FARM CREDIT, FARMLAND, FARM INFRASTRUCTURE AND AGRICULTURAL OUTPUT IN KANO STATE, NIGERIA: THE MODERATING EFFECT OF *MURABAHAH* FINANCE

AHMED IBRAHIM MOHAMMED

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By
AHMED IBRAHIM MOHAMMED

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: AHMED IBRAHIM MOHAMMED (96190)

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Nama Penyelia/Penyelia-Penyelia
(Name of Supervisor/Supervisors)

: Dr. Ahmad Bashir @Zolmat bin Aziz

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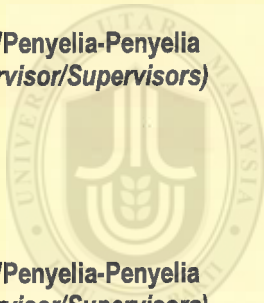
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ABSTRAK

Tujuan kajian ini adalah untuk menyelidik hubungan antara kredit ladang, tanah ladang, infrastruktur ladang dan pengeluaran pertanian di negeri Kano, Nigeria dengan kesan pembiayaan Murabahah. Sorotan kajian dalam bidang pertanian dan lain-lain bidang yang berkaitan dilakukan secara meluas untuk lebih memahami keperluan masa lalu, masa kini dan masa hadapan dalam bidang pengeluaran hasil pertanian. Walaupun hubung kait tersebut telah menjana kepentingan ilmiah yang agak besar, namun hanya beberapa kajian dijalankan berkaitan mode pembiayaan pertanian berasaskan Shariah terhadap pengeluaran pertanian di Nigeria. Pertanian penting bagi pertumbuhan ekonomi di Nigeria dan merupakan sumber utama makanan, pekerjaan dan pembasmian kemiskinan di Nigeria. Berdasarkan pengamatan teori yang dikemukakan, satu model telah dicadangkan untuk meneliti hubungan ini. Reka bentuk tinjauan keratan rentas digunakan dalam kajian ini melibatkan pekebun kecil di Kano. Kajian ini telah menggunakan teknik persampelan secara sistematik dalam pengumpulan data dan seramai 764 responden yang terdiri daripada petani dipilih secara rawak. Algoritma Kuasa Dua Terkecil Separa (PLS) dan teknik butstrap telah digunakan untuk menguji hipotesis kajian. Dapatan kajian menunjukkan bahawa kredit ladang dan infrastruktur ladang mempunyai hubungan langsung yang positif secara signifikan dengan output pertanian, manakala tanah ladang pula bukan faktor peramal bagi output pertanian di Kano, Nigeria. Hasil regresi hierarki (ujian pengantaraan) membuktikan bahawa pembiayaan Murabahah mengantarakan hubungan antara kredit ladang, tanah ladang, infrastruktur ladang dan pengeluaran pertanian. Walaubagaimanapun, pembiayaan Murabahah tidak mengantara hubungan antara infrastruktur ladang dan hasil pertanian. Kesimpulannya, hasil kajian ini membuktikan pembiayaan Murabahah mampu memberikan impak yang penting khususnya terhadap pembuat dasar dan organisasi bukan kerajaan (NGO) juga seharusnya mengalakkan pekebun kecil untuk memperbaiki tahap aliran kewangan dan keuntungan. Hal ini akan menggalakkan institusi kewangan Islam menyediakan bantuan perkhidmatan kewangan kepada mereka.

Kata kunci: kredit ladang, tanah ladang, infrastruktur ladang, kewangan murabahah

ABSTRACT

The purpose of this study is to investigate the farm credit, farmland, farm infrastructure and agricultural output in Kano State, Nigeria with the effect of *Murabahah* finance. Literature in agriculture and other related fields was extensively reviewed for better understanding of past, present and future needs in the area of agricultural production. Although their relationships have generated considerable scholarly interest, few studies have actually been conducted in relation to Shariah mode of financing agricultural input and output in Nigeria. Agriculture is essential to the economic growth and it is a major source of food security, employment and poverty reduction in Nigeria. Based on a theoretical consideration, a model was proposed to examine these relationships. A cross-sectional survey design was adopted and the unit of analysis was the registered small scale farmers in Kano state. The study employed systematic sampling technique in data collection, with a sample size of 764 farmers. Partial Least Squares (PLS) algorithm and bootstrap techniques were used to test the study's hypotheses. This study found that farm credit, farmland and farm infrastructure have a significant positive relationship with agricultural output in Kano State, Nigeria. The result of hierarchical regression (moderation test) established that *Murabahah* finance was found to moderate farm credit and farmland. However, *Murabahah* finance does not moderate the relationship between farm infrastructure and agricultural output. Finally, the results of this study reveal that *Murabahah* finance is essential on farm input and output which implies that policy makers and non-governmental organizations should encourage small scale farmers to improve their cash flows and profit. These may encourage Islamic financial institutions to provide them with the financial services.

Keywords: farm credit, farmland, farm infrastructure, *murabahah* finance

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Glossary of Terms

Ijara	Lease
Istisna	Commissioned or Order Production
Mu'ajjal	Sale by deferring Price
Mudarabah	Mark-Up or Cost Plus
Mudarib	Manager or Entrepreneur
Murabahah	Mark-Up or Cost Plus
Musharakah	Equity Partnership
Qardhassan	Benevolent Loan
Qur'an	Holy Book of Allah
Rabaha	Sells an Item for a Certain Profit
Rabbul mal	Investor
Riba	Interest Rate
Sadaqat	Deeds of Charity
Shariah	Islamic Law
Sihah	Higher Price than its Original

List of Abbreviations

SDGs	Sustainable Development Goals
ACGF	Agriculture credit Guarantee Fund
AMOS	Analysis of Moment Structure
AOP	Agricultural output
AVE	Average Variance Extracted
CAADP	Comprehensive African Agricultural Development Programme
CBN	Central Bank of Nigeria
CMH	Commodity Murabahah House
CPO	Crude Palm Oil
D2	Mahalanobis Distance
EU	European Union
FAOSTATS	Food and Agricultural Organization Statistics
FOA	Food and Agricultural Organization
GAFSP	Global Agriculture and food Security Programme
GDP	Gross Domestic Product
GIS	Geographic Information System
HND	Higher National Diploma
IBI	Islamic Banking Institutions
IDB	Islamic Development Bank
IFAD	International Fund for Agricultural Development
IFC	International Finance Cooperation
ITFC	International Trade Finance Cooperation
KM^2	Kilometer Square

