“Crossborder shopping in South Africa: practices in eight SADC countries”

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ARTICLE INFO	Solly Matshonisa Seeletse (2015). Crossborder shopping in South Africa: practices in eight SADC countries. *Environmental Economics*, *6*(4-1), 180-191
RELEASED ON	Monday, 14 December 2015
JOURNAL	"Environmental Economics"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES **0**

NUMBER OF FIGURES **0**

NUMBER OF TABLES **0**

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Crossborder shopping in South Africa: practices in eight SADC countries

Abstract

This paper presents the results of an exploratory study undertaken to determine the dynamics in crossborder shopping into South Africa by neighboring countries from the Southern Africa Developing Communities (SADC). The patterns of the crossborders and crossborders' demographics were studied. The factors of economic engagement and market segments were identified. The paper exposed ample potential for markets with neighboring countries. This can enable niche and large supermarkets businesses along the border towns, in South Africa and/or inside the neighboring countries.

Keywords: business opportunity, foreign investment, market segments, niche markets, SADC.
JEL Classification: Z32, Z33.

Introduction

Neighboring countries may differ significantly in availability and prices of similar goods, opening opportunities for economic growth. This may also influence crossborder shopping. Globally, commuters travel into neighboring countries to acquire cheaper products and services to offset higher prices of the retailers in their countries. Other reasons for crossborder movement are convenience of shopping and savings on tax (Davis, 2011). The simplified relationships between many neighboring countries and the relative ease of entry into other countries enable consumers to compare goods in the markets of the neighboring countries. Crossborder shopping has become fashionable. Research attests to the increased propensity of consumers crossing state borders to do shopping (Knight & Schiff, 2012). Reasons for crossing state borders for shopping may be tourism related, and other unknown miscellaneous reasons. Countries intending to include buyers from neighboring countries may investigate what appeal to the crossborder shoppers and include what they lack that the buyers from the neighboring countries desire.

When shoppers benefit significantly more by shopping locally, then crossborder shopping will probably decrease. On the other hand, if buying across the border has significantly more buyer benefits, then crossborder shopping will more likely increase. Furthermore, knowledge and understanding the buyers' needs is important for policy makers. Most buyers want to save money, goods availability and convenience of shopping. Crossborder shopping may help to save in taxes and prices (Goolsbee, 2000), which is the case in high-tax states. Movement of people from other SADC countries (Botswana, Lesotho, Malawi, Mozambique, Namibia, Swaziland, Zambia, and Zimbabwe) into South Africa was typically due to seeking jobs (Crush, Williams & Peberdy, 2005). This paper examines factors concerning consumers from neighboring countries who travel into South Africa for shopping.

1. International crossborder shopping practices

Crossborder shopping refers to conveying goods bought in one country across the international borders between jurisdictions in a legal trade flowing through standard national export/import frameworks (Knight & Schiff, 2012). Increases in such trade occur in areas where crossing of borders is reasonably relaxed, and where goods are significantly cheaper in another country. Transport modes used for crossborder shopping is based on availability, convenience and price, among others. Foreign nations experiencing this practice include East Asian, European, North American (Canada, Mexico and the US), and African ones. Thus, crossborder shopping is a universal practice.

1.1. East Asia. East Asian crossborder shopping include occurrences in China, Hong Kong, Indonesia, Malaysia and Singapore. According to Agarwal et al. (2013), many Singaporeans travel for crossborder shopping in Johor Bahru, Malaysia and in Batam, Indonesia. Their main reasons are price advantages and varied products' availability. In ensuring that not all revenues are spent outside the borders of Singapore by crossborder shoppers into neighboring countries, the Singaporean legislation requires each car traveling out of Singapore to be at least 75% full of fuel. This prevents crossborder shopping on vehicle fuel, but not for other commodities. In Hong Kong and the neighboring Shenzhen, the crossborder shopping is also exchanged (So, 2003).

1.2. Europe. European countries practicing crossborder shopping include Belgium, Bosnia-Herzegovina, Croatia, Denmark, Estonia, Finland, France, Northern Ireland, Norway, the Republic of Ireland, Russia, Serbia, Sweden, Switzerland, The United Kingdom, Ukraine (Thomas & Frizon, 2011). Croatia borders on Bosnia-Herzegovina and Serbia.

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The movement of Croatians into these two countries for crossborder shopping is common. The leading product bought in this travel is tobacco but other goods are also involved (Anderson, Chisholm & Fuhr, 2009).

There are regular crossborder shopping activities between Ukraine and Russia, based on historical connections (Bar-Kołelis & Wiskulski, 2012). Norway has crossborder relations with Denmark, Estonia, Finland, Russia and Sweden. Germany has crossborder relations with Denmark and Switzerland (Kraus et al., 2004). The outstanding reason for crossborder shopping in Estonia is the cheap tax on alcohol. Several shops in the Tallinn harbor, Estonia, cater specifically for tourists from neighboring countries (Sadilov & Õun, 2013). In Finland, alcohol is cheaper than in Sweden. Apparently, the excise tax on alcohol is cheaper in Estonia than in Finland and also much cheaper than in Sweden. Thus it has become traditional to buy alcohol in bulk from Estonia. Österberg and Karlsson (2004) infer that France and Belgium offer cheaper alcohol, tobacco and value added taxes on laundry shampoos compared to the United Kingdom. As a result, consumers travel on a regular basis to these two countries to make bulk purchases on these items.

