A proposed Bay-Salam with Takaful and value chain model for financing agriculture in Kano State, Nigeria

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Abstract

Purpose – The purpose of this paper is to propose a model that will demonstrate how the integration of Salam (exclusive agricultural commodity trade) with Takaful (micro-Takaful – a subdivision of Islamic insurance) and value chain can address major challenges facing the agricultural sector in Kano State, Nigeria.

Design/methodology/approach – The study conducted a thorough and critical analysis of relevant literature and existing models of financing agriculture in Nigeria to come up with the proposed model.

Findings – The findings indicate that measures undertaken to address the major challenges fail. In view of this, this study proposed Bay-Salam with Takaful and value chain model to solve a number of challenges such as poor access to financing, poor marketing and pricing, delay, collateral requirement and risk issues in order to avail farmers with easy access to finance and provide effective security to financial institutions.

Research limitations/implications – The paper is limited to using secondary data. Therefore, empirical investigation can be carried out to strengthen the validation of the model.

Practical implications – The study outcome seeks to improve the productivity of the farmers through enhancing their access to finance. This will increase their level of production and provide more employment opportunities. In addition, it will boost financial inclusion, income generation, poverty alleviation, standard of living, food security and overall economic growth and development.

Originality/value – The novelty of this study lies in the integration of classical Bay-Salam with Takaful and value chain and create a unique model structure which the researchers do not come across in any research that presented it in Nigeria.

Keywords Bay-Salam, Takaful, Value chain, Agricultural financing

Paper type Conceptual paper

JEL Classification — Q140 Agricultural finance. **KAUJIE Classification** — K09, I65, I67

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1. Introduction

Agriculture was one of the major economic activities that provided employment to over seventy per cent (70%) of the total Nigerian population, 95% of the needed food for the people and 70% of foreign exchange earnings during 1960–1980s (Anyanwu, 2014; Onyiriuba *et al.*, 2020). With the discovery of petroleum, the Nigerian economy experienced a dramatic change leading to neglect of the agricultural sector (Izuchukwu, 2011). Consequently, agricultural production declined, triggering food insecurity challenge to the country (Ifeoma and Agwu, 2014). As a result Nigeria's import bill for rice and wheat skyrocketed to over one trillion Naira in foreign exchange annually (Emefiele, 2016).

It is observed that despite high demand for food items in the country, there exists huge waste of potentials from farmers, which would have been utilized to meet the growing demand. The farmers failed to meet up with the demand because of the challenges facing the sector (Okolo, 2006). The challenges include poor infrastructures, inadequate technical know-how and skills, inadequate modern input facilities, failure to incorporate value chain, ineffective government policies and programmes, inadequate marketing skills, fluctuating crop prices, inadequate logistic facilities and poor financing (Abdullahi *et al.*, 2016; Aboch, 2016; Adeleye *et al.*, 2020) There are some specific challenges that are associated with the models of financing from government, commercial banks and microfinance. The challenges include inaccessibility of loans, infinitesimal loan amount, prolonged delay, introduction of rigorous terms and conditions (due to guarantor and collateral requirement), bureaucratic bottleneck and high-interest charges (Badiru, 2010; Emerole *et al.*, 2014; Asaleye and Alege, 2020). Several measures have been taken by the government to address the challenges, but they still persist (Anthony, 2010; Bichi, 2016). Despite numerous researches in the field, it is, however, observed that, there is no practical research that incorporates *Salam*, value chain and *Takaful* to form a single model by involving all agricultural and financial stakeholders in Nigeria. Secondly, the structure of the model is unique in the sense that none of the previous researches presented it in Nigeria.

In view of the above, the subsequent sections of the article present an overview about Nigerian economy and agricultural development, review literature of proposed Islamic alternative models of financing agriculture and highlight the current model of financing agriculture in Nigeria. Next is brief discussion about concept of *Salam, Takaful* and value chain then followed by rationale for integrating them. Lastly, the study proposes *Salam* with *Takaful* and value chain model and discusses its prospect, policy recommendation and then conclusion.

1.1 An overview about Nigerian economy and agricultural development

Nigeria is a country endowed with both human and natural resources (Inusa *et al.*, 2018). The country has the 6th largest gas reserve and 8th largest crude oil reserve and the largest producer of cotton during 60–70s (Ekundare, 1973; Olaniyi *et al.*, 2015). With oil discovery, Nigerian government diverted its attention to oil production to the extent that over 85% of the government revenue is derived solely from oil. This led the country to become a mono-cultural economy with resultant decline in agricultural production (Ncube and Balma, 2017). The Consequences of the above challenges resulted to food insecurity, mass unemployment, poverty, inflation, high rate of crime and general stagnation of the economy (Aina and Salau, 1992; Abdullahi *et al.*, 2016). Empirical studies by Asaleye *et al.* (2020) reported that Nigeria is estimated to have lost US$10bn in annual export opportunities from only cash crop due to decline in its production. Although, there are several efforts undertaken by the Government to improve the local production through massive investment in the agricultural sector and border closure to ban importation of staple food such as rice (Ugwuja and Chukukere, 2021), Attempts made to revive the agricultural sector through these government's financing

schemes failed to improve the productivity of farmers due to associated challenges. Therefore, to resuscitate the agricultural sector, there is a need for an alternative model that can ensure sustainable financing. As emphasized by Adeleye *et al.* (2020), concerted efforts must be made by the federal government, the Central Bank of Nigeria (CBN), financial intermediaries and other stakeholders in making agriculture financing an utmost priority for the sustainability of domestic consumption. It is also indicated by Mungai *et al.* (2021), that private sector investment is necessary to meet financing needs of the agricultural sector.