LC	Letter of Credit
MF	Murabahah Finance
NA	Not Available
NACRDB	Nigerian Agricultural Cooperation and Rural Development Bank
NBS	National Bureau of Statistics
ND	National Diploma
NPC	National Population Commission
OLS	Ordinary Least Square
PGD	Post Graduate
PLS-SEM	Partial Least Square of Structural Equation Modeling
NGOs	Non Government Organizations
SACCOS	Savings and Credit Cooperatives
SPSS	Software Package of Social Science
UN	United Nations
USD	United State Dollars
VAR	Vector Auto Regressive
VIF	Variance Inflated Factors
WOFAN	Women Farmers Advance Network

CHAPTER ONE

INTRODUCTION

1.1 Background and Motivation of the Study

Agriculture is the pillar of the global economy through the food security and supply of raw materials to the industries. Agriculture is also a business management of food supply, animal rearing, fisheries, poultry and forest reservations for sustainable living. It can be seen as an act of soil cultivation for the growing of plant and animal management for the purpose of poverty reduction and economic growth. It equally serves as a solution to the global food constraints and means for accomplishing the target of Sustainable Development Goals (SDGs) of the United Nation towards food supply and poverty eradication. Similarly, it is a major source of income and full time employment to the majority of developing countries (Food and Agriculture Organization (FAO), 2013 & 2004; Chisasa, 2014a; Muhammad, Zaheer & Khan, 2014; Ogunbado & Ahmed, 2015; Dobermann, 2016; Bashir & Mohammed, 2017).

To add, developing economy solidly depends on agriculture, as such, three of every four Africans, which constituted 70 percent of the continent population are living in rural areas with the agricultural productivity (Sakumbade, 2009). It equally remained a vehicle for poverty reduction as well as a channel for speedy and sustainable living standard and economic growth of most African countries. Likewise, the economic growth of the most populous country of Africa called Nigeria is almost dependent on agricultural production (FAO, 2008; Ugwa & Kanu, 2012; Oludiran, Akinleye & Ighodaro, 2012; Ogunbado & Ahmed, 2015; Collins, 2015). Additionally, Oguoma, Ben-chendo and Henri-Ukoha (2010) argued that Nigeria was among the highest exporters of agricultural output in Africa that leads to the growth of the country's

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economy with the exportation of output including cotton, hide and skin, cocoa, palm-oil, groundnut and rubber.

Furthermore, the exportation of agricultural output (production) was the foundation of the Nigerian economy prior to the discovery and explorations of the oil. In addition, the sector has not only served as a channel of earning income to the Nigerian government, but also, it led to innovations and expansions of the other sectors in the economy. The expansion of the economy leads to the improvement of the government revenue and socio-economic growth and development (Anyawu, Ibekwe & Adesope, 2010; Ogbonna, Uwajumogu, Chijioke & Nwokoye, 2013; Atagama & Kanu, 2014; Dang, Leathm, Mccarl & Wu, 2014, Yunus, 2014).

Notwithstanding, the Nigerian population was estimated at 181,748,044 in 2016, whereas 70 percent remain solidly dependent on agriculture as their main source of socio-economic priorities, namely: income, food, employment, market and social amenities among others (Philip, Nkonya, Pender & Oni Nkonya, 2009; Sakumbade, 2009). This is in line with the arguments of Anyawu et al. (2010) and Ahungwu, Haruna and Abdusalam (2014) that the sector has the highest percentage in providing opportunities for employment as well as the second contributor to the Gross Domestic Product (GDP) of Nigeria. For instance, the contributions of agricultural output were 18,295,631.91 Naira (i.e., 1.00 United State Dollar (USD) is equivalent to 314.90 Naira (₦)) to the GDP and this indicates that the sector had accounted for 24.39 percent of the Nigerian GDP in 2013. According to the National Bureau of Statistic (NBS) (2014) and Central Bank of Nigeria (CBN) (2014) the contribution of agriculture to the GDP usually comes from the major agrarian States of Nigeria.

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Furthermore, Kano State is among the highest contributors of agricultural produce to the GDP of Nigeria. It is also the most populous location with over 15 million population in 2016, whereas, 75 percent (%) of the estimated population are solidly engaged in agriculture and agribusiness activities (http://www.kanostate.net; Ifeoma & Agwu, 2014). The State is the second largest industrial centre in Nigeria and among the largest commercial centres in West Africa. Specifically, it covers 840 kilometres square (km^2) distance away from the Sahara desert edge site and it is located at altitude 472.45 meters above the level of the sea (Dandago, 2005 p. 66-68; Bello, 2006; Mustapha, 2012; Kano State Budget (KSB), 2016). The state covers a total land area of 2,013 km^2 with a minimum temperature of 15°C to the maximum level of 30° C. Similarly, the temperature falls to 10°C during winter or cold season with the average of 690 mm per annum precipitation (Mohammed, Ibrahim & Abubakar, 2014; KSB, 2016).

Figure 1.1
Nigerian Map

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The above Figure 1.1 is the map of Nigeria and the red shaded portion is indicating the location of Kano State (http://www.kanostate.net). Agriculture remains the key supplier of over 70 percent of the food consumed locally and raw materials to the local industries of Kano State. Also, the State is exporting farm produce that includes groundnut, cotton, high and skin among others (Dandago, 2005, p. 66-68; Bello, 2006; Mustapha, 2012; Mohammed, Ibrahim & Abubakar, 2014).

Consequently, the Kano State government has collaborated with the federal ministry of agriculture, Central Bank of Nigeria and private organizations to improve the State's agricultural output. Additionally, the collaborating programmes and schemes between Kano State, the federal government and other partners were set to improve the output through the provision of capital in terms of credit (farm credit), land (farmland) and infrastructure or rural infrastructure (farm infrastructure) (Philip et al., 2009; Mustapha, 2012; CBN, 2014). In line with this, Awe (2013) and Ador and Farhah (2014) argued that farm credit is an essential financial service lent to the farmer in cash or in kind under curtained agreement of repayment with some additional charges over a period of time (Adegeye & Ditto, 1985).

Farm credit is very essential for the growth and development of agricultural output and it is among the key drivers for agricultural modernization (Anthony, 2010; Chisasa, 2014c; Monke, 2015). Farm credit or agricultural credit in this study refers to the capital factor of production, which is provided as a farm working capital credit from the financial institutions (Chamber, 1988; Ahiakpor & Asmah, 2012; Marwa, 2014; Chisasa, 2014a). To add, this study considered farm credit as a type of lending either in cash or in kind with the aim of providing or purchasing a direct soft farm

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working input such as; fertilizer, seeds, livestock feed, fish feed, herbicide and insecticide among others (NBS, 2014; Atagana & Kanu, 2014; Monke, 2015).

