

# **WOMEN'S GOLD: THE SHEA BUTTER INDUSTRY IN GHANA AND HOW EMPOWERMENT INFLUENCES EMPLOYMENT**

**Thesis**

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**By Nicole Naa Adoley Mensa  
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## **ABSTRACT**

This paper explores the relationship between empowerment and a woman's employment type. The research is based on a field survey data of 795 women in the Northern Region of Ghana. The paper seeks to evaluate two things. Firstly, it examines the effect of empowerment on a woman's decision to enter the shea butter industry in Ghana. Are more empowered women working in shea butter production? Or can evidence be found which shows that women who are more empowered choose to work in certain industries? Secondly, the paper also examines empowerment among different employment types within the shea butter industry. It seeks to understand how shea butter cooperatives might benefit women, and whether women who are more empowered will choose to work in shea butter cooperatives rather than choose to be shea butter entrepreneurs. This study uses an empowerment index to calculate the level of empowerment among each group. It then employs a logit and multinomial logit model to evaluate the relationship between empowerment and employment. The results show that women in shea butter cooperatives are the least empowered, followed by shea entrepreneurs and then entrepreneurs, who are the most empowered. The level of empowerment for each group is very close and quite low. When I evaluate how the empowerment categories impact employment, we find only a few empowerment categories to be significant. This means that only two or three empowerment statistics influenced a woman's employment decision. Thus, making it difficult to conclude that empowerment has any effect on employment choice.

## **BIOGRAPHICAL SKETCH**

Nicole Mensa is an Economist and Social Entrepreneur who is passionate about the economic empowerment of women and development of poor countries. Currently, Ms Mensa is the Special Assistant to the Director General, Dr Ngozi Okonjo-Iweala and serves as the Director General's Advisor on Women and Trade. In her current role she supports the Director General in achieving her mandate as the DG of the WTO and worked towards the outcomes of the unprecedented 12<sup>th</sup> Ministerial Conference. She is also currently spearheading work on a gender fund with the International Trade Centre and a gender audit within the Secretariat with the aim of producing a robust gender policy.

Previously she served as Special Advisor to the Board Chair at Gavi, the Vaccine Alliance in Washington D.C. During this time Ms Mensa contributed to the organisations work on ensuring vaccine equity, especially amongst children, by interacting with both government and private sector stakeholders to fund the organisation whilst also working with Gavi-eligible countries to find novel ways to achieve higher vaccine rates. She is also the founder of WONNi Cosmetics an organic skin care company which works with underprivileged women in Northern Ghana and ProjectHEY, a Non-Profit Organization that aims to equip underprivileged Ghanaian children with Information Technology skills

Nicole Mensa obtained her bachelor's degree (Summa Cum Laude) in Economics and Africana Studies. Her research interests focus on trade and inclusion specifically amongst women and Micro, small and medium-sized enterprises (MSMEs), women's economic empowerment and leadership, economics of education and health, as well as agricultural cooperatives and the effects they have on developing countries.

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# **Women's Gold: The Shea Butter Industry in Ghana and how Empowerment influences Employment**

## **Introduction**

For centuries, shea butter has been referred to as 'women's gold' – because of its golden color and the transformative power it is said to have, in financially elevating millions of poor women by providing them with jobs. The 2022 Cosmetic Shea Butter Market report valued the global shea butter market at about USD 690.1 million in 2020, and it is expected to reach USD 849 million by the end of 2027. In West Africa, exports generate between USD 90 million and USD 200 million a year. Shea butter is derived from the shea tree, which is mainly found in the Sahel region of Africa. Shea trees have a lifespan of 200 years and start producing fruits after their 15th year. Shea nut harvesting and the processing of shea butter is traditionally done by women, and the skill is passed down through generations. The process is extremely labor intensive and remains so today, despite the introduction of some technology.

In West Africa, over 16 million women make a living farming and processing shea nuts. In Ghana, one of the world's leading producers of shea butter, its exports are currently valued at \$66 million, with up to 1 million rural women working in this industry. Shea butter is often used in cosmetic production, in the food industry as a cooking oil, and increasingly as a cocoa butter substitute in products. Despite this impact and many anecdotes on the subject, very little research has been done on the effects of this industry on women (who are said to be the main beneficiaries), and the social and economic empowerment levels of the women who choose to work in this industry.

This paper explores the relationship between empowerment and a woman's decision to work in the shea butter industry as an entrepreneur or an employed cooperative member. The research is based on a field survey data of 795 women in the Northern Region of Ghana. The paper seeks to evaluate two things. Firstly, it examines the effect of empowerment on a woman's decision to enter the shea butter industry in Ghana. Are more empowered women working in shea butter production? Or, can evidence be found which shows that women who are more empowered choose to work in certain industries? Secondly, the paper also examines empowerment within the shea butter industry, and among different employment types. It seeks to understand how shea butter cooperatives might benefit women, and whether women who are more empowered will choose to work in shea butter cooperatives rather than choose to be shea butter entrepreneurs.

Over the past 15-20 years, there has been a rise in shea butter cooperatives in Ghana. Shea butter is produced in 5 Northern Regions of Ghana, which are also the regions with the highest poverty rates and lowest employment rates in the country. So, this industry has created employment in a region where it is much needed. Cooperatives are usually local or foreign owned companies that employ hundreds of women to produce shea butter for export and sale. The Shea Butter Community Commerce Project in Ghana, for example, is funded by Sundial Brands Limited and The Sofi Tucker Foundation (STF), and involves fifteen producer cooperatives and approximately 2,540 women who are directly engaged in these cooperatives. Cooperatives have been found to be beneficial, as they often provide members with financial support (helping members set up bank accounts, mobile money accounts, providing credit services etc.), better production technology and more access to information (Ahmed and Mesfin, 2017). This type of support often improves productivity and is associated with enhancing worker livelihoods, reducing rural poverty and



increasing food security. Using this logic, it can be assumed that more empowered women, who want higher incomes and stronger social networks, are more likely to work in cooperatives.

I examine the social and economic outcomes of 3 groups of women: employed women in shea butter cooperatives, self-employed women/entrepreneurs in the shea butter industry, and self-employed women/entrepreneurs in different industries. Using an empowerment index, I find that despite significant differences in income across employment types, and despite my expectation that women who work in the shea butter industry, especially those employed in shea butter cooperatives, would be more empowered than their counterparts who do not, the calculated level of empowerment was similar across all three groups and remained relatively low.

Women's empowerment comprises two components. Social empowerment in this paper is understood as the process of developing a sense of autonomy and self-confidence, and acting individually and collectively to change social relationships, whilst feeling empowered to change situations in one's community. Economic empowerment is an increase in finances that allows one to exercise greater control over both their resources and life choices. Economic empowerment will often empower women socially, giving them more decision-making power and more of a say in making investments in areas like health and education. Women's social and economic empowerment are often intertwined and dependent on each other and so, I combine both the economic and social aspects in this paper.

There is a large amount of qualitative research that has been done on the women in the shea butter industry. However, there is little quantitative and economic research, specifically on the impact of

shea butter cooperatives on its women members. More research has been done on the effect of other agriculture cooperatives on members' economic empowerment. There is also some research on whether employment empowers women, but not on how empowerment might impact a woman's choice of employment.

In 2017, The Food and Agriculture Organization of the United Nations examined the impact of the shea nut industry on women's empowerment in Burkina Faso. In a study of 189 participants, they found, using an analysis of averages, that women in cooperatives identified social rather than financial advantages from their membership - acknowledging that these groups made them more open-minded and taught them new skills. In terms of economic resilience, they found that the average woman in the shea industry had a yearly income of USD 900, significantly above the national poverty line of USD 183 but far below the international threshold of USD 1.90 per day. The study also found that men occupied certain positions of leadership in the industry such as group leaders and sometimes shea traders - where they made 44 times more than women in the same positions. The Network of African Women Economists found in a qualitative study of a shea butter cooperative in Burkina Faso (with 1,174 members), that working in a shea butter cooperative allowed women to take control of their lives. The study found that being in a shea butter cooperative enhanced the women financially, and also provided them with technical skills, organizational capacity and increased their decision-making power (NAWE, 2012). These studies, though more qualitative, are useful because there is consistency in the narrative that the shea industry empowers women both financially and socially. Mohammed, Boateng and Al-Hassan (2013) showed, using difference-in-differences approach and t-testing, how adopting improved processing technology improves the income, savings, employment, investment and credit levels of

shea butter producers in Ghana. Given the fact that women in cooperatives are often given access to better production equipment and technology than women who self-produce, it can be hypothesized that similar results will be found. This study evaluates not only the relationship between shea production and increased incomes and savings but also whether increases in women's decision-making power increased their likelihood of being in the industry. Kent (2017) found in a survey that though women make money through shea, half of the women also reported joint spending decisions (with their husbands), thus it is not clear how empowered the women really were. There is more research to be done on the effects of income on empowerment.

When it comes to cooperatives, research has been done to show that cooperative membership is often correlated with higher income and livelihoods. Calkins and Ngo (2011), using qualitative (focus groups) and quantitative (ANOVA and student t-tests) methods, evaluated the impact of cooperatives on the well-being of villages in Ghana and Cote d'Ivoire, and found that cooperatives had a positive impact on the income, health and well-being of producers. Mojo et al (2017), using propensity score matching and endogenous switching regression models, found that coffee cooperative members in Ethiopia economically performed significantly better than non-members, and non-members would have even performed better than members if they had joined cooperatives. Stephen Pitts (2018) also used propensity score matching and a logit model to show that cooperative membership, in coffee cooperatives in Mexico, was often correlated with higher household income and higher social capital at the individual and village level. In Rwanda, Verhofstadt and Maertens (2014), also use PSM to evaluate whether agricultural cooperatives help to reduce poverty. They find that cooperative membership in general increases income and reduces poverty, and that these effects are largest for larger farms and in more remote areas. It is clear that

cooperatives lead to increased income, and I find this in the data as well. However, I investigate further about whether this increased income also means the women are more empowered.

Though this research looks at cooperatives versus non cooperatives, on a larger scale it is also looking at how women's empowerment affects employment types. In this paper, I discuss two employment types - entrepreneurship/self-employment and employment (in a cooperative), and three different groups within these types. There is a large amount of research on the relationship between employment and women's empowerment but very little on how the type of employment matters. The 2013 UN Women report finds that formal and semi-formal employment is more likely to contribute to women's ability to decide how to use their income, to make decisions about their own health, to gain respect within the community, to participate in politics, to express support for a more equitable distribution of unpaid workloads and, in cultures characterized by son preference, less discriminatory attitudes towards daughters. However, they state that this formal employment that contributes to empowerment has been on the decline with the shift to market-oriented growth strategies. Guinée (2012) argues that employment will improve women's empowerment because the opportunity to control one's own resources gives more bargaining leverage and thus, more empowerment. However, in my research, I question whether employment actually equates to controlling one's own resources, or whether a woman can still be told how to spend the money she has earned. Some empirical studies have indicated that empowered women who want to increase their domestic decision-making power, are more likely to become employed. However, this is only a given when said women have higher educational levels, more knowledge of their legal rights and belong to a relatively affluent background, among other things (Banerjee, Alok, George, 2020). Dutta's (2000) study of 105 women in Bengali found that when women were employed, they

tended to be consulted more in household decision-making, and participated in a greater social life. Indeed, Dutta states that “paid employment has the potential to alter deeply embedded cultural norms”. However, she acknowledges that other aspects of empowerment, including household management expectations, did not change. Salway (2005), using survey and ethnographic data in Bangladesh, finds that employment makes women more likely to manage money, save and participate in household decision-making. Still, her research shows that social and economic structures continue to weigh heavily against women. West (2006) finds that being employed is not enough to ensure women’s empowerment, because working does not necessarily mean that women can challenge the power structures that have been put in place to disempower them (Kabeer 1997; Kantor 2003; Sen 1999; Pearson 2004). In the case of poor women, where employment is often survival-driven, they might choose to work only to survive and not necessarily because this work empowers them. This is extremely important for my own analysis.

In this paper, to distinguish between the groups, women employed in shea butter cooperatives will be referred to as *sheacoops*, self-employed women in the industry but not in cooperatives will be referred to as *sheapreneurs*, and self-employed women outside of the shea butter industry will be referred to as *entrepreneurs*.

## **Data Collection and Methods**

This paper uses survey data from a household survey I administered in the Northern Region of Ghana. The Data collection was done in November 2020 and the survey was administered to 802 participants. I interviewed women from 4 different communities - Gupanarigu, Kumbuyili, Mangulukuko and Bamivim- all within a 40-minute drive radius of Tamale city, the metropolitan

capital of the Northern Region. These communities were randomly selected out of a total of 10 potential ones. All these communities are known as shea butter communities. Shea butter communities are communities with a large number of women involved in the process of making shea butter due to cultural reasons or proximity to shea farms or cooperatives. Women in such communities either produce and sell on their own, or work in cooperatives. Still, many women who live in shea butter communities are involved in other work. Most are self-employed or work with a few friends, as the formal employment industry for rural women in these communities is scarce.

**Image 1: Map of Ghana with the Map of the Northern Region**



Participation in this survey was voluntary. I approached the leadership of each community for permission to interview the women. Announcements a week before the interviews to let the women know that a group would be visiting to ask them questions about their work and lives. Women were asked to show up if they could spare a few minutes. Interviews were conducted at either schools, community centers or at shea cooperatives. My enumerators and I spent two days in each community. For each session, I explained to the women that I was conducting research for a school

project and wanted to find out about their employment, lives, decision-making power, among others. I also explained to the women that some questions would be sensitive but their answers would all be anonymous. Approval was obtained from the women who either signed or thumb printed a document signifying that they understood the information. Women were given a cash token of \$6 or GHS 30 (at the time) for their time and effort. The women were not told that they would receive any financial payment for their participation. This decision was made once I realized that the prospect of financial payment would cause an influx of women, all of whom I would not be able to interview. Even so, many more women appeared than was required and often, when I got to a village, once the first few women received their payments, the news spread, and I got even more women. At the end of most days, I had to turn several women away.