1.2 The concepts

There are three major concepts employed in this study and these include.

1.2.1 Concept of Bay-Salam. *Bay-Salam* is a contract of sale in which price of the commodity is advanced initially at the time of making the contract against an agreed obligation to deliver a defined quantity and quality of a commodity in certain prescribed time in the future (Abdul Halim Umar, 1995). It is one of the important classical measures of enhancing access to finance to farmers during the time of the Prophet, peace be upon him (Obaidullah and Mohamed-Saleem, 2008). *Bay-Salam* is of great benefit to the buyer as it provides cheaper price for the commodity, thereby serving as security against future price fluctuations (Zaman, 1991; Abdul Halim Umar, 1995; Ayub, 2007; Iqbal and Mirakhor, 2011). Moreover, it satisfies the pressing need of the seller (farmer) in that it saves him from incurring unnecessary additional cost, exploitation and risk (Obaidullah, 2005).

1.2.2 Concept of Takaful. *Takaful* can be referred to as mutual financial protection that is based on the concept of cooperation among participants (Frenz and Soualhi, 2010). It involves "participating members contributing money to a common pool to indemnify those that suffer loss from defined perils. The cooperative principles are built on mutual cooperation, mutual help and mutual protection" (Ali and Nisar, 2016, p. 7). The aim of *Takaful* is not profit-making as risk is shared (Mahmood, 1991; Billah, 1998, 2001; Maysami and Kwon, 1999; Maysami and Williams, 2006; Bakar and Ali, 2007; Ayuba, 2014; Mansor *et al.*, 2015). Agriculture is one of the economic sectors that is more susceptible to various risks which deter financial institution's investment (Miller and Jones, 2010; Rasheed and Mudassar, 2010; Iqbal and Mirakhor, 2011). Therefore, to attract more investment in the agricultural sector, it is essential to curb and mitigate its related risks (Yu and Rehman Khan, 2021). This is where *Takaful* becomes pertinent to provide shield and confidence to financial institutions. It is evident by the studies of Onyiriuba *et al.* (2020) that government should address risk aversion tendencies among the lenders, provide adequate subsidies and budgetary allocations to agriculture to ensure effective commitment of the lenders to agriculture and underpin agricultural insurance. As highlighted by Muhammad (2021), there is a class of Takaful known as micro-Takaful, which is affordable to low income earners and under privileged segment of the population thriving in informal economy. IFSB-AIAS (2015, p. 15) defined micro-Takaful as "*the Islamic counterpart of micro-insurance. It is a joint-guarantee initiative, whereby a group of participants agree among themselves to support one another jointly for the losses arising from specified risks, under the core principles of Tabarru' (donation), TaÑāwun (mutual assistance) and Prohibition of Ribā (usury)*".

1.2.3 Concept of value chain financing. A value chain is defined as "a sequence of activities that a product passes through with value-added in each stage from design to the transformation of inputs to the final market. These activities are carried out by series of actors, who set rules and relate to each other in different ways, depending on the value chain" (Fries and Akin, 2004, p. xi). Meanwhile, value chain financing is referred to any or all of the financial services, products and support services flowing to and/or through a value chain to address the needs and constraints of those involved in that chain, be it a need to access finance, secure sales, procure products, reduce risk and/or improve efficiency within the chain

(Boland *et al.*, 2009; Miller and Jones, 2010). The idea of value chain financing expands the level of finance at various stages of a value chain, which accelerates the competitiveness of complete value chain, thereby involving manifold actors to mitigate risk (Fries and Akin, 2004; Quirós, 2015, pp. xi). Thus, this entails that the risk and return of the supplier and those that demand finance (chain actors demanding finance) are being considered. Hence, it can become a solution to the *Salam* financing in dealing with credit and market risk and makes farmers to be financially inclusive. In Nigeria, the current government policies and programmes are yet to tackle the dwindling performance of the agricultural sector. To resuscitate the agricultural sector performance and increase production, huge investments and innovative ideas are required. The agricultural value chain has the potential of triggering economic growth in a higher scale with a trickle-down effect to other sectors of the Nigerian economy (Olomu and Ekperiware, 2020).

2. Literature review

2.1 Previous studies that proposed Islamic alternative models for financing agriculture

There are many studies that proposed Islamic alternative models of financing agriculture. Some of these studies proposed conceptual parallel and agency *Salam* models (Zaman, 1991; Rasheed and Mudassar, 2010; Muneeza *et al.*, 2011; Ogunbado and Ahmed, 2015; Ali, 2016; Adamu, 2018).

A *muzara'ah* supply chain model proposed by Oladokun *et al.* (2015) requires financial institutions to procure inputs and all logistics related to agriculture. Meanwhile, farmers will contribute in the form of labor or land. The main limitation of this study is the number of respondents (31) and only quantitative approach was considered to validate the model.

A framework of Zakah and *Salam* contract was proposed by Hossain *et al.* (2019) to improve access to finance to poor smallholder farmers. However, the framework lacks empirical validation.

Mohd and Thaker (2020) proposed an Integrated Agricultural Land Crowdfunding Model (IALCM) using Islamic financing instruments through a crowdfunding platform to meet the liquidity constraints in Indonesia.