For the two Irelands neighboring each other, according to Stennett and Love (2012) petrol is cheaper in Northern Ireland while groceries, furniture and clothing are cheaper in the Republic of Ireland. Crossborder shopping takes place regularly between the two countries.

1.3. North America. In North America, Díaz-Bautista (2012) notifies that Canada, Mexico and the United States have an effective crossborder shopping relationship through the North American Free Trade Agreement (NAFTA). Through the NAFTA, barriers and tariffs were decreased to a bare minimum in order to facilitate crossborder shopping. In 2008, the daily crossborder shopping transaction between Canada and the US alone was estimated to about $2 billion. Three paramount reasons of consumers engaged in crossborder shopping were to broaden product selection, gain access to larger markets, and exploit currency flux. Another convenient platform for crossborder shopping in this region was on-line buying, which grew noticeably in recent years.

Reckonable disappointments were experienced in some crossborder shopping in this region. Since crossborder shopping involves additional border costs such as duties, brokerage and shipping (Canada Customs Office, n.d., Lasalle, 2014), sometimes they are not disclosed before the transactions, and often unknown to retailers. Consequently, some situations result in the final item cost momentously exceeding the expected price. For alleviating such problems, crossborder shopping solutions such as Wishabi and Canada Post's Borderfree (Fedex, 2010) were initiated. These initiatives have successfully mitigated some difficulties, albeit with mixed successes. Involved consumers are advised to be cautious in determining the final total cost of goods before deciding to purchase.

1.4. Market segmentation. Market segmentation is a marketing tactic that divides a broad target market into subdivisions of businesses, consumers, or countries with common needs, interests, and priorities (Kotler & Armstrong, 2014). A unique strategy to service each segment is designed and implemented. Common forms of market segmentation practices are geographic, demographic, behavioral, psychographic, occasional, and cultural benefits. Marketers of geographic segmentation fragment the market according to geographic criteria such as populations, countries, regions, cities, neighborhoods or postal codes (Kotler & Keller, 2006). Segmentation according to demography is based on variables such as age, gender, occupation and education level, or in terms of product or service benefits (Reid & Bojanic, 2009). Kotler and Armstrong (2012) clarify that behavioral segmentation splits consumers into variables such as consumer knowledge, attitude, usage, loyalty status, and related qualities. Psychographic segmentation, or lifestyle, is based on the activities, interests, and opinions. This is the way people spend their leisure, and the way they are influenced (Goldstein, 2007). Occasion segmentation focuses on analyzing occasions, which may be associated with elements that depend on seasonal factors.

In recapitulating, the principal reasons for crossborder shopping in these countries were availability of products/services, cheaper prices, and tax benefits. In the SADC region, many crossborder shoppers travel to South Africa. This paper focuses on the crossborder shopping activity for the crossborder shoppers from eight countries neighboring South Africa.

2. Research methodology

2.1. Research design. The design of the study was qualitative exploratory based on categories of verbatim responses for the categorical data analysis (CDA) use of statistical methods. The qualitative nature is explained by the fact that the study requires words in addressing the research problem (Crowther & Lancaster, 2012). Qualitative research was used to explore issues leading to crossborder shopping in South Africa, and find reasons for lack or limited crossborder shopping of South Africans in the same countries explored. These reasons

served as the categories of CDA. The exploratory aspect is due to the indepth search to obtain the understanding of the research problem (Creswell, 2009). It was crucial to determine the factors that prompt crossborder shopping in South Africa by customers originating from eight mentioned countries. An exploratory study is helpful in uncovering the occurrence, searching for new insights, asking questions and assessing phenomena in a new perspective.

2.2. Research instrument. The study instrument was a structured questionnaire for consistency in survey approach, which were self-administered with limited support. The information required from the questionnaire included the type of consumers practicing cross-border shopping, the products they buy, travel modes they use and factors motivating them to practice cross-border shopping, among others.

2.3. Sampling method and data collection. The countries involved were allowed to remain in their natural (or geographical) strata. In each stratum, a *constricted* systematic sampling was used in which every first willing (but not previously used) respondent was selected to participate in the study. The respondents were identified as they left or entered the respective borders, and tourists crossing for other reasons other than crossborder shopping were not involved for this purpose. The estimated stratum sample size was 300 crossborder shoppers, to have enough respondents to make a judgement on responses. The data collection process took place over 14 months from July 2013 to September 2014. Data capturing benefited from the use of spreadsheet.

3. Data analysis

SPSS was used for data analysis. Categorical data were organized into frequency tables. The analyses consisted of graphs, percentages to compare the various categories of responses using testing equality of proportions, and the chi-square tests of independence. In determining the goodness-of-fit of assumptions, the chi-square test is appropriate (Wackerly, Mendenhall & Scheaffer, 2008). The null and alternative hypotheses for the tested are:

H_0: The row and column results are independent of each other.

H_a: The row and column results are not independent of each other.

The customization of these hypotheses for paper was:

H_0: Response is independent of country of origin.