Khan, Haim, Rapaport-Rom and Schechter (2008) and Chisasa (2014b) viewed that farmland is also a key player towards the advancement of agricultural output as the name refers to the land which is a fixed factor of production used on the agricultural production process. Similarly, Allahyari, Poshtiban and Koundinya (2013) described farmland as a soil which is the top layer of the earth's surface that contained nutrients for the growth of plants, livestock, poultry, fisheries as well as agribusiness activities (Chamber, 1988; Ammani, 2012 & 2013). The farmland in this study refers to the land which is a fixed factor of production used in a process of production of agricultural output (FOA, 2013; Jayne, Chamberlin & Headey, 2014; Chisasa, 2014a; Bashir & Mohammed, 2017).

In the contrasting views of Miriam, Patrick and Ifechukude (2014) stipulated that farm infrastructure investment is one of the best targets towards supporting agricultural output. It refers to the necessary facilities employed in the farm with the aim of facilitating other factors of production (Collier & Dercon, 2014). Labour and entrepreneurial services for factors production are regarded in this study as farm infrastructure which refers to the human and capital investment employed in the agricultural productivity. Specifically, human capital includes; farmer education and training, information, farmer health, crop management and extension services among others (FOA, 2013 & 2004; Chisasa & Makina, 2013; Yunus, 2014). Furthermore, capital investment is regarded as sophisticated modern farm working equipment such as: tractors, harvesters, incubators, high modern storage facilities, shop and farm

produce market, road and transportation, etc. (Anthony, 2010; Awe, 2013; Ahugwu, Haruna & AbdusSalam, 2014). Accordingly, Kano State, CBN and worthy partners established various agricultural programmes and schemes in order to improve agricultural output through agricultural financial services (Ezike & Ogege, 2012; CBN, 2014; NBS, 2014).

However, the production of agricultural output is declining in Kano State due to inadequate funding (agricultural financing) which is negatively affecting the key factors of agricultural production (farm credit, farmland and farm infrastructure) (Mustapha, 2012, Ifeoma & Agwu, 2014). This issue was linked to the period of the oil boom back in the 1970's, when Nigeria neglected agriculture and relayed on oil products (Dandago, Muhammad & Osein, 2013, p. 353-368; Ogunbado & Ahmed, 2015). More so, the agricultural production in Kano State faces a severe problem due to the fluctuation level of funding the small scale farmers through the Agricultural Credit Guarantee Fund (ACGF). For instance, in 2005, ACGF provides 77,875.50 million and increased to 88, 299.50 in 2006, then, decreased to 59, 068 in 2007 and to 14,740 in 2008, then, to 26,880 in 2009, to 326,164 in 2010 and increased to 799,815 in 2011 then decreased to 212,729 in 2012, then, increased to 313,912 in 2013 and decreased to 225,301 in 2014, all in millions of Naira respectively (CBN, 2014).

Consequently, the experienced ACGF fluctuation resulted in the poor supply of agricultural output in Kano State and Nigerian economy. This issue leads to the insufficient farm credit, inadequate farmland and the emergence of poor farm infrastructure (Philip et al., 2009; Odufote, 2012; Mustapha, 2012; Ayegba & Ikani,

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2013; Ogunbado & Ahmed, 2015; Marwa, 2014). Furthermore, previous studies revealed that the current ACGF mode of financing agriculture has characterized with an interest rate, exploitation, manipulation and gambling. Additionally, it is grossly inadequate to solve the current problems of agricultural financing in Kano State (Mustapha, 2012). Specifically, there is a general consensus that the agricultural financing is highly inefficient and ineffective to the extent that the State and the country faces the danger of food insecurity, malnutrition, unemployment, rural-urban-migrations and increase in the poverty rate among others (Mtatuschke, 2009; Ayegba & Ikani, 2013; CBN, 2014; FAO, 2013; Ogunbado & Ahmed, 2015).

Furthermore, sustaining agricultural finance for improving farm input (farm credit, farmland and farm infrastructure) still remains a fundamental issue. Indeed, several transformation programmes and schemes may fail to deliver expected results, if, the basic factors like *Murabahah* finance (Mark-up or cost plus) that can motivate farmers to produce more agricultural output beyond expectation remain neglected (Hendri, 2016; Mohammad, Bashir & Ogunbado, 2017). Meanwhile, process and structural problems in financing agriculture can be solved by adopting *Murabahah* finance which is a tool for stimulating farmers to perform at their highest level of agricultural output. Specifically, *Murabahah* finance provides free interest financial transactions in relation to trading of farm input and output (Khaleequzzamzn & Shirazi, 2012; Ahanger, Padder & Ganie, 2013; Hilmy, 2013; Rahman & Yousif, 2016).

 Similarly, Hanif (2014) pointed out that, *Murabahah* finance provides free interest trading of farm working capital whereby financial institutions can purchase a given

farm input on behalf of the farmer and resell the input to the farmer on agreed price and margin profit, while, the payment will be on the spot or in the future. Likewise, the study of Hendri (2016) revealed that *Murabahah* mode of finance was set to help farmers and agribusiness to purchase agricultural input and marketing the output.

1.2 Problem Statement

Nigeria is blessed with the abundance of both human and natural resources. It has favourable climatic conditions for supporting agricultural production with 84 million arable land hectares. Kano is among the most agrarian, industrial and commercial as well as the most populous State in Nigeria with subsistence and commercial-based agricultural production. The subsistence farmers are the majority and not in isolation from the problems of inadequate agricultural finance and services which lead to poor access to farm credit, sales of farmland and insufficient farm infrastructure which include: inadequate farm machineries and modern farming equipments (NPC, 2015; Ogunbado & Ahmed, 2015; Mohammed, Bashir & Ogunbado, 2016a & 2016b).

The Agricultural Credit Guarantee Fund (ACGF) is an agricultural finance scheme set to provide agricultural finance to the needy farmers in the 36 States of Nigeria through the Commercial banks. However, the scheme remain fluctuated from the year 2005 to 2014 which created a setback in the Kano state agricultural production, mostly in the area of farm credit, farmland and farm infrastructure (Mustapha, 2012; CBN, 2014; Bashir & Mohammed, 2017). Consequently, the Kano State government had distributes the sum of 2 billion Naira on micro credit based and yet, the rural farmers are with the challenges of insufficient farm credit, farmland and farm infrastructure (CBN, 2014; KSB, 2016).

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Although both governments and private organizations made initiatives to provide agricultural finance mostly through AGCF in order to enable small scale farmers to access farm input and output to improve their productivity. But, there was a total absence of such initiatives in 2015 which lead to the persistence of the problem in Kano State. This issue increases more pressure on food insecurity, unemployment and poverty as well as small scale farmer faces additional difficulties towards the accessibility of farm credit, farmland and farm infrastructure (CBN, 2015).