Surveys took an average of **45 minutes** to complete and my survey had a total of 77 questions. Surveys were conducted using SurveyCTO, an app that enumerators downloaded on their phones and iPads that could be used both online and offline. This proved to be very useful as there was often no internet service in the field. At the end of the day, answers on the app were synced, tabulated and presented in a spreadsheet.

The women I interviewed fit into 3 categories as described above. We interviewed 377 women in shea butter cooperatives (*sheacoops*), 183 women entrepreneurs in the shea industry (*sheapreneurs*) and 235 women entrepreneurs who are not in the shea butter industry. My initial target was 450 women (150 per group), however, I surpassed that target due to the influx of women who came to be interviewed, and some adjustments made to finances. For the analysis in this paper,

I removed 7 observations from the original sample because of missing or incorrect information, hence I worked with a total sample of 795 women.

For this study, I spent close to three weeks in the Northern Region and worked with 9 enumerators. Enumerators were all women because of the nature and sensitivity of this work, and some of the questions I asked were on domestic violence and other sensitive topics. All the enumerators had previously worked as volunteers and interns for Planned Parenthood Association Ghana. This was helpful as they had conducted such sensitive surveys before. Enumerators also spoke Dagbani, which is the primary language spoken in that area and spoken by the women, thus allowing them to properly interview the women and capture their responses more accurately. Enumerators went through a one-week training before conducting the studies. They were trained on the aim of the study and the research being conducted. Enumerators were taught how to ask the questions, specifically those that were sensitive, why I was asking certain questions, and what I hoped to gain from asking certain questions. They were also able to discuss how to ask the questions in Dagbani, and alternative phrases that the rural women might understand.

My survey was quantitative, with specific questions on demographic characteristics, employment type, financial freedom (income, savings & assets), cooperative membership, decision-making power, and political views. The data allows us to calculate monthly and annual income of the women, as well as how much decision-making power they have, which helps us to evaluate how empowered they are socially and politically.



**Table 1: Summary Statistics (Demographics)**

	Full Sample (n =795)	Shea Entrepreneurs (n=183)	Shea Employed (n=377)	Other Entrepreneurs (n=235)
<b>Age</b>	36.84 (11.04)	38.80 (11.89)	36.58201 (10.46175)	35.80851 (11.01754)
<b>Years of Education</b>	1.553594 (3.632411)	1.551913 (3.487227)	1.429708 (3.632151)	1.769231 (3.851057)
<b>Percentage Married</b>	.9396226 (.2383346)	.9672131 (.1785669)	.9365079 (.2441691)	.9276596 (.2596037)
<b>Yearly Income</b>	3860.571 (11322.56)	1748.798 (2467.766)	4910.587 (12586.62)	3783.498 (13034.09)
<b>Monthly Income</b>	322.2428 (852.2447)	155.4973 (227.4282)	408.2751 (879.0001)	311.783 (1070.582)
<b>Annual saving amount</b>	372.152 (534.5896)	320.2803 (604.3802)	435.119 (569.3835)	297.2067 (361.6143)
<b>Percent of women who save frequently</b>	.8000 (.4002518)	.7868852 (.4106315)	.8730159 (.3333965)	.6893617 (.4637427)
<b>No of Children</b>	4.238994 (2.194162)	4.273224 (2.181766)	4.325397 (2.124117)	4.097872 (2.297108)
<b>Percentage of Children in school</b>	.8845178 (.319806)	.8882682 (.3159199)	.9146667 (.2797503)	.8382979 (.3689632)
<b>Number of household members</b>	12.00126 (7.138341)	11.22951 (7.47169)	12.26455 (7.188914)	12.14043 (6.897406)

Table 1 above presents the descriptive statistics of the characteristics for the sample. The average age of the women interviewed was 36.<sup>1</sup> All women had an average of less than 2 years of education. That is, the women had at most attended only up to primary two (second grade) before dropping out of school. Despite English being the official language in Ghana, over 88% of the women I interviewed did not speak English and were mainly illiterate. The average percentage of women were married (94%) and the average number of children each woman had (4) was also similar across all three groups. Women lived with an average of 12 household members. I found out that many women lived with other family members, especially their husbands' families. In many cases, the men had multiple wives and so, women lived with not just their husbands and children but also their husbands' other wives and children. Indeed, during my surveying, in the conversations that took place, some women even pointed out their senior or junior wives.

When it comes to income, there are large differences across the three groups. I asked the women for both their yearly and monthly income. In this paper, I will refer mostly to monthly income because the women found it easier to give us their monthly income and often could not estimate or calculate their yearly income. However, in the final results the annual income results accurately reflect the monthly income results that the women mentioned.<sup>2</sup> For the full sample, women made a monthly average of GHS 322/\$57.5 and an annual income of GHS 3861/\$689.<sup>3</sup> Women in sheacoops made the most at GHS 409/\$73 a month. Sheapreneurs made the least amount at GHS 155/\$27.76 a month, whilst women entrepreneurs in other fields made GHS 312.5/\$55.80 a month.

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<sup>1</sup> There were quite a few older women, and I noticed an increase in younger girls between 16-18 who had started working recently because they had dropped out of school or were taking a pause in their education due to the Covid19 Pandemic. Often, many women did not know how old they were. So, I would have to estimate their ages based on their answers to questions on certain important events and whether or not they were alive.

<sup>2</sup> I explained to each group of women that I was there to conduct research and hence disclosure about how much they made would not affect the amount I were giving them, and also would have no impact on their future amount as I was not an NGO trying to help them. (women often underreport data if they think they can benefit from the group interviewing them)

<sup>3</sup> Dollar rate in November 2020 was such that 1 USD = 5.6 GHS

Thus, I found that women in sheacoops make more than double the income of sheapreneurs. And entrepreneurs make more than sheapreneurs but less than women in sheacoops. So, it can be seen that being in a cooperative will lead to higher income and, thus, expected financial empowerment, but employment in the shea industry itself does not necessarily lead to financial empowerment.

There are similar dynamics when it comes to annual saving amounts. Across the three groups, the results show that 80% of the women saved, and these women saved an average of GHS 314/\$56 a year. Women employed in sheacoops were able to save GHS 386/\$69 a year, whilst sheapreneurs saved GHS 275/\$49 a year. Entrepreneurs saved the lowest at GHS 229/\$41 a year. So, women in sheacoops earned and saved more, but sheapreneurs, despite earning less than entrepreneurs outside of the shea industry, were able to save slightly more on average.

### **Empowerment Index**

This study seeks to evaluate the relationship between women's empowerment and employment, and whether empowerment influences a woman's employment. Within the shea butter industry, do more empowered women work in cooperatives or do they work as sheapreneurs? And looking at the bigger picture, with the benefits that the shea industry is said to have, will more empowered women work within the industry or as entrepreneurs in other industries? In order to answer these questions, it is important for empowerment to be defined.

In this study, I created an empowerment index based on the question's women were asked in the survey.<sup>4</sup> The empowerment index then formed one of my independent variables. The index looks

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<sup>4</sup> I used the OXFAM empowerment index as a basis/guide for my index.

at 12 different categories/indices. Each category is based on multiple or single questions. The questions were then evaluated and weighted based on importance and the number of questions attached to each category. Most of the indices were binary and had a score between 1 and 0, but there were three - saving attitude, women's autonomy and women's views - that were continuous. Each category was then added up to form the index. The categories that determined a woman's empowerment included:

- A woman's personal assets (and whether she has access to certain utilities and assets),
- Her attitude towards savings (whether she was able to save, her method of saving and the priority she places on saving),
- Freedom and ability to spend her income,
- Knowledge of total household income including spouse's income/finances,
- A woman's autonomy over choosing a job and choosing when to marry and who to marry (can she make these decisions on her own or are they forced on her by her family and community?),
- Women's household autonomy (can a woman make decisions about expenditures for children, health and other household expenditures?)
- Women's views on leadership, and power (including a woman's ability to lead her community or nation),
- Women's political agency/views,
- Women's community views and how they viewed themselves within their communities,
- Women's views on equality (with regards to children),
- Women's non acceptance of domestic abuse/gender-based violence,
- Sexual agency and ability to determine family planning.

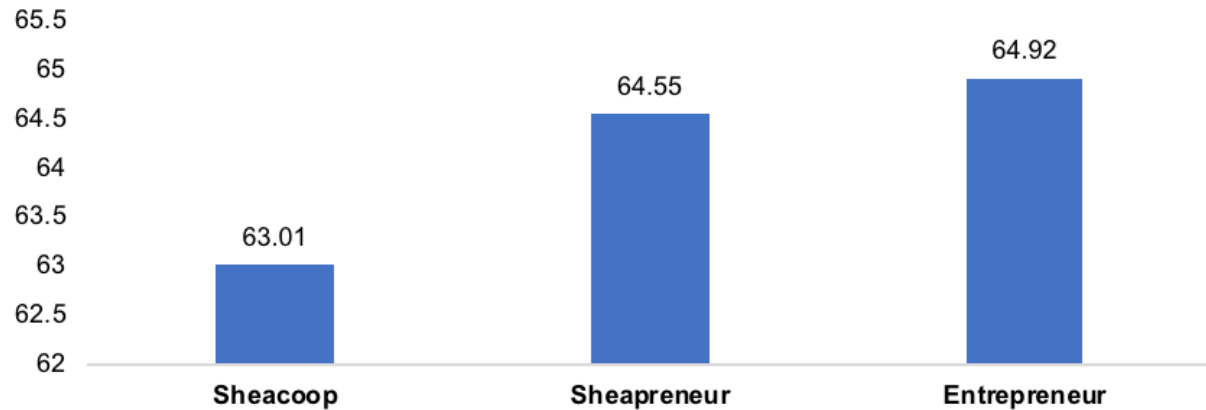
These categories were all evaluated and then weighted. The points were then added and divided by 16 to give the empowerment base index. The empowerment base index gives a figure between 0-1. For the purposes of evaluation, I made this figure a percentage between 0 and 100.

I found that the mean empowerment index of each group is quite similar as seen in Table 2. Women in the sheacoops had the lowest empowerment score of 63.01, followed by sheapreneurs who had an empowerment score of 64.55. Entrepreneurs had the largest score of 64.92. This is very different from my hypothesis, as I assumed that like income, there would be great differences in empowerment scores among the employment groups, and that women in shea butter cooperatives would have the highest empowerment score. I also expected the empowerment scores to be a bit higher. However, as I explored the data, I recognized that perhaps women who take more risks, have stronger decision-making power and more empowered views about their role in society, are more likely to be entrepreneurs.

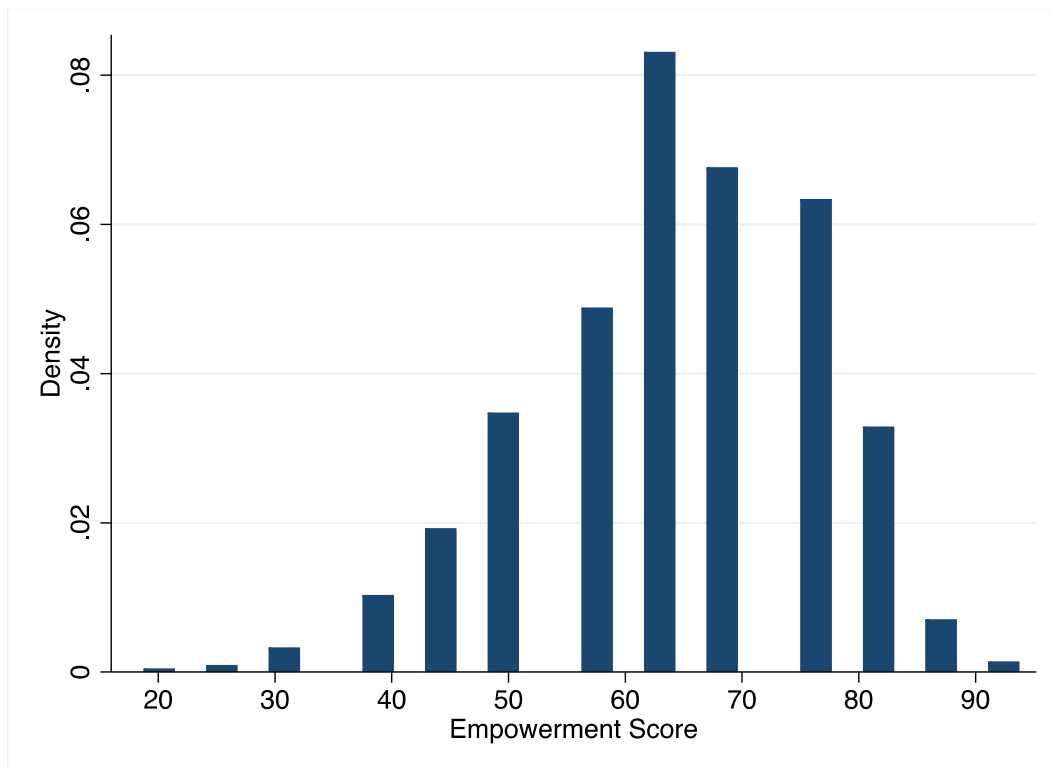
***Table 2. Empowerment Score among different groups***

