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Willingness to Participate in Platform Cooperatives among Members of Abundant Farmers' Cooperative Society, Ikorodu, Lagos State, Nigeria

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Abstract
One of the efforts to improving the livelihood of citizens within the rising e-economy space is cooperatives promotion among actors in the agricultural value chain. Despite this, inequality and poverty have been on the rise while e-business is increasing in all sectors. This has led to the rethinking of conventional cooperatives to shift to platform cooperatives (PCoop) for market expansion and surplus sharing. Nevertheless, the literature on PCoop is lean, worldwide. This study therefore investigated the awareness and willingness to participate in PCoop, among members of a Farmers' Cooperatives in Ikorodu, Lagos. Multistage sampling procedure was used to 90 cooperative members. Data on socio-economic characteristics, awareness and willingness to participate in PCoop were collected with Questionnaires. The data was described using frequency distribution, percentage and analysed with probit regression. The results showed that majority were male (60.7%), below 50 years old (58.34%), had first degree (54.7%), maximum of one million naira yearly farm income (48.8%), aware of PCoop (86.90%) and willing to participate in PCoop (88.10%). Further, the female respondents (0.354) have lower and those that were aware of PCoop (0.307) have higher probabilities of willingness to participate in PCoop than their opposite categories. Years of formal education (0.006) and age (-0.031) have positive and negative relationship with the probability of willingness to participate in PCoop respectively. These coefficients were significant at levels higher than 10%. Awareness campaign on PCoop should commence for agricultural cooperatives members to shift to PCoop to boost members' income and e-business.

Keywords: Platform cooperatives, Farmers' cooperatives, Awareness, Online, Participate.

Introduction
Cooperatives, as a form of business organisation, will continue to be relevant in all economies of the world, especially in the capitalist oriented markets, where emphasis is on profit for owners of the businesses. One major reason for this is the basic underpinning principle of cooperatives, which include equity in terms of voting right and distribution of business surpluses to all its members. These two features and other characteristics of cooperatives motivated the rethinking of the operation of other forms

of business, especially those run through the internet known as platform cooperatives (PCoop), as cooperative for a shared economy to boosts the income of all the stakeholders of the business (Scholz, 2014; Zhu and Marjanovic, 2021).
PCoop is an online cooperative that is operated on any internet-enabled gadget such as mobile phones and computers. It has all the features of conventional cooperative except that it is done through the internet. As a form of cooperative, it is a business and all stakeholders partake in the sharing of its presumed profit normally, called surplus, with equal voting rights (Ogunyemi, Kolawole and Okeowo, 2021 and 2023). Upon subscription to the platform, the subscriber becomes a member and partner in the business. The Subscriber does buying and selling through the platform and collects proportional part of the distributed surplus at the end of the PCoop financial year. Scholz (2023) reported that in Brazil, suppliers of service who are members of Coomappa PCoop earned 40% higher than what they would have netted in other groups. Scholz (2016) also stated that by 2014, a platform co-op called Stocksy in Victoria, British Columbia, United States of America, has shared several million dollars in surplus to its subscribers from a revenue of 3.7 million dollars and by 2019 according to *Brodsky and Azhar (*2019), 90% of the co-op's surplus was distributed back to its members who had already received earnings from services rendered. Thus, hundreds of thousands of people will share significant amount of money, if thriving online business is operated as a PCoop. This would greatly benefit subscribers with surplus sharing ranging from millions to billions of Naira every year.

The rise of online businesses and markets in the modern economic terrain has widened the benefit gap between the producers and consumers of offered e-services. According to Akiode (2021), online business has become an ingredient of entrepreneurial ecosystem, which boosts information provision and access to financial resources for entrepreneurs to create wealth. The producers of the services, as owners of the platform and the intermediaries take all the profits while the buyers and other users of the digital services are left with nothing after the consumption of the service. Calzada (2020) opined that online business should move from capitalist economy system to participatory and democratic ownership system for users of the platform, which include promoters, workers, sellers, intermediaries, buyers and other stakeholders. There is no doubt that the owners-take-all-profit principle of capitalist e-businesses increases income inequality and does not assist poverty alleviation efforts. Conversely, PCoop as a business model will directly reduce income inequality and poverty as it promotes sharing of business surpluses as against the practice of owners-takes-all in other forms of businesses like sole proprietorship, partnership and joint stock company (Scholz, 2014).

