

An Assessment of Performance Effectiveness of Agricultural Cooperatives in Egypt: Case Study of Nubariya District

Basma Hassan Saad¹, Diaa El-Ansary², and Sherin Sherif³

ABSTRACT

Egypt has a long history with consumer and producer cooperatives that dates to the late 1950s and till today. Both types of cooperatives are government-owned and operated. While consumer cooperatives evolved smoothly over the years with a significant improvement in effectiveness with the economy gradually switching to a complete market system, producer cooperatives suffer from lack of effectiveness. Farmers complaints about lack of effectiveness of the agricultural cooperatives is a popular debate in Egypt.

The main objective of this study is to quantify an effectiveness measure taking into consideration the points of views of the farmers and the cooperative managers. The agricultural cooperatives located in Nasr Canal Command Area of New Nubariya of Egypt are surveyed via personal interviews. Six cooperative managers and two hundred farmers are interviewed face to face. In assessing effectiveness, the study has extended and modified the Robert Elkin and Mark Molitor model. The effectiveness measure modifications resulted in having a measure of the organization's degree of effectiveness of agricultural cooperatives through the estimation of four indicators: capital (four items), human resources (four items), administrative (four items), and the cooperative objectives fulfillment (fifteen items). Results show overall effectiveness levels below average with ratios of 42.81% and 46.92% for farmers and managers, respectively. The organizational and administrative indicator being the weakest from the farmers perspective. Cooperative managers cited that the indicators of human resources and capital resources to be the weakest. Both the farmers and the managers commonly conformed that the indicator of the cooperative goals fulfillment to occupy first place in impacting effectiveness.

Key words: Producer Cooperatives; Performance Effectiveness; Egypt's Newlands.

Background and the Problem:

Egypt is probably one of few world economies that wedged with cooperatives for decades. Both of consumer and producer cooperatives emerged in the late fifties, ever since the political system in Egypt was of the socialist command type. At that time, the country has switched from the monarchy ruling to the socialist command system, with the latter's philosophy well lasting till the 1980s. For over six decades, going back

to the year 1954, Egypt has adopted the cooperatives system as a way of mainly availing agricultural produce and food to the Egyptian population through consumer cooperatives. Farmers cooperatives mainly aimed at helping the poor farmers by availing inputs of production. At that time, Egypt was experiencing food shortage due to the government embracing a philosophy that the economy is less developed because of relying heavily on the agricultural sector; a vision proved disastrous later on and adversely impacted Egypt for decades to follow till the day.

Lack of having an efficient market economy then, combined with abandoning investments in the agricultural sector resulted in the country experiencing severe food shortage. Egypt turned to be a major grain and food oil importer, among others, after being a food exporter for tens of decades. Agriculture contribution to the country's GDP dropped from over 40% during the monarchy era to 11.7% in 2019 (CAPMAS, 2019). Food prices skyrocketed, black markets emerged, deadweight loss resulting from the misallocation of resources kept creeping up, and most food products could hardly be found in the retail markets. On the other hand, farmers suffered from low incomes, non-availability of needed agricultural inputs, and several marketing problems due to having small to tiny acquisitions because of the agricultural reform laws and legislation adopted by the socialist governments for decades.

To overcome that, the socialist governments found the answer to these problems in the initiation of government-owned and operated cooperatives. The country started with the establishment of consumer cooperatives to avail food at reasonable prices to the growing population. Nevertheless, long queues and disputes were a common scene on the gates of these cooperatives with consumers trying to grab food while it lasts. A phenomenon well lasted till the end of the 1990s. With the political system gradually switching to the market system, consumer cooperatives kept improving in shape and performance. This is mainly because of the enormous investments made in the agricultural sector, particularly from the year 2014 and on. Consumer cooperatives lasted till the moment, but in

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¹Assistant Professor, Rural Development Department, Alexandria University, Egypt

²Professor, Pomology Department, Alexandria University, Egypt

³Professor, Economics and Agribusiness Department, Alexandria University, Egypt

a much modern view, making consumer cooperatives looking somewhat like some privately-owned supermarkets, except for offering less varieties of products, particularly the imported ones, at reasonable prices (El-Shazly, 2010).

Farmers cooperatives emerged in the late 1950s early 1960s, with the initiation of the agricultural reform laws implemented by the Egyptian governments limiting agricultural acquisitions to a maximum of five feddans per person, among many other “social” measures. Historically, farmers cooperatives are government owned and operated. Farmers belong to the cooperative with insignificant membership fee to be paid. However, if the farmer does not register in the cooperative, he will not be able to receive the inputs of production at some subsidized prices. And contrary to the case of the consumer cooperatives which went from bad to good with the evolution of the market system, farmers cooperatives experienced mismanagement and corruption for decades. Till the date, farmers cooperatives are classified by farmers as being ineffective and do not provide them with the things they need, in either quantity or quality. Complaints about these cooperatives and their corresponding weak performance are the common themes farmers keep spreading (Abdel-Zaher, 2014).

Obstacles and impediments hindering the performance of farmers cooperatives, which are claimed and reported for years by all agents dealing with the farmers cooperatives are those of: lack of trained and experiences staff, less government subsidization and support to these cooperatives, misapplication of the cooperative principles, having small-sized cooperatives which hinders their performance, lack of facilities and weak infrastructure, having multiple governmental monitoring agents resulting in confusion and the like, bad quality of services offered to farmers, implementation of incorrect accounting procedures, weak self-financing, existence of legislative impediments which prevent the development of the cooperatives, and most importantly weak contribution of the cooperatives to availing needed agricultural inputs to the needy farmers (a major objective of initiating these farmers cooperatives) (National Planning Institute, 2001). Most of these impediments are addressed in this study through making a trial to measure the effectiveness of these farmers cooperatives. The quantitative measure of effectiveness the study comes up with would indicate whether the farmers cooperatives are effective or not. This is made considering the farmers on the one hand, and the cooperative managers, on the other.

