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**Factors Affecting Success for Women Entrepreneurs in West Africa:
The Case of Kossai, a Value Added Cowpea Product**

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Abstract

Kosai, a deep-fat fried fritter made from cowpea, is an important product for economic development and poverty alleviation. Kosai is sold as street food almost exclusively by women entrepreneurs who use the money they earn from selling kosai on savings and daily expenditures for their family. In addition, cowpea is the more important indigenous African legume and kosai production uses a significant amount of cowpea. Data was collected, via personal interviews, with about 400 vendors in three different cities in the West African country of Niger. Results revealed that vendors with more experience were more likely to be successful.

Factors Affecting Success for Women Entrepreneurs in West Africa: The Case of Kossai, a Value Added Cowpea Product

In West and Central Africa street food is prepared and sold almost exclusively by women. Cowpea is a common base product for these street foods and the most common product made from cowpea is a deep-fat fried fritter (called “kosai” in Hausa, and “akara” in languages used in coastal areas). This entrepreneurial activity can be found first thing in the morning as customers are acquiring their breakfast of kosai and in the late afternoon/early evening when kosai is consumed as a snack between lunch and dinner.

Cowpea is the most important indigenous African grain legume (Langyintuo et al. (2003b)). It is grown throughout West and Central Africa and because of its tolerance to drought is especially important for the Sahel. Cowpea is grown on small scale farms and is used for both family consumption and as a cash crop. In addition, cowpea is a major item in regional trade with official statistics showing over 300,000 MT crossing borders annually (Langyintuo et al. (2003a)). Kosai production is important because it uses a significant volume of cowpeas. With over 1300 vendors in the city of Niamey, Niger using an average of 2 kg. of cowpea per day, the usage of cowpea is over 2600 kg. per day in the one city alone (Ibro et. al.). The major focus of the analysis in this paper is Niger, with sample data collected in the three largest cities of the country.

Niger is a very poor country located in West Africa bordering Nigeria to the south, Benin and Burkina Faso to the southwest, Mali to the west, Algeria to the northwest, Lybia to the north and Chad to the east (Figure 1). The northern four-fifths of this land-locked country is desert and only 11.43% of the land is arable. Recurring droughts are a significant problem. The median age of the population, of over 12 million

in 2005, is 16.5 years and the life expectancy is 43.8 years. The overall literacy rate (percentage of population aged 15 and older who can read and write) is 17.6%. With 2005 per capita income of \$800 (US), Niger is one of the poorest countries in the world, ranking last on the United Nations Development Fund index of human development (CIA). Uranium is the most important natural resource for Niger but decreases in world demand for Uranium have created a situation where that resource has significantly decreased in value.



Figure 1: Map of Africa (Source: Infoplease)

Kosai, a value added cowpea product, is made from a batter of wet milled cowpea. The women entrepreneurs cook the batter in hot oil over an open fire or a small gas stove from their street vending location. Kosai customers are often identified as “everyone” ranging from small children to elderly persons and from laborers to office workers. The women entrepreneurs spend their income from kosai vending directly on their families for savings, food, clothes, health care, and school. This traditional activity is therefore important for economic development and poverty alleviation.

The objectives of this paper are to determine the importance of kosai production in three cities in Niger, Niamey, Maradi and Zinder, describe the characteristics of Kosai markets in each of the cities and identify the factors that affect the success for women entrepreneurs involved in value added processing of cowpeas into Kosai. In the following section we describe the data collection process which included a census of all vendors in each of the cities along with in-person interviews with randomly selected vendors. We then present the descriptive statistics which provide the framework to highlight the importance of Kosai production and the market characteristics of this sector. In the fourth section we present the results of regression analysis to examine the factors that affect success for the women entrepreneurs. The final section contains conclusions and suggestions for further study.

Data

Data for this study were collected in three cities in Niger, Niamey, Maradi and Zinder, in Western Africa. These three cities are the major urban areas in Niger and cowpea based street foods are widely available throughout each of the cities. Niamey is the capital city and also the financial center for the country. As seen in Figure 2, Maradi and Zinder are in the eastern part of the country which is also the cowpea production region. The research began in Niamey. A complete census of cowpea based food entrepreneurs in Niamey was undertaken in December 2004 and January 2005. Enumerators visited all common areas where street food vendors position themselves including bus stations, schools, government office complexes and beer gardens. They walked up and down all of the streets in the morning and the afternoon to ensure a

complete census. A total of 1305 vendors were found in the city. Data were collected on gender, location of business, market segment, language of the vendor and products produced. Next, a stratified random sample was selected and in-depth interviews were conducted with 206 vendors in the spring of 2005. During the interviews information was collected on business experience, profitability, operations, and demographics. The data collection was repeated, using the same methodology, in Maradi and Zinder during the Spring and Summer months of 2005. A total of 199 and 195 vendors were found in Maradi and Zinder respectively. A stratified random sample was selected and in-depth interviews were conducted with 104 vendors in Maradi and 100 vendors in Zinder.



