

New Jersey Agricultural Experiment Station
P-15009-2-06
November 2006

A Comparison of Wholesaler/Retailer Business Characteristics of Natural Products between Ghana and Rwanda

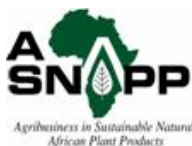
**Ramu Govindasamy
James Simon
Venkat Puduri
H. Rodolfo Juliani
Juliana Asante-Dartey
Hanson Arthur
Bismarck Diawuo
Dan Acquaye
Nicholas Hitimana**



**Department of Agricultural, Food and Resource Economics
Rutgers Cooperative Extension
New Jersey Agricultural Experiment Station
Cook College
Rutgers, The State University of New Jersey
New Brunswick, New Jersey 08901**

A Comparison of Wholesaler/Retailer Business Characteristics of Natural Products between Ghana and Rwanda

**Ramu Govindasamy
James Simon
Venkat Puduri
H. Rodolfo Juliani
Juliana Asante-Dartey
Hanson Arthur
Bismarck Diawuo
Dan Acquaye
Nicholas Hitimana**



Ramu Govindasamy is Associate Professor, Dept. of Agricultural, Food and Resource Economics, Rutgers University, New Brunswick, NJ 08901; James Simon is Professor, Dept. of Plant Sciences and New Use Agriculture and Natural Plant Products Program Rutgers University, New Brunswick, NJ 08901, USA; Venkat Puduri is Post Doctoral Associate, Dept. of Agricultural, Food and Resource Economics, Rutgers University, New Brunswick, NJ 08901; H. Rodolfo Juliani is Research Associate, Dept. of Plant Sciences, Rutgers University, New Brunswick, NJ 08901; Juliana Asante-Dartey, Hanson Arthur, Bismarck Diawuo and Dan Acquaye, ASNAPP-Ghana, P.M.B. (18) Kanda, Accra, H/NO C 205/29, Mempeasem, East Legon, Accra, Ghana; Nicholas Hitimana, ASNAPP-Rwanda, PO Box 6052, Kigali, Rwanda.

Correspondence Address

**Ramu Govindasamy, Associate Professor
Department of Agricultural, Food and Resource Economics
Cook College
Rutgers, The State University of New Jersey
55 Dudley Road, New Brunswick, New Jersey 08901-8520
Phone: (732) 932-9171 ext. 254**

Acknowledgements

We thank both the Ghanaian and Rwandan individuals with whom we interviewed for sharing their information with us. We thank the USAID for providing funds to support this survey work and our ASNAPP and PFID/NP programs. Specifically, we thank Carol Wilson, USAID Cognizant Technical Officer of our Partnership for Food and Industry in Natural Products (PFID/NP), a university led program supported by the Office of Economic Growth, Agriculture and Trade (EGAT/AG) of the USAID (Contract Award No. AEG-A-00-04-00012-00) in support of their global economic development programs. We also thank Jerry Brown, USAID-Southern Africa and project officer, for his support and encouragement on our ASNAPP programs and organization. Finally, we thank the New Use Agriculture and Natural Plant Products Program (NUANPP) and the New Jersey Agricultural Experiment Station, Rutgers University. For further information, see pfidnp.org; and www.asnapp.org.

Table of Contents

Acknowledgements.....	i
Table of Contents.....	ii
List of Tables and Figures.....	iii
Abstract.....	v
1. Introduction.....	1
2. Survey Design.....	4
3. Results.....	5
3.1. Opinion and Preferences	5
3.2 Demographic Characteristics	12
3.3 Commonly Traded Natural Products and Uses.....	15
3.4 Ghana and Rwanda Combined Regression Model	17
4. Conclusions.....	21
5. References.....	23

List of Tables

Table 1: Percentage Distribution of Wholesalers versus Retailers in Ghanaian and Rwandan Natural Products Industry	6
Table 2: Sourcing of Natural Products by Wholesaler/ Retailers of Ghana and Rwanda .	6
Table 3: Wholesalers/Retailers Business/Firm that received any Support towards Trade/Finance/Technical training.	7
Table 4: Distribution of Type of support received by Wholesalers/Retailers towards Trade/Finance/Technical training.	8
Table 5: Wholesalers/Retailers Opinion about their Infrastructure, needs, information and support.....	8
Table 6: Types of Current Support needs of Ghanaian Wholesalers/Retailers	9
Table 7: Obstacles faced by Ghanaian and Rwandan Respondents in the Industry	10
Table 8: Wholesalers/Retailers Positive (increase) Expectation about Business Growth in the next one to two Years.....	12
Table 9: Wholesalers/Retailers Age Distribution	13
Table 10:Wholesalers/Retailers Educational Levels	14
Table 11:Wholesalers/Retailers Special Educational Skills with respect to their Business	14
Table 12: Marital Status of Principal Business Operator.....	15
Table 13:Distribution of Top Ten Natural/Herbal Products by Ghanaian Wholesalers/ Retailers	16
Table 14:Distribution of Top Ten Natural/Herbal Products by Rwandan Wholesalers/ Retailers	17
Table 15:Descriptive Statistics of Variables Used in the Regression Analysis.....	18
Table 16:Regression Model Results	19