Objectives:

This paper addresses farmers cooperatives effectiveness via surveying a sample of both the farmers benefitting from their services and the governmental managers working and operating these cooperatives. The main aim is to identify the cooperatives bottlenecks hindering performance and the main obstacles limiting their effectiveness. An evaluation and assessment of the degree of effectiveness of farmers cooperatives in the Egyptian newlands region of Nasr Canal Command Area in New Nubariya is the study’s main objective. More specifically, the objectives of this study are:

- 1.To establish a method of performance effectiveness measurement which could later be applied in other regions of Egypt.
- 2.To quantify a performance-effectiveness scale in the study area taking into consideration the points of views of the farmers and those of the managers of these cooperatives. And
- 3.To identify the differences of performance indicators between the farmers and the cooperatives managers, and to recommend what factors should be stressed on to improve effectiveness.

Review of Previous Literature:

This section presents some of literatures made on the effectiveness of agricultural cooperatives in different parts of the world. Conclusions which could be extracted from these literatures are presented in the end of this section.

Cain et al (1989) examined farmers’ assessment of the effectiveness of cooperatives as compared with proprietary firms in providing goods and services. The areas of consideration were marketing, market share, business functions, service, stability, and public involvement. Farmers indicated that cooperatives’ greatest advantages were in the areas of service and public involvement. Respondents indicated that cooperatives were more willing to provide low profit products and services, establish programs that best meet needs, provide low profit products and services, and provide a more dependable source of supplies and services. Cooperatives further provided a greater enhancement of welfare and in general reduced the risks facing farmers.

Burt and Wirth (1990) reported in their study the results of a survey of attitudes of commercial farmers and supply cooperative managers about agricultural supply cooperatives. Cooperative managers and farmers frequently made significantly different responses to questionnaire statements. With a few expectations, farm size and farmer age did not appear to influence perceptions about supply cooperatives. Whether a farmer was a cooperative member was

important in some cases. Lower prices in lieu of easy credit and patronage refunds were found to be acceptable to farmers, but not at the expense of good service. Managers placed great importance on member loyalty to the supply cooperative without regard to price consideration.

Drivas and Giannakas (2006) developed a game-theoretic model of heterogeneous consumers to analyze the effect of cooperative involvement on quality-enhancing product innovation activity. Analytical results showed that the involvement of the member welfare-maximizing coop in R&D can be quality and welfare enhancing by increasing the arrival rate of product innovations and reducing the prices of food products. The effectiveness of the coop is shown to depend on the nature of product differentiation and the relative quality of its products, the degree of consumer heterogeneity, and the size of innovation costs.

Lohr and Park (2008) evaluated survey evidence from U.S. organic farmers to identify the factors influencing effectiveness ratings of cooperative extension advisors by organic farmers. A nonlinear logit model is specified for the ratings provided by organic producers, and critical demographic and management factors that influence the ratings are identified. Results indicated that part-time and newer adopters of organic farming methods are more likely to rate extension service providers as effective providers of information. Scenarios to predict extension effectiveness when interacting with specific groups of organic farmers are developed.

Hanson et al (2010) reported that the remade cooperatives and the unions of cooperatives are struggling in Bosnia and Herzegovina. Their paper examined the needs of the agricultural cooperatives in order for them to be more successful and identified what support will likely come from the unions of cooperatives and what support must come from other sources. Data were obtained through: 1) questionnaires to a large group of cooperatives, 2) focus groups with a smaller number of cooperatives, and 3) personal interviews with union of cooperatives representatives. The findings indicated that the unions of cooperatives are working on issues such as registering and auditing cooperatives and resolving land ownership conflicts. The cooperatives also need help in business management, marketing, legal services, and organizational effectiveness. The unions will not be able to help in these areas, so nongovernmental organizations will need to provide these educational programming for farmers.

Katchova and Woods (2011) examined the role that food consumer cooperatives play in the local food networks. Data were collected from three case studies

with leading food cooperatives and a national survey of the general managers of food cooperatives. The authors identified the emerging business practices in local sourcing as a differentiation and member recruitment strategy for food cooperatives. The analysis identified several clusters of strategies used for local food procurement, based on the extent to which the cooperative is involved in procurement activities at the farm, at the distribution center, or at the food cooperative. Results showed that when compared to other grocers, food coops have clear advantages in working with local producers and oftentimes played a key role in the producers' business viability.

Butt et al (2011) revealed that the cooperative effectiveness of agencies such as evaluation will lead to discover the weakness and strengths for further improvement of cooperative programs. Their study was designed specially to see the effectiveness of the working of agricultural extension staff as perceived by 300 farmers in district Okara-Pakistan. Results showed that most 45.0% of the respondents belonged to the old age (31-40 years) category and most 30% of the respondents were above illiterate. An overwhelming majority 77.33% of the respondents was in fall radio category. Whereas only 29.33% of the respondents reported that they had contact with Extension Field Staff. An overwhelming majority 74.33% of the respondents indicated lack of mobility as the major constraints in approaching agricultural extension education services. It is recommended that educational level of the study area should be increased, and Government should ensure adequate availability of rural infrastructure facilities.

Issa et al (2011) placed emphasis on identification of various extension delivery channels used by various agencies and institutions, and the effectiveness of each of the channels in imparting knowledge, skill, and attitude to 600 interviewed selected through multi-stage random sampling techniques in Ogun and Osun States, Nigeria. Descriptive statistical techniques and correlation analysis are used. The study showed positive and significant correlation between the effectiveness of extension delivery channels and level of education, income, membership of association, and farming experience. Farmers' perceptions of the use of extension delivery channel in the study areas ranked very low showing the ineffectiveness of the delivery channels. The most effective extension delivery channels are other farmers, friends/relatives, radio, and extension agents.