The study of Shafiai and Moi (2015) proposed three *Muzaraah* and *Musaqa* models to be adopted as a solution to the landholding problem in Malaysia. The limitation here also lies in the scope of the sampling (126) as attested by Hoe (2008).

In response to agricultural financing problems in Pakistan, Kaleem and Abdul Wajid (2009) proposed *Salam* model as a solution. Their study proposed three conceptual models namely, diminishing *Musharaka,* agency and parallel *Salam*.

Similarly, a study conducted in Somalia by Hassan (2015) proposed a model of *Salam* and supply chain. The study focused on group discussion with seven informants. The limitation of the study is assigning farmer alone to mitigate *Salam* credit risk. However, Somuyiwa (2010) affirmed that most farmers lack the necessary expertise in marketing goods. Thus, this option can result in lower price, hence low profit to financial institutions.

Another study of Saiti *et al.* (2018) proposed *Salam*-based crowdfunding to ease financing challenges of farmers in Afghanistan.

Waluyo and Rozza (2020) propose a model for minimizing problem faced by Islamic banks when using *Salam*-based financing. The study proposed that Islamic bank should cooperate with agricultural insurance, establish a symbiotic relationship, have a marketing network, and innovate *Salam* products with a hybrid contract.

Anwer (2020) proposes a framework where *Salam* can be used to conduct import transaction. The proposed model suggests changing bank's role from intermediary to entrepreneur and favors better alignment of risk between the related parties.

Arzova and Şahin (2019), examines the application of *Salam* in financing agriculture in Turkey and discuss its inherent risk thereby suggesting ways to minimize the losses.

Azganin *et al.* (2021) proposes an Islamic P2P crowdfunding model as an alternative financing solution for paddy farmers in Malaysia.

Yu and Rehman (2021), designed a financing system for GAPSC to reduce the income gap between rural and urban areas with agricultural product suppliers as financiers and urban residents as investors.

In another study, Moh'd *et al.* (2017) attributed the decline in clove production in Zanzibar to charging high-interest rates as well as collateral requirements. Hence, the study proposed a *Muzaraah* model to address the challenges through partnership and risk-sharing between business partners. However, due to risk-sharing nature of *Muzaraah* contract, studies of Ahmed and Khan (2007) indicated that credit risk is highest in profit and loss sharing (PLS) modes and *Salam* was ranked average. In terms of ease and cost of liquidity of instrument, *Musharaka* has the highest risk followed by *Salam* (Elhiraika, 2003). Moreover, Obaidullah (2015), enunciated that Salam is the best for financing agriculture upon all Islamic products because it meets the immediate cash needs of farmers.

2.2 Models of financing farmers in Nigeria

Previous studies demonstrated that financing giving to agricultural sector in Nigeria is inadequate as only 1.1% (N228,4B) of the budgetary allocation is given to agriculture in 2023 (USDA, 2023) Regarding commercial bank loans portfolio, only 6.16% of cumulative commercial bank loans and advances was directed to agriculture in 2022 (Central Bank of Nigeria, 2023). Equally, loan from microfinance involved high-interest charges and represented only 1% of cumulative credit (Mhammed and Hasan, 2008; Badiru, 2010). Consequently, farmer's productivity is adversely affected, resulting to low agricultural production.

Amongst the various policies and schemes undertaken by Nigerian government to address the challenges is commercial agriculture credit scheme, which offer concessionary (low interest) financing agriculture to the tune of 200 billion bond. Apart from the structure that involves financing in cash and kind. The financing involves complete value chain ranging from production, processing, storage, farm input supplies and marketing. Another scheme is the Anchor Borrowers Program, which target farmers by offering single digit interest rate loans. Under this scheme, over 1 trillion naira has been disbursed through mid-2022 (Jung, 2023). Other scheme and intervention include the Nigerian Agricultural Promotion Policy (APP), which targets "an agribusiness economy' while emphasizing food security, import substitution, job creation with a view to reduce poverty and diversify the economy. The Accelerated Agriculture Development Scheme (AADS) is another dimension that seeks to engage a minimum of 370,000 youths in agricultural production across the country over a period of three years in order to reduce unemployment among the youths in the country. Of recent, National Agricultural Technology and Innovation Policy (NATIP). 2022–2027 aims at generating agricultural employment and services, and facilitating agribusiness, and therefore increasing Nigeria's agriculture sector and transforming the country into a leading global food market (FAO, 2022). Finally, the micro-finance model is a private entity witch offer loan through farmer's group basis or associations. In this instance, farmers collectively request for the loan and promise to repay the loan with its interest rate when due Oladukun *et al.* (2015).

Upon all these various measures undertaken by government to curtail the challenges the problems persist. It can be inferred that government financing schemes and other models failed to adequately address the challenges in the sector because of prolonged delay in the process of loan application, inadequacy of designated funds, nonchalant attitude of the banks towards the schemes, high default of loans repayment by farmers, lack of collateral and high cost in

administering loans (Central Bank of Nigeria, 2017; Ugoani *et al.*, 2015; Coker *et al.*, 2018; Olomu and Ekperiware, 2020).

Consequent upon that, the models have less impact on improving productivity and income of farmers (Central Bank of Nigeria, 2016, 2017; Ijaiya *et al.*, 2016; Oke, 2017; Coker *et al.*, 2018; Olomola and Nwafor, 2018). These challenges, coupled with poor observation of Sharia compliant financing products lead to financial exclusion of an appreciable number of farmers. This is because Nigeria has a larger number of Muslim population (Mhammed and Hasan, 2008). For instance, Kano state, where 95% of the population are Muslim and majority farmers have the highest number of financially excluded adults in Nigeria (2, 512,75) (EFINA, 2014).