<b><i>Group</i></b>	<b><i>N</i></b>	<b><i>Mean</i></b>	<b><i>Std.dev</i></b>	<b><i>Minimum</i></b>	<b><i>Maximum</i></b>
<b><i>Sheacoop</i></b>	377	63.0139	11.8096	31.25	93.75
<b><i>Sheapreneur</i></b>	183	64.5492	11.5943	31.25	93.75
<b><i>Entrepreneur</i></b>	235	64.9202	13.0473	18.75	93.75

**Graph 1. Mean empowerment index comparison among groups**



**Graph 2. Histogram of empowerment index across total population**



## Models

In order to explore my results, my model examines how empowerment influences a woman's employment type.<sup>5</sup> To measure the association of women's empowerment on employment, I first employ a simple OLS regression, but then focus on the logit and multinomial logit regression given the categorical nature of my dependent variable. To evaluate the effect of women's empowerment on shea cooperatives and employment type, I also evaluate certain independent variables. I looked at the age and education of the women, as well as the number of children they have. One expects a decrease in age to be associated with a higher level of empowerment because younger women today have more agency and more liberal views on gender than older women, thus I expected them to be more empowered than older women. I also measure how education might impact empowerment and hypothesize that women with a higher level of education will be more empowered than others. Likewise, this study also consider the number of children each woman has, as women who are more empowered are expected to have less children (Phan, 2013). Additionally, I include the monthly income, annual savings and property ownership. I expect empowered women will choose to earn more, save more and be more likely to own or rent their homes, than to live with their family members. I run 3 OLS models such that the econometric form of the model is as below:

$$Y = \alpha + \beta_1 \text{Empowerment} + \beta_2 \text{Age} + \beta_3 \text{Education} + \beta_4 \text{Children} + \beta_5 \text{PropertyOwnership} + \beta_6 \text{MonthlyIncome} + \beta_7 \text{AnnualSavings} + \varepsilon$$

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<sup>5</sup> I also addressed endogeneity and examined the reverse i.e. how employment type might influence different aspects of empowerment, where the employment group is the dependent variable and my independent variables are the differing categories of empowerment. I did not find much in terms of significance

Where Y is equal to the employment type/ the probability that a woman is in a particular employment type. We run three models such that  $Y = \text{Sheacoop}$  (where 1= Sheacoop and 0= Entrepreneur and Sheapreneur) etc.

- $\text{Sheacoop} = \alpha + \beta_1 \text{Empowerment} + \beta_2 \text{Age} + \beta_3 \text{Education} + \beta_4 \text{Children} + \beta_5 \text{PropertyOwnership} + \beta_6 \text{MonthlyIncome} + \beta_7 \text{AnnualSavings} + \varepsilon$
- $\text{Entrepreneur} = \alpha + \beta_1 \text{Empowerment} + \beta_2 \text{Age} + \beta_3 \text{Education} + \beta_4 \text{Children} + \beta_5 \text{PropertyOwnership} + \beta_6 \text{MonthlyIncome} + \beta_7 \text{AnnualSavings} + \varepsilon$
- $\text{Sheapreneur} = \alpha + \beta_1 \text{Empowerment} + \beta_2 \text{Age} + \beta_3 \text{Education} + \beta_4 \text{Children} + \beta_5 \text{PropertyOwnership} + \beta_6 \text{MonthlyIncome} + \beta_7 \text{AnnualSavings} + \varepsilon$

I use an OLS to evaluate the effect that empowerment has on each employment group. I noticed early in my analysis that the mean empowerment score for all three groups differs only by a maximum of 1.91 points and my regression with the empowerment index did not tell us much. This led me to question whether it might be better to look at how the individual empowerment components might affect the different employment groups.

Before exploring the individual empowerment components, I used a Principal Components Analysis to see whether the results would suggest another way in which the index could be created. The Principal Component Analysis reduces a large set of variables into a smaller one whilst preserving as much necessary information as possible. Given the quantity of my data, I hoped that the PCA would highlight the most relevant empowerment variables such that those few variables could then be used in a new index which might show more variability across the groups. I conducted the PCA in STATA using the 12 empowerment variables as seen in Table 3 below as well as with all the original 41 empowerment variables. The results of the PCA with the 12 indices



can be seen below.<sup>6</sup> In the first part of Table 3, the first 5 eigenvalues are all  $\geq 1$ . This is a positive sign, however I find that the cumulative percentage of variance is low and the first 5 components carry only 54% of the data. Thus, I cannot make too many assumptions about which empowerment categories are more relevant than others.

Though there are 12 components, a PCA will try to put maximum possible information in the first few components. However, I do not see this strongly with my results.

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<sup>6</sup> The results of the PCA with the 41 variables can be found in the appendix

**Table 3 – Principal Component Analysis of 12 Empowerment Variables**

Table 6: Principal Component Analysis of 12 Empowerment Variables																								
Component	Principal components/correlation																							
	Eigenvalue		Difference		Proportion		Cumulative																	
	Comp1		Comp2		Comp3		Comp4		Comp5		Comp6													
	Comp7		Comp8		Comp9		Comp10		Comp11		Comp12													
	1.6868		0.1056		0.1406		0.1406																	
	1.5812		0.3918		0.1318		0.2723																	
	1.1894		0.1255		0.0991		0.3715																	
	1.0639		0.0575		0.0887		0.4601																	
	1.0065		0.0648		0.0839		0.5440																	
	0.9416		0.0351		0.0785		0.6225																	
	0.9065		0.0769		0.0755		0.6980																	
	0.8296		0.0182		0.0691		0.7671																	
	0.8115		0.0448		0.0676		0.8348																	
	0.7667		0.1385		0.0639		0.8987																	
0.6282		0.0402		0.0524		0.9510																		
0.5880		-		0.0490		1.0000																		
Variable	Principal components (eigenvectors)																							
	1		2		3		4		5		6		7		8		9		10		11		12	
	Assets		Saving attitude		Freedom to spend		Spousal finance		Individual autonomy		Household autonomy		Woman's view		Political view		Influence		GBV non-acceptance		Children' opinion		Sexual agency	
	0.211		-0.126		0.330		0.255		0.276		-0.432		0.671		0.080		-0.177		0.082		-0.021		0.091	
	-0.167		0.229		0.522		0.301		0.285		0.233		-0.244		-0.102		-0.129		-0.489		-0.175		0.255	
	0.321		-0.232		-0.039		0.009		0.137		0.701		0.236		-0.252		-0.356		0.007		0.217		-0.199	
	-0.303		-0.003		-0.255		0.550		0.307		0.137		0.033		-0.296		0.360		0.417		0.089		0.165	
	0.353		0.310		-0.186		0.216		0.045		0.141		0.233		0.249		0.549		-0.403		-0.046		-0.306	
	0.324		-0.323		0.367		-0.196		0.008		-0.081		-0.170		-0.255		0.509		-0.058		0.447		0.235	
	0.437		0.282		0.194		-0.022		0.034		-0.107		-0.218		-0.440		0.028		0.367		-0.477		-0.273	
	0.086		-0.019		0.373		0.454		-0.617		0.208		-0.072		0.340		0.004		0.311		0.075		-0.013	
	-0.136		0.579		0.176		-0.058		0.134		-0.126		-0.036		-0.017		-0.141		0.138		0.653		-0.334	
	0.285		-0.211		-0.072		0.112		0.523		-0.044		-0.484		0.542		-0.110		0.181		0.046		-0.076	
	0.367		0.461		-0.219		-0.126		-0.030		0.124		0.065		0.104		-0.109		0.148		0.065		0.721	
-0.266		0.071		0.349		-0.468		0.232		0.367		0.242		0.301		0.301		0.331		-0.217		-0.007		

In the second part of the table, the coefficients for the components are mostly  $< 4$  and there are no clear trends or patterns among the components. Given this, I decided not to use the PCA method to create a new index. I also conducted the Kaiser Meyer Olkin test, which suggests the extent to which an indicator is suitable for a factor analysis. My KMO value was 0.58. This suggests that the data might not be appropriate for applying a PCA, this is in line with the PCA results.

Given the results of my PCA did not strongly indicate that I should use certain variables for a new index, I decided to collapse my empowerment index into the 12 indices, and then evaluate the effect these 12 variables had on determining a woman's employment type. I then evaluated this using an OLS, a logit regression and a multinomial logit regression.

Using the decompressed index my 3 models now read as below:

$$Y = \alpha + \beta_1 \text{Age} + \beta_2 \text{Education} + \beta_3 \text{Children} + \beta_4 \text{PropertyOwnership} + \beta_5 \text{MonthlyIncome} + \beta_6 \text{AnnualSavings} + \beta_7 \text{Assets} + \beta_8 \text{SavingAttitude} + \beta_9 \text{SexualAgency} + \beta_{10} \text{FreedomtoSpend} + \beta_{11} \text{SpousalFinance} + \beta_{12} \text{IndividualAutonomy} + \beta_{13} \text{HouseholdAutonomy} + \beta_{14} \text{WomensViews} + \beta_{15} \text{PoliticalViews} + \beta_{16} \text{CommunityInfluence} + \beta_{17} \text{GBVnon-acceptance} + \beta_{18} \text{childrens equality} + \varepsilon$$

Where Y is equal to the employment type/ the probability that a woman is in a particular employment type. We run three models such that Y = Sheacoop (where 1= Sheacoop and 0= Entrepreneur and Sheapreneur) etc.

I used VIF to check for multicollinearity to ensure that my variables were not correlated. My VIF values were all less than 2, with the exception of the value for children which was 2.07. These indicate that there is very little correlation amongst variables/ little to no multicollinearity.

**Table 4 - VIF Check for Multicollinearity**

<i>Variable</i>	<i>VIF</i>	<i>1/VIF</i>
<i>Number of Children</i>	<i>2.07</i>	<i>0.483158</i>
<i>Age</i>	<i>1.93</i>	<i>0.517375</i>
<i>Education</i>	<i>1.29</i>	<i>0.775847</i>
<i>Children' opinion</i>	<i>1.29</i>	<i>0.776069</i>
<i>Influence</i>	<i>1.28</i>	<i>0.781724</i>
<i>Household autonomy</i>	<i>1.24</i>	<i>0.808792</i>
<i>Woman's view</i>	<i>1.20</i>	<i>0.832592</i>
<i>Savings attitude</i>	<i>1.20</i>	<i>0.835143</i>
<i>Property Ownership</i>	<i>1.19</i>	<i>0.839961</i>
<i>Monthly finance</i>	<i>1.16</i>	<i>0.865793</i>
<i>Saving Amount</i>	<i>1.13</i>	<i>0.883603</i>
<i>Individual autonomy</i>	<i>1.11</i>	<i>0.898477</i>
<i>Sexual agency</i>	<i>1.10</i>	<i>0.905618</i>
<i>Freedom to spend</i>	<i>1.08</i>	<i>0.923200</i>
<i>Spousal finance</i>	<i>1.07</i>	<i>0.930528</i>
<i>GBV non-acceptance</i>	<i>1.06</i>	<i>0.939475</i>
<i>Asset</i>	<i>1.05</i>	<i>0.952757</i>
<i>Political view</i>	<i>1.02</i>	<i>0.977038</i>
<i>Mean VIF</i>	<i>1.25</i>	

My analysis will focus on the results of the multinomial logit regression because this captures the results of each group, compared to another. Given my dependent variable is categorical and my independent variables are not all continuous, the multinomial logit regression is a good choice.

Though I focus on the multinomial, I also conduct a logistic regression as my dependent variable is binary, predictor variables are not colinear and the relationship between the log(Odds) and the predictor variables is linear. The logistic regression is useful as it helps us evaluate the log odds of

one employment group in comparison to the other two. The multinomial however allows us to evaluate two employment groups in comparison to one base group.

To measure how empowerment affects employment choice, I develop my logistic and multinomial logistic regression such that my independence variables include the 12 empowerment categories as well as age, education, number of children, Property Ownership, Monthly Income and Annual Savings.

The probability of a woman choosing a specific employment based on a particular empowerment category  $j$  is denoted in the logistic model as:

$$\log\left(\frac{P_i}{1-P_i}\right) = \beta_{0i} + \beta_1 Age_i + \beta_2 Education_i + \beta_3 Children_i + \beta_4 PropertyOwnership_i + \beta_5 MonthlyIncome_i + \beta_6 AnnualSavings_i + \beta_7 Assets_i + \beta_8 SavingAttitude_i + \beta_9 SexualAgency_i + \beta_{10} FreedomtoSpend_i + \beta_{11} SpousalFinance_i + \beta_{12} IndividualAutonomy_i + \beta_{13} HouseholdAutonomy_i + \beta_{14} WomensViews_i + \beta_{15} PoliticalViews_i + \beta_{16} CommunityInfluence_i + \beta_{17} GBVnon - acceptance_i + \beta_{18} childrens equality_i + \varepsilon$$

Where  $P = P(Y=1) = P(\text{Sheacoop} = 1)$ , and  $1 - P = P(\text{sheacoop} = 0)$  or  $P(\text{a woman is not sheacoop})$ .