List of Figures

Figure 1: Wholesaler/Retailer's Prediction about the Future of the Herbal and Cosmetic Industry	11
Figure 2: Distribution of Gender.....	13

Abstract

The usage of natural products is becoming an increasingly common consumer phenomenon due to increasing health consciousness, and because of their naturalness, and medicinal qualities of the products. African countries are very rich with natural products resources and supplies. The continent's rich botanical heritage offers an excellent opportunity to diversify away from other traditional exports. Europe and the USA are particularly promising markets for natural products. Thus, it is advantageous to examine development of natural products exporting as alternative or complimentary economic opportunities for many African people, especially those in the rural areas. This paper has explores both factors which promote and which act as obstacles to the natural products market, specifically in the retail and wholesale portions of the value chain in Ghana and Rwanda.

A Comparison of Wholesaler/Retailer Business Characteristics of Natural Products between Ghana and Rwanda

1. Introduction

The natural food industry has emerged as one of the fastest growing markets in the United States and the rest of the developed world due to overwhelming consumer acceptance. The usage of natural products is becoming an increasingly common consumer phenomenon due to increasing health consciousness, and because of their naturalness, and medicinal qualities of the products. Trends and opportunities of natural products trade is different from country to country, based on socio-demographic and ethnic factors of societies in each country. In the global market, Europe and the United States of America have major shares in consuming natural products. However, due to diversification in both products and usage thereof, it is difficult to present comprehensive statistics regarding the size of the entire industry.

Indeed, some researchers have combined organic and natural products, treating the two categories as synonymous while estimating the size of the market. According to the projections of DTI (Department of Trade and Industry, Philippines), global sales for organic and natural products will reach about \$100 billion in 2008 at an annual growth rate of 20 to 30%. The world trade in organic natural products is dominated by the United States, the European Union (EU) and Japan. According to Organic Natural Health 2001 estimates, organic and natural products sales for Europe totaled US \$9.2 billion, with an annual 22% growth rate. Organic and natural products sales for the same year for the United States totaled US \$9.4 billion with an annual 19% growth rate. The United States market should be worth between US \$13 and US \$18 billion by 2005.

Organic and natural product sales for Japan were US \$3.1, with an annual 19% growth rate. Market research had shown that consumer demand is growing rapidly in these major markets and the share of organic products is expected to reach 5% to 10% of total food sales by the year 2005 (Organic Natural Health, 2001).

The Japanese are the largest per capita consumers of organic and natural products in the world. Japan had a national market value of US \$1.5 billion in 1998, which grew to US \$3.2 billion in 2002 (Inspired Living, 2001). Global natural product sales in all distribution channels reached an estimated \$42.8 billion in 2003, which was an 8.1 percent increase over global sales for 2002 (Marty T. S., and Patrick R., 2004). Overall, both natural products sales and available market places, such as web marketing have been increasing, along with consumers' tastes, health concerns and demand.

African countries are very rich in a plethora of natural products resources and supplies. The continent's rich botanical heritage offers an excellent opportunity to diversify away from its more traditional exports while still being able to both preserve and conserve its genetic resources. As noted above, natural products have particularly good markets in Europe and USA. We hypothesize that the development of natural products exporting can serve as effective alternative or complimentary economic opportunities for many African people, especially those in the rural areas.

The natural products industry in Ghana and Rwanda are characterized by low input and low output; mostly operated by small-scale farmers (suppliers) with low levels of formal education and agricultural production knowledge. The current situation on the supply-side may be summarized as traders lacking regular supplies, of good quality and timeliness. Organizationally, the scale of natural products operation may also be a

bottleneck. Equally telling obstacles are lack of information, capital; product quality and assurance mechanisms, access to financial credit and loans at reasonable rates, facilities and processing equipment, and more, each hindering successful commercialization.

The domestic markets of wholesalers and retailers¹ are largely at the low levels of commercialization; the traders have limited technical knowledge about natural products, and limited capital to expand their businesses and exploit available foreign markets. On the demand side, there may be corresponding lack of consumer information as to the range of products available, where to find them and what remedies they offer, and information on quality and safety.