2.3 The legal framework

Enabling policy is essential for the application of the proposed model. In Nigeria a new development in the banking industry in Nigeria emerges as a result of promulgation of Central Bank of Nigeria (CBN) Act 2007 and the Banks and Other Financial Institutions Act (BOFIA), which give room for various economic reforms in the banking industry. One of such development is the issuance of decree that made new provision for the establishment of Non-Interest banking in Nigeria (Dauda, 2013). On January 13th 2011 the Central bank issued the "Framework for the Regulation and Supervision of Institutions offering Non-Interest Financial Services in Nigeria" for the NIBs. This is immediately followed by the "Guidelines for the Regulation and Supervision of Institutions Offering Non-Interest Financial Services in Nigeria" on 21st of July, 2011. This development led to the establishment of the first full-fledged Islamic bank known as Jaiz Bank (Bebeji *et al.*, 2020). The regulation extended to conventional banks that offer non interest banking services and they are required to open a distinct records for Islamic Banking services. The provisions confined in the companies and Allied Matters Act 1990 also covers the legal framework of NIB in Nigeria as it relates to the incorporation of a company (a bank), as well as section 4(1) (c) of the "Regulation on the Scope of Banking Activities and Ancillary Matters, No. 3, 2010" which defines specialized banks to "include noninterest banks (Dauda, 2013).

3. Research methodology

The study critically review reports, documentaries, empirical and conceptual papers and the existing models of financing farmers in Nigeria to propose a viable framework of *Salam* with *Takaful* and value chain that can be used in financing agricultural sector in Kano State, Nigeria. Kano state, situated in the Northern part of Nigeria (Maryam, 2015), has 98% of its population as Muslims (http://www.sharia-in-africa.net, 2006). The state is an ancient city with a projected population of 13,337,462 people (Sayyadi *et al.*, 2021). The State has a cultivable land area of about 18,684 square kilometers (7,214sq mi). Being a shari'ah practicing state with high economic potentials in agriculture (70% of the population in agricultural line (Henao and Baanante, 1999)), the state is selected because the prospect of accepting the model is high due to challenges on accessing finance leading it to having the highest number of financially excluded persons (2, 512, 751) in Nigeria (Efina, 2014).

4. The model

4.1 The rationale for integrating Takaful and value chain with Salam

The principal objective of *Salam* is satisfying the financing needs of farmers (Obaidullah, 2015). In Sudan, bank of Khartoum uses *Salam* as the dominant mode of finance with a share of 21 and 5% for all commercial banks, respectively (Bashir, 1999; Elhiraika, 2003). Although *Bay-Salam* has proven to be successful in Sudan, there are some issues that must be resolved if *Salam* model were to be practised for financing in Kano State. This is because there are associated

price, market and delivery risks and other practices related problems of storage as well as quality assessment (bin Haji Idris, 2001; Muneeza *et al.*, 2011; Kaleem and Ahmad, 2010). Moreover Ehsan and Shahzad (2015) reveal that Islamic financial institutions are skeptical in using classical *Bay-Salam* because they are accustomed to dealing with liquid cash, rather than receiving commodity from their customer. Moreover, financial institutions cannot sell the commodity before delivery due to Islamic injunction that strictly prohibits selling of anything not in possession of the seller. Therefore, this study modifies the use of classical *Salam* and integrates *Takaful* and value chain to address these risk issues. This is with the view to providing effective security to financial institutions through *Takaful* and ensuring mutual effort to increase the quality and quantity of farm produce through value-added activities. Moreover, World Bank (2018) asserts that, in addition to its associated risks, factors which constrain growth of agricultural financial markets lie in addressing complete risks through insurance and other risk management mechanisms. Against this background, this study observes that different approaches are required to address the default, price and natural disaster risks by integrating *Takaful*, value chain financing with *Salam* in a single model.

The rational of combining *Takaful* and value chain financing is seen in their ability to mitigate certain risks in financing agriculture because that the two are mutually inclusive. This is because *Takaful* is meant to reduce the rate of farmer's vulnerability and risk exposure through sharing the risk among participants. It also financially includes the farmers by making easy access to financing. This is achieved through provision of protection/security to financial institutions. It is therefore apparent to understand that Takaful seeks to ensure no or less loss from the side of the financier as it gives a guarantee of indemnity when natural disasters affect the farming output. With this, the issue of delivery/default risk can be addressed. It should however be noted that since farmers falls under low income earners, the class of Takaful that will fits their financial status is micro-Takaful. This is because according to Muhammad (2021), micro-Takaful as a sub-class of Takaful has several advantages over general Takaful which includes; ability to cover high risk, being an extension of social insurance, possessing a requirement for pre-existing conditions, being affordable to low income earners and accommodating informal economy outside social insurance coverage.

It is important to note that *Takaful* alone cannot provide concerted effort between actors to improve the quality and quantity of farm products. Thus, this can expose farmers and financial institutions to other risks and hence, the need for integrating value chain financing becomes inevitable. Value chain financing facilitates appropriate financing at each stage of the value chain so as to respond to the financing needs of various actors. This can be possible through establishing efficient linkages between financiers, farmers (producers), processors, agricultural experts and agribusinesses. Incorporating value chain brings higher yield and greater profit. The link helps to reduce cost, risk level and ensures a constant supply of products. Therefore, the combination of *Bay-Salam*, *Takaful* and value chain financing in a unique model can help to address the challenges facing farmers in accessing financing and reduce their level of poverty in Kano State.