Figure 2: Map of Niger (Source: CIA)

Importance of and Market Characteristics for Kosai

Table 1 presents summary statistics for the Kosai vendors that were surveyed. While the average family size was 6 members in each of the cities the range for family size was large ranging from 1 person to 20 people. Kosai vending is an activity performed by women of many different ages. The average age for Kosai vendors in Niamey is 38, in Maradi is 52 and in Zinder is 44. It is useful to note the values for the standard deviations range from almost 11 to just over 14. The average number of years that the Kosai vendors had been in business ranged from 8 to 10 years. Once again, the standard deviations are high, ranging from just under 7 to 9 denoting significant variety among the vendors. On average vendors in Zinder purchase more cowpeas for their business (with an average of 3 kg.) than vendors in Niamey and Maradi, where they purchase 2 kg. and 1.3 kg. of cowpeas each day.

Table 1: Average Characteristics of Kosai Vendors

	Niamey	Maradi	Zinder
Family Size	6 (2.8)	6 (3.3)	6 (3.03)
Age	38 (10.6)	52 (14.2)	44 (14)
Years in Business	8 (6.6)	9 (9)	10 (8.6)
Cowpea Purchased per day (kg.)	2 (1.0)	1.3 (.56)	3 (1.07)

*Values in parenthesis are standard deviations

An examination of the responses to the question of how frequently cowpeas were purchased for the business all of the vendors in Zinder indicated that they purchased cowpea every day. In Maradi virtually all of the vendors followed the same pattern with just 1 out of 103 vendors storing cowpeas. In contrast, in Niamey 4% of the vendors

purchased cowpea in larger volume and stored it for later use, which may be due to vendors having a higher level of resources available in the capital city.

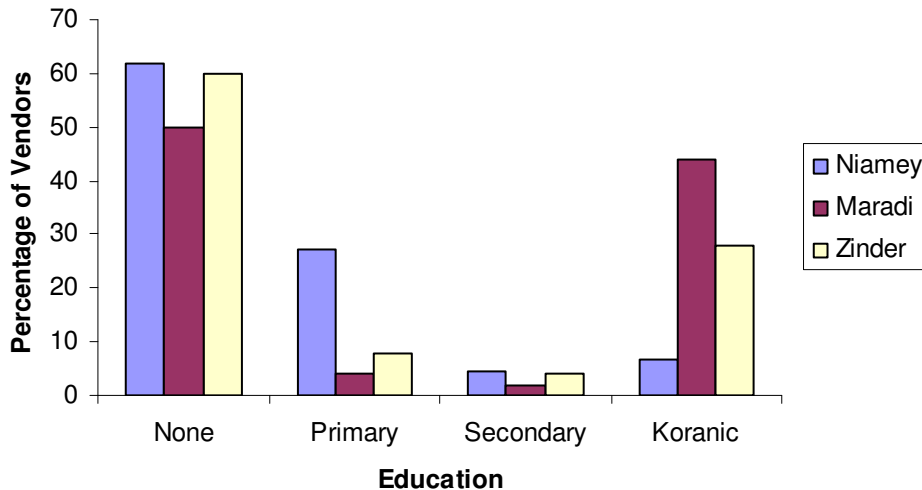


Figure 3: Education Level of the Vendors

As shown in Figure 3, between 50 and 60 percent of the vendors reported having no formal education. In Niamey just over one-quarter of the vendors reported some primary education while in Maradi only 4% had some primary education and in Zinder 8% has some primary education. In all three cities less than 5% of the vendors had some secondary education. The vendors in Maradi and Zinder were more likely to have Koranic education than those in Niamey. The participation by girls in any schooling, French or Koranic, has been historically very low in Niger in general and in the more rural areas in particular. While the overall literacy rate in Niger is 17.7% the literacy rate for females is 9.7% (CIA). The fact that a high proportion of the women in the Maradi and Zinder samples have Koranic education may indicate a shift toward thinking that education for women is more important and that Koranic education is at least to some extent displacing household work as the sole training these girls receive. It is interesting

to note that while the vendors in the Niamey sample have a higher level of formal French schooling, total schooling including Koranic schools is higher in Maradi and Zinder.