H_a: Response is independent of country of origin.

For testing equal proportions, the hypotheses are:

H_0: $p_1 = p_2 = \ldots = p_k$.

H_a: At least one p_i differs from the others.

Let o_i denote the i^{th} observed frequencies and e_i the corresponding expected frequencies in a contingency table (e.g. frequency table). The value of the test statistic (Bless, Higson-Smith & Kagee, 2006) is given by the formula:

$$\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i}. \quad (1)$$

When small (< 5) observed frequencies are involved, Simon (2002) recommends the Yates corrected chi-square equation:

$$\chi^2 = \sum_{i=1}^{k} \frac{(|o_i - e_i| - 0.5)^2}{e_i}. \quad (2)$$

The chi-square statistics' degrees of freedom (d.f.) is given by $k - 1$ when the number of categories k is used (Curwin & Slater, 2002); or $(c - 1)(r - 1)$ when the contingency table is a matrix with c columns and r rows (Tabachnick & Fidell, 2007). The rule is to reject the null hypothesis if the calculated test statistic exceeds the critical value obtained from the table of chi-square statistics at a given level of significance. All tests are conducted at 5% significance level. The results follow.

4. Results

A total of 2221 crossborder shoppers were interviewed at eight South African borders with the countries involved. Among them 247 (11.1%) were from Botswana, 261 (11.8%) from Lesotho, 293 (13.2%) from Malawi, 289 (13.0%) from Mozambique, 295 (13.3%) from Namibia, 251 (11.3) from Swaziland, 287 (12.9) from Zambia, and 298 (13.4) from Zimbabwe. In terms of age, 161 (7.2%) were between 10 and 20 years old, 1198 (53.9%) were between 21 and 35 years, 743 (33.5%) were between 35 and 65 years, and 119 (5.4%) were 65 years or older. These discrepancies are explored using the chi-square tests. First, we test the numbers of countries.

The null hypothesis is being tested and the alternative hypothesis are given by:

H_0: $p_1 = p_2 = \ldots = p_8$.

H_a: At least one p_i differs from the others.

The Table used for the calculation is:

Table 1. Distribution of crossborder shoppers by country

Country	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
o_i	247	261	293	289	295	251	287	298
e_i	277.625	277.625	277.625	277.625	277.625	277.625	277.625	277.625

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 11.9$, d.f. $= k - 1 = 8 - 1 = 7$, and the critical value $\chi^2_{0.05} = 14.1$. The test statistic does not exceed the critical value. Hence, the hypothesis of independence is not rejected. This implies that there is no enough statistical evidence at 5% significance level that the proportions of crossborder shoppers from South Africa's neighboring countries are dissimilar. Next we test the ages. The null hypothesis being tested and the alternative hypothesis are:

H_0: $q_1 = q_2 = \ldots = q_4$.

H_a: At least one q_j differs from the others. The Table used for the calculation is:

Table 2. Distribution by age

Ages	o_i	e_i
10 to < 20	161	555.25
21 to < 35	1198	555.25
35 to < 65	743	555.25
65+	119	555.25

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 1430.2$, d.f. $= k - 1 = 4 - 1 = 3$, and critical value $\chi^2_{0.05} = 7.81$. The test statistic exceeds the critical value. Hence, the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at 5% significance level that the proportions of crossborder shoppers in these countries are the same. The next step investigates if the ages of crossborder shoppers and their home countries are independent. The null and alternative hypotheses are:

H_0: Age is independent of country of origin.

H_a: Age is not independent of country of origin.

The required input values are in the tables below:

Table 3a. Observed by age vs country

Age class (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
10 to < 20	8	14	16	29	11	18	22	43
21 to < 35	102	128	182	168	171	137	161	149
35 to < 65	125	100	81	77	94	84	97	85
65+	12	19	14	15	19	12	7	21

Table 3b. Expected by age vs country

Age class (e)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
10 to < 20	17.90	18.92	21.24	20.95	21.38	18.19	20.80	21.60
21 to < 35	133.23	140.78	158.04	155.89	159.12	135.39	154.81	160.74
35 to < 65	82.63	87.31	98.02	96.68	98.69	83.97	96.01	99.69
65+	13.12	13.87	15.57	15.35	15.67	13.34	15.25	15.83

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 94.9$, d.f. $= (4 - 1)(8 - 1) = (3)(7) = 21$, and $\chi^2_{0.05} = 32.7$. The test statistic exceeds the critical value, and the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at 5% significance level that the ages and countries of origin are independent. The next Figure presents the observed frequencies according to age groups.

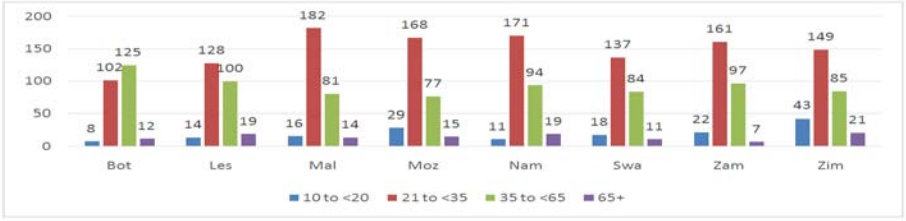

Fig. 1. Age vs country

The graph shows that crossborders of ages from 21 to 35 years were awesomely in the majority; followed by those in 35 to 65 years old. All the other ages had much fewer crossborder shoppers from these countries into South Africa.