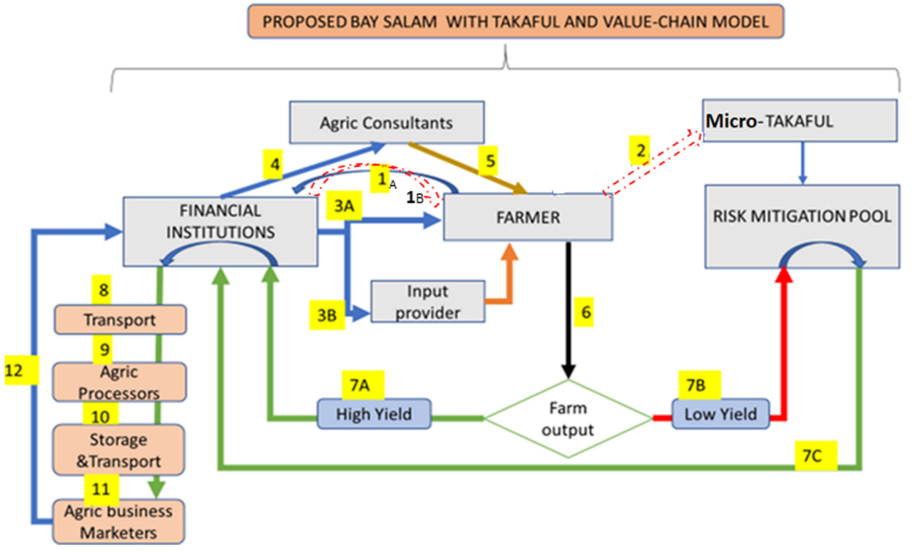
4.2 The proposed Bay-Salam *with* Takaful *and value chain model*

The model is a novel approach to classical *Salam* aimed to provide interest-free financing to farmers. The ultimate objective is to help in achieving increased and sustained growth in food production, enhance farmers' income and reduce poverty. The proposed model provides integration and coordination of all actors in the value chain to achieve the goal of efficient production, processing and marketing. Hence, an increase in the profit generation of a financial institution by identifying economic opportunities of investment in the real sector is ensured. It is revealed that government financing schemes and other models in Nigeria failed

to adequately address the challenges in the sector because of inadequate access to finance, small loan amount, and prolonged delay due to bureaucracy, lack of collateral and high charges. It is also evident that farmers are facing other marketing and pricing risks. The proposed framework *of* Salam*, Takaful* and value chain can help in addressing these challenges in the following ways.

The principal objective of *Bay-Salam* is to satisfy the financing needs of farmers through provision of working capital. In this case, the issue of lack of financing is addressed. The challenges of poor marketing and pricing can be addressed using *Salam* as farmers will repay financiers back with crops rather than cash. Correspondingly, pricing of crops is initially agreed upon at the time of making the contract. Therefore, *Salam* can serve as a hedge against future fluctuation of price. Equally, in *Salam* the issue of delay, cumbersome process of loan application to its approval is addressed as initial working capital is given immediately at the time of concluding the contract. More so, group finance emphasized by the model also solves the challenge of collateral requirement. Since farmers are in groups it will be much easier for them to get financing from financial institutions. This is because group financing serves as a security to financial institutions which can replace the condition of pledging collateral, which most farmers lack. The farmers' associations can also serve as grantors to farmers to ease their access to financing. By doing so the issue of collateral is addressed. In totality, *Salam* provides a link between finance and real economic activity.

The model is a multi-stage, where various Islamic financing contracts that can strengthen the link between actors through responding to different agricultural needs are co-opted and presented. Likewise, roles and interrelated links of various actors in the chain are presented where value is added at each stage. Each contract is preserved as an independent contract to ensure collective and mutual benefit of chain actors towards best result. The proposed model can be implemented by various financial institutions including Islamic banks, commercial banks with Islamic window service, non-governmental organizations, government agricultural development finance and Islamic micro-finance institutions. These institutions have the goal of achieving profit and uplifting socio-economic status of society. Figure 1 presents structure of the model which is followed by the stepwise explanation.



Source(s): Author's own illustration

Figure 1.
Proposed *Bay-Salam* with *Takaful* and value chain model

4.2.1 Steps of the proposed model.

(1) Farmers through their association go to the bank looking for financing

(2) Farmers are supported by the institution through its corporate social responsibility to contribute to a *micro-Takaful* pool to help them hedge against unforeseen circumstances in a separate agency *Takaful* contract

(3) • The bank provides cash to farmers as payment for future Salam goods. (2) In case if some farmers have difficulty getting standard input the bank can provide input to farmers

(4) Agricultural extension agents are assigned by the bank to monitor farmers

(5) Agricultural extension agent provides technical skills and expert advice to farmers to ensure proper management for better output

(6) Farmers harvest the farm output

(7) • If there is a high yield, the output is given to financial institutions directly.

- If there is low yield the farmers go to the *Takaful* operator to look for indemnification from risk mitigation pool so as to deliver the goods to banks as initially agreed upon.
- *Takaful* pays in the commensurate amount to farmers to purchase complimentary farm products and take it to financial institutions. However, *Takaful* must confirm that the loss is not as a result of negligence.

(8) The financial institution assigns agri-business to collect and sell the crops after delivery for the financial institutions, based on *Wakala* contract.