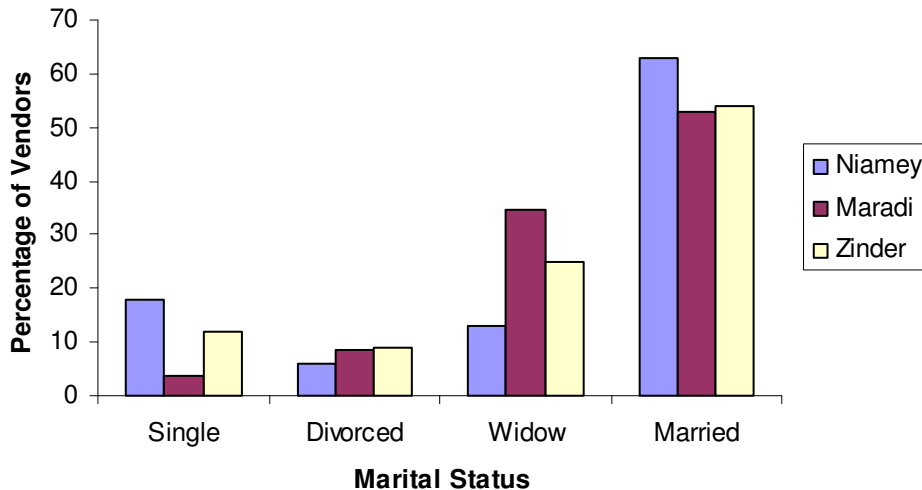


Figure 4: Marital Status of Vendors

As shown in Figure 4, between 53 and 65 percent of the vendors are married with the largest percentage being in Niamey. More of the vendors in Maradi and Zinder are widowed at 35% and 25% respectively. Between 6 and 9 percent of the vendors are divorced. In Maradi only 4% of the vendors are single, which is considerably smaller than in Niamey and Zinder.

Table 2: Percentage of Vendors Purchasing Cowpea from Central vs. Local Market

	Niamey	Maradi
Central Market	18	57
Local Market	82	43

The results reported in Table 2 reflect the location where vendors purchased cowpea for use in the business. In Niamey 82 percent of the vendors purchased cowpea for their business from a local market in the area of the city they live in, while 18 percent of the vendors purchased from one of the central markets. In Maradi over half (57

percent) of the vendors purchase cowpea from the central market and 43 percent purchased cowpea from the local market. Data was unavailable for Zinder concerning where the vendors purchased cowpea.

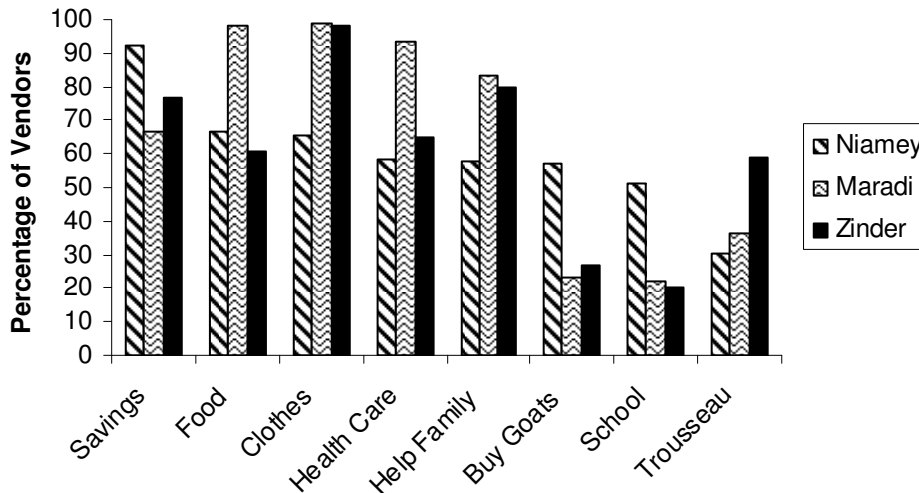


Figure 5: Expenditure outlets for Income from Kosai

Figure 5 presents the results of the vendors’ response to the question of where they spend the money that they earned from selling Kosai. The interviewer was instructed to select all that apply so the numbers add up to more than 100%. As shown in Figure 5, more of the Vendors in Niamey (92%) are using income from Kosai for some saving, which they do through a Tontine or savings group. In contrast only 67% of the vendors in Maradi and 77% in Zinder reported using the money earned for savings. In Maradi over 80% of the vendors used the money to help the family, pay for health care, clothes and food. In Zinder virtually all of the vendors use the money to buy clothes and 80% of the vendors use the money to help the family. Sixty-one percent and 60% of the vendors in Zinder use the money on food and health care respectively. The vendors in Maradi and Zinder use the money for more immediate expenditures while the vendors in Niamey are