For the multinomial logit our model with  $I$  categories (in this case 3) is denoted as:

$$\log\left(\frac{P_i}{P_1}\right) = \beta_{0i} + \beta_{1i} Age + \beta_{2i} Education + \beta_{3i} Children + \beta_{4i} PropertyOwnership + \beta_{5i} MonthlyIncome + \beta_{6i} AnnualSavings + \beta_{7i} Assets + \beta_{8i} SavingAttitude + \beta_{9i} SexualAgency + \beta_{10i} FreedomtoSpend + \beta_{11i} SpousalFinance + \beta_{12i} IndividualAutonomy + \beta_{13i} HouseholdAutonomy + \beta_{14i} WomensViews + \beta_{15i} PoliticalViews + \beta_{16i} CommunityInfluence + \beta_{17i} GBVnon - acceptance + \beta_{18i} childrens equality + \varepsilon$$

$$i=1, \dots, I-1 \\ P_1 + P_2 + P_3 = 1$$

As in binary logistic regression, multinomial logistic regression uses maximum likelihood estimation to evaluate the probability of categorical membership. Thus, this type of model allowed us to characterize the probability of a woman's employment type for a particular multinomial discrete choice, conditional on the values of the explanatory variables

The multinomial logit regression is helpful in my scenario because it allows us to look at:

- 1) The log odds of being a sheapreneur and entrepreneur compared to sheacoop as a base. Here, I am able to compare two entrepreneurial groups to a group of employed women, and analyze how and whether employment type has an impact on women's empowerment. I can see whether entrepreneurial women share similarities when it comes to empowerment, as well as whether employed women are more empowered than entrepreneurs. (I also look at whether sheapreneurs are more or less empowered than sheacoop women based on the 12 categories).
- 2) The log odds of the sheacoop and entrepreneur group when compared to the sheapreneur as a base. This allows us to evaluate one of my main questions - Are women in sheacoops more empowered than sheapreneurial women? This was my hypothesis. The multinomial logit will allow us to compare these two groups based on the 12 categories and see which group performs better in each category as well as whether the results are statistically significant.
- 3) The log odds of both the sheacoops and sheapreneur when there are other entrepreneurs as a base. This gives us further insight into the effects of the shea butter industry and whether this industry truly empowers women as is often proclaimed.

## Results and Analysis

Firstly, the results of 3 OLS regression compared women in the shea sector (sheapreneurs and sheacoops) to women entrepreneurs in different sectors. The results are presented in Table 5. Compared to the two other groups, women in shea butter cooperatives have a lower empowerment score. Thus, a one unit increase in empowerment score, reduces the probability that a woman will be in a sheacoop by 0.36%. This is statistically significant at a 5% significance level. A higher empowerment score increases the probability that a woman is either a sheapreneur or an entrepreneur. However, these are not found to be significant in the OLS So altogether, women in the shea butter business are less empowered than women employed in other sectors. Also, age and monthly finance are significant at a 5% significance level for sheacoops. Thus, a 1-year increase in age decreases the probability that a woman will be in a cooperative by 0.48%. Women who make and save more are more likely to be in sheacoops, and saving is also significant at the 1% level.

**Table 5. OLS regression – Empowerment index**

	<i>Sheacoop</i>	<i>Sheapreneur</i>	<i>Entrepreneur</i>
<i>Empowerment Score</i>	<b>-0.0036**</b> (0.0014)	<b>0.0015</b> (0.0012)	<b>0.0021</b> (0.0013)
<i>Age</i>	<b>-0.0048**</b> (0.0022)	<b>0.0073***</b> (0.0018)	<b>-0.0024</b> (0.0020)
<i>Education</i>	<b>-0.0056</b> (0.0054)	<b>0.0015</b> (0.0045)	<b>0.0041</b> (0.0050)
<i>Number of Children</i>	<b>0.0177</b> (0.0111)	<b>-0.0183*</b> (0.0094)	<b>0.0054</b> (0.0102)
<i>Property Ownership</i>	<b>-0.0294</b> (0.0427)	<b>0.0214</b> (0.0361)	<b>0.0509</b> (0.0394)
<i>Monthly finance</i>	<b>0.00005**</b> (0.00002)	<b>-0.00006***</b> (0.00002)	<b>0</b> (0.00002)
<i>Annual Savings</i>	<b>0.0001***</b> (0.00003)	<b>-0.00003</b> (0.00003)	<b>-0.0001***</b> (0.00003)
<i>n</i>	<b>795</b>	<b>795</b>	<b>795</b>
<i>F-test</i>	<b>4.71***</b>	<b>3.91***</b>	<b>2.46**</b>
	<b>4.02%</b>	<b>3.36%</b>	<b>2.14%</b>

**Note:** \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.001$

Columns 2 and 3 show the results for sheapreneurs and entrepreneurs. Here, a one unit increase in empowerment score will make a woman 0.15% more likely to be a sheapreneur and 0.21% more likely to be an entrepreneur, but both results are not statistically significant. Age is statistically significant for entrepreneurs at the 1% significance level. A one-year increase in age, increases the probability that a woman is a sheapreneur by 0.73%. Women with fewer children are also more likely to be sheapreneurs. When it comes to monthly finance, an increase in monthly finance reduces the probability of being a sheapreneur by 0.006%. This is statistically significant at the



1% level. An increase in annual savings also decreases the likelihood that a woman is a sheapreneur or entrepreneur. For entrepreneurs, this is significant at the 1% significance level.

My OLS regression shows that contrary to my hypothesis, a higher empowerment score does not lead to a woman's employment in a sheacoop. Rather, women who are more empowered are more likely to be entrepreneurs, perhaps because of their ability to take risks, advocate for themselves and work against the status quo, but this is not statistically significant.

**Table 6: OLS Regression - evaluating how employment type influences aspects of empowerment**

	<i>Sheacoop</i>	<i>Sheapreneur</i>	<i>Entrepreneur</i>
<i>Age</i>	-0.0048** (0.0022)	0.0080*** (0.0018)	-0.0032 (0.0020)
<i>Education</i>	-0.0049 (0.0054)	0.0035 (0.0045)	0.0014 (0.0050)
<i>Number of Children</i>	0.0182 (0.0114)	-0.0234** (0.0094)	0.0052 (0.0104)
<i>Property Ownership</i>	-0.0438 (0.0445)	0.0088 (0.0368)	0.0350 (0.0406)
<i>Monthly finance</i>	0.00005** (0.00002)	-0.00005*** (0.00002)	0 (0.00002)
<i>Savings</i>	0.0002*** (0.00004)	-0.00007** (0.00003)	-0.0001*** (0.00003)
<i>Assets</i>	-0.0840** (0.0356)	-0.0781*** (0.0294)	0.1621*** (0.0325)
<i>Savings attitude</i>	-0.0156 (0.0257)	0.0655*** (0.0212)	-0.0498** (0.235)
<i>Freedom to spend</i>	-0.0931** (0.0362)	0.0960*** (0.03)	-0.0029 (0.0331)

<i>Spousal finance</i>	-0.0699 (0.0531)	0.1137** (0.0440)	-0.0439 (0.0486)
<i>Individual autonomy</i>	-0.0486 (0.0299)	0.0136 (0.0247)	0.0350 (0.0273)
<i>Household autonomy</i>	-0.0174 (0.0391)	0.0524 (0.0323)	-0.0349 (0.0357)
<i>Woman's view</i>	0.0253 (0.0275)	-0.0527** (0.0228)	0.0274 (0.0251)
<i>Political view</i>	-0.0008 (0.1384)	0.0819 (0.1145)	-0.0811 (0.1265)
<i>Influence</i>	-0.0538 (0.0413)	0.0276 (0.0342)	0.0262 (0.0377)
<i>GBV non-acceptance</i>	0.1913* (0.1026)	-0.2478*** (0.0849)	0.0565 (0.0937)
<i>Children's opinion</i>	0.1010* (0.0599)	-0.0429 (0.0496)	-0.0581 (0.0548)
<i>Sexual agency</i>	-0.0326 (0.0367)	0.0409 (0.0304)	-0.0083 (0.0335)
<i>n</i>	795	795	795
<i>F-test</i>	2.91***	4.64***	2.89***
<i>R<sup>2</sup></i>	6.32%	9.72%	6.28%

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.001$

In order to gain more clarity on what factors of empowerment actually impact my three groups, the empowerment index is collapsed to determine the effect of all 12 subcategories. 3 OLS regressions were ran to see how the 12 subcategories might influence a woman's employment type. In Table 6, for sheacoops, annual saving amount, and freedom and ability to spend, are significant at the 1% significance level. Savings is positive, signifying that women who save more are more likely to be in cooperatives. However, a one unit increase in a woman's ability to freely spend her own money means that she is 9% less likely to be part of a cooperative. Age, monthly income, and assets are also significant at a 5% significance level. Compared with other groups, cooperative members are younger than all entrepreneurs, and earn more money. Surprisingly, despite the

higher income, the results show that an increase in assets by 1 unit will lead to a decrease in the probability of cooperative membership by 8%. Both women's views on equality (with regards to children) and women's non-acceptance of domestic abuse/gender-based violence were found to be significant at the 10% significance level. Cooperative members are 19% more likely to refuse to accept gender-based violence, and a positive increase in a woman's views on equality amongst children also increases her probability of being in a cooperative by 10%.

For sheapreneurs, age, monthly income, assets, saving attitude, freedom and ability to spend, GBV non-acceptance and knowledge of spousal finances are all significant at the 1% significance level. Sheapreneurs are more likely to be older than their counterparts. With regards to finances, sheapreneurs earn less and are 7.8% less likely to own assets. As expected, they also save less than the other groups (significant at the 5% significance level). Despite their finances being lower, sheapreneurs are associated with a positive savings attitude. For women who choose to be sheapreneurs, the probability of saving increases by 6.5%, one's freedom to spend increases by 9.6%, and the probability that a woman has knowledge about her husband's finances increases by 11.4%. However, women who are 24.8% more likely to find gender based/domestic violence acceptable are Sheapreneurs. Indeed, our data showed that all Sheapreneurs found gender based violence to be acceptable in some form. Sheapreneurs are more likely to have fewer children than their counterparts and have more oppressive views on a woman's role in society (significant at the 5% significance level).

For the entrepreneurs, in Table 6, they are shown to save less and have a negative savings attitude (this is significant at the 1% and 5% significance level, respectively). Given that they save less, it

therefore makes sense that entrepreneurs are 16% more likely to have more assets than women in other groups (significant at the 1% level).

**Table 7. Logistic regression outputs-** evaluating how employment type influences aspects of empowerment

	<i>Sheacoop</i>	<i>Sheapreneur</i>	<i>Entrepreneur</i>
<i>Age</i>	-0.0216** (0.0095)	0.0524*** (0.0114)	-0.0166 (0.0103)
<i>Education</i>	-0.0222 (0.0232)	0.0279 (0.0280)	0.0080 (0.0247)
<i>Number of Children</i>	0.0779 (0.0486)	-0.1565** (0.0606)	0.0322 (0.0526)
<i>Property Ownership</i>	-0.1782 (0.1887)	0.0625 (0.2289)	0.1636 (0.2095)
<i>Monthly finance</i>	0.0002 (0.0003)	-0.0004 (0.0006)	-0.00003 (0.0003)
<i>Income</i>	0 (0.00002)	-0.00003 (0.00005)	0 (0.00002)
<i>Savings</i>	0.0010*** (0.0003)	-0.0006** (0.0003)	-0.0008*** (0.0003)
<i>Assets</i>	-0.3676** (0.1515)	-0.4638** (0.1868)	0.8048*** (0.1655)
<i>Savings attitude</i>	-0.1124 (0.1114)	0.4721*** (0.1430)	-0.1958 (0.1199)
<i>Freedom to spend</i>	-0.4030*** (0.1541)	0.5890*** (0.1878)	-0.0078 (0.1688)
<i>Spousal finance</i>	-0.3025 (0.2261)	0.6483** (0.2529)	-0.2270 (0.2587)
<i>Individual autonomy</i>	-0.2157* (0.1267)	0.0750 (0.1521)	0.1996 (0.1449)
<i>Household autonomy</i>	-0.0578 (0.1653)	0.3452* (0.2047)	-0.1838 (0.1818)
<i>Woman's view</i>	0.1050 (0.1165)	-0.2845** (0.1331)	0.1387 (0.1327)
<i>Political view</i>	-0.0276 (0.5802)	0.5240 (0.8299)	-0.3744 (0.5997)
<i>Influence</i>	-0.1951 (0.1757)	0.1531 (0.2117)	0.1194 (0.1923)
<i>GBV non-acceptance</i>	0.8543** (0.4367)	-	0.2180 (0.4427)

<i>Children' opinion</i>	0.4772* (0.2591)	-0.1979 (0.2903)	-0.3516 (0.2817)
<i>Sexual agency</i>	-0.1513 (0.1556)	0.2152 (0.1879)	-0.0379 (0.1717)
<i>n</i>	795	770	795
<i>X<sup>2</sup></i>	56.65***	79.87***	53.90***
<i>R<sup>2</sup></i>	5.15%	9.46%	5.58%

**Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.001$**

My logit results show something similar. In Table 7, the logit results of all three groups are compared. Very similar to my OLS regression, for cooperative members, annual saving amount and freedom and ability to spend are significant at the 1% level. With savings being positive and freedom to spend negative. Age, assets and non-acceptance of domestic abuse/gender-based violence are all significant at the 5% level. In the same direction as the OLS, a one unit increase in age leads to a 0.0216 decrease in the log-odds of a woman being in a sheacoop. A one unit increase in assets also leads to a 0.3676 decrease in the log-odds of a woman being in a sheacoop, and a one unit increase in a woman's refusal to accept domestic violence leads to a 0.8543 increase in the log-odds of a woman being in a sheacoop. Women's autonomy and women's views on equality (with regards to children) are significant at the 10% significance level. Whilst women's views on equality (with regards to children) are positive in comparison to other groups, their own autonomy decreases with their cooperative membership. So, from the empowerment categories, only 2 categories of empowerment significantly and positively influence a woman's decision to join a sheacoop. This is much less than expected.