Abdul Nasser, Rabab (2012) evaluates the Current Role of agricultural cooperatives in agricultural economic development and identify Strengths and weaknesses in the performance of these cooperatives in

Egypt (a case study in Assiut governorate). The study uses the inductive method of historical facts with the use of some statistical analysis tools for data related to the study like arithmetic mean and percentages. The study relied on primary data collected for a sample of farms in Assiut Governorate. number of (200) square meters planted by members of agricultural cooperative societies in four centers the administration of the governorate is: (Manfalut, Al-Fath, Assiut, Abu Tig), through a questionnaire. The study results were that there was a deficiency in the performance of cooperatives Agriculture at the level of the Republic and in Assiut Governorate as a result of many problems, most notably: (The state's abandonment of support, assistance and protection of agricultural cooperatives, the failure to define a clear role, the weak cooperative awareness of the majority of members, the lack of sufficient attention paid to the programs, Training and educating members, the small size of the associations and the limited number of their members, which affected the performance of its role.

Abou El-Nour and Abd Al-Hameed (2012) aimed at formulating a sound vision for improving the capital formation of agricultural cooperatives through developing their financing sources. The study used a Descriptive method for a Random stratified sample of 11 agricultural coops from Sharkia Governorate. The main results showed that the total numbers of projects related to credit agricultural coops amounted to 20 distributed in the different activities such as; 13 animal fathening with capital LE 2.179 million represented about 42.7% of the grand sum, 2 house bees with capital LE 51 thousand represented about 1% of the grand sum, finally 5 projects in different activities with capital LE 318.1 thousand represented about 6.24% of the grand sum. As for agrarian reform agricultural coops, it is noticed that, the total number of projects related amounted to 76 distributed in the different activities such as; 27 machinery project with capital amounted to LE 1.95 million, 23 project animal fathening with capital amounted to LE 3.89 million, 6 projects amounted to LE 6.59 million distributed to 2 for chicken immunization and 2 duck production and 2 marketing outlets, finally 2 project one for sheep breeding and the other for veterinary pharmacy with capital LE 125 thousand. Studying the capital and the distribution of investments through the different activities of agricultural cooperatives indicated the following results: As for agrarian reform of agricultural coops, the main results showed insufficient capital and investments when compared to the area served by these coops. This situation results in depending on getting loans as main financing resource for conducting their activities. Nevertheless, the main results for agrarian reform agricultural coops showed the membership fees and the

return on previously invested capital are the main financing resources for this type of coops. However, the main results for land reclamation agricultural coops showed poor capital and investments. This reflects the difficulty they face for providing guarantees when

getting loans to conduct their activities thus, such coops are self-financed depending on their membership fees and the return on invested capital. Investigating the point of view for the managers of the three types of agricultural coops designated the keys for improving the capital formation of agricultural coops. As for credit agricultural coops, the results showed that facilitating the procedure of getting loans, and increasing the membership fees are the core keys for increasing the capital of credit agricultural coops. Moreover, subsidized loans offered by the Government of Egypt, motivating and encouraging investment, and reducing the interest rate on loans offered to coops are the core keys for increasing the investments of credit agricultural coops. On the other hand, the results showed that facilitating the procedure of getting loans, increasing the membership fees, and increasing the prices of supplied crops are the core keys for increasing the capital of agrarian reform agricultural coops. Besides, motivating and encouraging

investment, and removing the restrictions of crop pricing are the core keys for increasing the investments of agrarian reform agricultural coops. Furthermore, the results showed that facilitating the procedure of getting loans, and increasing the membership fees are the core keys for increasing the capital of land reclamation agricultural coops. Moreover, motivating businessmen to invest in the agricultural cooperative sector is the core keys for increasing the investments of land reclamation agricultural coops.

El Sharif et al (2013) aims to identifying the agricultural cooperatives opinions about the roles of these societies in social empowerment and economic development for youth and women within the rural community as well as identifying the most important challenges facing agricultural cooperatives. The study sample consisted of four organizations entrusted with agricultural cooperatives: the Central Agricultural Cooperative Union, the General Agricultural Cooperative Association for Multi-Purpose Credit, the General Cooperative Society for Reclaimed Land, and the General Agricultural Cooperative Society for Agrarian Reform, in Cairo city. The social survey method by a purposive (meaningful) sample, based on questionnaire forms were applied to (182) forms on all members of the agricultural cooperative societies in the Cairo area. The research reached many results, the most important of which is that it was proved that there are roles for agricultural cooperative societies that will

achieve social and economic empowerment of youth and women in the rural society. In addition, there was a set of challenges facing agricultural cooperative societies, standing as an obstacle to these societies for achieving the emerging empowerment.

Brown et al (2013) identified that communicating the cooperative value package to member-owners as the most critical challenge among U.S. agricultural cooperatives. Rural cooperatives in three states are surveyed to identify current communications methods and to elicit the effectiveness of communicating key messages through those efforts by conducting a simple regression analysis.

Verhofstadt and Maertens (2014) analyzed the inclusiveness and effectiveness of agricultural cooperatives in Rwanda. They estimated mean income and poverty effects of cooperative membership using propensity score matching techniques. Heterogeneous treatment effects across farmers were examined by analyzing how estimated treatment effects vary over farm and farmer characteristics and over the estimated propensity score. Results showed that cooperative membership, in general, increased income and reduced poverty and that these effects are largest for larger farms and in more remote areas. Evidence is found of a negative selection as impact is largest for farmers with the lowest propensity to be a cooperative member.

Steklá et al (2015) analyzed the development of the capital structure and capital disparity across the farmers' cooperatives from fourteen regions of the Czech Republic for time series 2009 – 2013. The authors found out that one of the major factors, which affect the economic effectiveness, is suitable capital facilities of enterprises. In case of correct adjustment of capital structure, it is necessary to consider a number of factors which operate on the structure of capital. The analysis used the debt leverage indicators and method of comparative statics. Data are obtained and processed from the database of enterprises of Albertina. The impact of capital structure indicators on the profitability of cooperatives seemed to be insignificant during the monitored period.