more likely to use the money for savings and longer term expenditures, such as buying goats and school. These results may reflect a higher standard of living in Niamey. The household budget constraint is not as tight in Niamey and so more money can go into savings. Also there may be more opportunity for saving and investing in Niamey, since it is expected that there are more Tontines and more small businesses or property for women to invest in.

Table 3: Percentage of Women Selling in Each Time Frame

	Niamey	Maradi	Zinder
Morning	75	40	58
Afternoon	16	38	23
Both	9	22	19

In all cities the greatest number of vendors sell in the morning only but this is most obvious in Niamey (75%) and Zinder (58%). Seventeen percent of the vendors in Niamey sell in the afternoon only, while 23% of the vendors in Zinder sell in the afternoon only and 38% of the vendors in Maradi sell in the afternoon only. The difference in the percentage of vendors selling in the morning in Niamey is noteworthy. This could be a reflection of there being more resources for consumers in Niamey in general. Instead of skipping breakfast consumers will buy Kosai. The value of women's time is also expected to be higher in Niamey than in Maradi and Zinder because Niamey is the business center of Niger and there are expected to be more women working outside of the home. With a higher opportunity cost of time women will look for labor saving activities and may buy Kosai for their family for breakfast. Finally with more formal sector employment in the capital city of Niamey it could be that employees need to be at work on time so they pick up Kosai on the way or purchase Kosai from the women at the doorway when they get to work.

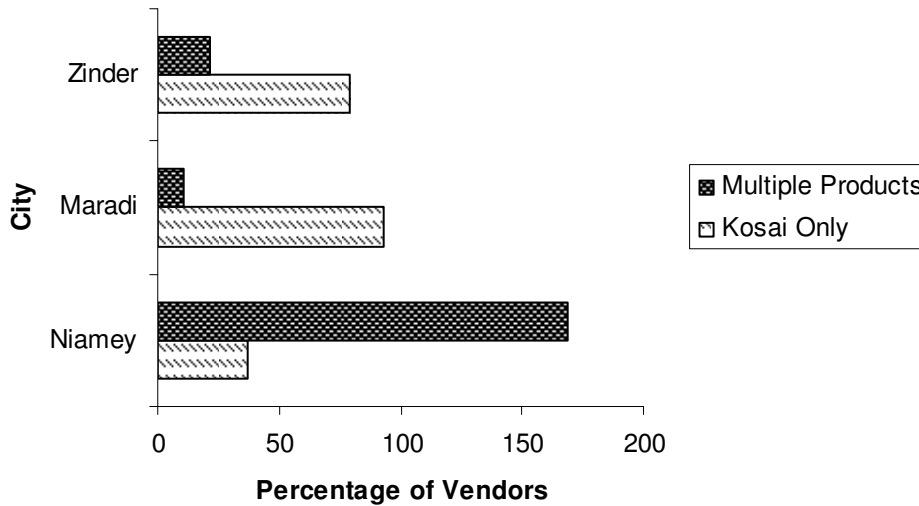


Figure 6: Percentage of Vendors Selling Multiple Products

Vendors were asked to identify the different products that they sell, including a fritter made from wheat flour, water, bread and other items. Figure 6 illustrates the percentage of vendors selling kosai only versus multiple products. Vendors in Niamey are more likely to sell multiple products (82% compared to 18%). It is interesting that the values are more or less the opposite for Maradi and Zinder where the larger percentage of vendors are selling kosai only and the smaller percentage of vendors are selling multiple products. The higher rate of multiple product sales in Niamey probably reflects a more developed, higher income market, as well as women entrepreneurs with slightly more resources to invest. A wider product line usually means a higher investment for the entrepreneur.