With sheapreneurs, the results of the logit are parallel to my results in the OLS regression with the exception of monthly income which is still negative but not significant and GBV non acceptance

which is omitted by the model. My summaries indicated that all 183 sheapreneurs accepted gender-based violence and so received a score of 0. Age, saving attitude, and freedom and ability to spend are all significant at the 1% significance level. A one unit increase in age leads to a 0.0524 increase in the log-odds of a woman being a sheapreneur. So, sheapreneurs are more likely to be older than both sheacoops and entrepreneurs. A one unit increase in saving attitude and freedom to spend will lead to a 0.4721 and 0.5890 respective increase in the log-odds of a woman being a sheapreneur. Assets, number of children, knowledge of spousal finance and women's views on their role in society are significant at a 5% level. Women with fewer children and fewer assets are more likely to be sheapreneurs. Even though women who have an increased knowledge of their spouses' finances (signaling higher empowerment) are more likely to be sheapreneurs, these women are also more likely to have more oppressive views regarding their status in life. Although sheapreneurs had a higher empowerment index than sheacoops, for the empowerment categories, only 2 categories of empowerment significantly and positively influence a woman's decision to become a sheapreneur. Again, this is very small, and I expected it to be higher.

With entrepreneurs, they save less but have more assets than other groups (both significant at the 1% level). A one unit increase in savings leads to a 0.0008 decrease in the log odds of a woman being an entrepreneur, and a unit increase in assets leads to a 0.8048 increase in the log odds of a woman being an entrepreneur. Saving attitude is not statistically significant in the logit for entrepreneurs but it is still negative, and it can be inferred that perhaps entrepreneurs are more likely to buy assets and less likely to save because they have a more negative saving attitude.

Finally, I evaluate the empowerment index and the sub-categories using the multinomial logit. My analysis will focus on the results of the multinomial logit regression because this captures the results of each group, compared to another. For ease of understanding, I will discuss only the categories that were statistically significant and what they mean in terms of direction.



**Table 8: Multinomial logistic regression outputs**

	<i>Base = Sheacoop</i>		<i>Base = Sheapreneur</i>		<i>Base = Entrepreneur</i>	
	<b>Sheapreneur</b>	<b>Entrepreneur</b>	<b>Sheacoop</b>	<b>Entrepreneur</b>	<b>Sheacoop</b>	<b>Sheapreneur</b>
<i>Age</i>	0.0522*** (0.0122)	-0.0003 (0.112)	-0.0521*** (0.0122)	-0.0525*** (0.0133)	0.0003 (0.0112)	0.0525*** (0.0133)
<i>Education</i>	0.0349 (0.03)	0.0175 (0.0265)	-0.0349 (0.0300)	-0.0174 (0.0320)	-0.0175 (0.0265)	0.0174 (0.0320)
<i>Number of Children</i>	-0.1628** (0.0642)	-0.0171 (0.0560)	0.1628** (0.0642)	0.1456** (0.0696)	0.0171 (0.0560)	-0.1456** (0.0696)
<i>Property Ownership</i>	0.1350 (0.2425)	0.2060 (0.2224)	-0.1350 (0.2425)	0.0710 (0.2689)	-0.2060 (0.2224)	-0.0710 (0.2689)
<i>Monthly finance</i>	-0.0008*** (0.0003)	-0.00006 (0.0001)	0.0008*** (0.0003)	0.0007** (0.0003)	0.00006 (0.0001)	-0.0007** (0.0003)
<i>Savings</i>	-0.0009*** (0.0003)	-0.0011*** (0.0003)	0.0009*** (0.0003)	-0.0002 (0.0004)	0.0011*** (0.0003)	0.0002 (0.0004)
<i>Assets</i>	-0.1717 (0.1997)	0.7417*** (0.1767)	0.1717 (0.1997)	0.9134*** (0.2160)	-0.7417*** (0.1767)	-0.9134*** (0.2160)
<i>Savings attitude</i>	0.4247*** (0.1519)	-0.0712 (0.1278)	-0.4247*** (0.1519)	-0.4959*** (0.1628)	0.0712 (0.1278)	0.4959*** (0.1628)
<i>Freedom to spend</i>	0.6705*** (0.1995)	0.2066 (0.1803)	-0.6705*** (0.1995)	-0.4638** (0.2187)	-0.2066 (0.1803)	0.4638** (0.2187)
<i>Spousal finance</i>	0.6444** (0.2720)	-0.0058 (0.2798)	-0.6444** (0.2720)	-0.6502** (0.3094)	0.0058 (0.2798)	0.6502** (0.3094)
<i>Individual autonomy</i>	0.1609 (0.1606)	0.2570* (0.1528)	-0.1609 (0.1606)	0.0961 (0.1832)	-0.2570* (0.1528)	-0.0961 (0.1832)

<i>Household autonomy</i>	0.3182 (0.2166)	-0.1009 (0.1933)	-0.3182 (0.2166)	-0.4191* (0.2376)	0.1009 (0.1933)	0.4191* (0.2376)
<i>Woman's view</i>	-0.2652* (0.1426)	0.0404 (0.1429)	0.2652* (0.1426)	0.3057* (0.1616)	-0.0404 (0.1429)	-0.3057* (0.1616)
<i>Political view</i>	0.4455 (0.8766)	-0.2375 (0.6334)	-0.4455 (0.8766)	-0.6830 (0.9034)	0.2375 (0.6334)	0.6830 (0.9034)
<i>Influence</i>	0.2176 (0.2254)	0.1862 (0.2057)	-0.2176 (0.2254)	-0.0314 (0.2468)	-0.1862 (0.2057)	0.0314 (0.2468)
<i>GBV non-acceptance</i>	-15.0066 (545.8293)	-0.2680 (0.4464)	15.0066 (545.8293)	14.7386 (545.8293)	0.2680 (0.4464)	-14.7386 (545.8293)
<i>Children's opinion</i>	-0.3867 (0.3153)	-0.5100* (0.3076)	0.3867 (0.3153)	-0.1234 (0.3442)	0.5100* (0.3076)	0.1234 (0.3442)
<i>Sexual agency</i>	0.2328 (0.2)	0.0535 (0.1830)	-0.2328 (0.2)	-0.1793 (0.2202)	-0.0535 (0.1830)	0.1793 (0.2202)
<i>n</i>	795		795		795	
<i>X<sup>2</sup></i>	140.19***		140.19***		140.19***	
<i>R<sup>2</sup></i>	8.38%		8.38%		8.38%	

Note: \* denotes  $p < 0.1$ , \*\* denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.001$

In Table 8, when sheapreneurs are compared with cooperative members, age, monthly income, annual saving amount, saving attitude and freedom to spend are significant at the 1% significance level. Sheapreneurs are more likely to be older than cooperative members. At the same time, compared to cooperative members, sheapreneurs make less, save less and have fewer assets. Despite having fewer assets, sheapreneurs are more likely to have more freedom when it comes to spending their own income than sheacoops, signifying that they might use their income for things other than buying new assets. Their saving attitude compared to cooperative members is also positive, signaling that they might be able to save more than cooperative members if they had higher incomes. Children, spousal finance and views on women's role in society are also statistically significant at the 5% significance level. Sheapreneurs are likely to have fewer children than cooperative members, and more likely to have some knowledge about their spouses' finances. These are two positive signs of empowerment. At the same time, when it comes to how sheapreneurs view the role that women play in society, their views are more regressive than the views shared by cooperative members. These results are the same as that in table 6 in the OLS regression.

It must be noted that many of the major drivers of empowerment were not found to be statistically significant in all of the regressions. Despite the stark difference in mean income noticed earlier, only 7 out of the 18 categories to be significant, and of those that directly measured empowerment, only 3 out of 12 were found to be positive and significant. This means that only 3 empowerment indices directly impact a woman's choice to be a sheapreneur, over a sheacoop. This is not strong enough. I expected to find very sharp differences in empowerment statistics between sheapreneurs and cooperative members, especially due to the significant difference in income. Research has

shown that higher incomes are associated with higher empowerment for women, thus I expected women in cooperatives to exhibit this. However, I do not see that income has any strong effect on empowerment, and what I do see is that a woman's empowerment level does not significantly affect her choice of employment as much as one would expect.

Column 2 also compares entrepreneurs to the cooperative members. For entrepreneurs, saving amount and assets were significant at the 1% significance level. When compared to cooperative members, entrepreneurs save less each year. However, unlike sheapreneurs who also save less than cooperative members, entrepreneurs have more assets than cooperative members. Entrepreneurs were also found to be more likely to have higher personal autonomy, but more regressive views regarding equality of children. These were both significant at the 10% significance level.

When the two entrepreneurial groups are compared to the employed group, there are not many correlations amongst both groups especially with regards to their empowerment statistics. On finances, entrepreneurs as a group (both sheapreneur and entrepreneur) earn less and save less than employed women. However, with the measurements of empowerment, there is no clear pattern between the two entrepreneurial groups to signify that they behave in a specific way due to their employment type.

Column 3 looks at the ratio between cooperative members and sheapreneurs, and entrepreneurs and sheapreneurs. The relationship that sheapreneurs have with cooperative members has been previously analyzed, and the second regression shows the same results.

When the performance of entrepreneurs is evaluated, compared to sheapreneurs in column 4, age, assets, and saving attitude are statistically significant at the 1% significance level. Entrepreneurs are more likely to be younger than sheapreneurs. As noted earlier, entrepreneurs also have more assets than sheapreneurs but a negative saving attitude when compared to sheapreneurs. Entrepreneurs earn more than sheapreneurs but have less freedom when it comes to spending their income and these are significant at the 5% level. Though they earn more, entrepreneurs save less than sheapreneurs. This is not statistically significant, but might be due to their lack of control over the spending of their income. The probability that an entrepreneur has information about their spouse's income is also lower than it is for sheapreneurs. This is statistically significant at the 5% level. Thus, compared to sheapreneurs, it seems though entrepreneurs earn more, they are less empowered when it comes to control over their own money and knowledge of household income. Entrepreneurs are more likely to have more children than sheapreneurs. Entrepreneurial women also have more positive outtakes on leadership and power for women (women's views) but lower household autonomy than sheapreneurs, both significant at the 10% level. In this regression, there are clearly some significant differences between the entrepreneur and sheapreneur.

In column 5, the outcomes of the sheacoop group are compared to the entrepreneur group (base). Column 5 also compares sheapreneurs to entrepreneurs as a base, but those results were previously discussed in column 2. This regression also gives us the chance to look at whether there are similarities between how the shea sector as a whole, compares to the non shea sector. Comparing cooperative members to entrepreneurs, the saving amount and assets are significant at the 1% level. Women in cooperatives save the most and save more than entrepreneurs, but have fewer assets (entrepreneurs have the most assets amongst all three groups). Women's autonomy and opinions

on equality among children are significant at the 10% level. When it comes to their own autonomy, women in cooperatives have lower personal autonomy than entrepreneurs, but at the same time have more empowered views about their children's equality, which at least is a positive sign for the future generation.

Looking at how the shea industry might compare to other industries, when both sheacoops and sheapreneurs are compared to entrepreneurs, the two groups have quite a few similarities. 10 out of the 18 categories have coefficients in the same direction. However, not all of these are statistically significant. Women in the shea industry own less property and have fewer assets than women outside the industry. However, they are more likely to also save more, and have a more positive saving attitude than women outside the shea industry. Women in the shea industry are more likely to have knowledge about their spouses' finances. However, they are also more likely to have less personal autonomy, but more household autonomy, than entrepreneurs. This may be explained by the fact that these women make more decisions at home, but personally still feel that men should have more autonomy than women. Indeed, the negative coefficients on women's views buttresses this point. When it comes to political views, women in the shea industry have higher positive political views, signaling that they are more likely to vote, more likely to be politically informed and also more likely to believe that their voices can influence the politics of the nation. Finally, women in the industry also have more empowered opinions when it comes to equality among young children and the way they should be treated. These categories are quite important, however, as mentioned, not all of them are significant across groups, and not all of them signify higher empowerment. So, it cannot be concluded that women in the shea industry are more empowered than those in other industries.

## **Conclusion and Discussion**

From my data, it is difficult to make a general conclusion about each group. Whilst women in each group were empowered in some ways and disempowered in others, I did not have strong results to show that one group was more strongly empowered than another. The mean empowerment scores of the three groups were very similar and differed by not more than two points across the groups. Both the difference in means and OLS results show that women in sheacoops are surprisingly the least empowered, followed by sheapreneurs and then entrepreneurs, who are the most empowered. When I deconstructed the index to look at how the differing empowerment categories impact employment, I found that for all three employment types, only two or three empowerment categories were both positive and significant. This means that only two or three empowerment statistics influenced a woman's employment decision. Given that there were 12 categories in total, I note two things: firstly, it is difficult to conclude that empowerment has any effect on employment choice, and secondly, the empowerment of the women in these groups is extremely low.

What this indicates is that there are stronger driving factors, other than empowerment level, that affect women's choice of employment across industries, and within the shea butter industry. In this circumstance, I believe that the dominant force may be culture, especially given that all three groups of women come from the same area and region, which is traditionally known to be a very patriarchal society.

In my multinomial logit results, I did find similarities among groups and areas where they seemed to be aligned or opposing in empowerment statistics. However, the evidence was not strong enough

to conclude that a woman's level of empowerment can affect her choice of employment. Deconstructing the index, however, allowed us to point to certain categories that in fact impacted choice of employment type or industry, and this will be helpful for future research. This is especially so with regards to focus areas that must be addressed in order to help increase women's empowerment.