In line with the argument of the Cobb-Douglas theory of production function, it revealed that, sufficient production input is subject to the proportional and significant increase in the production output (Chambers, 1988; Chisasa, 2014a). Similarly, the theory of economic development indicated that financial intermediaries remain a key facilitator and a player towards attaining the economic growth of the productive sectors (King & Levine, 1993). However, Kano State subsistence farmers suffers from the issues related to insufficient farm credit, farmland and farm infrastructure to the extent that farmers are abandoning the practice of agriculture.

More so, the global trade in agriculture and food products has increased the farm output support from USD 230 billion in 1980 to almost USD 1100 billion in 2010 to the smallholder farmers in the developing countries in order to reduce poverty through agricultural production (Mundial, 2006; Loisel, 2009; Hoellinger, 2011; Maertens & Swinnen, 2014). Despite these initiatives the Kano State and Nigerian farmers in general remain hard-up to the challenge of farm credit, farmland and farm infrastructure (Mustapha, 2012).

The studies of Nijbroek and Andelman (2016) and Meyer (2016) reported that the acquisition of the farmland recently in Africa was over USD 4.5 billion and increased to 15 to 20 million hectares which Kano State, Nigeria is not in isolation. However, the invention of such capital investment increased the hardening of the farm credit, farmland and farm infrastructure to the extent that rural farmers involved in rural and urban migration as well as increasing the level of unemployment and poverty in Kano state (Abimbola & Oluwakemi, 2013; Jayne, Chamberlin & Headey, 2014).

Despite the proportional increase in the population level of Kano State from 9,383,682 in 2006 to 11,058,300 in 2011 and over 15 million in 2016. While the agricultural sector is drastically declining due to the increasingly complex challenges on the living standard of the farmers due to the inadequate farm credit, insufficient farmland and poor modern farm infrastructure to meet the population demand and economic growth (http://www.kanostate.net; Adetiloye, 2012; Marwa, 2014; NPC, 2015; KSB, 2016).

On the other hand, empirical studies were conducted to study on the relationship between farm credit and agricultural output, but these revealed mixed results. Thus, among the researches that reported a positive relationship between farm credit and agricultural output are: Chisasa (2014a), Kaleem and Abdul Wajid (2009), Ammani (2012), Tasie (2012), Awe (2013), Dang- Leatham and Bagheri (2014), Chisasa and Makina (2014), Atagana and Kalu (2014) and Tibi and Edebiri (2015). However, other researches who investigated the negative relationship between farm credit and agricultural output are: Faridi (2012), Adetiloye (2012), Reyes, Lensink,

Kuyvenhoven and Moll (2012) and Kofi and Akwaa-Sekyi (2013) and Toluwase, Oludayo and Uche (2014). Meanwhile, Simtowe, Zeller and Diagne (2009), Dang, Leatham, McCarl and Ximing-Wu (2013), Okuthe, Ngesa and Ochola (2013) and Ayegba and Ikani (2013) had reported mixed results.

Furthermore, researches were conducted on the relationship between farmland and agricultural output, among which reported positive results: Rezvanfar and Mohammadi (2012), Rezvanfar, Shiri and Kanigohar (2012), Allahyari, Poshtiban and Koundinya (2013), Jayne, Chamberlin and Headey (2014) and Chisasa (2014a & 2014b). In contrast, other studies found a negative or inverse relationship between farmland and agricultural output and they are: Davidova, Fredriksson, Gorton, Mishev, and Petrovici (2012), Garrett, Lambin and Naylor (2012), Jiang, Deng, and Seto (2013), Di-Falco (2014), Chamberlin and Headey (2014), Mattthew and Uchechukwu (2014), Muyanga and Jayne (2014). Furthermore, Chamberlin et al. (2014), Nkonde, Jayne, Richardson and Place (2015) reported mixed findings.

Notwithstanding, other studies reported a positive relationship on the relationship between farm infrastructure and agricultural output and they include: Gholfar, Asadi, Akbari and Atashi (2010), Ammani (2012), Okuthe, Ngesa and Ochola (2013) and Qureshi, Yasmin, Ilyas and Khan (2013). On the other hand, the researchers whose findings revealed a negative relationship between farm infrastructure and agricultural production and they include: Franken, Pennings and Garcia (2012), Adepoju and Salman (2013), Temu, Nyange, Mttee and Kashasha (2013), Chisasa (2014c), Obayelu, Olarewaju and Oyelami (2014), Ngaruko (2014) and Nkonde, Jayne, Richardson and Place (2015). While, Felloni, Wahl, Wandschneider and Gilbert

(2001), Adepoju and Salman (2013) and AbdelRahmana and Yousif (2016) reported mixed results.

Therefore, previous findings on farm credit, farmland, farm infrastructure and agricultural output have reported mixed results. This entails that, some findings reported positive effects while others were negative as well as some reported positive and negative results in a single study on the relationship between the current study variables. Consequently, most of the findings on farm credit, farmland, farm infrastructure and agricultural output were conducted in advanced countries such as; United States of America, United Kingdom, Russia, France and some Asian countries among others. Well, only a few were done in developing countries, particularly African countries.

Oludufe (2012), Mustapha (2012), Marwa (2014) and Ifeoma and Agwu (2014) reported that the current model of providing farm credit, farmland, farm infrastructure and agricultural output is essentially tied to the problems such as: political bias, delay, fluctuation, mismanagement and corruption. These issues led the government to seek for an alternative model and this motivated the NGOs, scholars and agricultural experts to suggest free interest, free collateral and uncertainty among others. In addition, Ayegba and Ikani (2013), Omonijo, Toluwase, Oludayo and Uche (2014), Marwa, (2014), Ngaroko (2014), Chisasa (2014b), Tibi and Edebiri (2015) and Mohammed et al. (2016b) recommend and suggested that, further research should look for an alternative model of financing farm input and output with free interest rate.

Furthermore, the study of Khan (1996), Hilmy (2013), Suharsono and Candra (2013), Saeed, Ashraf, Zaidi, Lodhi, Ahmad, Awan and Malik (2013), Sardar, Azeem, Hassan, and Bakhsh (2013), Saqib, Nazeer, Khan and Zafar (2014), Obaidullah (2015), Hussain (2016), Mohammed, Bashir, Ogunbado, Adamu, Salisu, and Yakubu (2016c), Rahman and Yousif (2016) and Hendri (2016) reported that, *Murabahah* finance has an influence on the relationship between farm credit, farmland, farm infrastructure and farm agricultural output.