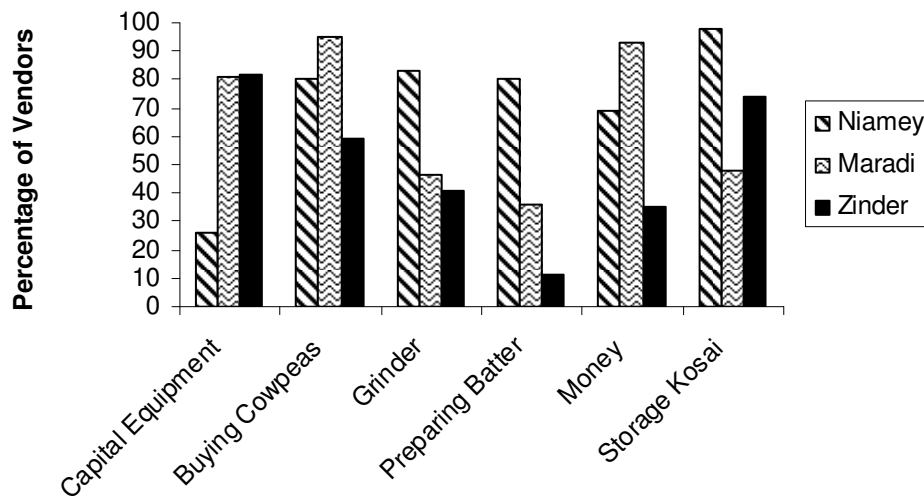


Figure 7: Business Constraints Identified by Vendors

Respondents were asked what factors were constraining for their business and the interviewers were instructed to select all that apply. Therefore the numbers will add up to more than 100 percent. While just over one-quarter of the vendors in Niamey noted that capital equipment was a constraint for their business, over 80% of the vendors in Maradi and Zinder felt that capital equipment was a constraint (see Figure 7). The operations activities of buying cowpeas, getting the cowpeas to the grinder for grinding, and preparing the batter were noted as important by around 80% of the vendors in Niamey. There were fewer vendors in Maradi and Zinder who identified these activities as important constraints. Virtually all of the vendors in Niamey identified storage of kosai as a constraint while only 48% in Maradi identified this constraint and 74% in Zinder. Capital seems to be a greater constraint in Maradi and Zinder than in Niamey. This is probably due to the slightly higher level of resources in Niamey.

Factors Affecting Success of Kosai Vendors

As noted above, one of the objectives of this research was to identify the factors that contribute to the success of the kosai vendors. In particular, we are interested in the factors related to the women's business operation as well as her personal characteristics that influence her success or:

(1) Success = f (business characteristics, personal characteristics)

To address this objective, regression analysis was conducted. Business success can be measured in different ways including income, size, and longevity. In the regression analysis reported here size was the variable used to signify success¹. More successful vendors are larger in size. In this analysis size is measured by the amount of cowpeas (measured in kg.) that the vendor uses per day. Cowpeas are the main ingredient for kosai production and there is a direct relationship between the amount of cowpeas used and the level of kosai production. Several combinations of variables were included in the regression analysis with selected results for four different models reported in Table 4.

The independent variables utilized include Years, which represents the number of years experience the vendor has as a kosai vendor and Capital Constraint which is a dummy variable equal to one if the vendor indicated that capital equipment was an important business constraint. Cowpea Constraint and Prep. Batter Constraint are dummy variables equal to one if the vendor indicated that the operations aspects of purchasing the cowpea everyday and preparing the batter were important business constraints. Primary, Secondary and Koranic are dummy variables equal to one if the

¹ Initially income, as reported by some of the entrepreneurs in Niamey, was used in regression analysis. However, the women were very resistant to providing information on income and the interviewers found it impossible to collect income data in Maradi and Zinder.

vendor had education at that level. Finally the variables for Maradi and Zinder are dummy variables equal to one if the vendor was from that city.

About twenty percent of the variation in the vendors' success is explained by the regression equations. The coefficients for Years are positive and statistically significant for all of the models, indicating that vendors with more experience are more successful. This is as expected and consistent with the initial regression analysis done using income as the dependent variable. That analysis utilized a sub-set of the vendors from the Niamey market. The coefficients for Capital Constraint are negative and statistically significant for the first two models. Vendors who identify capital equipment as an important constraint to doing business are less likely to be successful. This is as expected. The coefficients for Cowpea Constraint are negative and statistically significant for all models, suggesting that vendors who find purchasing the cowpea every day is an important business constraint are less likely to be successful, again as expected. It is interesting to note that the coefficients for Prep. Batter Constraint are positive and statistically significant for the first two models. The positive sign is not as expected since this suggests that women who find preparing the batter to be an important constraint are, in fact, more likely to be successful.