For example, with regards to domestic abuse, when I deconstructed the index, I found that only 15 cooperative members and 10 entrepreneurs found violence to be non-acceptable. All sheapreneurs thought gender-based violence was acceptable under certain conditions, and so did the other 362 sheacoops and 225 entrepreneurs. The fact that only 3.14% of my entire sample found domestic violence to be unacceptable is concerning, but also points to the fact that there are other factors at play. Perhaps culture, the patriarchy, deference to traditional roles, and deference to the status quo have prevented women from becoming fully empowered, despite the apparent empowerment that women who choose to work in the shea industry, for example, have.

In conclusion, I find that despite the fact that most women in shea butter cooperatives reported that they had benefited greatly from the cooperative, and that the cooperative helped their households gain access to different services, there is no evidence to show that this knowledge encouraged them to make an empowered decision to join the shea cooperatives. This also leads us to conclude that increased access to certain benefits, or even a desire for increased access, does not signify that a woman views herself as having agency, nor does it signify that she is more empowered than her counterparts without access. Perhaps the shea industry and shea cooperatives do not necessarily appeal to women who are more empowered than their counterparts. It is clear that when it comes



to finances, women in shea cooperatives also strongly benefit from their cooperatives and have a much higher average income than the other groups. Since my research showed that they were the least empowered group, I can also conclude that higher income within an employment type or industry does not necessarily signify greater empowerment.

For further research, it would be good to also look at endogeneity issues. Though I have shown that empowerment itself does not explain the decision to become an entrepreneur or cooperative member, one could raise the question that perhaps, employment type rather affects how empowered a woman is. I looked at this briefly in my process (see annex), but also found that employment type did not have a significant impact on a woman's level of empowerment.

Above all, it is important to note that empowerment is a state of mind. A woman with fantastic employment and an extremely high income might still be disempowered if she does not see her value and importance in the world. Cultural forces remain strong in oppressing or disempowering women in this region, and this has to be addressed seriously. Indeed, women in my sample had an average of two years of education, in total. This is something that will also have to be addressed, as cultural barriers can be removed, and ways of thinking can be shaped, with an education.

On the policy implications, we note that though women in certain employment sectors are not necessarily more empowered than others, there is a large financial gap between the groups. Women in cooperatives made more than two times (2.8 times) the income that shea butter entrepreneurs made, and also make more than entrepreneurs (1.3 times more). This is key to policy makers because we know that higher incomes in general lead to even higher output and more growth for

communities and women who make more money will save more and invest more in their families and economies. The key difference we find between our groups is that women in cooperatives are able to trade and sell their goods on a global and regional market. Thus, policy makers have to look at how to integrate women who trade into global and regional value chains. This is essential to an economy and to global growth. McKinsey in a 2015 study found that advancing women's equality would lead to a \$12 trillion increase in annual global growth. In a full potential scenario this would be a \$28 trillion increase. Thus, trade is important, and this study also shows how involving women in trade can significantly benefit them and benefit the economy.

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## **APPENDIX**

### Appendix 1. Household Survey

**Participant ID :** \_\_\_\_\_

1. Date (M/D/Y): \_\_\_\_\_
2. Name: \_\_\_\_\_
3. Age (Birth date): \_\_\_\_\_
4. Village name: \_\_\_\_\_
5. Occupation: \_\_\_\_\_
6. Are you a member of a shea butter cooperative?  
YES \_\_\_\_\_ NO \_\_\_\_\_
7. If no, please skip to question 9.
8. Name of Cooperative: \_\_\_\_\_
9. What year did you join the cooperative? YEAR: \_\_\_\_\_
10. Has anyone else in your family sold shea butter?
11. What is the main benefit from joining this cooperative?
  - a. Increases my finances
  - b. Improves my household's access to services
  - c. Benefits the community
  - d. Helps me take care of my family
  - e. Sense of fulfillment
  - f. Other (specify) \_\_\_\_\_
12. Does the cooperative help your household get access to any of the following services?
  - a. Education or Training
  - b. Health services
  - c. Water supply or sanitation
  - d. Technological input\* - helping them use phones, save money on Momo etc.?
  - e. Other (specify) \_\_\_\_\_

### **DEMOGRAPHIC AND HOUSEHOLD INFORMATION**

13. How many years did you go to school for? /Education level
14. How many children do you have?
15. How many girls?
16. How many boys?
17. Are they receiving an education?
  - a. If yes, what level of education?
    - i. Primary school
    - ii. SHS - Senior High School
    - iii. Tertiary education \_\_\_\_\_
18. Are you married?
19. Are you divorced, widowed or separated?
20. What is your husband's occupation?

21. Do you help him in his work?
  - a. 1 = yes
  - b. 2 = no
22. What religion do you practice?
23. Do you live in a cement house or mud house?
24. Do you own your home? Are you renting or living with a family member?
  - a. 1 = own
  - b. 2 = rent
  - c. 3 = living with family
25. How many people live in your household?
26. How far is the nearest shea butter cooperative from you?
27. How far away is your home from Tamale Market?
28. What mode of transport do you normally use?
29. Do you have access to the following utilities/assets?
  - a. 1=Mobile phone
  - b. 2= Electricity
  - c. 3=Toilet and running water
  - d. 4=Motorcycle
  - e. 5=Bicycle
  - f. 6=Car
  - g. 7=Gas stove
  - h. 8=Radio
  - i. 9= Television

## **FINANCIAL INFORMATION**

30. How much money did you make in 2019?
31. About how much money do you make every month?/ What are the ranges?
32. Were you able to save in 2019?
33. How much money were you able to save?
34. How often do you save?
  - a. 1= regularly
  - b. 2= sometimes
  - c. 3= rarely
  - d. 4= never
  - e. 99= don't know
35. What is your main method of saving?/where do you put your money?
  - a. Bank
  - b. Keep the money at home
  - c. Mobile money/mobile banking
  - d. VSLA - Village Savings/Loans Account
36. Do you have a mobile money account?
37. How do you use the money you save?/how have you used the money you have saved in the past? (multiple options allowed)
  - a. To start a new business
  - b. To expand a relatives business
  - c. Given to husband/partner

- d. For personal education
  - e. For your marriage
  - f. For family members marriage
  - g. For household use - food, repair etc.
  - h. For children's education
  - i. For medication or hospital bills
  - j. For family medication or hospital bills
  - k. For travel
  - l. I never use my savings
  - m. For jewelry
  - n. To repay borrowed money
  - o. Other
38. Can you choose to spend your money anyway you want? enumerator should listen and then tick) is it her own choice?
- a. 1= yes, all or most
  - b. 2= no, none or only some
39. Did you take out a loan in 2019?
40. How much money did you borrow?
41. Where did you get your loan from?
- a. Local bank
  - b. Informal credit
  - c. Micro finance scheme
42. What did the borrowed money go towards?
- a. To start a personal business
  - b. For your husband's family
  - c. For your own marriage
  - d. For family members marriage
  - e. For Household repairs
  - f. Emergency use
  - g. Children's education
  - h. Household
  - i. Travel
  - j. Medical expenses
  - k. To repay a loan
  - l. To Buy jewelry/clothes etc.
  - m. To buy land
  - n. Other business
43. Is saving a priority to you?
- a. 1= yes
  - b. 2 = No
  - c. 99= Don't know
44. Do you know how much your spouse makes?
45. How much does your spouse make?



## **Decision Making**

46. Does your husband do any of the following at home? Culturally, this might not work
- Cooking
  - Collecting water
  - Cleaning the home
  - Washing clothes
  - Looking after children or parents
  - Gathering firewood
  - Buy food from the market
  - None
47. What other businesses are you involved in?
48. How much money do you obtain from your other businesses a year/month?
49. If the person has no other businesses, ask - are you planning to start something on the side in the next 3 years?
- 1=Yes
  - 2=No
50. Now we will read you a short description of a family. We will ask you a couple of questions about what you think the parents should have done. There are no 'right' or 'wrong' answers. Please answer each in terms of your own reactions. Amina, a 21-year-old girl, belongs to a village in Bandisuglo. Since childhood, she has wanted to become a police officer. After graduating from college, she takes the Tamale police examination and is offered a job as a police officer. Her parents are worried about her job as they think that is not suitable for a woman. They also believe that it is her age to get married and they have found a prospective groom for her from a good family. Amina, however, wants to take up the job and does not wish to get married. According to her parents, Amina would not need to work after she gets married as her husband will take care of her. Amina should instead focus on household work, help out her mother-in-law and eventually have children. Finally, her parents decide that instead of taking up the job, she should get married. Do you agree with the parents' decisions?
- 1= yes
  - 0= no
51. What would you have done if you were Amina?
- 1=Readily agree with decision
  - 2=Disagree, but keep quiet
  - 3=Negotiate with the parents
  - 4=Work and then get married
  - 5=Work after marriage
  - 6=Refuse to get married
  - 999=Don't know

52. If a wife has earned some money, does she have the right to buy clothing for herself or her children without asking the permission of her husband?
- 1=Yes
  - 2=No
  - 3= Don't know
53. Who makes most decisions about what food items to purchase?
54. Who makes most decisions about what educational expenditures to make, such as tuition, uniforms, etc.?
55. Who makes most decisions about buying items like TV, Fridge, bicycles etc.?  
(TV, fridge, tape recorder, etc.)?
56. Who makes most decisions about what health expenditures to make?
57. To your knowledge, did you have other proposals prior to this one?
- 1 = yes
  - 2= no
58. Did you have the ability to refuse any of these marriage proposals that came by?
- 1 = yes
  - 2= no
59. To what degree do you agree with these statements?
- 1=Strongly agree
  - 2=Agree
  - 3=Disagree
  - 4=Strongly disagree
  - 5=Not applicable
- Men and women should be treated equally
  - A wife should obey her husband, even if she disagrees.
  - It is important for a man to show his wife/partner who is the boss
  - Only men can be leaders (e.g. president, MP etc.) not women
  - A woman should be able to choose her own friends, even if her husband disapproves - strike out
  - If a woman has power in the household, it means she is taking power away from her husband - strike out
  - A husband and wife can share power
  - Women's opinions are important and should always be considered when household decisions are made

### **Political views**

60. Do you plan to vote in this election?
- 1= yes
  - 2 = no
61. What is the name of the President of Ghana?
- 1= Correct
  - 2= wrong

- c. 3= don't know
62. How often do you follow politics in the news (on the radio, television, or in the newspapers)?
- a. 1=Every day
  - b. 2=Several times a week
  - c. 3=Once or twice a month
  - d. 4=Once or twice a year
  - e. 5=Never
63. Which of the following statements do you agree with?
- a. Women should have the same chance of being elected to political office as men;
  - b. Men make better leaders than women, and should be elected rather than women.
    - i. 1=Very strongly agree with
    - ii. 2=Somewhat agree with
    - iii. 3=Somewhat disagree with
    - iv. 4=Very strongly disagree with
64. Please answer the following questions:
- a. If I disagree with something the community leader is doing or saying, I keep quiet.
    - i. 1=Always true
    - ii. 2=Generally true
    - iii. 3=Sometimes true
    - iv. 4=Rarely true
    - v. 5=Never true
  - b. Do you feel that you can generally change things in your community if you want to?
    - i. 1=Yes, very easily
    - ii. 2=Yes, fairly easily
    - iii. 3=Yes, but with a little difficulty
    - iv. 4=Yes, but with a great deal of difficulty
    - v. 5=No, not at all

### **Domestic Violence**

65. In some of the other villages we have visited, (some) people think that a man has good reason to hit his wife if she disobeys him, while (other) people in those communities do not think this is a good reason to hit one's wife. Do people in your community think a man has a good reason to hit his wife if she disobeys him? (that is if she refuses to have sex, if she asks him for money when he is broke, or if she hangs out with friends he does not approve of)
- a. 1=Yes
  - b. 2=No
  - c. 3=sometimes
66. In your opinion, does a man have a good reason to beat his wife if she disobeys him?

