

Dimension	Characteristic - indicator	Description	Resource	Variable	N	Question				
Personal	Potential for economic independence	Women's economic autonomy is one of the measures of women's empowerment (Jejeebhoy & Sathar 2001). However, their economic independence is constrained due to limited access to resources (eg. land, inputs, credit and savings services and technology) which decreases women farmers' productivity (Duguid & Weber 2016, Veraan 2000). At the same time, they face barriers in access to markets. Limited opportunities for women result, to a large extent, from traditional patriarchal social arrangements (Lecoutere 2017). Studies have shown that cooperatives have a potential to accelerate women's economic development (Fernando et al. 2021), leading to their greater independence (Dohmwirth & Liu 2020).	Jejeebhoy & Sathar (2001), Duguid & Weber (2016) Lecoutere (2017), Fernando et al. (2021), Dohmwirth & Liu (2020), Hao et al. (2017)	Potential for economic independence	65	Are you able to receive a higher price for your main product than 3 years ago, due to your membership in the cooperative?				
					64	Are you able to access higher quality inputs at a lower price than 3 years ago, due to your membership in the cooperative? (SA-SD)				
					66	Is the purchase of your product more secure and stable than 3 years ago, due to your membership in the cooperative? (SA-SD)				
					68	Do you dedicate less time to marketing and selling your product than 3 years ago, due to your membership in the cooperative? (SA-SD)				
					69	Have you reduced the cost of production in the last 3 years, due to your membership in the cooperative? (SA-SD)				
					70	Have you had better access to credit and saving services in the last 3 years, due to your membership in the cooperative?				
					63	Has your income increased in the last 3 years, due to your membership in the cooperative? (SA-SD)				
					Opinions on women's economic role	In developing contexts, including in Zambian culture, women are still perceived as subordinate human beings (Ferguson & Kepe 2011, Duguid & Weber 2016), even ascribed a status of a minor (Veraan 2000). Women's economic opportunities are unequal to opportunities of their male counterparts. They perform 2.5 times more unpaid domestic work than men, while this type of work is often informal and unprotected (UN Women 2015). Women are under-represented in leadership, including cooperative leadership positions (Majurin 2012).	Ferguson & Kepe (2011) Majurin (2012) UN Women (2015), Lombardini et al. (2017)	Opinions on women's economic role	90	It is crucial to have women members because they can enrich the cooperative performance. (SA-SD)
									97	It is good to train a woman to keep financial records because she can do the job as well as a man can. (SA-SD)
									91	It is crucial to have a woman representative in the board of the cooperative. (SA-SD)
98	Men are better than women in doing their job as cooperative board members. (SA-SD)									
Individual knowledge	Knowledge and information empower. Women in Sub-Saharan Africa, who generally have lower formal education and skill levels, can benefit from knowledge and skill development mediated by trainings (Lecoutere 2017, Duguid & Weber 2016, Majurin 2012).	Lecoutere (2017), Duguid & Weber (2016), Majurin (2012), Lombardini et al. (2017)	Trainings-related knowledge	137	I am aware of sustainable environmental practices. (SA-SD)					
				140	My level of knowledge on sustainable environmental practices has increased in the last three years. (SA-SD)					
				88	As a result of the project, I got familiar with the benefits of diversification of agricultural production. (SA-SD)					
Individual capability	"Education, vocational skills and technology are underlying pre-requisites for the economic emancipation of women" (Veraan 2000). Under the condition they have a capacity to apply their knowledge in daily life, using practical skills, having access to technology, women's economic empowerment increases.	Veraan (2000), Lombardini et al. (2017)	Knowledge application	84	Thanks to project training, my capacity to use technology in production of my product (e.g. effective use of inputs, soil management, post-harvest management, small mechanization and irrigation, pest and disease management, (SA-SD).					
				85	Thanks to project training, my capacity to use technology in food processing has increased over the last three years (SA-SD).					