Gender and country were also tested for independence. The null and alternative hypotheses are:

H_0: Gender is independent of country of origin;

H_a: Gender is not independent of country of origin.

Table 4a. Observed by gender vs country

Gender (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Female	96	105	139	121	163	82	117	145
Male	151	156	154	168	132	169	180	143

Table 4b. Expected by gender vs country

Gender (e)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Female	107.65	113.75	127.70	125.96	128.57	109.40	125.09	129.88
Male	139.35	147.25	165.30	163.04	166.43	141.60	161.91	168.12

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 42.1$. The d.f. $= (r-1)(c-1) = (2-1)(8-1) = 7$, and $\chi^2_{0.05} = 14.1$. The test statistic exceeds the critical value, and the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at 5% significance level that gender and country of crossborder shopper are independent.

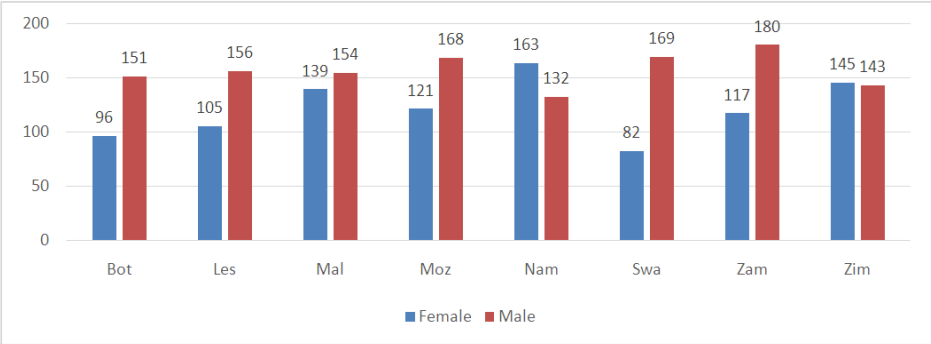

Fig. 2. Gender vs country

In six (66.7%) of these countries, males dominate females in crossborder shopping while only in two countries (33.3%) (Namibia & Zimbabwe), females dominate males. The level of education of crossborder shoppers was tested against country of origin.

The hypotheses are:

H_0: Educational level is independent of country of origin.

H_a: Educational level is not independent of country of origin.

Table 5a. Observed by schooling vs country

Education (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Primary	91	119	107	124	119	113	132	126

Table 5a (cont.). Observed by schooling vs country

Education (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Matric	71	62	79	81	73	64	74	79
M+3	56	48	61	63	58	32	28	36
Postgrad	28	32	46	21	45	42	53	57

Table 5b. Expected by schooling vs country

Education (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Primary	103.538	109.406	122.820	121.143	123.658	105.214	120.305	124.916
Primary	103.538	109.406	122.820	121.143	123.658	105.214	120.305	124.916
Matric	64.836	68.511	76.911	75.861	77.436	65.886	75.336	78.223
M+3	42.483	44.891	50.394	49.706	50.738	43.171	49.362	51.254
Postgrad	36.032	38.075	42.743	42.159	43.035	36.616	41.868	43.472

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 58.0$. The d.f. = $(c - 1)(r - 1)$ = = $(4 - 1)(8 - 1) = 21$, and $\chi^2_{0.05} = 32.7$. The test statistic exceeds the critical value, thus the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at 5% significance level that crossborder's ages and the countries of their origins are independent.

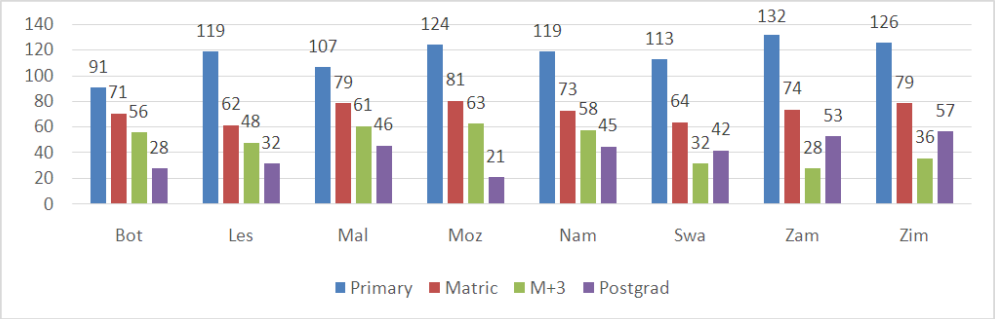

Fig. 3. Education vs country

The crossborder shoppers with primary school education dominate in all the countries, followed by those with matric. Those with 3-year tertiary qualifications dominate the ones with postgraduate qualifications in five (62.5%) countries. Only in three (37.5%) countries (Swa, Zam & Zim), the postgraduates dominate the graduates.

Next we test the crossborders according to the marital status. The hypotheses are:

H_0: The marital positions are independent of country of origin.

H_a: The marital positions are not independent of country of origin.