- a. 1=Yes
  - b. 2=No
  - c. 3=sometimes
67. Suppose a man beats his wife almost every evening. Do you think other people should intervene or should they wait for the situation to improve on its own?
- a. 1= No - wait
  - b. 2=Yes Intervene
68. Do you think your partner treats you well?
- a. 1=Yes
  - b. 2=No
  - c. 3=Don't know

### **QUESTIONS ON GENDER AND CHILDREN**

69. It is better to be a man than to be a woman?
- a. 1= Yes
  - b. 2= No
70. Boys should be allowed to get more opportunities and resources for education than girls.
- a. 1= Yes
  - b. 0= No
71. Boys should be fed first and given more food compared to girls.
- a. 1= Yes
  - b. 0= No
72. Your sons should be given more money than your daughters
- a. 1= Yes
  - b. 0= No

### **HEALTH**

73. Who decides how many children to have?
74. Do you and your husband use family planning to prevent pregnancy?
- a. 1=Yes
  - b. 0=No
75. What sort of family planning do you use?
- a. 1=Pills
  - b. 2=Monthly injection
  - c. 5=Condom
  - d. 6=IUD/AKDR/spiral
  - e. 7=Norplant/Implant/Susuk KB
  - f. 8=Female sterilization/tubal ligation
  - g. 9=Male sterilization/vasectomy
  - h. 10=Periodical abstinence
  - i. 11=Coitus interruptus
  - j. 12=Traditional herbs
  - k. 13=Traditional massage

1. 95=Other

76. Can you say no to your partner if you do not want to have sexual intercourse?

- a. 1= yes
- b. 2= no
- c. 3 =sometimes

77. With regards to your health, how do you feel in general?

- a. 1= well
- b. 2= alright
- c. 3= tired/weak
- d. 4= sick
- e. 5 = extremely sick

## Appendix 2.– *Principal Component Analysis of 41 Empowerment Variables*

Principal components/correlation      Number of obs      =      795  
    Number of comp.      =      41  
    Trace      =      41  
 Rotation: (unrotated = principal)      Rho      =      1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	3.71724	.985194	0.0907	0.0907
Comp2	2.73205	.311778	0.0666	0.1573
Comp3	2.42027	.437425	0.0590	0.2163
Comp4	1.98285	.338149	0.0484	0.2647
Comp5	1.6447	.0991337	0.0401	0.3048
Comp6	1.54556	.156251	0.0377	0.3425
Comp7	1.38931	.0783349	0.0339	0.3764
Comp8	1.31098	.125804	0.0320	0.4084
Comp9	1.18518	.0643021	0.0289	0.4373
Comp10	1.12087	.00582346	0.0273	0.4646
Comp11	1.11505	.0249073	0.0272	0.4918
Comp12	1.09014	.00706516	0.0266	0.5184
Comp13	1.08308	.0641751	0.0264	0.5448
Comp14	1.0189	.0329014	0.0249	0.5697
Comp15	.986	.012784	0.0240	0.5937
Comp16	.973216	.0391388	0.0237	0.6174
Comp17	.934078	.0353504	0.0228	0.6402
Comp18	.898727	.0154827	0.0219	0.6622
Comp19	.883245	.017018	0.0215	0.6837
Comp20	.866227	.0596302	0.0211	0.7048
Comp21	.806596	.0107779	0.0197	0.7245
Comp22	.795818	.0181602	0.0194	0.7439
Comp23	.777658	.0164033	0.0190	0.7629
Comp24	.761255	.0161833	0.0186	0.7814
Comp25	.745072	.0409844	0.0182	0.7996
Comp26	.704087	.00193269	0.0172	0.8168
Comp27	.702155	.00759507	0.0171	0.8339
Comp28	.694559	.0339407	0.0169	0.8509
Comp29	.660619	.0662254	0.0161	0.8670
Comp30	.594393	.0116253	0.0145	0.8815
Comp31	.582768	.00873178	0.0142	0.8957
Comp32	.574036	.0441411	0.0140	0.9097
Comp33	.529895	.0271061	0.0129	0.9226
Comp34	.502789	.00644393	0.0123	0.9349
Comp35	.496345	.0668756	0.0121	0.9470
Comp36	.42947	.00356588	0.0105	0.9574
Comp37	.425904	.0138921	0.0104	0.9678
Comp38	.412012	.0388752	0.0100	0.9779
Comp39	.373136	.0383755	0.0091	0.9870
Comp40	.334761	.13577	0.0082	0.9951
Comp41	.19899	.	0.0049	1.0000

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9	Comp10	Comp11	Comp12	Comp13	Comp14	Comp15	Comp16	Comp17	Comp18	Comp19	Comp20	Comp21	Comp22	Comp23
utilityacc-1	0.0449	0.0450	0.0913	0.2612	-0.0065	-0.1640	0.0694	0.1394	-0.1876	0.3946	0.2412	0.1823	0.1458	-0.1226	-0.0919	0.0891	-0.1595	-0.3739	-0.0445	0.1086	0.0874	-0.0826	-0.0381
utilityacc-2	0.0059	0.0049	0.1101	0.1889	-0.1790	0.1320	-0.3095	0.0272	0.1152	0.0867	-0.1412	-0.1826	0.0982	-0.2582	0.1776	0.0877	-0.3319	0.4723	-0.2085	-0.1527	0.1851	0.2176	-0.1329
utilityacc-3	-0.0223	0.1238	0.1207	0.3617	-0.2747	-0.1336	0.3558	-0.1512	-0.0191	-0.1253	-0.3525	0.0092	0.0046	0.0675	-0.1496	-0.2416	0.0695	0.1553	0.1460	0.2372	-0.2687	0.2192	0.2648
utilityacc-4	-0.0079	0.1102	0.1114	0.3617	-0.2747	-0.1336	0.3558	-0.1512	-0.0191	-0.1253	-0.3525	0.0092	0.0046	0.0675	-0.1496	-0.2416	0.0695	0.1553	0.1460	0.2372	-0.2687	0.2192	0.2648
utilityacc-5	0.0662	0.1806	0.0735	0.0752	-0.0053	0.1806	-0.0788	0.0029	0.1810	-0.2994	0.1753	0.1884	-0.1437	-0.2008	0.1364	-0.2898	-0.3277	-0.2830	-0.0810	0.3096	0.1261	0.0186	-0.0256
utilityacc-6	-0.0350	0.0497	0.0260	0.0405	-0.2366	0.1060	0.0075	-0.0905	0.2720	-0.0905	0.1664	-0.0477	0.2293	-0.1563	0.4611	0.0909	0.5222	-0.1918	-0.1700	0.0260	0.1356	0.0402	-0.0214
utilityacc-7	-0.0147	0.0435	0.0666	0.1470	-0.1270	0.0622	0.0506	0.0562	-0.2414	-0.0212	0.0545	0.3733	0.0083	0.0669	0.3169	-0.4320	-0.0429	0.0676	-0.1180	-0.0467	0.0669	-0.0531	-0.3493
utilityacc-8	0.0448	0.1274	0.2099	0.2233	-0.0228	0.0552	0.1545	0.0895	0.3641	0.0411	0.0358	0.0924	-0.1325	-0.0950	-0.2238	-0.1435	0.0158	-0.1426	0.0481	-0.2371	0.1947	-0.2159	0.1877
utilityacc-9	0.0315	0.1401	0.1710	0.3538	-0.3265	0.0005	0.1258	-0.0467	-0.0090	0.0824	-0.0219	-0.1375	0.0527	-0.0438	-0.0505	0.1418	-0.0879	-0.0170	-0.0823	0.0549	-0.1228	-0.0871	0.0871
utilityacc-10	-0.0185	0.1116	-0.1302	0.2847	0.0780	-0.1755	0.1283	-0.0678	0.2612	-0.2996	0.1801	-0.0862	0.0544	-0.0392	-0.0183	0.0609	0.1578	0.0839	0.2475	0.0802	0.2629	0.3763	0.0339
savingmethod	-0.0292	-0.0232	-0.0092	0.3482	-0.0383	0.1816	0.0259	0.0961	0.0762	0.1277	-0.0994	0.0510	0.0804	-0.1061	0.1046	-0.0567	-0.0276	0.0932	0.0125	-0.1071	-0.1418	0.0441	0.0388
saving	-0.0671	-0.1037	-0.2701	0.1436	0.1251	0.3880	0.2091	-0.0018	0.1192	-0.0040	0.0291	-0.0187	-0.0173	-0.1002	-0.0326	-0.0364	0.0215	0.0015	-0.0237	-0.0806	-0.1282	0.0595	-0.0012
savingprio-1	0.1026	0.0091	-0.0607	0.0742	0.1050	0.4495	0.2787	-0.2323	-0.1229	0.0848	0.0666	-0.0251	-0.0013	-0.0551	-0.1309	-0.1000	0.1441	0.1743	-0.0814	0.0498	0.0380	-0.0932	-0.1233
spendingch-1	0.1494	0.2958	0.1909	0.0227	0.3263	-0.0668	-0.0114	-0.1456	-0.1238	-0.0183	0.0568	-0.0640	-0.0289	0.0853	-0.0112	0.0329	0.0378	-0.0263	-0.1306	-0.0608	-0.0282	0.0402	0.0402
spendingch-2	-0.0636	-0.1958	0.0008	-0.1208	-0.3829	0.1843	0.2232	0.1321	-0.0579	0.3078	0.1822	0.0258	0.1823	-0.2036	-0.0947	-0.1299	-0.0808	0.0441	0.1702	0.2253	-0.0924	0.2611	-0.1059
spousalfin-e	-0.1273	-0.1536	0.1374	0.0173	0.1833	0.1338	-0.0737	0.0805	0.1249	-0.0937	-0.0493	0.1911	-0.2425	0.0468	-0.1392	0.2754	-0.0093	0.0478	0.2173	0.2775	0.3998	-0.0302	-0.2769
girlshdwork	-0.2118	-0.0153	0.0768	-0.0532	-0.1618	0.1630	0.0282	-0.0044	0.0391	-0.1859	0.2849	-0.0489	-0.1826	-0.0433	-0.1787	0.0778	-0.0963	0.2348	-0.1450	-0.2069	-0.0830	-0.0499	0.1956
marriage_w-3	0.0738	0.0743	0.2959	-0.1458	0.1373	0.1105	0.2958	0.1813	-0.0868	-0.1057	0.0616	-0.3890	-0.0566	-0.0519	0.1081	-0.1577	-0.1226	0.1644	0.0751	-0.0560	0.1119	0.0486	0.0503
marriage_w-4	0.0933	-0.0059	0.1681	0.1399	-0.0221	0.3465	-0.4544	0.1095	-0.0012	0.0469	0.0610	0.0456	0.0615	0.1134	-0.0762	0.0694	0.2134	-0.0658	0.1231	0.0301	-0.1940	0.1190	0.0703
marriage_w-5	0.0152	-0.0042	0.0079	-0.0904	0.0022	-0.0813	0.3924	-0.3455	0.2122	0.1869	-0.1174	0.1647	0.0235	0.1416	0.3466	0.2916	-0.2290	0.0301	0.1110	-0.0192	-0.0918	0.0212	0.0291
marriage_w-6	0.0015	0.0000	-0.2977	-0.1255	0.0394	-0.2479	-0.0241	-0.2270	0.0060	-0.1041	0.2163	0.2006	0.1148	-0.2115	-0.1797	0.0265	0.0025	-0.2481	-0.1662	0.1052	0.0020	-0.1680	0.0240
household-1	0.0522	-0.0045	-0.1289	-0.0473	0.0161	-0.0183	-0.0384	-0.0430	0.0100	-0.0690	-0.1729	-0.1179	-0.1161	-0.0438	-0.1275	-0.1599	-0.0057	-0.0835	-0.0051	-0.1044	0.0480	0.0520	0.2102
equality	0.0637	0.1687	-0.1943	-0.0133	-0.0192	0.0826	0.0925	0.3143	0.0852	0.2102	0.0423	0.0466	-0.0774	0.1770	0.0513	0.0661	0.0176	0.2538	-0.2054	0.4526	0.1410	-0.1456	0.4148
obedience	-0.0053	-0.2646	0.1559	0.0499	-0.0132	-0.2265	0.2028	0.2630	0.1547	0.0436	-0.1451	0.1110	-0.0916	0.0506	-0.1439	-0.0363	0.2696	0.1089	-0.0983	-0.0899	0.1005	0.0817	-0.0235
dominance	0.1712	0.1695	0.3650	-0.0769	0.0928	0.0075	-0.0740	-0.1795	-0.1167	0.2420	0.0550	0.1055	-0.0395	0.0017	0.0605	-0.0716	0.1594	0.0031	0.0342	0.0195	-0.0293	0.0095	0.2740
leadership	0.3456	-0.0635	-0.0743	0.1117	0.0756	-0.0074	0.0034	0.0638	0.1094	0.1023	-0.0662	-0.1576	-0.0077	0.1513	-0.0075	-0.0272	0.1239	0.1329	0.0015	-0.0796	0.0354	0.1738	-0.1404
sharedpower	0.0595	0.2965	-0.2560	0.0310	-0.0462	0.0592	0.0411	-0.1461	-0.1396	0.0154	-0.0018	-0.0163	-0.1373	0.0345	0.0353	0.1077	0.0057	0.1710	0.1722	-0.0560	-0.1184	-0.0608	-0.1230
impoinsions	-0.0052	0.1143	-0.0951	0.0128	-0.0826	-0.1002	0.0289	0.1564	0.1020	0.0188	0.2920	0.1800	-0.6200	-0.0502	0.1323	0.1373	-0.0079	-0.0319	0.0255	-0.1629	-0.2248	0.4056	0.0205
voting	0.0111	0.0765	-0.0071	-0.0793	0.0097	0.2577	0.2195	0.2066	-0.0137	-0.2836	-0.0045	0.1077	-0.1535	0.1208	-0.1072	0.3288	-0.0557	-0.2109	-0.4708	-0.0190	-0.0673	0.0823	0.0451
politics	-0.1155	-0.2790	0.0553	0.2000	0.1820	-0.1200	0.0081	0.0080	-0.0542	-0.0125	-0.0021	0.0176	-0.0337	-0.0097	-0.0454	-0.0306	-0.1175	0.0408	-0.2597	-0.1076	-0.1598	0.0041	-0.0807
political-e	0.0768	0.1608	-0.0756	0.0394	-0.0074	0.0034	0.0638	0.1094	0.1023	-0.0662	-0.1576	-0.0077	0.1513	-0.0075	-0.0272	0.1239	0.1329	0.0015	-0.0796	0.0354	0.1738	-0.1404	0.0291
political-c-2	0.3528	-0.0095	-0.0585	0.0048	0.0043	-0.1230	-0.0082	0.0312	0.0717	-0.0027	-0.0545	0.0146	0.1209	0.0410	0.0162	-0.1165	0.0046	-0.0097	-0.0064	-0.0542	0.1700	0.2102	0.0102
voice	0.0027	-0.2383	-0.2167	0.2789	0.0226	0.0363	-0.2001	-0.1466	0.0153	0.0402	-0.0822	0.0403	-0.0308	0.0054	0.1975	0.0681	-0.0087	-0.0315	0.0042	0.0550	0.0467	0.0301	0.2916
change	0.0283	0.0326	-0.0774	-0.0383	-0.0128	-0.0068	0.0526	0.2109	-0.4377	0.0385	-0.3786	0.2611	-0.0162	-0.3933	0.2400	0.1185	0.1288	0.0407	0.1710	-0.2115	0.1546	-0.1304	0.1108
abusestence	0.1543	-0.0892	0.1117	0.0994	0.2386	-0.1840	0.0231	0.2777	-0.0644	-0.0797	0.2401	-0.2285	0.1148	-0.0528	0.2593	0.0927	-0.1026	0.0523	0.1489	0.3033	-0.1136	-0.1000	0.0028
intervention	0.1095	0.2165	0.0324	-0.0410	0.1510	-0.0722	-0.0461	0.0394	0.2097	-0.1163	-0.0296	0.0080	0.3750	0.2739	-0.0341	0.0645	-0.1515	-0.0782	0.0326	-0.1086	0.0095	0.0380	-0.0117
gender2	-0.4000	0.1249	0.0282	0.0267	0.1030	0.0100	0.0130	0.0006	-0.0142	0.0759	0.0643	0.0040	0.1651	0.0100	-0.0208	-0.0240	0.0249	0.0099	0.1121	-0.0077	-0.0221	0.0003	0.0502
gender3	-0.4141	0.1638	0.0137	0.0735	0.0041	-0.0192	-0.0941	0.0390	0.0908	0.0677	0.0675	0.0266	0.0782	0.0585	0.0194	-0.0347	0.0078	0.1287	0.0459	-0.0382	-0.0090	0.0631	0.0346
gender4	-0.4110	0.1604	0.0218	0.0695	0.0755	0.0043	-0.0370	0.0589	0.0588	0.0527	0.0039	0.0086	0.0066	0.0396	0.0232	-0.0424	0.0415	0.0482	0.0537	-0.0423	0.0415	0.0405	0.0807
sexchoice	-0.0608	-0.0032	-0.3123	0.0329	-0.1308	0.1215	-0.0127	-0.0644	-0.1833	0.2600	-0.1266	-0.2242	-0.1325	0.1738	-0.1201	-0.0699	-0.0036	-0.1899	0.0379	-0.1405	0.1007	0.0192	0.1247
famplanning	-0.1094	-0.1007	0.1626	0.0762	-0.0491	0.1104	0.0653	-0.2025	-0.1775	-0.0608	0.2004	-0.0375	-0.0172	0.2342	0.0067	0.2361	-0.1944	0.0053	0.0930	-0.1018	0.2042	0.1715	0.1659