This paper analyzes the results of a survey administered to natural products traders in Ghana and Rwanda, two selected African countries with potential to exploit the increased international consumer demand for natural products to economic advantage. The results from the Ghana and Rwanda traders' surveys show that most of the businesses are operated by retailers whose product supply is dependent on small-scale farmers and agents (those who buy products from farmers and supply to the wholesalers). The survey results also reflect that virtually all the traders² have not received sufficient technical, financial or trade assistance from any organization. The supply of these countries in the export market is very limited. The preliminary results suggest tremendous potential; however, to catalyze the potential into concrete business and trade opportunities remains challenging.

¹ Throughout this paper, the terms wholesalers and retailers, operators or business operators and traders are used interchangeably.

This paper has the objective of highlighting the factors which serve to promote or which act as obstacles facing the natural products market in the retail and wholesale portions of the value chain in Ghana and Rwanda. The specific objectives of the paper are to: (i) profile the technical, financial, organizational, etc., constraints the traders face (domestically and externally), (ii) profile the natural product range and their functions (iii) suggest and compare appropriate policy interventions for each of the two countries, the West African country of Ghana and the East African country of Rwanda

2. Survey Design

Rutgers University and the collaborating ASNAPP (Agribusiness in Sustainable Natural African Plant products) partners in Ghana and Rwanda under the PFID/NP (Partnership for Food Industry Development Natural Products) project prepared separate survey instruments for farmers and traders to elicit information on production and marketing of natural products. The survey instruments were pre-tested in each partner country in the areas of production and marketing. This study primarily compares traders of Ghana and Rwanda, using data collected from wholesalers as well as retailers in both the counties. In addition, the survey gathered information on traders' socio-economic data. A sample of 50 traders was surveyed from Ghana and Rwanda.

A sample of 55 traders was randomly selected from Accra and Kumasi, which are not only the two major cities of Ghana, but the cities which account for the bulk of the natural plant products trade (exports, wholesaling, distribution, and retailing within the country). Trained personnel personally administered the interviews from the collaborators at the country office. Respondents were assured of confidentiality, by

letting them know that respondents were to be identified by a survey number, as an input to the summary results. The surveys were conducted between August and December 2005.

For Rwanda, a sample of 50 traders was randomly selected from Kigali, the capital and most important city as it is here where almost all sales of natural plant products are transacted in the country. Two university students administered the interviews to 50 respondents, who were assured of confidentiality as respondents in Ghana had been. The students had been trained on how to administer the questionnaire, including how to explain the purpose of the survey. The surveys were administered in November 2005.

3. Results

3.1. Opinion and Preferences

The results indicate that the majority of the natural product traders in both countries are retailers, have been in business for an average of less than 4 years, do not themselves produce natural products on their own farm, do not export any natural products out of the country and have not received any support training toward trade, finance and technical in natural products industry. In terms of support received by the traders, only 12% received technical advice in Ghana compared to 64% in Rwanda; only 2% received processing and marketing support in Ghana compared to 55% in Rwanda; and 14% received training pertaining to information in Ghana compared to 55% in Rwanda.

Table 1: Percentage Distribution of Wholesalers versus Retailers in Ghanaian and Rwandan Natural Products Industry

Category	Ghana	Rwanda
Wholesaler	6%	0%
Retailer	74%	84%
Both	20%	16%
Total	100%	100%

As indicated in Table 1, in case of Ghana, 74% of the trader respondents were categorized as retailers, 20% were considered to be both retailers and wholesalers, and the remaining 6% were wholesalers in natural products business. In Rwanda, 84% of the traders were categorized as retailers, which is 10% more than Ghana, 16% were considered as both wholesalers, which is 4% less than Ghana. None of the traders in Rwanda were simply wholesalers.

In terms of business experience in the natural products area, the majority of the respondents were involved in the retailing area of the marketing chain in both the countries. The Ghanaian respondents experienced on average 16 years of natural products business experience and most of them have over ten years experience. Rwandan respondents have only an average of 4.5 years of business experience and very few of them have more than four years experience.

Table 2: Sourcing of Natural Products by Wholesaler/ Retailers of Ghana and Rwanda

Source	Ghana	Rwanda
Farmers	26%	4%
Forest	20%	0%
Buy from agents	36%	100%
Buy directly from people	76%	10%
Directly from Suppliers	12%	0%

In terms of sourcing of natural products, about 76% and 36% of Ghanaian wholesalers/retailers were receiving products directly from people and agents respectively; whereas, this is about 10% and 100% for the same sources in Rwanda. In Ghana, the other sources of natural products to traders were farmers (26%), forest (20%) and directly from suppliers (12%). Regarding Rwanda, farmers supplied goods to 4% of the traders and there were no resources from forest and directly from suppliers (Table 2). In terms of natural products production, about 4% of Ghanaian traders produced on their farm, where as, about 2% was reported in Rwanda.