Table 6a. Observed by marital status vs country

Status (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Single	126	98	136	182	142	69	78	118
Married	93	129	143	81	114	174	196	123
Div/Wid	28	34	14	26	39	8	13	57

Table 6b. Expected by marital status vs country

Status (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Single	105.54	111.52	125.19	123.49	126.05	107.25	122.63	127.33
Married	117.11	123.74	138.91	137.02	139.86	119.00	136.07	141.29
Div/Wid	24.36	25.74	28.89	28.50	29.09	24.75	28.30	29.38

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 214.1$, d.f. = $(c - 1)(r - 1)$ = = $(3 - 1)(8 - 1) = 14$, and $\chi^2_{0.05} = 23.7$. The test statistic exceeds the critical value. Hence, the hypothesis of independence is rejected. Thus there is no enough statistical evidence at 5% significance level that the marital statuses and countries of origin of crossborder shoppers are independent.

The graph below displays the crossborders according to their marital statuses.

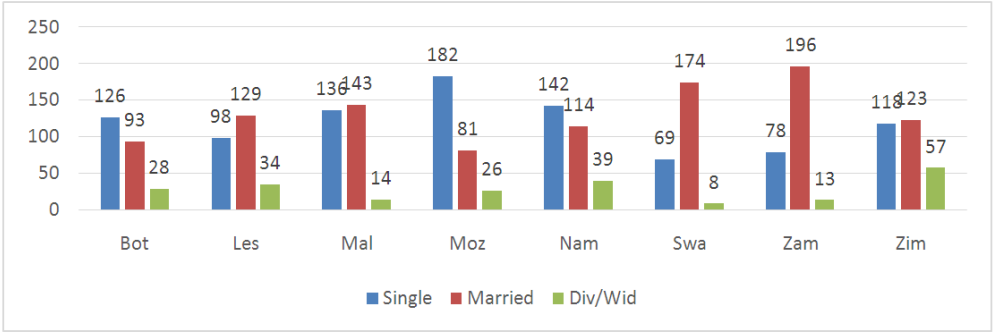

Fig. 4. Marital status vs country

The divorced/widowed crossborder shoppers were the fewest for all countries. The married ones dominate in five (62.5%) countries (Les, Mal, Swa, Zam & Zim)), followed by those with matric. Those with 3-year tertiary qualifications dominate the ones with postgraduate qualifications in five (62.5%) countries. Only in three (37.5%) countries (Swa, Zam & Zim), the postgraduates dominate the graduates. A test on modes of transport follows. The hypotheses are:

H_0: The transport modes used are independent of country of origin;

H_a: The transport modes used are not independent of country of origin.

Table 7a. Observed by transport mode vs country

Travel mode (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Own vehicle	116	98	109	184	107	132	182	111
Public transport	131	163	184	205	188	119	105	187

Table 7b. Expected by transport mode vs country

Travel mode (e)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Own vehicle	115.55	122.10	137.07	135.20	138.00	117.42	134.26	139.41
Public transport	142.57	150.65	169.12	166.82	170.28	144.88	165.66	172.01

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 101.6$, d.f. $= (c-1)(r-1) = (2-1)(8-1) = 7$, and $\chi^2_{0.05} = 14.1$. The test statistic exceeds the critical value. Hence, the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at 5% significance level that the transport used and countries of origin are independent. The graph below displays the transport modes used.

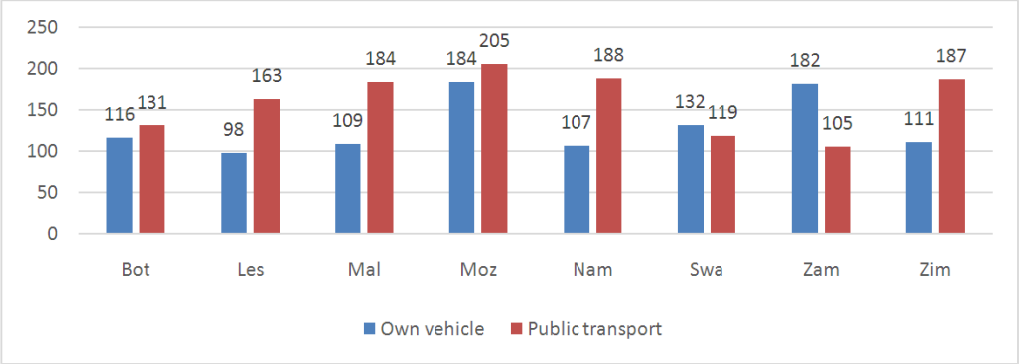

Fig. 5. Travel mode vs country

While using public transport for shopping the crossborder shoppers were more than those using own vehicles in seven (87.5%) countries, except only in Zambia (contributing 12.5%) in which own vehicles were used more to travel for shopping in South Africa.

The shopping frequency for crossborder shopping was also tested. The hypotheses were:

H_0: The frequencies to crossborder shop are independent of country of origin.

H_a: The frequencies to crossborder shop are not independent of country of origin.