Variable	Comp24	Comp25	Comp26	Comp27	Comp28	Comp29	Comp30	Comp31	Comp32	Comp33	Comp34	Comp35	Comp36	Comp37	Comp38	Comp39	Comp40	Comp41	Unexplained
utilityacc-1	-0.2655	0.2283	0.0820	-0.1174	-0.1865	0.1380	0.0648	-0.1021	0.1412	-0.2411	-0.0959	0.0331	-0.0581	0.1457	-0.0177	0.1461	-0.0119	-0.0133	0
utilityacc-2	-0.1231	-0.0132	0.0721	-0.1490	-0.2434	0.0775	0.1075	0.0013	-0.2030	-0.0573	-0.0896	0.0238	0.0223	-0.0060	-0.0021	-0.0077	0.0105	0.0154	0
utilityacc-3	-0.0496	0.0290	0.4518	0.0670	-0.1780	0.0430	0.0231	0.0065	0.1567	-0.0839	-0.1400	0.0327	-0.0253	0.0239	0.0754	-0.0154	0.0101	-0.0102	0
utilityacc-4	-0.1053	0.1393	-0.0695	-0.0724	0.3557	0.0308	-0.0283	0.1819	-0.2631	-0.2296	0.1205	0.2988	0.0187	-0.0641	-0.1557	0.0509	0.0833	0.0139	0
utilityacc-5	0.0627	0.3291	-0.1380	-0.0594	0.2027	-0.0149	0.1909	0.0281	0.0379	0.1233	0.0902	-0.1403	-0.0418	0.0337	-0.0247	-0.0144	0.0205	-0.0137	0
utilityacc-6	0.1196	0.0684	0.1662	0.1101	0.0027	0.1770	0.1085	-0.0584	0.0655	-0.0477	-0.1301	0.0460	0.0353	-0.0218	0.0052	-0.0712	-0.0317	0.0043	0
utilityacc-7	0.0580	-0.1469	0.1089	0.0073	-0.0733	-0.0156	-0.1266	-0.0163	-0.0924	-0.0058	-0.0129	0.0197	0.0387	-0.0403	-0.0536	0.0887	0.0104	0.0174	0
utilityacc-8	0.2117	-0.3280	-0.0154	0.0116	-0.1293	-0.2990	0.0949	-0.0278	-0.2166	-0.0986	-0.2050	0.0895	-0.0745	-0.0206	-0.0529	0.1170	0.1202	0.0056	0
utilityacc-9	0.0535	-0.1885	-0.1190	0.0875	-0.0617	0.0465	-0.2666	-0.0544	0.3141	0.4008	0.2735	-0.3212	0.0320	0.0094	0.1196	-0.0830	-0.0774	-0.0095	0
utilityacc-10	-0.0851	-0.1450	-0.3521	-0.2108	0.0170	0.0683	-0.0395	-0.1114	-0.2633	0.0128	-0.1891	-0.0851	-0.0682	-0.0224	-0.0314	-0.1143	-0.0139	-0.0085	0
savingmethod	0.0551	-0.0017	0.0634	0.1681	0.1361	0.0755	-0.1425	-0.1170	-0.0894	-0.3768	0.1605	-0.2385	0.1913	-0.2118	0.1651	-0.3062	0.193	-0.082	0
saving	-0.1104	0.2124	0.0838	0.1056	-0.2522	0.0559	-0.3046	-0.1122	-0.2464	0.2861	0.0944	0.1678	-0.1377	0.0445	-0.1581	0.3190	-0.0583	0.0666	0
savingprio1	-0.0980	0.0177	-0.0842	-0.3584	-0.1147	-0.1358	0.2031	0.3358	0.2761	-0.0484	-0.0613	0.3733	0.1795	0.0292	0.0434	-0.1850	0.0187	-0.0505	0
spendingch-1	0.0760	0.0580	0.1871	0.0136	-0.0096	0.1306	0.1829	0.1059	0.0095	0.2041	0.0873	0.0223	-0.3290	-0.5648	-0.1246	0.0587	-0.1832	-0.0091	0
spendingch-2	-0.1047	-0.1967	-0.0500	0.1629	0.1914	-0.0168	0.2671	0.1470	-0.1245	-0.0115	0.1215	-0.0544	-0.1222	-0.3387	-0.1002	0.0321	-0.0508	-0.0198	0
spousalfin	-0.2501	-0.2635	0.2768	0.1672	0.0893	0.1672	0.0188	0.0183	0.0951	0.0148	0.0010	0.0393	-0.0713	0.0410	0.0471	-0.0537	0.0383	-0.0048	0
girlshwork	0.0173	0.1045	0.0512	-0.1036	0.2291	0.1458	-0.0511	-0.0287	0.0832	0.0232	0.0090	0.1970	-0.1317	0.0399	-0.0780	-0.3093	-0.0941	-0.0458	0
marriage_w-3	0.1266	-0.0295	-0.1306	0.0556	0.1302	0.3373	-0.0724	-0.0999	0.2303	-0.1975	0.0170	0.2005	0.0642	0.0785	0.1781	0.3740	0.0192	0.0480	0
marriage_w-4	0.1001	0.0247	-0.0145	-0.1859	0.1356	-0.0939	-0.0195	0.0230	-0.0030	-0.1120	-0.2460	-0.1801	-0.0595	-0.0840	0.3558	0.3362	-0.0051	0.0158	0
marriage_w-5	-0.1187	-0.0715	0.0171	-0.2147	0.2293	-0.1125	0.0345	-0.0661	-0.0884	0.0595	-0.1692	-0.1262	-0.0754	0.0243	0.2340	0.1533	-0.0163	0.0255	0
marriage_w-6	0.1990	-0.0753	0.1426	0.0055	0.0979	0.1403	0.0696	-0.1882	-0.0667	-0.0980	0.2180	-0.1820	0.0926	0.0506	0.1452	0.3894	0.0670	0.0659	0
household-1	-0.0496	0.0021	0.2224	0.1618	0.3727	-0.3443	-0.2292	-0.1061	0.0983	0.0735	-0.2831	0.1128	0.3315	-0.0570	-0.0581	0.0448	-0.1290	0.0256	0
equality	-0.0052	0.0468	-0.1531	0.0629	-0.0244	0.0847	-0.2162	-0.0646	-0.0498	0.0649	-0.1750	-0.0594	-0.1260	-0.0959	0.0136	-0.0742	-0.0495	-0.0602	0
obedience	-0.0706	0.3471	-0.0019	-0.2160	0.0697	-0.0586	0.0996	-0.1969	-0.0530	0.1912	0.1088	-0.0902	0.3797	-0.1829	-0.0371	0.1280	0.0965	-0.0048	0
dominance	-0.1940	-0.1163	-0.0220	0.1878	0.0959	0.1381	0.0854	0.0595	-0.3070	0.1897	0.1854	-0.0808	0.3129	0.3595	-0.2140	0.0136	0.0624	0.0155	0
leadership	0.0890	0.0692	0.0434	0.0050	0.1020	-0.0930	0.0222	0.0103	0.1772	-0.1817	0.0165	-0.3222	-0.3745	0.3184	-0.4210	0.0670	-0.0315	0.0918	0
sharedpower	-0.0478	0.0996	-0.0784	0.3223	-0.1025	-0.0801	0.5533	-0.3618	-0.0145	0.0445	-0.0192	-0.0761	-0.0037	0.0856	0.1985	0.0302	0.0198	0.0085	0
impopinions	0.1233	-0.0092	0.0384	-0.0809	-0.1194	0.0940	-0.0452	0.2007	0.0991	-0.0046	0.1144	-0.0028	0.0146	-0.0325	0.0385	-0.0451	0.1093	-0.0257	0
voting	0.0302	-0.2066	0.0633	-0.0308	-0.0426	-0.0925	0.0987	-0.0747	-0.0580	0.0848	0.1747	-0.0241	0.0012	0.1120	-0.0129	0.0873	-0.0048	0.0554	0
politics	0.1269	-0.0176	-0.0761	0.2355	0.1671	0.2110	0.1839	0.1729	-0.0046	0.3323	-0.4251	0.1155	-0.0497	0.2177	0.0256	-0.1301	-0.0907	0.0258	0
political-e	-0.0980	0.0393	0.0103	0.0329	-0.0763	0.1861	0.0756	0.4291	0.0616	-0.1053	-0.1023	-0.0152	0.2711	-0.0428	-0.0915	0.0425	0.0812	0.0500	0
political-c	-0.1573	0.0845	-0.0701	0.1727	0.0629	-0.2321	-0.0487	0.1679	-0.0291	0.0899	0.2620	0.3960	-0.2102	0.0761	0.4816	-0.0917	0.1619	-0.0268	0
voice	-0.0237	-0.2358	-0.1579	0.0558	0.0218	-0.0581	0.1766	-0.1879	0.3699	0.0859	0.0712	0.3069	0.2010	-0.1777	-0.2724	-0.0895	-0.0059	-0.0078	0
change	0.1033	0.0323	0.1076	0.0064	0.1025	-0.1490	-0.1487	0.2174	0.0958	0.0435	-0.0972	0.0162	-0.0510	0.0110	-0.1032	0.0731	0.0154	-0.0201	0
abustance	0.2411	-0.0985	0.3354	-0.2575	-0.1032	-0.2490	0.0867	-0.0543	-0.0921	0.2213	0.1443	0.1020	0.0597	0.1130	-0.0400	-0.1213	0.0104	-0.0117	0
intervention	0.5471	0.0762	-0.2214	-0.0156	-0.1086	0.1382	-0.0639	-0.0643	-0.0002	0.0050	-0.0116	0.2472	0.0745	-0.0102	-0.0604	-0.0385	0.0201	0.0113	0
gender2	-0.0062	0.0879	0.0076	-0.0673	0.1408	-0.0525	0.0217	-0.1124	0.1612	0.1579	0.0435	-0.0028	-0.1287	-0.0466	-0.1114	-0.0200	0.7606	0.1905	0
gender3	0.0361	0.0190	-0.0640	-0.0725	0.0937	-0.0938	0.0409	0.0691	0.0858	0.0253	0.1228	0.0750	-0.1421	0.1726	0.0033	0.1645	-0.1905	-0.7343	0
gender4	0.0053	-0.0101	-0.0642	-0.0609	0.0454	-0.1328	0.0858	0.1032	0.0574	-0.0675	0.2315	0.1275	-0.0465	0.1708	0.0536	-0.0557	-0.4576	0.6086	0
sexchoice	0.2919	0.0346	0.3260	-0.2277	0.2071	0.2900	0.1096	-0.0920	-0.1500	0.1062	0.0607	0.0803	0.0104	0.1014	0.0118	-0.1176	-0.0003	-0.0235	0
fampanning	0.2533	0.4055	0.0349	0.3528	-0.1255	-0.2626	0.0080	0.1464	-0.0531	-0.1058	-0.0337	-0.0082	0.0667	-0.0161	-0.0155	-0.0061	0.0126	-0.0239	0