Table 3: Wholesalers/Retailers Business/Firm that received any Support towards Trade/Finance/Technical training.

Received Support	Ghana	Rwanda
Yes	14%	24%
No	86%	76%

Tables 3 and 4 present results on variety of support received by the traders. About 24% of respondents received support towards trade, finance and technical training in Rwanda, where as in the case Ghana it is about 14% which is 10% less than Rwandan traders. Considering each aspect of the support, overall Rwandan traders received more benefit than Ghanaians. About 64% of Rwandan traders received technical advice, where as, in the case of Ghana, only 12% received such technical advice.

Table 4: Distribution of Type of support received by Wholesalers/Retailers towards Trade/Finance/Technical training.

Support to Trade	Ghana	Rwanda
a).Technical Advice	12%	64%
b).Processing and Marketing	2%	55%
c).Information Training	14%	55%
d).Financial Assistance	4%	55%
e).Vocational Training	4%	9%

Table 5: Wholesalers/Retailers Opinion about their Infrastructure, needs, information and support.

Respondents' Opinions Sought	Ghana	Rwanda
Do you feel that the infrastructure available locally for processing is adequate to your requirements	6%	58%
Are there any specific needs to improve distribution infrastructure?	92%	98%
Do you share information with your buyers/ retailers/ consumer?	84%	100%
Does your business have current support needs?	100%	57%

Table 5 presents the information regarding infrastructure, information needs, and support required by the operators. Only 6% and 58% of the Ghanaian and Rwandan traders, respectively, responded that they felt a lack of infrastructural support is available to meet their requirements. About 92% and 98% of Ghanaian and Rwandan traders responded that the distribution of infrastructure needs to be improved. Around 84% and 100% of the traders of Ghana and Rwanda share information with their buyers, retailers and consumers. In the process of supply chain management, sharing information among business communities develops and strengthens long-term relationships. In terms of current business support needs, Ghanaian traders received 100% support, where only

57% of traders received such support in the case of Rwanda. However, both business communities required more support in the area of developing international business in these countries, since only 4% of Ghanaian and 2% of Rwandan traders currently export natural products into the Global market. At least 2% of the Ghanaian traders were exporting natural products to the United States of American which is the largest consumer of the natural products in the world, whereas, Rwandan traders had not yet ventured into the USA market.

Table 6: Types of Current Support needs of Ghanaian Wholesalers/Retailers

	Aspects	Ghana	Rwanda
1	Technical Advice	78%	37%
2	Processing and Marketing	96%	33%
3	Short Seminars/Courses	100%	33%
4	Financial Assistance	94%	89%
5	Agricultural Certification	96%	15%
6	Others	100%	11%

As shown in Table 6, a majority of respondents receive financial assistance in both the countries surveyed. Rwandan business communities received minimal current support when compared to Ghanaian traders. In particular, Rwandan traders required support towards agricultural certification considered as the most important to promote the products in current competition.

Table7: Obstacles faced by Ghanaian and Rwandan Respondents in the Industry

Obstacles in Industry	High	Average	Low	Total
Ghana				
a). Human Resources	0%	16%	84%	100%
b). Access to Finance	82%	10%	8%	100%
c). Access to information	40%	48%	12%	100%
d). Access to Market	36%	32%	32%	100%
e). Labor and Logistics	6%	28%	66%	100%
f). Taxes	4%	28%	68%	100%
g). Management	32%	14%	54%	100%
h). Technical Support	38%	18%	44%	100%
Rwanda				
a). Human Resources	18%	56%	26%	100%
b). Access to Finance	18%	56%	26%	100%
c). Access to information	14%	50%	36%	100%
d). Access to Market	10%	72%	18%	100%
e). Labor and Logistics	40%	38%	22%	100%
f). Taxes	62%	36%	2%	100%
g). Management	2%	38%	60%	100%
h). Technical Support	0%	30%	70%	100%

Almost 84%, 66%, and 68 % of the Ghanaian respondents felt that human resources, labor and taxes were low priority problems, respectively (Table 7). Ghanaian respondents rated the access to finance as an especially high priority obstacle. In the case of Rwandan traders, about 70% and 60% of the respondents felt that Technical Support and Management, respectively, were low priority problems, respectively (Table 7). Rwandan traders considered Taxes (62%) as a high priority problem.