Based on the above, the current study argued that *Murabahah* finance could strengthen the relationship between farm credit, farmland and farm infrastructure and agricultural output (Hanif, 2014; Hendri, 2016; Mohammed et al., 2016a & b). This is also in line with the argument of Baron and Kenny's (1986) that the inclusion of a moderating variable is necessitated in the existence of inconsistent findings on the relationship between the independent and the dependent variables. Therefore, this study incorporated *Murabahah* finance to moderate the relationship between farm credit, farmland, farm infrastructure and agricultural output.

According to Khan (1996) and Mohammed and Umar (2017) *Murabahah* finance is quite close to the current conventional mode of financing. However, it is free from interest rate, speculation, gambling, uncertainty, exploitation and manipulation, among others. This indicated that the principle operation of *Murabahah* finance in the Islamic bank is certainly more consistent with the traditions of conventional commercial banking in terms of the professional orientation of technology, bank staff, language, terminology and premises.

To support the above arguments, the theory of production based on Cobb-Douglas' production function explained that the technical increase in factors of production in relation to capital, land and labour lead to efficient and technical increase in the production output and vice versa (Anthony, 2010; Ammani, 2012 & 2013; Chisasa, 2014b). This is also in line with the theory of economic development based on financial intermediaries which covers the inclusion of financial aspect in production and economic growth. Equally, rural credit market theory signified the essence of the two theories in the field of agricultural production with the assertion that interest rate remains a constraint to the agricultural growth and development (Chisasa, 2014a & 2015).

Therefore, as mentioned above the declining of the agricultural output in the Kano State economy remains a complicated issue that needs a serious attention with both theoretical and practical examinations which demand empirical research with the moderating effect. This research incorporated the *Murabahah* finance as a moderator in order to examine the relationship between farm credit, farmland, farm infrastructure and agricultural output. This is in line with the significant role of agriculture in the socio-economic growth of Kano State and Nigeria in general (Ifeoma & Agwu, 2014; Mohammed et al., 2017). Notwithstanding, the researcher had not come across any work that combined the three variables such as farm credit, farmland, farm infrastructure and agricultural output with the moderating variable of *Murabahah* finance in a single model of study. Based on the above, the current study formulated the following research questions in order to meet the designated aims and objectives of the study.

1.3 Research Questions

Based on the foregoing problem statement, the broad research question to which the study attempts to provide an answer remains: Is there any influence of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output in Kano State, Nigeria? Based on the main research question, the following specific questions are raised in order to guide the study:

1. Is there any relationship between farm credit and agricultural output in Kano State, Nigeria?

2. Is there any relationship between farmland and agricultural output in Kano State, Nigeria?

3. Is there any relationship between infrastructure and agricultural output in State, Nigeria?

4. Is there any moderating role of *Murabahah* finance on the relationship between farm credit and agricultural output in Kano State, Nigeria?

5. Is there any moderating influence of *Murabahah* finance on the relationship between farm credit and agricultural output in Kano State, Nigeria?

6. Is there any moderating influence of *Murabahah* finance on the relationship between farm credit and agricultural output in Kano State, Nigeria?

1.4 Objectives of the Study

The study is primarily aimed at examining the conduct of farm credit, farmland, farm infrastructure, with the moderating effect of *Murabahah* finance on agricultural output in Kano State, Nigeria with a view to reduce the observed gaps between agricultural input and output. To attain the aim of the research, the following precise objectives are developed. The objectives are designed to handle the research

questions mentioned. Hence, the first objective takes care of the first question, the second objective leads to answering the second question, so on and so forth. Below are the objectives of this research:

1. To examine the relationship between farm credit and agricultural output in Kano State, Nigeria.

2. To analyse the relationship between farmland and agricultural output in Kano State, Nigeria.

3. To assess the relationship between infrastructure and agricultural output in Kano State, Nigeria.

4. To analyse the moderating role of *Murabahah* finance on the relationship between farm credits and agricultural output in Kano State, Nigeria.

5. To examine the moderating influence of *Murabahah* finance on the between farm credits and agricultural output in Kano State, Nigeria.

6. To assess the moderating influence of *Murabahah* finance on the relationship between farm infrastructure and agricultural output in Kano State, Nigeria.

1.5 Significance of the Study

This research investigates the moderating effect of *Murabahah* finance to the agricultural output on the relationship with farm credit, farmland and farm infrastructure. Also, the research explains that the *Murabahah* finance can moderate the production of agricultural output due to the fluctuating levels of the Agricultural Credit Guarantee Fund from 2005 to the 2014 in financing Kano State farmers (CBN, 2014). Therefore, it is necessary to incorporate the alternative model of financing the State farmers. More so, the influence of *Murabahah* finance on

agricultural output in relation to the soft credit or short term agricultural financing (farm credit) remains a significant investigation in relation to the purchase of fertilizer, seed, insecticide and herbicide among others.

Likewise, the study contributes to the purchase or lease or hire of farmland to the short and medium term agricultural financing. Similarly, the significant investigation of this study covers the area of human capital investment for agricultural financing such as; farmer education and training, extension services, farm health and crop and animal management. Also, farm working capital and investment include; purchase of tractors, harvesters and planters among others (farm infrastructure). The following theoretical and practical significance would further justify this study as a model that made the inclusion of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output in Kano State, Nigeria.

1.5.1 Theoretical significance

This research will contribute to the body of knowledge in relation to *Murabahah* in the finance of farm credit, farmland, farm infrastructure and agricultural output as a Shariah mode product. Also, it will contribute to the discipline of Islamic economics and finance as well as the agricultural financial studies and practice for both students and researchers. Likewise, the study is significant because, to the best of the researcher's knowledge *Murabahah* finance as a moderator on the relationship between farm credit, farmland, farm infrastructure and agricultural output has not been empirically addressed in Kano State, Nigeria, as a literature for addressing problems of agricultural finance and services. Thus, this research will fill the existing

gaps in agricultural finance and services in relation to farm credit, farmland, and farm infrastructure and agricultural output in Kano State, Nigeria.

1.5.2 Practical significance

The result of this research will create more awareness of the financial accessibility to the farmers on how to borrow to meet their highest socio-economic welfare through the income generated on the *Murabahah* Shariah mode of financing. Likewise, the findings of this work will upgrade the standard of Islamic financial institutions, especially, in relations to the agricultural financing, agribusiness and agro-allied industries over the conventional mode of financing. More so, the outcome of this work will attract more investors to the fields of agriculture and agro-business. Similarly, the result of this research will assist Kano State and Nigerian governments, particularly in formulating policies and making the decisions towards financing agriculture.