Table 8a. Observed by crossborder frequency mode vs country

Frequencies (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Weekly	102	121	79	87	109	113	76	106
Fortnightly	69	46	64	43	74	68	49	52
Monthly	58	43	41	17	68	21	28	38
Intermittently	18	51	109	142	42	49	134	102

Table 8b. Expected by crossborder frequency mode vs country

Frequencies (e)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Weekly	88.19	93.19	104.61	103.19	105.33	89.62	102.47	106.40
Fortnightly	51.71	54.64	61.34	60.51	61.76	52.55	60.09	62.39
Monthly	34.92	36.90	41.42	40.86	41.71	35.49	40.58	42.13
Intermittently	71.95	76.03	85.35	84.19	85.94	73.12	83.61	86.81

Then $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 270.8$, d.f. = $(c - 1)(r - 1)$ = = $(4 - 1)(8 - 1) = 21$, and $\chi^2_{0.05} = 32.7$. The test statistic exceeds the critical value. Hence, the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at the 5% significance level that the frequency of entering South Africa and the country of origin are independent. The graph below displays these patterns.

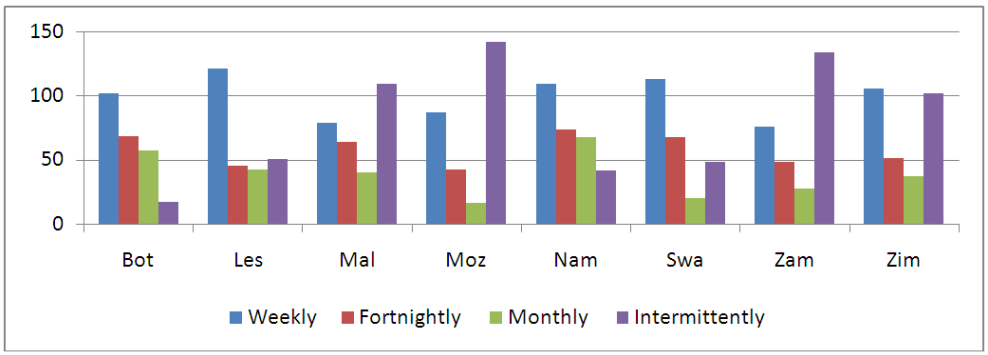

Fig. 6. Travel frequency vs country

In five countries, weekly crossborder shopping was most common while Malawi, Mozambique, Zambia and Zimbabwe crossborder shoppers came to shop in South Africa intermittently. Fortnightly frequencies exceeded monthly ones in all countries. The items purchased by the crossborder shoppers were tested.

The hypotheses are:

H_0: The types of bought goods are independent of country of origin.

H_a: The types of bought goods are not independent of country of origin.

Table 9a. Observed by purchased goods type vs country

Goods types (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Appliances	22	23	28	27	19	14	21	18
Clothes	63	56	66	73	71	61	79	36
Vehicles	18	22	27	24	31	28	19	36
Stationery	21	24	29	16	21	32	26	26
Furniture	19	32	21	6	27	37	8	19
Jewellery	23	16	29	16	13	18	36	14
Pharmaceuticals	22	28	27	39	26	23	34	24
Hair products	34	23	46	54	37	17	36	41
Built material	16	29	9	7	14	28	4	34
Other	9	8	11	17	19	7	18	16

Table 9b. Expected by purchased goods type vs country

Goods types (e)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Appliances	19.128	20.213	22.691	22.381	22.846	19.438	22.226	23.078
Clothes	56.162	59.345	66.621	65.711	67.076	57.071	65.257	67.758
Vehicles	22.798	24.090	27.044	26.675	27.229	23.167	26.490	27.506
Stationery	21.686	22.915	25.725	25.374	25.900	22.037	25.198	26.164
Furniture	18.795	19.860	22.295	21.991	22.447	19.099	21.838	22.675
Jewellery	18.350	19.390	21.767	21.470	21.916	18.647	21.321	22.139
Pharmaceuticals	24.800	26.206	29.419	29.017	29.620	25.202	28.816	29.921
Hair products	32.029	33.844	37.994	37.475	38.253	32.548	37.216	38.642
Built material	15.681	16.570	18.601	18.347	18.728	15.935	18.220	18.919
Other	11.677	12.339	13.852	13.663	13.946	11.866	13.568	14.088

Then $\chi^2 = \sum_{i=1}^{k} \frac{(|o_i - e_i| - 0.5)^2}{e_i} = 203.6$, the d.f. = $(c - 1)(r - 1) = (10 - 1)(8 - 1) = 63$, and $\chi^2_{0.05} = 70.2$. The test statistic exceeds the critical value. Hence, the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at 5% significance level that the goods purchased and the countries of origin are independent. The Figure below displays the purchased items.