The internet is aiding the exponential increase in digital economy and markets globally through networks (Oxford Economics, 2011). All countries are witnessing a rise in e-business, which comprises businesses done through the internet on mobile phones and computers (Goetsch, 2024). The e-businesses done on the internet include financial services, logistics, buying and selling of goods and services in primary, secondary and tertiary industries. Agricultural cooperatives can be run on the internet

for members to consummate exchange transactions in their input and output markets to take advantage of platform cooperatives. With PCoop, distance and location are not barrier to membership. There is more of an opportunity for market expansion as it improves the accessibility of input and output markets for members across many locations. It will reduce, if not completely remove intermediaries between agricultural products processors and buyers of their products that has additional cost effect (Kayode and Awoyemi, 2020). Likewise, PCoop will promote linkage between producers in the agricultural sector and the users of agricultural products in the manufacturing sector that is necessary for the growth of contract farming (Akanbi, Alarape and Olatunji, 2019). PCoop as a business model is also relevant, as surplus generated in the e-business is distributed among all stakeholders. It is therefore necessary to study the willingness to join platform cooperative in Nigeria locality especially among agripreneurs. The awareness of a group by an individual precedes his decision to participating in it, the research thus provides answers to these questions. What is the level of awareness of PCoop among the respondents? Are the respondents willing to participate in PCoop? Additionally, what are the determinants of the respondents' willingness to participate in PCoop?

Individual's willingness to participate in a group depends on the socioeconomic peculiarities of the person in line with Seymour Lipset theory. This theory, according to Khoshdel and Bakhshan (2015), explains that the willingness and non-willingness of individual's participation in a group is influenced by the socioeconomic characteristics of the person in focus that include age, income level, education, rural-urban location and employment type. Other theories of participation in a group could have served as basis for the study but for their inadequacies. For instance, Homans's exchange theory explains the motive for willingness to participate by the difference between required effort and obtainable reward (Enayat, 2022). In reality, the value attached to effort and reward in terms of cost and benefit respectively in participating in a group will vary between individuals and depend on their socio-economic features. Thus, this study is guided by Seymour Lipset theory of group participation.

Anigbogu, Agbasi, and Okoli (2017), Ologbon, Idowu, Aderinto, Dada and Akerele (2020) and Twumasi et al. (2021) reported that socio-economic characteristics such as age, credit access, family size, farm size, formal education, geographical location, gender, income, marital status and off-farm job significantly affects membership of cooperatives. Family size, female gender and income positively influence membership of cooperative (Ologbon et. al., 2020). Similarly, credit access, formal education, geographical location and off-farm job positively determine membership of cooperative (Twumasi *et. al*., 2021). However, age, income, farm size, formal education, married status negatively affect membership of cooperatives while family size and collective bargaining positively affect cooperative membership participation (Anigbogu et al., 2017).

The relevance of this study emanates from abounding evidence that the internet has become a veritable tool for consummation of the exchange process. This made Scholz

(2014 and 2017) to mention that online businesses should be run as PCoop to take advantage of the shared economic principle of conventional cooperatives. The authors posited that PCoop will boost the income of all stake holders in the business and improve income distribution. The benefits derivable from PCoop will therefore be enormous in Nigeria as it will reduce the high income inequality and poverty rate in the country. In 2019, income inequality was estimated to be 0.351 with a poverty incidence level of 40.01% (National Bureau of Statistics, 2020). By early 2022, 63% (133 million people) of the total inhabitants in Nigeria were declared multi-dimensionally poor with 72% and 42% of rural and urban dwellers being poor respectively (National Bureau of Statistics, 2022). PCoop will boost the income of all members of the group across rural and urban areas, as its membership will be from the two sectors.

Also, due to the benefits derivable from PCoop, its adoption is growing in Europe and United States of America with different variations (Canada, 2023); but it is yet to become popular in practice and research in Africa. In relation to research outcomes, the literature on PCoop started with Scholz (2014 and 2017). The two studies were followed by Borkin (2019), Calzada (2020), Ogunyemi et al., (2021), Bunders, Arets, Frenken and De Moor (2022), Ogunyemi (2022), Canada, Carla, Campos and Jose (2023) and Ogunyemi et al., (2023). Ogunyemi et al. (2021 and 2023) and Ogunyemi (2022) focused on agro-allied sector in Nigeria while other mentioned studies focused on PCoop in gig-economy in the global north. This indicates that PCoop literature is lean (Zhu and Marjanovic, 2021; Philipp, Hermes, Schreieck and Böhm, 2021) and more research needs to be done on it to boost its growth (Philipp et al., 2021).