				142	I have adopted sustainable agricultural practices on my total farm size. (SA-SD)					
Personal autonomy	Deciding for herself in strategic life matters and acting accordingly, is an important measure of autonomy, which is a prerequisite for social change. Starting with smaller steps on personal level (feelings of autonomy, of free participation in collective action or autonomy in production, can lead to impactful changes on relational and environmental levels (e.g. freedom of movement, marriage and children-related decision-making).	Kabeer (1999), Meier zu Selhausen (2016), Lombardini et al. (2017), Beach (2023)	Feeling autonomous and independent	38	Do you feel more autonomous and independent than 3 years ago, due to your membership in the cooperative? (SA-SD)					
				100	I can freely participate in community activities, groups, meetings etc. (SA-SD)					
			Free participation in group and community activities Personal autonomy in production	101	Regarding agricultural production, I do what I do because: I personally think it is the right thing to do (1)/ Because I would get in trouble if I acted differently (0)/ Because I don't want others to think poorly of me (0)/ Other (0)					
				102	Regarding inputs to buy, I do what I do because: I personally think it is the right thing to do (1)/ Because I would get in trouble if I acted differently (0)/ Because I don't want others to think poorly of me (0)/ Other (0)					
				103	Regarding crops to grow I do what I do because: I personally think it is the right thing to do (1)/ Because I would get in trouble if I acted differently (0)/ Because I don't want others to think poorly of me (0)/ Other (0)					
Relational	Social capital	Women's capabilities, that increase their empowerment, are enhanced by social networks (Lecoutere 2017). For cooperatives' function, social capital is fundamental. It stands on trust, democratic norms and values, healthier communication (Apparao et al. 2019), and team work, which, in the end, trickle down to household power dynamics and individual level. Members' involvement, activity, solidarity and loyalty to the group bring less free-riding and higher satisfaction, that, again, support the social capital.	Apparao et al. (2019), Lombardini et al. (2017)	Trust	29	Now the trust between the farmers is generally higher than 3 years ago. (SA-SD)				
					50	Most people who are members of the coop can be trusted. (SA-SD)				
				Social contact increase	37	I now meet more with other cooperative members in other not official/business occasions than 3 years ago, due to my membership in cooperative. (SA-SD)				
					39	My social contacts have increased over the last 3 years of my farming business, due to my membership in cooperative. (SA-SD)				
				Sharing experience	82	Do you have better chance to mutually share experience with other farmers than 3 years ago, due to membership in the cooperative? (SA-SD)				
					32	It is important to make all decisions about my farm by myself and not in the group. (SA-SD, coded backwards, SD=5, SA=1)				
				Group and community participation	Collective action brings economic benefits, but not exclusively. Cooperatives and organizations of a similar nature have potential to become a "safe space" where traditional (including gender) norms are challenged. When members have equal opportunity to participate, when cooperation is based on trust and solidarity, the norms transform step by step (Lecoutere 2017). Women increase their agency, they become more self-confident and their voice becomes stronger on both personal and business levels (Meier zu Selhausen 2016).	Meier zu Selhausen (2016), Lombardini et al. (2017), Lecoutere (2017)	Participation in groups	105	What is the number of other groups you participate in? (eg. Credit or microfinance group, VSLAs etc., Women's association, Religious group, Trade and business association, Local government, Other group)	
								52	I attend all the meetings of the cooperative. (SA-SD)	
							Active participation in cooperative	31	I am willing to dedicate my time to the meetings in the cooperative. (SA-SD)	
								54	I consider myself an active member of the cooperative (eg. discussion, voting, proposing new topics). (SA-SD)	
74	What is the percentage of your production that you sell through the cooperative? (0-19%=>"1", 20-39%=>"2", 40-59%=>"3", 60-79%=>"4", 80-100%=>"5")									
Active participation in community	30	I now consider myself a more active member of my community than 3 years ago. (SA-SD)								
	28	I now work more actively with farmers in the community than 3 years ago. (SA-SD)								
Leadership and degrees of influencing in community	Membership alone does not tell us anything about the degree of activity and women's influence on group and community decision-making. Zambian women are under-represented in leadership positions on all levels, from	Duguid & Weber (2016), Majurin (2012), Zambia	Extent of involvement in important cooperative decision-making	104	I am involved in making important decisions in the cooperative to a large extent. (SA-SD)					

groups and in the community	communal to national, in both public and private sector, including within cooperatives (Zambia Statistics Agency, 2023; Duguid & Weber 2016). Carrying out leadership positions empowers them personally, and contributes to changing traditional attitudes on gender roles (Majurin, 2012).	Statistics Agency (2023)		106 I am involved in making important decisions in other groups I participate in to a large extent. (SA-SD)	
			Leadership roles	51 I believe that my opinion can influence the decision-making processes in the cooperative. (SA-SD)	
			Speaking in public	83 Has your opportunity to participate in community development decision (Infrastructure building and repairing, building a playground etc.) increased in the last 3 years, due to membership in the cooperative? (SA-SD)	
				18 What is your position within the cooperative? Member of the coop (0), Employee of the coop (0), Chairman of the board (1), Member of the board (1), Member paid by the cooperative (0)	
				107 I feel comfortable speaking up in public to help decide on community matters (eg building infrastructure, small wells etc.) (SA-SD)	
				108 I feel comfortable speaking up to intervene in a family dispute. (SA-SD)	