Individual natural products businesses were largely operated by family member with little or no hired labor. On average 1.18 and 1.78 of unpaid family members of

traders in Ghana and Rwanda respectively were involved in traders' natural products businesses. About 6.18 and 1.33 non-family members on average were hired by Ghanaian and Rwandan traders respectively. An average of 3.86 and 1.27 of part-time labors were engaged by Ghanaian and Rwandan traders. About 10 % and 14% of Ghanaian and Rwandan traders were employed by other business than their main activity. In terms of annual business turnover, on average, Ghanaian traders received 753,933,169 Ghanaian Cedi's (\$81,594), where as, in the case of Rwandan traders; this is about 1,420,903 Rwandan Francs (\$2,584).

Figure 1: Wholesaler/Retailer's Prediction about the Future of the Herbal and Cosmetic Industry

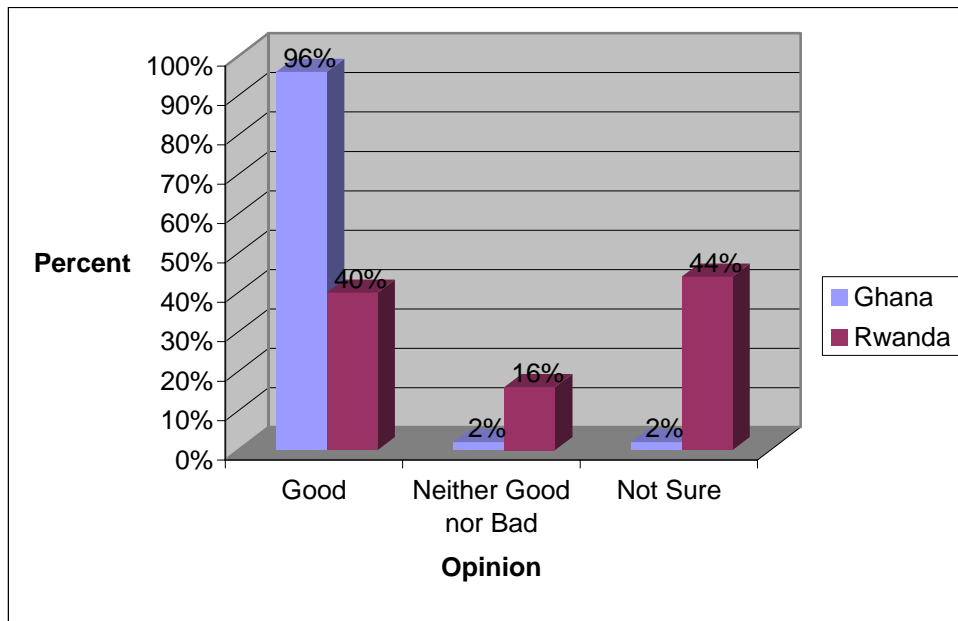


Figure 1 and Table 8 present the results on the traders' attitudes about the future of the natural products industry. Ghanaian respondents were more optimistic and reported much higher (96%) expectations about the future of natural products industry than the respondents in Rwanda. About 88% of the traders experienced their business

turnover increasing in both countries, with 92% and 86% of Ghanaian and Rwandan traders expecting profitable years. About 48% of the Ghanaian and 42% of the Rwandan traders expected the employment opportunities will be better in future.

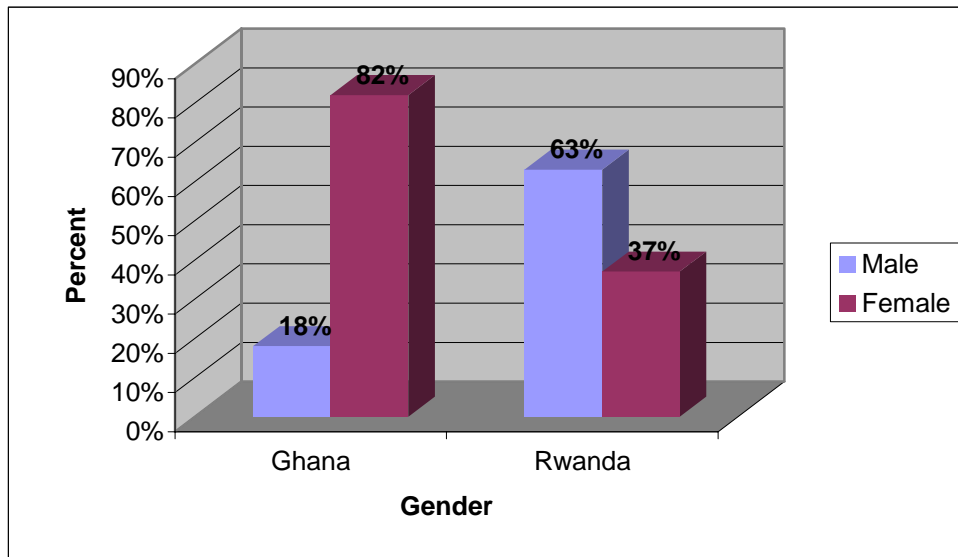
Table 8: Wholesalers/Retailers Positive (increase) Expectation about Business Growth in the next one to two Years