(9) The financial institution provides logistics (transportation) to agri-businesses for transporting the crops to processors.

(10) Agric-processors add value to crops by processing, packaging and labeling for the financial institution and charge their fees.

(11) Storage of the crops between financial institutions, farmer's association and storing company through *Ijarah* arrangement

(12) Agri-Business sells the crops to third party through *Murabaha*

(13) The agri-business returns the proceeds to financial institutions and gets its *Wakala* fee.

A. First Stage

In the first stage, cluster of farmers (say twenty-five in each group) will request for financing from financial institution through their association. There are two parties in this contract – farmers and financial institution. *Salam* will be used to give working capital to farmers to enable them plant their crops. The duration for this financing should be within the period of 5–6 months, which is enough for planting up to the harvest. Financial institutions have to send agricultural expert to survey the land and evaluate its productive capacity. Based on the information obtained, the required quantity to be entered into the contract will be determined.

Upon determining the quantity, selling price is set. Farmers' associations can negotiate a favorable sale price of *Salam with* financial institution based on the information and knowledge derived from the value chain. In view of the aforementioned, this research, therefore, adopts the pricing technique proposed by Ehsan and Shahzad (2015) which is

based on price projection. Therefore, to ensure well predictions of food price a proper adjustment should be made regarding changing market condition. In other words, prices should allow for more rapid and efficient adjustment to changing market conditions. In this instance, financier and the farmers' associations should reach agreement on the expected future price of commodities before concluding the contract.

B. Second Stage

After reaching agreement on pricing, quantity, quality, and place of delivery of the product, the next step is to ask farmers to contribute an agreed amount of money into a *micro-Takaful* pool, which is to be an independent contract. In order to improve the welfare and reduce the financial burden on already poor farmers, the model suggest that financial Institutions should channel their contribution of corporate social responsibility towards offsetting Takaful cost on behalf of the farmers. This flow as denoted by dotted red lines in the structure of the model starts all the way from (1_B) to (2). The significance of this step is seen in ensuring conformity of the financial institution with regulations (by fulfilling the requirement of corporate social responsibility) while mitigating the effect of uncertainty in their investment. Thus, the step presents a win-win situation by fulfilling mandate of the financial institution, aiding farmer's financial inclusion and addressing their exploitation. Therefore, the contribution from financial institution can be kept in a micro-Takaful common pool and can be used in case of any loss that may arise due to natural disaster.

C. Third Stage

The third stage is a two-fold approach where the financial institution offers financial support to farmers, while at the same time enters into separate *Murabaha and Musharaka* contract with input providers.

(1) After reaching agreement with farmers' association, financial institution will then give cash (for hiring laborers and maintenance cost) to farmers through their associations, which will also serve as grantors for the farmers. More so, financing of farmers through grouping may serve as security against default since any reckless member can be forced by other group members to pay on time so as not to block their future chances of getting financing. More so, group finance emphasized by the model also solves the challenge of collateral requirement. In order to strengthen the mitigation against deliberate default, the farmers will be made to sign a legal document of an irrevocable payment standing order with their banks providing their bank verification number (BVN) to serve as a security to financiers. The BVN is a unique bank ID in Nigeria which is linked to all banking transactions of a person and it can be used to track any account activity to recover the loan in case of deliberate default.

(2) *Murabaha* contract between input provider and financial institutions to supply inputs (pesticides, herbicides, fertilizer, seeds among others) to farmers on behalf of financial institution. This kind of large-scale contract is often secured at a cheaper cost because of bulk buying. This will also satisfy the needs of securing sale by input providers. To enable complete chain financing, input providers that need financing from financial institutions can enter into separate *Musharaka* contract, whereby they (input providers) contribute 25% while financial institutions contribute 75%. The profit and loss can be shared according to pre-agreed sharing ratio.

D. Fourth stage

The *Wakala* arrangement between financial institution and agricultural extension workers will be co-sponsored by the financial institution and farmer's associations in such a way that a

proper check and balance can be ascertained. There will then be a dual supervisory role by both parties. As such, they are eligible for certain percentage of the profit as a return for their investment. This is because, the better the crops, the better the return and vice-versa. Moreover, farmers are expected to add value to the crops by devoting their effort on the farms since they are part of the business.

E. Fifth stage

The fifth stage is where the agricultural-consultants monitor and supervise the farms to ensure proper management for better output. Reporting any problem on time to agricultural extension agent can assist in achieving higher yield.

F. Sixth Stage

Here the farmer produces his output and assesses its quality and quantity in accordance with agreed terms. After harvest, farmers' associations will collect all the crops from each farmer to guard against default and intimate the financiers to provide transportation for the next stage.

G. Seventh stage

With the provision of transport means, the farmers transport the goods where there is high yield (7A). Where there is no high yield (7B) the farmers will seek for indemnification from *micro-Takaful* pool, wherein commensurate compensation is given to them and deliver the *Salam* goods through route (7C) to the financial institution. But Takaful firm must ensure that the loss is not as a result of farmer's negligence.

H. Eighth Stage

The subsequent stage entails initiation of the contract under *Wakala* (agency) between financial institution on one hand and processors/marketers (represented by agribusiness firm) on the other hand. The agribusiness will serve as an agent of financial institution to collect the crops after harvest, take it for processing and sell it at a higher price by agreeing on some percentage as his commission in the business. This entails transportation throughout the chain covering stages 8, 9, 10 and 11 as shown in the figure. The delegation of agribusiness to sell the crop is very essential because, the viability of value chain finance depends on "insider knowledge".