Additionally, this research is significant to both the Islamic financial institutions as well as window operator's conventional financial institutions on agriculture financing and business diversification. Also, this result is significant to agribusiness, agro-allied industries and merchandise. Meanwhile, the results of this research are significant to the individual farmers, a group of farmers and cooperatives, and organizations in relation to their agricultural production and distribution strategies. In addition, this study is significant to the government and policy makers in both public and private organizations as well as NGOs. This is more, relevant to the ministry of agriculture and commerce as well as financial institutions in Kano State and Nigeria in general (Mohammed et al., 2016a & 2016 b).

1.6 Scope of the Study

This research did not cover the entire Islamic financial system, but it covered *Murabahah* finance towards financing agricultural output. Hence, the research limited itself in the agricultural output of Kano State, northwestern part of Nigeria with individual farmers as the unit of analysis. This indicated that, only subsistence or small scale farmers were considered. Hence, the relationships between the current research variables were analysed from the individual farmer's opinion and reasons. This study is limited to the examination of the relationship and moderating effect of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output in Kano State, Nigeria.

Kano is considered to the most populous, agrarian, commercial and Shariah compliant State in Nigeria. It is among the oldest socio-economic entities in West Africa. Equally, it is a historical place, politics, agrarian and commercial centre. This indicated that, Kano agro-allied and textile industry products were the dominant of Borno and Adamawa Empire as well as Murzuk, Chad and Timbuktu markets in the 19th century. Furthermore, Kano city is a significant strategic centre of agriculture, trade and industry in the tranSahara Trade, West Africa, Africa and Europe in local, crafts and manufactured commodities. Similarly, Kano State has the advantage of modern network of commutation which include: Rural, urban and international airport. These facilities serve as a factor of attracting Kano's local and international entrepreneurs and investors (Bello, 2006). Additionally, the city becomes the centre of agriculture, commerce, local trade and modern industry. Also, the State agriculture is dominated by small scale farming also that this system has provided a stimulus for the exportation of agricultural output, which resulted in the economic growth of

Kano State. It has to be stated that the economic activities of the State are mostly agriculture and trading (Ifeoma & Agwu, 2014).

1.7 Organization of the Thesis

The first chapter of this paper offers an introduction which includes the background and motivation of the research, the statement of the problem, research question, research objectives, significance and scope of the research. Furthermore, chapter two covers general literature review that includes: overviews of Kano State-Nigeria, theoretical definitions of agricultural output and related aspects, farm credits, farm credit and agricultural output, agricultural finance and services in Nigeria, farmland, farmland and agricultural output, farm infrastructure, farm infrastructure and agricultural output, *Murabahah* finance as a moderator, theoretical framework and Hypothesis of the study as well as the underpinning theory.

In addition, chapter three covers the research methodology which includes the philosophical nature of the research, hypothesis, theoretical framework, research design that consisted with the population of the research, sample size, unit of analysis, operationalization and measurement of the study variable instruments, questionnaire technique, data collection technique, techniques for data analysis, reliability and validity as well as the summary of the chapter. Also, chapter four demonstrates the data analyses and research findings. Finally, chapter five highlights the implications of the research findings based on the theory, methodology and practice as well as recommendations and suggestions offered for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the relevant literature on the research with some conceptual explanations and issues associated with the research on agricultural output and *Murabahah* finance. Also, the literature covers facts and figures related to Kano State, Nigeria. In addition, the literature discusses the conceptual definitions and the relationship between agricultural output, farm credit, farmland, farm infrastructure and *Murabahah* finance as a moderator and underpinning theories.

2.2 Overview of Kano State, Nigeria

Nigeria is located in the western part of Africa and the most populous country in Africa with 181,748,044 million estimated populations in 2016. Nigeria remains the largest economy so far in Africa with USD 568.51 billion GDP in 2014. The Nigerian economy depends on oil and agricultural output, among others. In addition, the oil sector provided only five million job opportunities to the citizens with USD 2, 200 per capital income, while the majority of the population depends on agriculture and related activities (Walkaenhorst, 2007; Ogbonna et al., 2013; Ahungwa, Rakiya & Haruna, 2013; NPC, 2016).

Furthermore, Kano, Nigeria has a rich, glorious cultural past, which the people have jealously guarded by since the 14th century. Besides the social life characterized by festivities, cultural environment, local boxing and wrestling as well as the famous Durbar, Kano cultural pride emanates primarily from the indigenous blacksmith,

cloth makers, creative artists, poets and scholars. Kano State was created in July 1967 and formally came into being on April 1st, 1968. Before its creation, Kano as one of the seven Hausa States, part of the Sokoto caliphates and later during the time as Kano province, had been relatively stable. As Hausa kingdom, Kano's existence started from AD 999 when Bagauda, the grandson of Bayajidda who was the founder of the Hausa Dynasty, became its first king. Since the early days Kano's potential as an agrarian, commercial, industrial and political powerhouse became manifest due to its location and political arrangement (Dandago, 2005, p. 66-68).

2.3 Agro-allied Industries in Kano State

The strategic role of industrial activities in any modern economy cannot be over-emphasized. In realization of this fact, Kano State has established agro-allied and industrial States on Sharada, Challawa, Hadejia Road, Bompai, Zaria and Katsina roads in the metropolis. It has also offered a liberal package to agro-allied industries and assisted private investors. In line with this, the well known enterprises were established with the assistance of Kano State Investment and Properties include Kano State Oil mill, Kano State Cotton Ginnery, Northern Nigeria Flour Mills and Kano Textile Printers. Even though the government has now divested from those companies, based Government privatization/commercialization of the companies, the initial efforts have proven to be very stimulating for the off of similar private ventures (Mohammed, Ibrahim & Abubakar, 2014).

For example, when the State was created there were only 65 industrial establishments located in the old industrial areas along Club, Maganda and Mission roads. Total capital investments, then were estimated at ₦160 million with an industrial

employment of about 8000. Between 1967-1969, nineteen new companies came into being with additional 13 by 1973. Total investments in industries by 1974 were estimated at nearly ₦ 800 million with the industrial employment increasing to over 13,000. However, the most rapid rate of industrial growth came between 1967 and 1987 with a total number of 240 large and medium scale industrial establishments. One of the large scale industry concerned is the sugar processing company (Bello, 2006; Ibrahim, Zhou, Li & Chen, 2014).

In addition to the medium and large-scale enterprises, the State Government in 1976 introduced the small-scale industry credit scheme, thus encouraging interested Small-scale entrepreneurs with loans to establish new, or expand the existing small-scale industries. The new credit scheme, however, was a revival of an existing small scale loan which had been in existence since 1968. In 1988 again, the Government having renewed the existing economic realities, increased the small/ scale industrial loan from ₦80, 000.00 to ₦ 250,000.00. This was done to ensure that what was offered could be sufficient for the purpose it was meant for. With those loans, the number of small industrial holdings, increased from 43 in 1984 to 164 in 1990 with a total disbursement of ₦4, 247,641 (Bello, 2006).