This study is therefore relevant for academic and research purposes especially for literature stock with Nigerian data on shared economy towards boosting the income of members of the platform group. More importantly, agricultural business contributes about 30% of the Nigeria GDP as at 2021 (Sasu, 2024), which reflects enormous volumes of buying and selling of goods and services in form of production inputs and outputs along the products value chains. The emphasis on value chain in the agricultural sector has made the sector's activities to transcend primary production level into secondary and tertiary businesses. Agribusinesses are now done through digital and physical markets in both rural and urban areas, which indicates that agricultural cooperatives can be run on the internet for members to consummate exchange transactions on inputs and outputs to take advantage of platform cooperatives.

Methodology

The study was conducted in the Lagos State University of Science and Technology, Ikorodu, Lagos State. The Abundant Farmers Multipurpose Cooperative Society, an agricultural production cooperative, was purposively chosen because it represents agripreneurs group that is an admixture of aquaculture, poultry and arable farming production. Also, all members of the cooperative could easily understand the concept

of platform cooperative for them to attend to the questionnaire. Data was obtained through simple random sampling of 90 members from 205 membership in the register of the cooperative society as at March 30th, 2023 and 84 questionnaires were successfully completed for the analysis. The data was on socio-economic features of the respondents, their awareness and willingness to participate in platform cooperative. The data was analysed using descriptive statistics: frequency distribution and percentage; while probit regression model was used to analyse the factors that influence the respondents' willingness to participate in platform cooperative. Probit model was chosen since the aim was to predict the absence or presence of an outcome based on a set of predictor variables' values. The model accounts for the dichotomous dependent variable, which in this case is the willingness to participate in platform cooperative. The Probit model was adapted from Etim and Benson (2016), and Etim, Thompson and Udoh (2020).

The mathematical model for the decision to participate in platform cooperative is given as:

$$Y_i^* = P(Y_i = 1) = \beta_0 + \beta X_i + \varepsilon_i \quad \text{..... (eqn 1)}$$

In the model, Y_i is the respondents' willingness to participate in PCoop. It takes the value of 1, if respondents says Yes, and 0 if No. Y_i* is the estimated value of Y_i (Y_i* =1) if Yi> 0. ε_i is the error term that has mean (μ) = 0 and variance (σ) =1; features of a normal distribution. The probability function is the P, β is the vector of parameter for estimation, X_i is the array of predictor variables that determine the ith respondent's decision to participate in platform cooperative; and they are defined as follows:

X_1 = Gender (Dummy variable: Male = 0; Female = 1)
X_2 = Age (Years)
X_3 = Marital status (Dummy variable: Single = 0; Married/Divorced/Separated = 1)
X_4 = Formal Education (Years: Primary education = 6; Secondary education = 12, National Diploma Education = 15; Bachelor's degree = 16; Master's degree = 18; Doctorate degree = 21)
X_5 = Years of experience in agro-production
X_6 = Time involved in agro-production (Dummy variable: Full-Time = 0; Part-Time =1)
X_7 = Income per year (Naira)
X_8 = Awareness of Platform Cooperatives (Dummy variable: Not-aware = 0; Aware = 1)

Results and Discussion

Socio-economic Characteristics of the Respondents

As shown in table 1, majority of the respondents, 60.71%, were male. Also, majority were youths with 58.33% within the age 21 and 40 years but 22.62% were 41 to 50 years old in tandem with Ogunyemi (2022). Moreover, 83.33% and 63.10% were married and into livestock production respectively. In addition, 83.33% of the respondents were involved in agro-production on full-time basis and 54.76% had first-

degree educational level. These results show that the respondents are matured and educated enough to easily understand the concept and implications of Platform Cooperatives (PCoop). Additionally, 72.62% and 1.19% of the respondents had 1 to 10 and 31 to 40 years of experience in agro-production respectively while 48.81% had yearly income of one million and below. It is noteworthy that 86.90 and 88.10 per cents of the respondents were aware and willing to participate in PCoop respectively. These are in line with Ogunyemi (2022) and Ogunyemi et al. (2021 and 2023) that majority of respondents were aware of PCoop and they could join it affirmatively. This implies that there is prospect for PCoop in the Nigerian locality.