Dummy variables associated with primary, secondary and Koranic education were included in the second model, but were not statistically significant suggesting that level of education does not affect the level of success for the Kosai vendors. In the final two models dummy variable for the cities of Maradi and Zinder were included. With the dummy variables for the cities included the coefficients for the variables Capital Constraint and Prep. Batter are no longer statistically significant. The coefficients for

Maradi are negative and statistically significant indicating that kosai vendors in Maradi are less successful (as measured by size) compared to kosai vendors in Niamey. The positive and statistically significant coefficients for Zinder suggests that kosai vendors in Zinder are more successful (as measured by size) compared to kosai vendors in Niamey.

Table 4: OLS Analysis of the factors affecting Size of Kosai Vendors

Variable	Model 1	Model 2	Model 3	Model 4
Constraint	2.0962***	2.1203***	2.0084***	2.0254***
	.1421	.1608	.1506	.1231
Years (Experience)	.0390***	.0318***	.0274***	.0269***
	.0063	.0064	.0060	.0059
Capital Constraint	-.3842***	-.3670***	-.1724	
	.1068	.1097	.1129	
Cowpea Constraint	-.6246***	-.6401***	-.3012*	-.3097***
	.1160	.1188	.1194	.1182
Prep. Batter Constraint	.3384***	.3225***	.0308	
	.1094	.1137	.1135	
Primary Education		.0396		
		.1392		
Secondary Education		-.0846		
		.2684		
Koranic Education		-.0807		
		.1281		
Maradi			-.6524***	-.7041***
			.1377	.1116
Zinder			.6232***	.6296***
			.1248	.1239
R2	.1991	.2005	.2979	.2970
Adj. R2	.1911	.1863	.2871	.2899
Durbin Watson	1.8273	1.8174	1.9989	2.0052
# Observations	400	400	400	400

Note: Values in parenthesis below the coefficients are Standard Errors

* Indicates Statistically Significant at 90% level

*** Indicates Statistically Significant at 99% level

Conclusions and Suggestions for Further Study

The production and selling of kosai by women street vendors in West and Central Africa is an important economic activity. This value added processing of cowpeas uses a

significant amount of cowpeas. The nutritious snack is regularly consumed by everyone – from small children to the elderly and by people from all walks of life and social classes. The income that the women earn from selling kosai is spent on savings, food, clothes and other family expenses. Understanding the factors that contribute to success for these women entrepreneurs is important for economic development and poverty alleviation.

The women entrepreneurs selling kosai are very diverse with respect to both years of experience and marital status. In addition, they represent all ages from 15 to 90 years of age. The overall level of formal education is low for these women with at least one-half of them having no formal education. It is interesting to note that while the vendors in the Niamey sample have a higher level of formal French schooling, total schooling including Koranic schools is higher in Maradi and Zinder.

Some important differences were noted across the three different cities where vendors were sampled with the capital city of Niamey different from Maradi and Zinder. More vendors in Niamey sold only in the morning and sold multiple products. Vendors in Niamey were less likely to indicate that capital equipment was a constraining factor for their business. In addition, vendors in Niamey were more likely to use the money earned from selling kosai on expenditures that are long term in nature, such as savings, school and buying goats. The vendors in Maradi and Zinder were more likely to spend the money earned from selling kosai on food and other day to day household expenses. Niamey is the capital city of Niger and also the business center for the country. The differences noted above may be due to the fact that there is more formal employment and a higher level of wealth in Niamey compared to Maradi and Zinder.

Regression results were employed to examine the factors that contribute to success for these women entrepreneurs. Size of operation, as measured by the amount of cowpea used per day, was the measure of success examined in this paper. The results revealed that vendors with more experience were more likely to be successful and that vendors who identified the daily purchase of cowpea as an important operational constraint were less likely to be successful.

Future study will examine other ways to measure success for the kosai vendors. Success is a multi-faceted variable and could be measured by income level, size of operation, length of time in business. While it is difficult to obtain data for income because the entrepreneurs are not willing to reveal that information, they are willing to reveal other information about their business. In future research aggregate measures of success, that incorporate more than one measure of success, will be examined.

Ongoing work is also underway with the Food Scientists from the Bean Cowpea Collaborative Research Support Program to explore how to adapt technologies that previous research uncovered concerning the production of cowpea flour for kosai under conditions that are appropriate for women street vendors in Niger and other parts of West and Central Africa. For the women who noted the challenge of getting cowpeas to the grinder and preparing the batter every day the adoption of this technology has the potential to be a positive change for their business.

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