Respondents Expectation	Ghana	Rwanda
a). Return on investment	88%	88%
b). Staff Employed	48%	42%
c). Profit	92%	86%

3.2 Demographic Characteristics

In the case of respondents demographic characteristics, 94% of the traders of the both countries come from urban areas and the remaining 6% from rural areas. On average, Ghanaian traders have been residing at their current locations for 16 years; whereas, in the case of Rwandan trader’s residence time at the current location is about nine years. The average family size of an operator was seven and five family members in Ghana and Rwanda respectively. The average number of persons below 17 years of age in a family was 2.8 in Ghana and 1.4 in Rwanda.

Figure 2: Distribution of Gender



As indicated in Figure 2, females were the dominant traders (82%) in Ghana, whereas, in Rwanda, 63% of traders were male. The majority of traders were in the age group between 36 and 50 (54%) in Ghana, whereas, about the same percentage (54%) of operators were in the age group between 21 and 35 in Rwanda (Table 9).

Table 9: Wholesalers/Retailers Age Distribution

Age Distribution	Ghana	Rwanda
Less than 20	2%	6%
21 to 35	22%	54%
36 to 50	54%	38%
51 to 65	18%	0%
Over 65	4%	2%

As indicated in Table 10, most of the traders from both countries had primary school education. Over all, Rwandan traders were more likely to have had some higher education levels than Ghanaian traders.

Table 10: Wholesalers/Retailers Educational Levels

Educational Levels	Ghana	Rwanda
None	16%	4%
Primary School (1-7)	44%	40%
Secondary School (8-12)	26%	33%
College Diploma/ Certification	12%	17%
University Diploma/Degree	2%	6%

Table 11: Wholesalers/Retailers Special Educational Skills with respect to their Business

Skills	Ghana	Rwanda
Family inheritance	16%	0%
Special Educational Skills	6%	26%
No Skills	78%	74%

As Table 11 shows, about 16% of the Ghanaian traders business was inherited from their family and 6% of them have special educational skills. In case of Rwanda, all operators started business on their own and about 26% of them had special educational skills when compared to Ghana this is higher. Around 82% of Ghanaian traders were married and 10% of them were widowers (9). In Rwanda, about half of them were married, 36% of them were single and 14% of them were widowers/widows (Table 12).

Table 12: Marital Status of Principal Business Operator

Marital Status	Ghana	Rwanda
Married	82%	50%
Single	0%	36%
Separated	2%	0%
Widower/widows	10%	14%

3.3 Commonly Traded Natural Products and Uses

The range of some of the natural products commonly traded and their usage in Ghana and Rwanda are illustrated in Tables 13 and 14. In Ghana most of the natural products are used for medicinal purposes. This was in contrast to Rwanda, where all the products were used for seasoning, flavoring, cosmetics and food preparation. Across all the businesses, in Ghana, *Khaya Senegalensis* was the top ranked natural product, followed by *Alstonia boonei*, whereas in the case of Rwanda, white pepper followed by Pilau masala are the most prominent. However, there are also a number of natural products, which, although not heavily traded, appear to have better prospects in the future. On the whole, quantities supplied by Rwandan traders were much lower compared to Ghanaian traders.

Table 13: Distribution of Top Ten Natural/Herbal Products by Ghanaian Wholesalers/ Retailers

