

# DEVELOPMENT OF AGRICULTURE IN UGANDA THROUGH THE USE OF WIND MILLS

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With agriculture being the backbone of Uganda, it is one of the critical topics to talk about. Without agriculture then no one in the country would survive because food is life and the people in Uganda greatly participate in agriculture. Thus, in this article I would like to tackle the development of agriculture through the use of windmills. Uganda as a country faces so many challenges in agriculture especially when it comes to generating rain and electricity hence the introduction of wind mills to solve most of the issues economically.

It has been registered that 80% of Uganda's population carries out agriculture. It also covers a big part of the country's GDP. 80% of land in Uganda is available but only 35% is or has been cultivated. In the year 2022/2023, agriculture accounted for 24% of GDP and 35% of export earnings. It is also estimated by the Uganda Bureau of Statistics (UBOC) that 68% of the population in Uganda are employed in agriculture [1].

According to the World Bank, agriculture contributes to the most Gross Domestic Product of 24% which is the largest in the country as a single contributor [2]. It is mostly common in the rural areas as that is where land is abundant as compared to the urban areas hence creating employment opportunities to about 70-80% in the country [2].

It comprises of both crops and animal husbandry. Crops grown include cassava, maize, bananas, potatoes, coffee, beans, peas, and so many others. The animals include cows, goats, sheep, and others. But all in all, coffee remains as the main export product in Uganda contributing to revenue for the government. In the recent years, the government has boosted agriculture through irrigation and modernization of equipment for farmers. It has also given out loans to farmers so as to encourage to continue farming.

The Ugandan government came up with various measures to boost agriculture in the country such as modernization of irrigation systems by use of windmills so as to provide adequate water for the crops. This system was found out to be so reliable and not as expensive as other methods hence the use of windmills to increase agricultural development in the country.

*What are windmills?*

Windmills are machines that are designed to convert wind into mechanical energy and power (electricity). But are mostly used to pump water in Uganda and Africa at large as we face a crisis of drought due to the existence of high temperatures. First of all, windmills are cheaper to construct and maintain by the government of Uganda. They are also very efficient as compared to other sources of energy production.

*So, windmills are used to develop agriculture in the following ways:*

They improve in crop irrigation by producing water that runs through pipes to water the crops. This increases on the harvest by farmers and solving problems of famine. The produced water is also used by animals to drink and wash. Farmers are able to use water for farm works such as cleaning their farms and all that hence development in agriculture.

Windmills generate electricity that is used to power large refrigerators that are used to store crops so that they do not go bad. Electricity from windmills also save the farmers from additional expenses since it is cheaper thus allocation of income to different other important sectors. Farmers are also able to produce different types of crops at the same time due to the abundance of water generated by the windmills.

Windmills reduce on soil erosion through effective irrigation thus increase in crop production and this boosts agriculture.

*Challenges faced while introducing windmills to develop agriculture in Uganda.*

It's quite expensive to start as it involves a lot of capital in transportation of the equipment, importation from abroad. This greatly affects poor farmers who cannot afford such amounts of money.

Most farmers do not have the knowledge on how to get the windmills or how to operate them, they would need to be educated first and this usually takes a long process of which some are not able to read and write.

The sector faces challenges such as lack of modern technologies for farming. Farmers use old equipment's that are slow in crop production and hence leading to low harvests. Some places in the country are affected by bad weather like Karamoja where the land is completely uncultivable. Farmers also face a problem of limited market for their goods. However, the government of Uganda has made efforts to improve agriculture through the Ministry of Agriculture, Fisheries and Animal Husbandry. This ministry has provided farmers with knowledge in farming.

In the recent years, the GDP concerning agriculture has moved between 3-4% per year which is still not enough to feed the people in the country and this is due to the challenges I've mentioned above [2].

Coffee, tea and maize have been the main products of export from Uganda to other countries. In the year 2020 it was recorded that the country earned 497 million \$ from coffee exportation [3]. It is also regarded that Uganda is one of the leading coffee producers in Africa. The country also exports produces like tobacco and flowers.

Bananas are mainly produced in Uganda. It is also noted that Uganda has been one of the largest producers of bananas with an exceeding number of 10 million metric tons. They are both exported and also eaten at home by the population.

Maize and Cassava. These crops are mainly grown in the rural areas. They are used to produce main food staffs that are used at home. On over 1.5 million hectares maize and cassava are grown. Cattle has an estimation of 13 million which is used for beef and milk. It is also noted that milk production in Uganda is around 2.5 billion liters annually. Next is the poultry sector. The production of birds such as chicken is estimated to be 40 million. These birds are eaten at home and also sold to earn income [4].