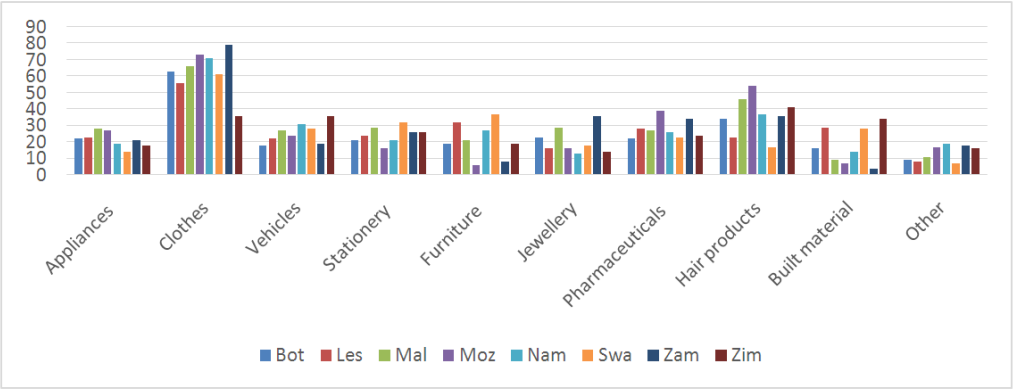

Fig. 7. Goods types bought vs country

Clothes were the overwhelming majority of the purchased items. They were followed at a far distance by hair products. Other items that were purchased included appliances, vehicles, stationery, furniture, jewellery, pharmaceuticals, built materials and miscellaneous. The industry types were also tested.

The hypotheses are:

H_0: The industry types of trade are independent of country of origin;

H_a: The industry types of trade are not independent of country of origin.

Table 10a. Observed by industry type vs country

Industry types (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Finance	67	59	84	81	89	24	79	27
Trading shops	47	47	45	46	51	41	44	51
Marketing	42	43	44	38	42	36	31	64
Transport	57	58	78	53	49	38	63	81
Crossborder business	27	11	34	22	26	29	23	31
Education	7	42	8	49	38	83	47	44

Table 10b. Expected by industry type vs country

Industry types (e)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Finance	56.718	59.932	67.281	66.362	67.74	57.636	65.903	68.429
Trading shops	41.704	44.068	49.471	48.796	49.809	42.38	48.458	50.315
Marketing	38.479	40.66	45.645	45.022	45.957	39.102	44.71	46.424
Transport	52.381	55.349	62.136	61.287	62.56	53.229	60.863	63.196
Crossborder business	22.353	23.620	26.516	26.154	26.697	22.715	25.973	26.969
Education	35.365	37.370	41.951	41.379	42.238	35.938	41.092	42.667

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 221.4$. The d.f. = $(c - 1)(r - 1) = (6 - 1)(8 - 1) = 35$, and $\chi^2_{0.05} = 46.1$. The test statistic exceeds the critical value, and the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at 5% significance level that the industry of interest and countries of origin are independent. The next graph shows the industry patterns.

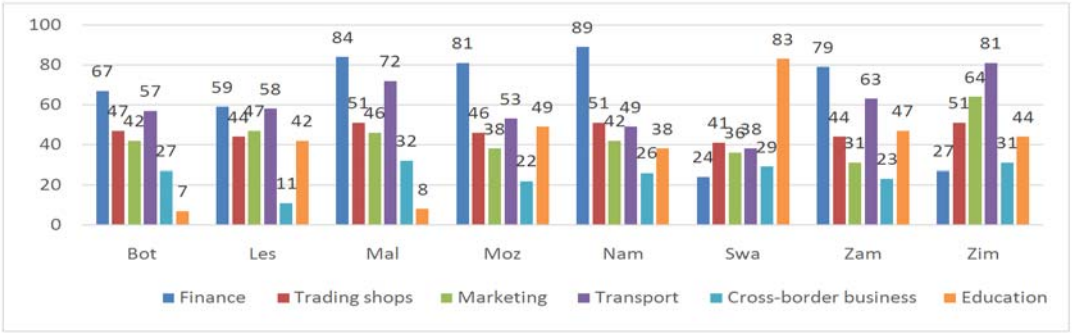

Fig. 7. Industry types of trade vs country

The finance industry crossborder shoppers dominated in six (66.7%) countries (Bot, Les, Mal, Moz, Nam, Zam). In Swaziland, the education ones dominated and in Zimbabwe the transport ones dominated. Botswana and Malawi education industry showed tiny proportions while crossborder business was tiny in Lesotho.

The principal reasons for crossborder shopping were tested. The hypotheses are:

H_0: The reasons for crossborder shopping are independent of country of origin.

H_a: The reasons for crossborder shopping are not independent of country of origin.

Table 11a. Observed by crossborder shopping purpose vs country

Reason (o)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Look for work	23	41	36	43	23	29	31	44
Stocking for business@ home	112	144	191	152	179	148	149	187
Tourism	29	23	26	24	21	23	25	19
Cheap items	26	21	28	36	39	31	39	24
Quality items	25	14	16	11	14	12	18	13
Fashion items	32	18	26	23	19	28	25	11

Table 11b. Expected by crossborder shopping purpose vs country

Reason (e)	Bot	Les	Mal	Moz	Nam	Swa	Zam	Zim
Look for work	30.03	31.73	35.62	35.13	35.86	30.51	34.89	36.23
Stocking for business	140.35	148.30	166.49	164.21	167.62	142.62	163.08	169.33
Tourism	21.13	22.33	25.07	24.72	25.24	21.47	24.55	25.49
Cheap items	27.14	28.67	32.19	31.75	32.41	27.58	31.53	32.74
Quality items	13.68	14.45	16.23	16.01	16.34	13.90	15.89	16.50
Fashion items	20.24	21.39	24.01	23.68	24.17	20.57	23.52	24.42

The $\chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} = 73.3$, d.f. $= (c-1)(r-1) = (6-1)(8-1) = 35$, and $\chi^2_{0.05} = 46.1$. The test statistic exceeds the critical value, and the hypothesis of independence is rejected. This implies that there is no enough statistical evidence at the 5% significance level that the reason for crossborder shopping and countries of origin are independent. The graphical display follows for illustration.