Rank	Product Name	Uses	Average Quantity Distributed /Sold by Wholesaler/Retailer (Metric Tons)	Average Price Per Metric Ton(Cedi/ton)
1	<i>Khaya senegalensis</i>	Appetizer, Blood tonic, Fever, Malaria, Stomachache, Stomach Ulcers, Waist Pains, Fresh Delivery, Menstrual Pains, Headache, Ulcers	1.08	2290.16
2	<i>Alstonia boonei</i>	Convulsion, Ulcer, Fresh Delivery, Measles, Measles, Stomach Ulcer	0.34	2633.33
3	<i>Paullinia pinnata</i>	Bone Diseases, Fertility Enhancer, Fracture, Rheumatism, Joint Diseases, Waist and Joint Pains, Stomach Ulcer	0.26	1873.44
4	<i>Enantia polycarpa.</i>	Fever, Malaria Fever, Stomach Ulcer	0.13	4650.00
5	Kokrodo	Fresh Delivery, Ulcer, Stomach Ulcer, Menstrual Pains, Post partum, Fresh Delivery	0.32	2725.93
6	<i>Pycnanthus angolensis</i>	Blood Tonic, Constipation, Menstrual Pains, Unstable Pregnancy, Stomach Ulcer	0.28	1414.81
7	<i>Terminalia ivorensis</i>	Diarrhea, Menstruation Pains, Ulcer	0.28	1889.63
8	<i>Rauwolfia vomitoria</i>	Phrodisiac, Piles, Blood Cleansing, Stroke & Kooko	0.16	1539.05
9	<i>Ricinodendron heudelotii</i>	Elasticity of the Womb, Increased Fertility, Menstrual Disorder & Pains	0.05	2431.11
10	Akata	Fever, Malaria Fever	0.05	2000.00

Table 14: Distribution of Top Ten Natural/Herbal Products by Rwandan Wholesalers/ Retailers

S.No	Product Name	Uses	Average Quantity Distributed (in Grams)	Average Price per Gram (RWF)
1	White pepper	Seasoning/Flavouring	600	1.25
2	Pilau masala	Seasoning/Flavouring	400	1.25
3	Samona herbal soap	Cosmetic products	271.5	1.57
4	Samona jerry	Cosmetic products	173.98	2.63
5	Black pepper	Seasoning/Flavouring	100.6	6.96
6	Simbambili(chilly product)	Seasoning/Flavouring	68.97	5.24
7	Rina oil	Food preparation	65	49.23
8	Moringa	Cosmetic products	36.99	62.40
9	Mukwano oil	Food preparation	33.5	62.69
10	Carrotina	Cosmetic products	10.8	46.30

3.4 Ghana and Rwanda Combined Regression Model

An OLS regression model was developed to estimate the business turnover of Ghanaian and Rwandan natural products traders. Socio-economic characteristics and availability of infrastructure were selected as explanatory variables. A dummy variable was used to test the differences between the countries. The model can be described as;

$$\begin{aligned}
 BUSTRNOVR = & \beta_0 + \beta_1 COUNTRY + \beta_2 BELOW17AGE + \beta_3 GENDER \\
 & + \beta_4 AGE\ 36-50 + \beta_5 SECSCHOOL + \beta_6 TECHSUPRT + \beta_7 CMPVARTY \\
 & + \beta_8 SUPPLYCONST
 \end{aligned}$$

Table 15: Descriptive Statistics of Variables Used in the Regression Analysis

Variable	Description	Mean	St-dev
BUSTRNOVR	Annual business turnover in U.S. \$ per entity is the dependent variable		
COUNTRY	=1 if the country is Ghana; Rwanda=0	0.500	0.503
BELOW17AGE	Number of persons Below 17 Age group	2.100	1.648
GENDER	=1 if operator is Female;0 =otherwise	0.590	0.494
AGE 36-50	=1 if operator Age was between 36and –50;0 =otherwise	0.460	0.501
SECSCHOOL	=1 if operator education was at the Secondary School (8-12 Grades) level; 0 =otherwise	0.820	0.386
TECHSUPRT	=1 if operator received technical support;0=otherwise	0.190	0.394
CMPVARTY	=1 if respondent viewed domestic product variety better than imported;0=otherwise	0.340	0.476
SUPLYCONST	=1 if respondent viewed his supply to be consistency viewed to imported sources; 0=otherwise	0.210	0.409

Table 16: Regression Model Results

Variable	Coefficient	t Value
Intercept	-39,219	-0.55
Country (COUNTRY)	9,392	0.1
Number of persons Below 17 Age group*** (BELOW17AGE)	48,102	2.74
Female=1 *** (GENDER)	-202,756	-3.08
Age 36-50 =1 ** (AGE 36-50)	136,220	2.49
Secondary School (8-12 Grades) =1 (SECSCHOOL)	26,462	0.35
Technical support viewed important =1*** (TECHSUPRT)	205,116	2.79
Local variety better compared to imports =1*** (CMPVARTY)	-155,716	-2.15
Better consistency of local product supply compared imported=1 ** (SUPPLYCONST)	180,264	2.56
$R^2 = 0.38$; Adj- $R^2 = 0.31$		