Similarly, the successful take-off of an effective industrialization scheme would depend on the availability of certain necessary infrastructural facilities, the State Government, provided industrial States with access roads, water and power supply as well as tax incentives. In the semi urban and rural areas these incentives were regularly reviewed in accordance with the existing realities. Presently, over 400 industrial establishments are in existence in Kano State, even though a good number

of them are not running at full capacity (some are even closed) due to the economic difficulties facing the country (Ibrahim, Zhou, Li & Chen, 2014).

2.4 Agriculture in Kano State

Prior to the creation of Kano State, the dominant role of agriculture was taken for granted in the provincial economy, as there was little or no support in the area of input and technology transfer as well as the fact that the irrigated agriculture was traditionally practiced. On the other hand, Kano State government recognised the semi-arid nature of the location in 1967 and enunciated policy measures to be engaged in. In spite of its geographical location in the semi-zone of the country, Kano is predominantly an agricultural State with about 75% direct or indirect engagement in agriculture or agro related activities.

In addition, the total land mass is 2, 040, 00 hectares out of which 1,754,200 hectares are arable land while 75,072 hectares are forestland. The inland waters in Kano State constitute 982, 600 hectares. The period of rainfall ranges from 90-120 days with an average rainfall of about 843mm depending on the geographical location within the 2 formations as the rainy season is at its peak between June and August (Mohammed, Ibrahim & Abubakar, 2014; Ifeoma & Agwu, 2014).

Furthermore, the average farm size per family of Kano State is about 1 hectare while the major crops include Guinea corn, millet, Maize, Groundnut, Rice, Wheat, Cowpea, Vegetable and fruits among others. More so, the plan is to engage the populace in agricultural activities throughout the year's articulated plan of irrigation farming to engage about 75% of the people in agriculture as well as to stem the tide

of rural-urban migration. To properly utilize the hectares of cultivable land, 22 earth dams with a total capacity of 5200 hectares of irrigation farming were developed in addition to the improvement of various Fadama lands. At the initial stage major agricultural and agribusiness activities include: farming, animal husbandry, fishing, processing and marketing of agro-allied products (Ifeoma & Agwu, 2014).

More so, Kano government has further been engaged in facilitating the socio-economic environment. The approach is basically to provide a good atmosphere of enhancing agriculture, cooperative, commerce, trade and craft, local and modern industries. The government will be monitoring and supporting the activities. These policies are aiming at promoting private organizations on the establishments and control of: agriculture, commerce and industry (Bello, 2005, KSB, 2012; Ahmed, Suleiman & Aminu, 2013; Mohammed et al., 2016c).

2.4.1 Importance of Agriculture to the Kano State and Nigerian Economy

According to Anyawu and Ibekwe (2010) agricultural output provides revenue to the government through exportation as well as tax charges for the importations of farm inputs. This is in line with the views of Lele (1991) and Ahmed, Suleiman and Aminu (2013) that the larger production of food and export crops not only conserve and earn foreign exchange, but they also establish the efficiency of other industries and assist the formation of new industries by importing scarce raw materials, automobiles, capital materials and technological knowledge.

Mohammed, Ibrahim and Abubakar (2014) reported that the agricultural sector employed the highest number of the labour force in the State. This indicated the

importance of the agricultural sector in a way and manner of providing employment opportunities to the youth and able bodies from the entire population which is resorted to the improvement in the social welfare of the community and the reduction of poverty level. In addition, agriculture is a productive entity that provides opportunities for a large number of people either directly or indirectly to engage in agriculture and agribusiness activities as their primary investment.

Seibel (2000) and Bashir and Mohammed (2017) found that agricultural output remains the strong channel of alleviating poverty and accelerating the economic growth of Kano State. This is in line with the views of Atagana and Kalu (2014) that economic growth is attained through the agricultural output. As the name implies economic growth is a process of quantitative increase in a country's per-capita output or income over a period of time (Akoum, 2008; Mohammed & Umar, 2017).

Likewise, the study of Lele (1991) viewed economic growth as a process of economic progress and raising the levels of national income over time, mostly starting from agriculture in less developed economies. In addition, economic growth plus changes in every angle of the social system leads to the economic development (Ammani, 2013). This is in line with the views of Mohammed and Umar (2017) that, economic development is a transformation in terms of the socioeconomic and political activities of a country and continuous growth process that is capable of satisfying the yearnings of the people, filling their enlightened aspirations and endowing the resources to sustain achievement. In addition, economic growth and development refer to the positive changes in the agricultural output, security, education, manufacturers and socioeconomic standard of the future generations over

a period of time (World Bank, 2008; Ahmed, Suleiman & Aminu, 2013). Therefore, agricultural growth remains a channel of food security and poverty eradications which stay in line with the target of the United Nation. Statistics have shown that agricultural output needed to be expanded by 70 percent before the year 2050 in order to provide food security to the world population and economic growth (Saibu, 2010; Adetiloye, 2012; Collier & Decon, 2014).

2.4.2 The Challenges of Agricultural Output in Kano State, Nigeria

Agricultural activities remain a key supplier of food and income to the individual, organizations and governments in Nigeria as well as raw material to the industries. Specifically, rural dwellers concentrated on getting food and socio-economic activities (Onyenuchenya & Ukaha, 2007, Anthony, 2010; Ahmed, Suleiman & Aminu, 2013; Chisasa, 2014a & 2014b). Despite the importance of agriculture to the economic growth of Kano State and Nigeria in general, there are some serious challenges in the sector as follows:

Small scale farmers are suffering from the problems of financial institutions in terms of higher interest rate which resulted in the poor credit processing and disbursement, bribery and corruption. Other problems include: poor Government and Non Governmental Organizations (NGOs) policies on agricultural loan, management and poor involvement of the real farmers in the credit programme (Odufote, 2012). Despite the importance of research and extension services in enhancing the agricultural output in Nigeria, their services are miserable and lacking the required facilities for proper operation (Anthony, 2010). In addition, the challenges of financing and attention on research and extension services have resulted in poor

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harvesting of agricultural output as well as loss of potentialities in agriculture and agribusiness investment (Philip et al., 2009).

Additionally, the production of the agricultural output is predominantly in primary commodities such as: cotton, coaco, groundnut, hide and skin for the exports. On the other hand, importations of finished goods for consumptions remained to be the order of the day (Sakumbade, 2009). Similarly, inadequate infrastructure is causing a lot of challenges to the growth of agriculture, where the problems mostly come from the area of insufficient quality roads, hospital, schools, electricity and storage facilities, among others. For example, the failure of transportation and communication constraints the movement and marketing of the agricultural output from the surplus to the deficit areas or market (Philip et al., 2009).