Table 1: Socioeconomic characteristics of Respondents

Characteristic	Frequency	Percent	Characteristic	Frequency	Percent
Gender			**Formal Education**		
Male	51	60.71	Primary	2	2.38
Female	33	39.29	Secondary	11	13.10
Total	**84**	**100.00**	National Diploma	16	19.05
			Bachelor's degree	46	54.76
Age (Years)			Master's degree	8	9.52
21 - 30	16	19.05	Doctorate degree	1	1.19
31 - 40	33	39.29	**Total**	**84**	**100.00**
41 - 50	19	22.62			
51 - 60	12	14.29	**Experience (Years)**		
61 - 70	4	4.76	1 - 10	61	72.62
Total	**84**	**100.00**	11 - 20	18	21.43
			21 - 30	4	4.76
Marital Status			31 - 40	1	1.19
Single	13	15.48	**Total**	**84**	**100.00**
Married	70	83.33			
Separated	1	1.19	**Income/year (₦'m)**		
Divorced	0	0.00	≤ 1.00	41	48.81
Total	**84**	**100.00**	1.10 - 2.00	19	22.62
			2.10 - 3.00	8	9.52
Main Product			3.10 - 4.00	4	4.76
Crop	20	23.80	4.10 - 5.00	6	7.14
Fishery	11	13.10	≥ 5.10	6	7.14
Livestock	53	63.10	**Total**	**84**	**100.00**
Total	**84**	**100.00**			
Time Status			**PCoop Awareness**		
Full Time	70	83.33	Aware	73	86.90
Part-Time	14	16.67	Not aware	11	13.10
Total	**84**	**100.00**	**Total**	**84**	**100.00**
Willingness to Participate in PCoop					
Yes	74	88.10			
No	10	11.90			
Total	**84**	**100.00**			

Factors that Influence the Willingness of Respondents to Participate in PCoop

Table 2 shows the results of the probit regression. The table reflects that none of the variables are significant but the signs of their coefficients offer useful insights to the

direction of relationship between the willingness of the respondents to participate in PCoop and their selected socioeconomic variables as indicated. The female respondents are less likely to participate in PCoop than the male respondents, which disagree with Ologbon et al. (2020).

Table 2: Probit Regression Results of Factors that Influence Respondents' Willingness to participate in Platform Cooperatives

Variable	Coefficient	Standard Error	Z-score	P-value
Gender	-0.354	0.429	-0.82	0.41
Age	-0.031	0.031	-1.01	0.32
Marital Status	-0.772	0.784	-0.99	0.32
Formal Education	0.006	0.081	0.07	0.95
Year of Experience in Agro-production	0.031	0.048	0.63	0.53
Time status in production	-0.976	0.495	-1.97	0.05
Income per Year	0.000	0.000	1.19	0.24
Awareness of Platform Cooperatives	0.307	0.609	0.50	0.61
Constant	2.657	1.774	1.50	0.13

No. of Observations: 84 Log likelihood = -26.01 Probability Chi Square = 0.32
Level of significant: *** = 10%; ** = 5%; * = 1%

As age of respondents increased, their willingness to participate in PCoop declines. The probability of respondents' willingness to participate in PCoop declines as one move from single to married respondents implying that married respondents are less likely to participate in PCoop. Also, respondents that engaged in agro-production on part-time basis have lower probability of participating in PCoop than those that engaged in agro-production on full-time basis. From table 2, as year of formal education, experience in agro-production and income of respondents increase, the likelihood of their participating in PCoop increases; which do not agree with Anigbogu et al. (2017) but in agreement with Ologbon et al. (2020) and Twumasi et al. (2021) on income and formal education levels respectively. Respondents that are aware of PCoop have higher probability of willingness to participate in PCoop.

Conclusion and Recommendations

Despite efforts that include the promotion of producer cooperatives to improve income levels among the citizens, inequality and poverty have been on the increase. The rising digital economy has led to the reconsideration of cooperative to be run on the internet as Platform Cooperatives to take advantage of shared economic benefit that boots members' income. The respondents understood PCoop due to their level of formal education and are adults with capacity to participate in it. Other socioeconomic features like male gender, younger age, full-time agro-production activity, PCoop

awareness and income can influence the likelihood of participating in PCoop. The study recommends that PCoop should be promoted among the younger agricultural cooperatives members. Also, awareness creation of PCoop should be started among agricultural cooperatives members for them to shift to PCoop. These will boost members' income and enhance e-business through the exploitation of the advantages in digital business.

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