- *** Significant at 1%
** Significant at 5%
* Significant at 10%

The regression results of correlating natural products business turnover to the socioeconomic and other value attributes of Ghanaian and Rwandan traders presented interesting findings (Table 16). Since the country dummy variable is not significant, this indicates there is no difference between Ghana and Rwanda in explaining the variation in

the turnover. The results indicate that the socio-economic variables associated with presence of young people in a household (children below 17 years of age), gender and the operator's age positively impact business turnover. The results imply that the number of children below age 17 positively contribute towards turnover. In particular, the turnover goes up by \$48,102 as the number of young children increases by one. When business operators are in the age range from 36 to 50 years, compared to other age groups, this was also found to impact business turnover positively. Especially, the turnover increases by \$136,220 when the business operator belongs to age group 36 to 50 years when compared to other age group categories. Results predict young and mature operators to be the group who are likely to make optimal business decisions towards business turnover. The results also show that the businesses operated by female have a negative impact on business turnover. Particularly, the business turnover decreases by \$202,756 when the business is operated by a female compared to a male operator. The model also tested the influence of various operators' views on a number of concerns such as business financing; marketing, quality and product supply and variety consistency on business turnover. The results showed that technical support contributes positively to business turnover. In other words, those who thought that technical support is essential to promote business have a higher turnover of \$205,116 when compared to those who thought otherwise. Growth and development of the business, product standardization, quality control and assurance are seen as indicators of business well being. The results show that those who view domestic product variety as better than imported have a smaller turnover compared to those who think otherwise. That is, the annual turnover decreases by \$155,716 if the operator views domestic product variety as better than imported. The

results also indicate that consistency of product supply will positively contribute to business turnover. The results further imply that confidence about the regularity of the product suppliers is also a supply chain factor that will be critical for business success.

4. Conclusions

This paper expresses the natural products trader's problems and opinions in the retail and wholesale portions of the value chain in Ghana and Rwanda. The results explain the factors influencing the natural products (herbal) business in Ghana and Rwanda. The obstacles include access to finance and markets, and lack of herbal market information especially relating to external markets. There is also a lack of processing capacity, and above all the operator's lack technical training relating to herbal products handling. Still, there are a number of commonly traded natural products that have potential for future developments once the constraints are addressed.

The regression result also supports the results discussed above indicating that technical support, supply consistency and quality standards influence business turnover. Similarly, the age of the operator, education and family involvement have considerable impact over business turnover. Strengthening technical support and efforts to establish continuity and regularity of the supplies as well as quality standard will contribute positively to the success of the Ghanaian and Rwandan natural products business. The identified constraints needed to be addressed by the respective agencies and governments relative to public policy, regulatory issues are needed to be discussed and improved to strengthen the ability of the traders from Ghana and Rwanda to more easily participate in global opportunities in the field of natural products market. The domestic (local and

regional) markets also provide a strong economic base in the natural products trade and should not be overlooked as a major vehicle for economic growth and trade benefiting the source country, and when properly done, benefiting the commercial small farmers, communities and those involved in the collection of the natural products. The additional opportunities to create value-addition to the natural products at the community level will also provide economic benefits at the local level that may or may not be realized with the traditional trade of raw materials that are later exported. Through the ASNAPP program, we are, in concert with our partners in both countries, starting to address some of the issues raised from government standards, to quality control, to the provision of market information, market access, and export readiness issues relative to developing international products and business relationships. This survey showed that the vast majority of traders in both Ghana and Rwanda share information with their buyers, retailers and consumers, and this process strengthen long-term relationships. Finally, the majority of traders in both countries found that the lack of infrastructural support limited their business and trade opportunities. Development and strengthening of effective partnerships with the public sector and increased cooperation form local governments and other international agencies in this area are still needed.

5. References

Alberta Agriculture, Food, and Rural Development, *Herb/Spice Industry Fact Sheet*. Compiled by Dennis Dey. AG-Ventures, Agdex 263/830-1, www.agric.gov.ab.ca, September 1996.

Datamonitor, Nov 15, 2002.

Inspiredliving, "The world is going Organic", 2001.

<http://www.inspiredliving.com/organic/WorldGoingOrganic.pdf>

Marty T. S., and Patrick R., "Natural Product Sales Top \$42 Billion" *Natural Foods Merchandiser*, 2004, volume XXV/number 6/ p. 1

Organic Natural health, 2001. <http://www.health-report.co.uk/organic-cosmetics-usa-opportunity.htm#Organic/natural%20industry%20profile>

Inspiredliving, "The world is going Organic", 2001.

<http://www.inspiredliving.com/organic/WorldGoingOrganic.pdf>

ITC (International Trade Centre), "products profile: Oilseeds & Products", Third United Nations Conference on the Least Developed Countries, UNCTAD, Brussels, 16 May 2001.

Marty T. S., and Patrick R., "Natural Product Sales Top \$42 Billion" *Natural Foods Merchandiser*, 2004, volume XXV/number 6/ p. 1.