Alia et al (2016) assessed the effectiveness of strategies as perceived and appreciated by coops' members using survey data from a national study on eight large food cooperatives in the U.S. The survey identified a wide range of attributes related to store and product characteristics, and marketing and management strategies. Interviewees are asked to rank their coop on these attributes on a Likert-scale of 0-4. Using Principal Component Analysis, information is aggregated and combined from the large number of rankings into six major categories. Results showed that, in general, members have strong positive perceptions of the

performance of their coops in term of quality of the products, quality of the management and the service, and the physical quality of the store.

Gulati and Juneja (2019) examined Indian agriculture which is dominated by smallholders. They addressed in their paper the questions of the evolution of the crediting system over time? What is its organizational structure, and how effective is it in terms of its reach, especially to smallholders? How efficiently can it deliver credit and what sorts of innovations are unfolding in this sector to make it more efficient, inclusive, and sustainable? In terms of inclusiveness, agri-credit institutions have played a major role. Small and marginal farmers, who operate on 47 percent of the operated area and account for 86 percent of the total operational holdings (number), got about 60 percent of institutional loans for agricultural purposes.

Elbuttat et al (2021) study the Performance Efficiency of local Agricultural Cooperative Associations in Egypt which are considered one of the most important means used by the state to perform many of the necessary tasks to enable those who work in various agricultural activities to meet the requirements of life, under unsuitable economic conditions locally and internationally. The study was determined that despite the great importance of the role of local agricultural cooperative associations, there is a deficiency in the performance efficiency of most of these associations, and thus their low effectiveness towards achieving their objectives. Therefore, this research aimed to evaluate the performance of these associations by measuring the efficiency of their performance, by using some financial criteria and indicators that achieve this objective. In achieving its objective, the research relied on the methods of descriptive and quantitative analysis, in addition to using some mathematical and statistical methods whenever required, to identify the relationships that control the main variables in this research, as well as their quantitative measurement. The study derived its data from the reality of the budgets' sheets of the local agricultural cooperative associations in the research sample, which reached 73, from the governorates of Beheira and Ismailia, during the year 2019/2020.

Mohamed et al (2022) aimed to measure the relationship between the quality of products and services by the agricultural cooperative association and the Egyptian farmer's satisfaction and the effect of products and services diversity on farmer's satisfaction. The study used two kinds of data collection to measure the Egyptian farmers' satisfaction with services provided by agricultural cooperative associations, which were primary and secondary data. The study used the secondary data by using previous studies that talk about

the agricultural cooperative association and farmer's satisfaction. The study used primary data by asking experts and farmers directly. The study conducted 100 questionnaires to measure the satisfaction of the Egyptian farmers with the services provided by agricultural cooperative associations. The study found that there is a positive relationship between the quality of products and services provided by agricultural cooperative associations and farmer's satisfaction. There is a positive relationship between the diversity of products and services provided by agricultural cooperative associations. The customer satisfaction is always main factor for any organization success and to make farmers satisfied cooperatives should improve the quality of products and services provided by them also they should provide farmers with different kinds of products and services.

In sum, the following could be extracted and highlighted from the previously presented literature review: 1/Cooperatives' greatest advantages are in the areas of service and public involvement, from farmers perspective. 2/ Cooperatives provide a greater enhancement of welfare and in general reduce the risks facing farmers. 3/Farm size and farmer age did not appear to influence perceptions about supply cooperatives. 4/ Lower prices in lieu of easy credit and patronage refunds are acceptable to farmers, but not at the expense of good service. 5/The effectiveness of the coop depends on the nature of product differentiation and the relative quality of its products, the degree of consumer heterogeneity, and the size of innovation costs. 6/Part-time, newer adopters of organic farming methods are more likely to rate extension service providers as effective providers of information. 7/Cooperatives need help in business management, marketing, legal services, and organizational effectiveness. 8/There is positive and significant correlation between the effectiveness of extension delivery channels and level of education, income, membership of association, and farming experience. 9/Communicating the cooperative value package to member-owners is a very critical challenge among agricultural cooperatives. 10/Cooperative membership generally increases income and reduces poverty and that these effects are largest for larger farms and in more remote areas. 11/Capital structure could have a significant impact on the profitability of cooperatives. 12/Farmers heterogeneity among coops and member socio-demographic and economic characteristics are strongly correlated with farmers perceptions of the coops. And 13/ Having a slid crediting system of the cooperative will strongly help farmers with small farm acquisitions.

The paper in hand, addresses some of the variables considered in previous studies in the composition of the

study variables and the method of assessing the cooperative effectiveness. This is made taking into consideration the nature of agricultural cooperatives in Egypt, in general, and particularly in the study area.

So, this section presents the definition Agricultural Cooperatives and Performance Effectiveness and related concepts.

• **Agricultural cooperatives:** FAO (2012) define the agricultural cooperatives as an autonomous association of women and men, who unite voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise. It is a business enterprise that seeks to strike a balance between pursuing profit and meeting the needs and interests of members and their communities. Cooperatives not only provide members with economic opportunities, but also offer them a wide range of services and opportunities. The cooperative enterprise model exists in many sectors, including agriculture, consumer issues, marketing and financial services, and housing.

Egyptian Agricultural Cooperation Legislation (1981) define the agricultural cooperatives as the economic and social units aiming to develop agriculture in its various fields also contribute to rural development in its areas of operation, with the aim of raising the level of its members are economic and social within the framework of the general plan of the state, and cooperatives are responsible for providing services different aspects of its members and contribute to social development in its area of operation, with the aim of raising the level of cooperative members and others economically and socially within the framework of the general plan of the state.

• **Performance Effectiveness:** FAO defined the performance effectiveness as the ability of an organization to achieve its goals and objectives in an efficient and effective manner, effectiveness refers to the ability to accomplish a task with a high degree of success.