I. Ninth Stage

This is the stage where value is added to the crops by way of processing. In this instance, the processors' role is significant as they process and package the products after harvest, which adds value to the crops. It equally, enhances market demand of the product through packaging, which makes the product to attract higher market value compared to unprocessed commodities. In addition, when processors are in need of equipment for processing, they can request for financing in separate *Ijarah* arrangement with the financial institutions. This can enable complete chain financing to allow the financial institution generate more profit. Moreover, majority of farmers suffer food spoilage as a result of inadequate transport and storage facilities. Therefore, there is need for coordinated and integrated means of collecting primary products through provision of an effective and efficient transport system (World Bank, 2018).

J. Tenth Stage

In this stage, provision of appropriate storage facilities serves to add value to the crops because poor storage accounts for 22% of the total world food loss (World Bank, 2018).

Smallholder farmers are often forced to sell their produce at very low prices to avoid losses due to decay. Therefore, financial institutions and farmers' associations can embark on *Musharaka* financing to provide appropriate storage facilities to reduce the level of waste and generate better prices for the crops. Alternatively, the financial institutions can store the goods through independent *Ijarah* contract with a storage company. This can serve as an investment strategy for the financial institution to own the storage facility and lease the asset to prospective customers through their associations. Even though, the repayment period is substantially long, a number of financial institutions are actively supporting enterprises in this business model (Abbott, 1986; World Bank, 2018).

K. Eleventh Stage

At this stage, the agri-business as an agent will find a potential buyer of the crop and sell it either through *Murabaha* or parallel *Salam* arrangement. Using *Murabaha* the agri-business can sell the goods based on cost-plus while using parallel *Salam,* the agri-business will find a third party who will make a promise to purchase the goods after delivery. However, the agri-business must take constructive possession of the commodities before selling it to a third party.

L. Stage Twelve

After selling the crops, agri-business will return the proceeds to financial institutions and financial institution pays his fee based on *Wakala* arrangement.

4.3 Risk management of the model

There are certain risks involved in this proposed model and the necessary measures taken to mitigate them are also presented in the model. In general, the model ensures that proper monitoring is induced rather than required. It is evident from the literature that the terms of financial institutions always require efficient and independent monitoring for the success of any financing programme (He *et al.*, 2023).

Against this background, the researcher looked at the possibility of involving stakeholder's interest in the model in such a way that coordination, cooperation, close and proper monitoring will be a self-induced or instinctive response because failure to do so will turn the stakeholders to the losing side. Farmers could fail to deliver the product deliberately which could result to default risk. This is why the proposed model emphasizes on incorporating *Takaful*. Farmers must be in group (at least 25) and be represented by their association to mitigate the risk of non-delivery. The farmers' association will also help in this respect by making necessary enforcement of delivery since they are the grantors. Regarding production risk, the proposed model ensures that this risk is mitigated by *micro-Takaful* service for the crop.

However, measures to mitigate price risk are presented by this model where it adopts trending of prices for the past seven years to forecast the future price of *Salam*. For example, if the price of an agricultural commodity is to be forecasted for the upcoming season, its price in the previous season can be used as a reference price so long as various factors which affect pricing remain constant. The justification for using forecast price is asserted by Bowman and Husain (2004). In this instance, the financier and the farmers' association should reach agreement on the expected future price of the commodities and a suitable benchmark rate before concluding the contract.

To mitigate credit risk, innovative algorithms can be employed in calculating customer's credit risk score by inputting data such as demographics, past credit behavior, and financial statement. In addition to that, application score, collection score and early warning score are essential (World Bank, 2019) With respect to quality risk the risk mitigation is also provided

by the model where technical skills acquired by the farmers, standard inputs provided by input supplier, as well as frequent monitoring of farms by agricultural experts would ensure qualitative and quantitative yield.

However, the study follows suggestion made by Ayub (2007) that sellers must purchase crops of equivalent quality in the market and deliver it to financial institutions. Therefore, an investigation has to be carried out to ascertain whether the low quality is as a result of a natural disaster or otherwise. If it is because of natural disaster *Takaful* has to come in and compensate the farmers. If, however, it is due to farmers' negligence, then farmers have to supply the crops of equivalent quality to financial institutions. Pre-harvest risk is to be dealt with by agricultural experts who would ensure standard practice in the farm. In addition, the technical skills will expose the farmers to gain new knowledge on managing their farm.

In order to consolidate the high level of confidence in safeguarding profitable agricultural product while deploying the services of agricultural expert, the agreement with the expert should include the necessity of employing artificial intelligence (AI) in administering and monitoring the supervisory role of the consultants over the farm. AI uses deep learning, robots, the Internet of things, image processing, artificial neural networks, machine learning, wireless sensor networks (WSN) and other cutting-edge methods to tackle agricultural challenges. The leading AI based technology in agriculture, hyper spectral imaging and 3D laser scanning are very essential in ensuring crop health and profitable output. AI will assist to effectively manage the farm better than the human input, which is limited in knowledge (Alibabaei *et al.*, 2022). AI-powered solutions will help farmers produce more products with fewer resources, increase crop quality, suggest appropriate nutrients to be applied for increasing quality of the soil and choose the optimal time to plant their seeds. The technology assists farmers in accessing advanced data and analytics tools that will improve efficiencies and reduce waste in biofuel and food production while minimizing the negative environmental impacts (Javaid *et al.*, 2022).