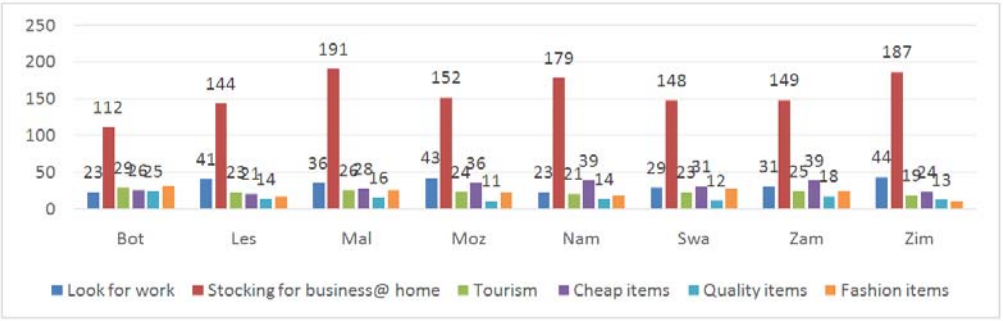

Fig. 8. Travel mode vs country

The reasons for all the South African neighbours to do crossborder shopping were to stock for business, seek jobs, tourism, and buy cheap, and quality as well as fashion items.

Discussion

The cross shoppers were distributed almost equally, with percentages of people coming from neighboring countries ranging from about 11% to about 13%. Statistical tests did not dispute that the distribution of crossborders from different countries were common. In terms of age, there were more crossborder shoppers in the age from 21 to 35 years followed by those between 35 and 65 years. The younger and the older ones were fewer. A statistical test also confirmed that the distribution differed according to age. The test for independence also suggested that the crossborder shoppers' ages depended on the countries from which they originated. There were generally more male crossborder shoppers, except only in Namibia and Zimbabwe where females were more. The test of hypothesis suggested that gender of crossborder shoppers depended on the country of the crossborder shoppers. Also, statistical tests suggested that the educational levels of the crossborder shoppers depended on their home countries.

The divorced and widowed crossborder shoppers were in the minority in all countries. The unmarried ones from Botswana, Mozambique and Namibia were more than the married ones while in the other five countries the married ones were more. A hypothesis test also suggested that the marital statuses depended on the home countries of the crossborder shoppers. Regarding travelling for crossborder shopping, there were more using their own vehicles from Swaziland and Zambia than public transport modes. In the six other countries there were more public transport users.

Mozambique and Zambia showed most crossborder shoppers being infrequent compared to other frequencies. In the other six countries, intermittent crossborders were the fewest. Also, the weekly ones exceeded the fortnightly ones, who exceeded the monthly ones. Tests of hypotheses confirmed that the frequency of traveling for crossborder shopping depended on the home country.

Clothes and hair products were the items purchased by most crossborders from the eight countries. Then the pharmaceutical and vehicles followed. Other items in descending order were stationery, appliances, furniture, jewellery, built materials and miscellaneous, other items not specified. Statistical tests confirmed that that there were discrepancies in the way the purchased items were distributed.

The crossborders from Swaziland travelled mostly for educational purposes, and those from Zimbabwe travelled mostly for transport. Hypothesis testing showed that the travel purposes differed according to country. The other countries were dominated by travel for finance. In total, the superiority of industry types was in the following order 'finance', 'transport', 'trading shops', 'marketing', 'education' and 'crossborder business'.

For crossborder shopping stocking for business was the overwhelmingly dominant reason for traveling to South Africa. Other reasons in superior order were 'look for work', 'cheap items', 'tourism', 'cheap items', 'fashion items', and lastly, 'quality items'. The test also suggested the differences in the reasons according to the countries.

Conclusion

The crossborder shopping patterns have been established. Like other countries that were discussed, the South African crossborder shopping offers more and better products and services. They also offer opportunities for market segments of various kinds, but mainly for business, consumers and countries. Clothes and hair products interests offer big segments. The ages show differences, and the middle (not too old, not too young) ones show larger segments. The markets of crossborders expose opportunities for bulk supermarkets and niche areas for South Africans and members of the neighboring countries. These can be established in border towns of South Africa, and/or in the countries involved. Possibilities are factories and shopping centres. The benefits of these initiatives will be availability at cheaper prices of products and services nearby, and the induced cost savings in transport fares and border taxes, among others. The supreme benefit will be job creations of large scales.

Recommendations

The study recommends that:

- Entrepreneurs should establish niche businesses as determined the market segments identified in the study.
- Big businesses should extend their trade to locations near the borders investigated.
- Economic planning departments of the regions of provinces in South Africa should solicit investments for establishing factories and shopping malls along the border towns.
- The countries involved should enable foreign investments offering easy entry.

Acknowledgement

The author duly acknowledges the financial support from Mososo Trading Enterprise.

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