Most researchers agreed that organizational performance in general: those methods and mechanisms adopted by the organization in the organizational field in order to achieve its goals that it seeks and organizational performance depends - to a large extent - that management is adept at directing and allocating available resources, in line with the goals it aspires to, and performance should be analyzed into two different types of measures, which are measures of efficiency and effectiveness, as they are one of the most important entrances in evaluating organizational performance (Al-Jubouri, 2015).

As seen in the literature review section, a variety of models exist to assess the effectiveness of socioeconomic organizations, with different types of data sets. This study extended the Robert Elkin and Mark Molitor Model (Elkin and Molitor, 1985), which identifies several criteria to organize socioeconomic entities and their abilities to achieve their goals. The model uses five major indicators; namely, sufficiency of resources, the matching of beneficiaries needs with the organization's goals, financing of the organization, the clearance of the organizational goals, the ability of the organization to impact its customers, and the ability of the organization to possess impacts on the society in the long run.

The study added some extra indicators and came up with a relatively new model. The model utilized four indicators representing the dependent variable of the study: the performance effectiveness of the agricultural cooperative. These four indicators are the human resources (4 items), financial/capital resources (4 items), organizational/administrative resources (4 items), and degree of achieving the organizational goals (15 items). The independent variables of the study include age, educational level, marital status, family size, time period residing in village, farm size, irrigation method adopted, current crops grown, selling locations of the produced crops, training sessions attended, sources of information, current job, previous job, time period working in agriculture and dealing with the agricultural coop, and ownership of the farm. Detailed discussion of the model is presented later.

Two sources of data are used in this study. Secondary data such as the mapping of the villages and all the needed information about the villages. This is provided by the Agency of New Communities and its related subbranches. In addition, primary data are collected through personal interviews with each set of interviewees (the farmer members and the coops managers).

The Study Population and Sample:

The study is conducted in the New Nubariya City. This city follows Branch 20, which follows the Medical Monitorship of West Nubariya Sector, which in turn follows Abu El-Matameer Area of El-Beheira Governorate. The study sample is randomly elicited from the existing agricultural cooperatives in Nasr Canal Command Area which includes three listed agricultural cooperatives (Table 1).

The study's population is all the farmers members of the three agricultural coops, in addition to the coop managers as examples of the service providers. The

sample size is determined according to the Taro Yamane equation (Snedecor and Cochran, 1980). The equation is shown below:

$$n = \frac{N}{1 + [(N/e)^2]}$$

- Where n is the sample size sought.
- N is the population size including all the farmer members of the three agricultural cooperatives.
- "e" is the accuracy level chosen at 0.07 for this study.

$$n = \frac{2789}{1 + [(2789)(0.07)^2]} = \frac{2789}{14.6661} = 190.166$$

Accordingly, the study sample stands at 190 farmers at the 7% confidence level. This number has been increased to reach 200 farmers to negate the possibility of having nonworkable and invalid questionnaires. Moreover, the study included 6 cooperative managers.

Variables Definitions and Measurements:

As mentioned earlier, the dependent variable of the study is the performance effectiveness level of the agricultural coop in the study area. This variable is defined as stated in the Egyptian Agricultural Cooperation Legislation number 122 for the year 1980 (Egyptian Agricultural Cooperation Legislation, 1981). The study made a measurement scale to measure the total degree for the coop's performance effectiveness. An original list of 47 statements reflects the concept of effectiveness is made. After discussing these statements with the experts in the field, only 27 statements were left. Two answers were given to the respondent to indicate his consent or not with the statements. If yes (meaning answer supporting effectiveness), one point is given; and if no (answer does not support effectiveness), zero point is given. Consequently, the degrees of effectiveness measurements range between zero to 27 distributed over all statements. The degree of measurement's reliability estimated using the Alpha Coefficient of Cronbach, with alpha value standing at 0.732, and utilizing the split half method with reliability coefficient of 0.606, which implies acceptable reliability (Tavakol and Dennick, 2011).

Table (2) displays a summary of the variables used in the study along with their indicators, definitions, and their corresponding components or items included.

Table 1. Agricultural Cooperatives in Nasr Canal Command Area

The Cooperative's Name	El-Yasha'a Ag. Coop	Soliman Ag. Coop	Mostafa Ismail Ag. Coop
Number of registered members	1149 Farmers	760 Farmers	880 Farmers
Total	2789 farmers		

Source: Information Center of the Local Unit of Abu Bakr El-Seddeek Village, Information Center of the Monitorship of West Nubariya, and Information Center of the Medical Monitorship (2017).

Table 2. Indicators and Components/Items of the Dependent Variable Definition (Performance Effectiveness of Agricultural Cooperatives)

Indicators of the Performance Dependent Variable	Coop' Variable Definition	Items/Components of the Variable Measurement	Agree	Disagree
Human Resources Indicator	Includes all the needed personal for the coop to offer services	1.Sufficiency of ag extension personnel in the coop. 2.Sufficiency of employees. 3.Sufficiency of technicians. 4.Sufficiency of administrators *Total score is calculated for this variable based on summing up the points scored by each farmer.		
Capital/Financial Resources Indicator	Includes all the needed capital for the coop to offer its services	1.Sufficiency of equipment and machinery. 2.Sufficiency of communication means. 3.Sufficiency and training halls. 4.Sufficiency of funds and cash. *Total score is calculated for this variable based on summing up the points scored by each farmer.		
Organizational/Administrative Resources Indicator	Includes all the items needed for the cooperatives to serve its members (the coop's capacity)	1.How capable the members are to absorb technologies. 2.Degree of commitment/awareness of the members. 3.Sufficiency of the coop's productive projects. 4.Sufficiency of the coordinating arrangements of the coop with high authorities. *Total score is calculated for this variable based on summing up the points scored by each farmer.		
Agricultural Cooperatives' Objectives Fulfillment Indicator	Includes the extent to which the coop would achieve its goals, as stated in the coop's legislation	1.The coop offers non-materialistic assistance. 2.Sufficiency of fertilizers and their suitability to crops grown. 3.Quantity and quality of seeds. 4.Loans number, amounts, and interest rate charged. 5.Machinery types and numbers. 6.Crop procurement services. 7.Crop marketing services offered. 8.Support of small enterprises and home production. 9.Information about daily market prices. 10.Solving unemployment issues. 11.Improvement of drainage systems. 12.Provision of health awareness programs. 13.Cooperation and coordination with the surrounding WUAs. 14.Coop helps in providing emergency fixation assistance. 15.Provision of guardians at the water-pumping stations. *Total score is calculated for this variable based on summing up the points scored by each farmer.		