Household decision making (including control over assets)	Patriarchal settings prevail in Sub-Saharan Africa, especially in rural areas. Women are viewed as of secondary importance, even ascribed a status of a minor (Veraan 2000). They are largely restricted in economic decision-making, access to and control over resources. Women have only been given responsibility in areas specifically assigned to them - e.g. food purchases, meals to cook, etc. Cooperatives, however, have a potential to bring change (Ferguson & Kepe 2021).	Alkire et al. (2013), Lombardini et al. (2017), Arthur-Holmes & Busyia (2020), Jejeebhoy (2000), Meier zu Selhausen (2016), Dohmwrith & Liu (2020)	Household decision-making (including control over assets)	109 Who normally makes most of the decisions about how much of the crops harvested should be kept for consumption in the household? Herself (1), her jointly with someone else (1), somebody else (0)	
				110 Who normally makes most of the decisions about how to spend the money made from the sale of crops? Herself (1), her jointly with someone else (1), somebody else (0)	
				111 Who normally makes most of the decisions about how to spend the money made from other activities where you are mainly contributing? Herself (1), her jointly with someone else (1), somebody else (0)	
				112 Who normally makes most of the decisions about what food to buy and consume? Herself (1), her jointly with someone else (1), somebody else (0)	
				114 Who normally makes most of the decisions about whether to take a small loan, from what source and how much to borrow? Herself (1), her jointly with someone else (1), somebody else (0)	
				113 Who normally makes most of the decisions about purchasing and selling livestock? Herself (1), her jointly with someone else (1), somebody else (0)	
				115 Who normally makes most of the decisions about purchase of plots of land? Herself (1), her jointly with someone else (1), somebody else (0)	
				116 Who normally makes most of the decisions about education of your children? Herself (1), her jointly with someone else (1), somebody else (0)	
				117 If someone else is making the decisions, I can influence them. (SA-SD)	
Contribution to household income	A woman's contribution to her household's income is a sign of economic power and autonomy, however, too high percentage contribution might be a sign of lower agency (she is able to earn the money, but may not control it). Or, on the other hand, it could mean she is a head of household.	Lombardini et al. (2017), Kabeer (1999)	Contribution to household income	119 With how many percent do you contribute to your household income? (0-19 %=>"1", 20-39 %=>"2", 40-59 %=>"3", 60-79 %=>"4", 80-100 %=>"5")	
Economic independency	Without reliance on her own income, including a full control of it, a woman still depends on her husband, a male relative, or another person, which prevents her from becoming empowered. Benefits accessed through cooperative participation contribute to gaining control of own income.	Alkire et al. (2013), Jejeebhoy & Sathar (2001), Haley & Marsh (2021)	Control of own income	120 I can fully control my own income. (SA-SD)	
				92 Participation in the cooperative makes me more independent on my spouse's income. (SA-SD)	
Power in markets	Women smallholder farmers are disadvantaged in the markets. They have lower bargaining power, occupy lower positions in value-chains. They are more vulnerable and face more barriers in access to more profitable levels mostly occupied by men who do not let women enter their networks and transform women's subsistence farms to more productive and profitable ones (Meier zu Selhausen 2016).	Hao et al. (2017), Fernando et al. (2021), Meier zu Selhausen (2016)	Bargaining power Market-related agency	73 Has your bargaining power on the market improved over the last 3 years, due to your membership in the cooperative? (SA-SD)	
				67 Do you now have more business contracts than 3 years ago, due to your membership in the cooperative? (SA-SD)	
				75 My number of business contracts has increased over the last three years. (SA-SD)	
Control of time spending	In Zambian society, traditional norms dictate women how to spend their time, based on their gender roles. The fact that they are double-burdened means that they are expected to perform an economic activity and after having completed the "first shift", one more awaits them - to take care of family members from children to the elderly, to perform domestic chores, collect water, firewood, etc. This phenomenon, also called "second shift" is not rewarded monetarily or otherwise acknowledged, which is one of the factors influencing higher incidence of poverty among women. Household responsibilities which can take most of their spendable time prevent them from possibility to perform a paid job. Work of women who manage to earn some money is often unqualified, unofficial, unprotected and low paid. The systemic result is their economic, and thus political, powerlessness (Veraan 2000).	Lombardini et al. (2017), UN (1995), Veraan (2000), Alkire et al. (2013)	Control of time spending	118 I am satisfied with the level of control of spending my own time. (SA-SD)	
Environmental	Accessibility within environment	Cooperatives also empower women through improving access to services and to resources for members (eg. access to credit, inputs, technical assistance, market information and knowledge, extension support). This also enhances farmers' agricultural productivity and social inclusion (Meier zu Selhausen 2016).	Fernando et al. (2021), Meier zu Selhausen (2016)	Extension support	35 There is sufficient extension support for cooperatives (from government or NGOs). (SA-SD)
					78 Has the service from extension agents improved over the last 3 years, due to membership in the cooperative? (SA-SD)
			Financial support of cooperatives	36 There is sufficient financial support for cooperatives (from government or NGOs). (SA-SD)	
			Access to services	71 Have you had better access to processing your production in the last 3 years, due to your membership in the cooperative? (SA-SD)	
				72 Have you had better access to storing your production in the last 3 years, due to your membership in the cooperative? (SA-SD)	
				76 Has service from input suppliers improved over the last 3 years, due to membership in the cooperative? (SA-SD)	
				77 Has your access to relevant market information improved over the last 3 years? Do you agree that this improvement is due to membership in the cooperative?	
				79 Has your access to information about good agricultural practices improved over the last 3 years, due to membership in the cooperative? (SA-SD)	
				80 Has your opportunity for training increased over the last 3 years, due to membership in the cooperative? (SA-SD)	