Several programs such as Plan for Modernization of Agriculture (PMA) have been created so as to promote modernization of agriculture in the country. The Agricultural Credit Facility was also introduced purposely to provide soft loans with low interests for farmers so as to encourage them to purchase the necessary modern tools to increase their work load in farming [5].

In conclusion, Uganda needs to improve on sectors such as irrigation so as to produce more crops, development of better infrastructures like roads so that farmers can transport their produces to the market for sale, giving out short loans and others. By doing all this, Uganda will definitely boost agriculture in the country and this will also promote high employment opportunities to the people. As one of Africa's main agricultural exportations, I believe with the coming future Uganda will definitely improve so much in modernization of agriculture as they are always trying to solve the issues amongst the farmers and the government.

Despite all the challenges faced by use of windmills in Uganda, the advantages weigh more than the problems and thus improving agriculture in the country. Windmills have not been considered so much in Uganda but I believe as time passes by, we shall use them to develop agriculture as of the reasons I have explained in this article. According to the Minister of Agriculture, Animal Industries and Fisheries Frank Tumwebaze, windmills would be of a great advantage in the sector of agriculture in Uganda [6].

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## **REVIEW OF AI- ENHANCED BUSINESS MANAGEMENT SYSTEM. A CASE STUDY OF AN ALGERIAN COMPANY**

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Management has been revolutionized in the recent past by the insertion of the Artificial Intelligence in diversified sectors for optimum practices in business execution, policy making and customer service. This change towards integrating AI in Business Management Systems (BMS) is closely observed on the construction industry where firms including NEXT TRAVAUX an Algerian construction firm is among the companies that has embraced these technologies to improve its operations.

LLC NEXT TRAVAUX is a leading construction company established in Algiers, Algeria in the year 2010. Specializing in infrastructure construction needs of the country such as roads, highways, rail and even bridges among others. The company has approximately 270 employees and, its growth has been realised well within the construction industry. The company has an annual revenue in the amount of 1,500,000,000 Algerian Dinar, it is equivalent to 600,000,000 Rubles. The financial performance is seen to be good and strong enough to support the company's position in the industry as well as to ensure that the company delivers worthy construction projects.

The management of the Algerian company NEXT TRAVAUX has realised the potential and the added values that could be introduced in the management of construction project by the use of AI (Figure 1).

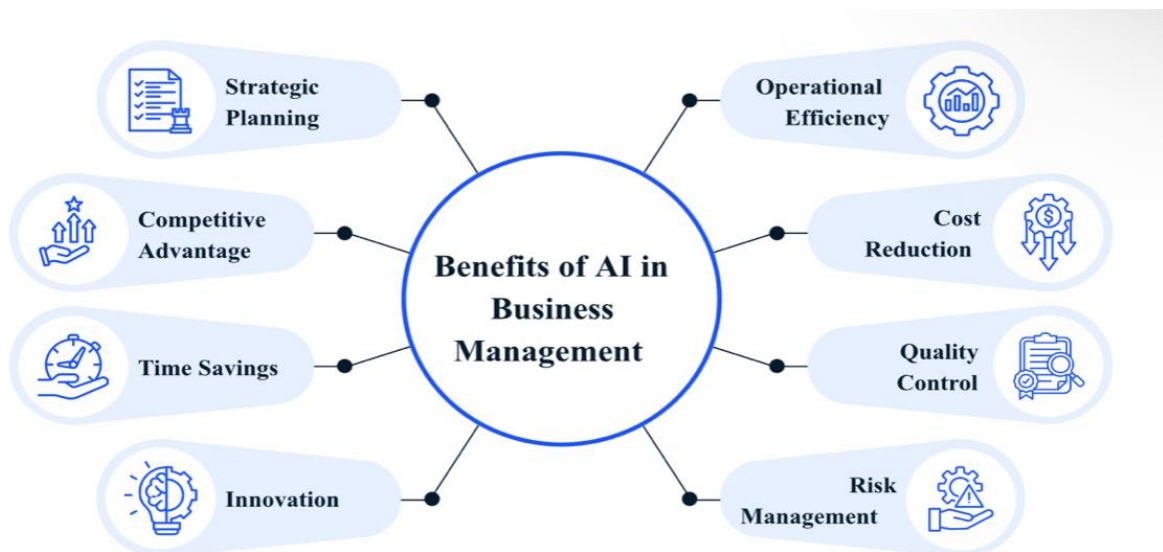


Figure 1. Benefits of AI in Business Management