The statistical methods used in this study includes frequency distributions, percentages, and some of the measures of central tendency. In addition, the degree of

reliability of composite measures is estimated using the Partition Technique where given a set of n objects, a partitioning method constructs k partitions of the data,

where each partition represents a cluster and $k \leq n$. That is, it divides the data into k groups such that each group must contain at least one object. In addition, the alpha coefficient of Cronbach is used. Cronbach's alpha, α (or coefficient alpha), developed by Cronbach (1951), measures reliability, or internal consistency. "Reliability" is how well a test measure what it should.

"Reliability" is concerned with the ability of an instrument to measure consistently. It should be noted that the reliability of an instrument is closely associated with its validity. An instrument cannot be valid unless it is reliable. However, the reliability of an instrument does not depend on its validity. It is possible to objectively measure the reliability of an instrument.

For example, a cooperative might give a performance satisfaction survey to their members. High reliability means it measures farmer satisfaction, while low reliability means it measures something else (or possibly nothing at all). In other words, this alpha coefficient tests to see if multiple-question Likert scale surveys are reliable or not. The statements measure latent variables, hidden or unobservable variables like a farmer's conscientiousness, neurosis, or openness. These are very difficult to measure in real life. Cronbach's alpha will tell if the test designed is accurately measuring the variable of interest or not (Tavakol and Dennick, 2011).

Analysis and Results:

First: Current Status of the Agricultural Cooperatives in the Study Area: Farmers Perspective:

Table (3) shows that the total score of the performance effectiveness measure is 11.56 points on a scale that varies between zero points and 27 points. This corresponds to 42.81% of the maximum, which is below

average. Table (3) also shows that the ordering of the indicators composing the performance effective variable from most important to least important is as follows: coop achieving its goals indicator (41.37%), human resources indicator (22.76%), capital/financial indicator (19.30%), and organizational/administrative indicator (16.57%), respectively.

Table (4) shows the results obtained detailing the different items making each of the four performance-effectiveness indicators which compose the dependent variable of the study. Results indicate that the item of lack of equipment and machinery occupies first place (one of the capitals/financial resources indicator). The item expressing the commitment of the coop members to the coop rules comes in second place (one of the organizations/administrative resources indicator). These are followed by the items of shortage of agricultural extension officers (one of the human resources indicator), and lack of technicians in the coop (one of the items making the human resources indicator). It should be noted that these two items of the human resources indicator are the main reason of making this indicator coming in second place among the four performance-effectiveness indicators.

The table also shows that the main reason for occupying the indicator of the coop objectives fulfillment first place among the remaining three indicators is the item of offering farmers enough fertilizers, whether suitable for the crops grown or not. Add to that the item regarding availing guards on the irrigation-pumping stations, the coordination of the cooperative with the Water Users Associations WUAs, and the relentless pursuit for improving agricultural drainage in the study area by the cooperative.

Table 3. Scores of the Performance-Effectiveness Indicators of the Agricultural Cooperatives in the Study Area: Farmers Perspective

Performance-Effectiveness Indicators	Score	%	Ordering
Human Resources	2.63	22.76	2 nd
Financial/Capital Resources	2.23	19.30	3 rd
Administrative/Organizational Resources	1.92	16.57	4 th
Coop Objectives Fulfillment	4.78	41.37	1 st
Total	11.56	100	

Source: calculated from the study data.

Table 4. Coop Performance Effectiveness Scores Recorded at the indicators and Their Corresponding Items Level: Farmers Perspective

Indicators of Performance Effectives and Items of Each Indicator	Score	%	Ordering
Human Resources			
1.Lack of ag extension personnel in the coop.	0.90	34.03	3
2.There are enough employees in the coop.	0.49	18.44	9
3.Coop needs more technicians.	0.81	30.61	4
4.Redundant number of administrators in coop.	0.45	16.92	11
Total score	2.63	100	
Capital/Financial Resources			
1.Lack of enough equipment and machinery.	0.92	41.03	1
2.The coop buildings suitable to doing needed tasks	0.52	23.09	6
3.Suitable and sufficient training halls.	0.35	15.47	13
4.Sufficient amounts of funds and cash in the coop.	0.46	20.40	7
Total score	2.23	100	
Organizational/Administrative Resources			
1.Members know technologies.	0.56	28.98	5
2.Coop members committed to the coop rules.	0.70	36.29	2
3.There are enough numbers of the coop's productive projects.	0.36	18.80	8
4.Sufficient coordinating arrangements of the coop with high authorities.	0.31	15.93	12
Total score	1.92	100	
Coop Objectives Fulfillment Resources			
1.The coop offers non-materialistic assistance.	0.57	11.82	14
2.The coop offers enough amounts of fertilizers and their suitability to crops grown.	0.98	20.40	7
3.Quantity and quality of seeds are enough and good.	0.10	2.09	22
4.Loans number, amounts, and interest rate charged are suitable	0.21	4.39	19
5.Modern machinery types and numbers are enough.	0.17	3.45	20
6.Crop procurement services are offered by the coop.	0.05	1.05	25
7.Crop marketing services offered (procurement and making of contracts)	0.14	2.93	21
8.The coop supports small enterprises and home production.	0.03	0.52	26
9.Information about daily market prices is availed.	0.35	7.22	17
10.Solving unemployment issues is made by the coop.	0.08	1.57	24
11.Improvement of drainage systems is made by the coop.	0.46	9.62	15
12.Provision of health awareness programs is made by the coop.	0.09	1.88	23
13.Cooperation and coordination with the surrounding WUAs is made	0.44	9.21	16
14.Coop helps in providing emergency fixation assistance.	0.28	5.86	18
15.Provision of guardians at the water-pumping	0.86	17.99	10
Total score	4.78	100	

Source: calculated from the study data.