4.4 Cost minimization strategy of the proposed model

The proposed model has a good design approach of reducing cost that will be incurred by the financial institutions. In the first-place, financial institution will enjoy reduction in price because by the nature of *Bay-Salam,* the price is lower than market price. Secondly, additional burden of risk is ruled out because if any inadvertent failure occurs, *Takaful* firm will compensate the financial institution.

Most importantly this proposed model provides ways of reducing cost in inquiring information, enforcing contracts and reducing credit risk through leveraging existing information inside the value chain. Financial institutions can make better-informed lending decisions when they have adequate information on where value is added along the chain, identification of main participants, intermediate and ultimate markets, nature of customer demand, etc. This kind of information helps significantly to lower transaction costs in lending and other services. More so, generating higher profit is possible through economies of scale in market transactions and the provision of multiple financial services using value chain connections.

The most important way the proposed model can reduce the cost is through reduction of the information asymmetries. Considerable information asymmetry is reduced by the proposed model through interrelated link and contracts with value chain actors. Information regarding agronomic technical/knowledge of crop(s) involved in the value chain include yields, desirable practices, input demands and timing of input delivery. The bank does not need to have the in-house expertise to collect this information. Secondly, financial institutions can easily get the profiles of various chain actors engaged in the value chain free of charge. Likewise, financial institutions without any cost can easily obtain customary trade relations, marketing information regarding price behavior and market shares of various buyers.

The proposed model indicated various Islamic contracts and the way this contract can be used to finance various chain actors. Therefore, financial institutions can enjoy lower transaction costs in delivering and servicing multiple financial products by relying upon existing networks or transaction platforms of VCF. This is because financial institutions can create payment platforms around those existing relationships, allowing them to operate as if they had a comprehensive branch network but without fixed costs of having established one. The existence of a well-established commercial relationship between financial institutions and chain actors can enable financial institutions to design and introduce financing vehicles to reflect the cost-sharing and risk-sharing arrangements between banks and value chain business partners. It is also important to be able to deliver services up and down the chain in a cost-effective manner.

The sharing of cost for monitoring as reflected in the payment of *Wakala* arrangement between the agric expert on one hand, financial institution and farmers' association on the other hand give financial institution the ability to defray financing transaction costs, including client screening and selection, monitoring and supervision and loan recovery is a key aspect of the business case for VCF.

4.5 Conditions for Sharī'ah compliance

The *Shari'ah* conditions require that, the right and obligations of the contract must be explicitly stated and should be understood by all the contractual parties. All the rights and obligations of each contract must be separated from one another. The contract involved must be independent of one another. Another requirement of the *Shari'ah* is financial institution must take the constructive possession of the product before selling it.

4.6 Prospects of the proposed model

The prospect of the proposed model can be seen with respect to financial institutions, farmers, economy and policymakers, as enumerated below.

4.6.1 Prospect/impact to financial institutions.

(1) It is envisaged that the proposed model can stimulate financial institutions to invest more in the agricultural sector. This is because the model proposes appropriate ways of risk mitigation.

(2) It will help to diversify sources of generating profit to financial institutions by investing in the real sector rather than concentrating on businesses.

(3) The proposed model can bring agricultural transformation through reawakening the financial institutions upon untapped area of realizing profit in real sector. This is by bringing transformation from the way agricultural sector is perceived as risk venture to business venture.

(4) Financing agricultural activities at micro-level can lead to expansion of agricultural activities as well as profit generation of farmers.

4.6.2 Prospect/impact to farmers.

(1) The involvement of farmers into a value chain can ensure sustainable financing by enabling constant cash flow to farmers.

(2) The model can financially include excluded farmers through *Shari'ah*-compliant financing. Thus, it can minimize the use of exploitative means of financing farmers.

(3) The proposed model can empower farmers by making working capital as well as access to qualitative and standard input available at their disposal.

(4) The model can help in increasing farmer's capacity building through technical skills and expert advice to farmers by agricultural extension agent.

(5) The proposed model will bring a ready-made market for the farmer's crop because already financial institutions will be repaid in kind.

4.6.3 Prospect/impact to economy.

(1) It will bring job opportunities for the teaming population of Nigeria through provision of working capital.

(2) Poverty reduction: When employment is secured, the level of poverty is reduced.

(3) Food security: It can engage many people in the agricultural sector by making working capital available. Thus, supply of agricultural produce will increase, hence ensuring food sufficiency and food security.

(4) It will improve standard of living

(5) It can create market for local food producers through good processing and packaging. With improved quality of the crops, the market demand of the local product can increase. Thus, it can reduce high dependency of importation of food products into Nigeria.

4.7 Summary and conclusion

The aim of this research is achieved by proposing an alternative mode of financing farmers in Kano State. The study shows that the model is capable of addressing most important challenge facing farmers such as poor financing, poor marketing, price fluctuations, and delay in getting financing and collateral requirement. Against this background, the proposed model is envisaged to increase farmers' access to finance, income generation, employment creation, poverty reduction, food production and overall economic growth and development of Kano State in particular and Nigeria in general. It is also envisaged that the model can be used in other countries for financing farmers The proposed model can be implemented by various financial institutions including Islamic banks, commercial banks with Islamic window service, non-governmental organizations, government agricultural development finance and Islamic micro-finance institutions. As this study focuses on proposing alternative *Bay-Salam* integrated with value-chain and *Takaful* in Kano State, further studies should be conducted on proposing *Ijarah* and *Takaful* model for financing farmers.

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