Second: Current Status of the Agricultural Cooperatives in the Study Area: Managers Perspective:

Similarly to the analysis made for the farmers members of the agricultural cooperatives in the study area, table (5) summarizes the findings. The table shows that the score obtained for measuring the performance

effectiveness of the agricultural cooperatives, from the managers perspectives, is 12.67 on a scale from zero points to 27 points. This is equivalent to an effectiveness level of 46.92%. Again, this level is below average, just like that of the farmers, but just a little bit higher. The difference in effectiveness between the farmers and managers perspectives is a mere 1.11 points.

Table 5. Scores of the Performance-Effectiveness Indicators of the Agricultural Cooperatives in the Study Area: Managers Perspective

Performance-Effectiveness Indicators	Score	%	Ordering
Human Resources	2.17	17.11	3 rd
Capital/Financial Resources	2.17	17.11	3 rd
Organizational/Administrative Resources	2.50	19.74	2 nd
Coop Objectives Fulfillment Resources	5.83	46.05	1 st
Total	12.67	100	

Source: calculated from the study data.

Table (6) also shows that the ordering of the indicators composing the performance effective variable is from most important to least important is as follows: coop achieving its goals indicator (46.05%), organizational/administrative resources indicator (19.74%), with both of the human resources indicator and capital/financial resources indicator set equal in 3rd place with a percentage of (17.11%). Results a little bit like that of the farmers, except for having the organizational/administrative resources indicator coming up in 2nd place instead of the human resources indicator, as was the case for the farmers. Effectives overall score is insignificantly 1.11points higher than that of the farmers, which corresponds to 4.11% increase in the level of effectiveness.

Table (6) shows the results obtained detailing the different items making each of the four performance-effectiveness indicators which compose the dependent variable of the study, from the managers perspective. Results indicate that lack of extension officers, shortage of coops technicians, and the item of lack of equipment and machinery occupy first place in impacting the coop

performance effectiveness. The first two items belong to the human resources indicator, whereas the third item belongs to the capital/financial resources indicator. The item defining the commitment of the coop members to the coop's rules (one of the organizational/administrative resources indicator), came in second place. The five last items in terms of having less impact on the coop's effectiveness all have the ordering of 11 in Table (6). It should be noted that the repetitions in the ordering of many items are since only six managers are interviewed. The managers have similar background and educational levels as all of them are governmental employees after all.

It is believed that the main reason behind the coop objectives fulfillment indicator occupying first place in terms of impacting the coop effectiveness is that the coops provide guardian services to the irrigation pumping stations. Add to that, the close relationship and coordination between the coops and the WUAs, the provision of fertilizers, involvement of the coops in improving drainage systems, and lastly the contribution the coops make in cases of emergencies.

Table 6. Coop Performance Effectiveness Scores Recorded at the indicators and Their Corresponding Items Level: Managers Perspective

Indicators of Performance Effectives and Items of Each Indicator	Score	%	Ordering
Human Resources			
1.Lack of ag extension personnel in the coop.	0.83	38.46	1
2.There are enough employees in the coop.	0.33	15.38	5
3.Coop needs more technicians.	0.83	38.46	1
4.Redundant number of administrators in coop.	0.17	7.69	9
Total score	2.17	100	
Capital/Financial Resources			
1.Lack of enough equipment and machinery.	0.83	38.46	1
2.The coop buildings suitable to doing needed tasks	0.50	23.08	4
3.Suitable and sufficient training halls.	0.50	23.08	4
4.Sufficient amounts of funds and cash in the coop.	0.33	15.38	5
Total score	2.17	100	

Organizational/Administrative Resources			
1.Members know technologies.	0.83	33.33	2
2.Coop members committed to the coop rules.	0.67	26.67	3
3.There are enough numbers of the coop's productive projects.	0.33	13.33	7
4.Sufficienct coordinating arrangements of the coop with high authorities.	0.67	26.67	3
Total score	2.50	100	
Coop Objectives Fulfillment Resources			
1.The coop offers non-materialistic assistance.	0.50	8.57	8
2.The coop offers enough amounts of fertilizers and their suitability to crops grown.	0.50	8.57	8
3.Quantity and quality of seeds are enough and good.	0.33	5.71	10
4.Loans number, amounts, and interest rate charged are suitable	0.33	5.71	10
5.Modern machinery types and numbers are enough.	0.33	5.71	10
6.Crop procurement services are offered by the coop.	0.17	2.86	11
7.Crop marketing services offered (procurement and making of contracts).	0.33	5.71	10
8.The coop supports small enterprises and home production.	0.17	2.86	11
9.Information about daily market prices is availed.	0.17	2.86	11
10.Solving unemployment issues is made by the coop.	0.17	2.86	11
11.Improvement of drainage systems is made by the coop.	0.50	8.57	8
12.Provision of health awareness programs is made by the coop.	0.17	2.86	11
13.Cooperation and coordination with the surrounding WUAs is made.	0.83	14.29	6
14.Coop helps in providing emergency fixation assistance.	0.50	8.57	8
15.Provision of guardians at the water-pumping	0.83	14.29	6
Total score	5.83	100	

Source: calculated from the study data.

Conclusions and Recommendations:

Agricultural cooperatives in the study area, and generally throughout Egypt's newlands, suffer from weak performance effectiveness of the existing agricultural cooperatives. Both of the 200 farmers, members of the three cooperatives located in the study area, in addition to the 6 managers interviewed emphasized less than average effectiveness, as measured through the utilization of a composite effectiveness measurement that is made of four indicators, the first three of which are functions of another four items each, with the fourth indicator composed of 15 items by itself. Little insignificant differences are generally found between the scores obtained between the farmers members of the coops. This is shown in the overall below average effectiveness scores of 42.81% and 46.92% for farmers and managers, respectively. This result goes with the ongoing debate among experts in the field and the individual farmers throughout Egypt dealing with the agricultural cooperatives for decades.

Efforts must be directed to raising the effectiveness levels of the Egyptian agricultural cooperatives. Work

should be directed to both farmers, on the one hand, and the managers, on the other. This is since the study shows that the organizational/administrative indicator to be the weakest regarding achieving effectiveness, from the farmers perspective. From the managers perspective, the two indicators of human resources and capital/financial resources are the weakest in impacting performance. The study also shows that the agricultural and crediting bank does not do its job properly. Its services are not recognized or felt by the farmers.

On the other hand, the coop's provision of fertilizers, guardianship of the water pumping stations, and cooperation and coordination of the WUAs are found to be of utmost importance to the farmers. This led to having the indicator of the coop objectives fulfillment scoring high in terms of coops effectiveness. Other impediments facing the agricultural cooperatives performance effectiveness in Egypt still need further research.

Efforts must be directed to raising the effectiveness levels of the Egyptian agricultural cooperatives. Work should be directed to both farmers, on the one hand, and the managers, on the other. This is since the study shows that the organizational/administrative indicator to

be the weakest regarding achieving effectiveness, from the farmers perspective. From the managers perspective, the two indicators of human resources and capital/financial resources are the weakest in impacting performance. So, the state should direct part of its investment in cooperatives, establishing cooperative funds, and encouraging and mobilizing Cooperative savings in the new lands. In addition to that the cooperatives should increase the share capital of associations, by increasing the value of the membership fee. The study also shows that the agricultural and crediting bank does not do its job properly. Its services are not recognized or felt by the farmers. So, it is a must to maintain the Agricultural and Crediting Bank as a specialized bank and not turning it into a commercial bank. Its role is focused on lending to cooperatives and their members through agricultural cooperative societies, to encourage mobilizing cooperative savings in Newlands.

On the other hand, the coop's provision of fertilizers, guardianship of the water pumping stations, and cooperation and coordination of the WUAs are found to be of utmost importance to the farmers. So, applying the principle of cooperation between cooperatives itself and between other associations to achieving integration among them, and supporting capable associations for weak cooperatives and the establishment of joint projects. As well as participation of cooperatives with others, especially the private sector, to benefit from their investments and financing for collaborative projects. On the other hand establishing new agricultural cooperatives and reconsidering the role of agricultural cooperative societies in order to become more attractive in terms of providing services for members and groups benefiting from them. So, it is important to emphasize on further development and modernization of agricultural cooperative societies of all types to increase operating efficiency, increase asset utilization, and benefit from the possibility of expansion Investments and projects to improve the financial positions of associations and their capital formation Which helps it to continue and perform its role efficiently in light of the strong competition from the private sector.

This led to having the indicator of the coop objectives fulfillment scoring high in terms of coop's effectiveness. Other impediments facing the agricultural cooperatives performance effectiveness in Egypt still need further research.

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الملخص العربي

تقييم فعالية أداء الجمعيات التعاونية الزراعية في مصر (دراسة حالة في منطقة النوبارية)

بسمة حسن سعد، ضياء الأنصاري، بشيرين شريف

روبرت إلكين ومارك موليتور. وأسفرت تعديلات مقياس الفعالية عن قياس درجة فعالية المنظمة للتعاونيات الزراعية من خلال تقدير أربعة مؤشرات: رأس المال (أربعة بنود)، والموارد البشرية (أربعة بنود)، والإدارية (أربعة بنود)، وتحقيق أهداف التعاونية (خمسة عشر مادة). تظهر النتائج أن مستويات الفعالية الإجمالية أقل من المتوسط بنسب ٤٢,٨١% و ٤٦,٩٢% للمزارعين والمديرين، على التوالي. أما المؤشر التنظيمي والإداري فهو الأضعف من وجهة نظر المزارعين. وأشار مديري التعاونيات إلى أن مؤشرات الموارد البشرية والموارد الرأسمالية هي الأضعف. اتفق كل من المزارعين والمديرين بشكل عام على أن مؤشر تحقيق أهداف التعاونية يحتل المركز الأول في التأثير على الفعالية. الكلمات المفتاحية: الجمعيات التعاونية الزراعية، فعالية الأداء، الأراضي الجديدة.

تتمتع مصر بتاريخ طويل مع التعاونيات الاستهلاكية والمنتجة يعود تاريخه إلى أواخر الخمسينيات وحتى يومنا هذا. كلا النوعين من التعاونيات تديرها وتملكها الحكومة. وفي حين تطورت التعاونيات الاستهلاكية بسلاسة على مر السنين مع تحسن كبير في الفعالية مع تحول الاقتصاد تدريجياً إلى نظام السوق الكامل، فإن تعاونيات المنتجين تعاني من نقص الفعالية. وشكاوى المزارعين من عدم فعالية التعاونيات الزراعية تثير جدلاً شعبياً في مصر. الهدف الرئيسي من هذه الدراسة هو قياس فعالية مع الأخذ في الاعتبار وجهات نظر المزارعين ومديري التعاونيات. تم مسح التعاونيات الزراعية الموجودة بمنطقة قيادة قناة النصر بالنوبارية الجديدة في مصر من خلال المقابلات الشخصية. تمت مقابلة ستة مديريين تعاونيين ومثلي مزارع وجهاً لوجه. وفي تقييم الفعالية، قامت الدراسة بتوسيع وتعديل نموذج