More so, the majority of farmers remains illiterate and suffers from the lack of education. These lead to chronic constraints and a problem for the agricultural output. This means that the two negative elements work as retarding factors for agricultural output (Saibu, 2003). Despite the modern technological intervention in the agricultural production up until now the problem appears to be the insufficient modern farm tools and equipment. It is a system which features the gratification of the basic demands of the farmers and their families and not for commercial purposes. This lead farmers to lag behind and still have to use primitive equipment such as: hoes, cutlasses and rake among others (Ijere, 1998; Anthony, 2010; Ugwu & Kanu, 2012; Ahmed, Suleiman & Aminu, 2013).

Based on the above problems of agriculture in the economic growth and development of Kano State and Nigeria, in general, this study has formulated the following theoretical definitions and the relationship between the study variables. It is formulated in order to investigate and predict the relationship between farm credit, farmland, farm infrastructure and agricultural output in Kano State, Nigeria with a moderating variable of *Murabahah* finance.

Theoretical Definitions

The global trade in agriculture and food products has increased the financial support and investment from US$230 billion in 1980 to almost US$1100 billion in 2010 for the growth of the agricultural output in the developing countries. The financial backing and investment was targeted the high-value export agricultural output, which includes: vegetables, fruits, meat and dairy with the objective of linking agricultural growth and poverty reduction. This is designed to further increase the agricultural production of the basic crops such as; Indian corn, rice and cassava in order to stimulate self-sufficiency and food security (Mundial, 2006; Goldman, 2006; Loisel, 2009; Mkpado & Arene, 2007; Hoellinger, 2011; Maertens & Swinnen, 2014).

2.5 Agricultural Output

The fundamental principle of the self-efficiency and food security is achieved through a good harvest of the output. Mohammed et al. (2016a) define agricultural output as an outcome of the successful combination of the selected factors of agricultural production. Likewise, it can be described as a yield of the agricultural production process, marketing and consumption level with the aim of achieving sustainable living and economic growth (Ammani, 2013; Monke, 2015). Similarly,

agricultural production is defined as an act of soil cultivation for the purpose of food supply and sensitive materials to the manufacturers (Anthony, 2010; Ammani, 2012; Akinleye, Ighodaro & Adetiloye, 2012; FOA, 2013; Chisasa, 2014c & 2015).

More so, agricultural production strategy is described as a systematic transformation of combined elements to produce a marketable agricultural output (World Bank, 2008; Mohammed et al., 2016b). Similarly, it is also a sustainable way of dwelling in terms of food supply, income, employment, market and industries as well as poverty eradicator in a given economy (FOA, 2008; Adetiloye, 2012). More so, the concept of agriculture covers many disciplines called agricultural science which includes: soil science and crop production, animal husbandry and veterinary, horticulture and forestation, agricultural economics and extension as well as farm mechanization to name but a few (Anthony, 2010; FOA, 2004; Sakumbade, 2009; Anyanwu & Adesope, 2010; Anthony, 2010; Ahiakpor & Asmah, 2012; Adetiloye, 2012; Tambo & Abdoulaye, 2013; FOA, 2014; Mohammed et al., 2016a).

Furthermore, agriculture is a science of crop production, forest management, caring of animals; fishery management, processing and marketing of farm produce (Ammani, 2013; Ayegba & Ikani, 2013). It is a subject that deals with the soil utilizations for food to the human beings and it is fed to the animals and reservation of forest for human gratification and economic growth. Equally, it is an act of soil cultivation for the purpose of food supply and raw materials to the industries as well as goods and services (FOA, 2008; Yunus, 2014). According to Mohammed et al. (2016b) agriculture is a science of crop yield, timber management, caring of animals, fishery management, processing and marketing for income earning, employment,

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food security as well as economic growth and development. Equally, agriculture can be described as a machinery of achieving economic growth through the utilizations of the soil for the supplying of food to man, feed to the animals and the reservation of forest (Anyanwu & Adesope, 2010; Ahungwa, Rakiya & Haruna, 2013; Ogbonna et al., 2013; Ammani, 2013).

2.5.1 Agricultural Output Development Approaches

This approach emerged in order to provide a comprehensive financial and services support to the agricultural output by the government, local and international donors. The glide path was made on many principles as required for its viability and natural selection. Among the rules required for the success of the approach include that the farmers and agricultural financial bodies should engage in self-sufficiency and stability, mobilization of savings loan and investments in the agriculture sector (Mkpado & Arene, 2007; Ugwu & Kanu, 2013; Marwa, 2014).

Agricultural finance is a concept which covers financial services in relation to the agricultural productivity and marketing through the provision of loan on short, medium and long-term, leasing, and insurance in relation to the harvest and farm animal. It can also largely be seen as a component of rural finance where some larger agro-allied industries operate in town, but they are part of the agricultural value chain (Goldman, 2006; Loisel, 2009). Rural finance is a concept which incorporates different agricultural financial services to needy rural households and agricultural enterprises located in the rural regions. It is also regarded as production machinery in the field of financing all the steps of rising to the consumption stages. Its services

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include savings, loans, money transfer services as well as the management of risk through the preparation of insurance guarantees hedging (Hoellinger, 2011).

Micro finance can be generally referred to as the financial service made available to poor traders and farmers in both urban and rural regions. It is also a channel of financing small and medium enterprises in both rural and urban areas with the intention of providing micro credit to the start-up entrepreneurs in the economy. Equally, agricultural micro finance can be regarded as financial services provided in order to support small farmers and needy rural households in the area of the agrarian production, and in the processing, storing and marketing. It is also regarded as a micro farm credit to the individual, small and medium groups of farmers and agribusiness entrepreneurs (Mkpado & Arene, 2007; Hoellinger, 2011).

Agricultural value chain finance was equally presented to raise the vertical dimension of financing agricultural activities and between different levels of agricultural value chains. It also covers each and every component of agricultural production. This suggested that the agricultural value chain finance is a kind of enhancing and financing all the aspects of agricultural productivity until it makes a final consumer of the commodity (Mundial, 2006).

Agricultural value chain finance is the machinery used by the global organizations toward increased investments in the field of agribusiness in order to tackle the multiplier effects of poverty as well as to improve rural socioeconomic growth and evolution (Goldman, 2006; Loisel, 2009). This is in line with the study of Mundial (2006) that in 2003 the Comprehensive Africa Agriculture Development Programme

(CAADP) shows that African countries engaged toward 10% allocation of their budgets to the husbandry and rural growth. Additionally, High-Level Task Force was commenced in April 2008, and attracted the attention of the heads of the United Nation's (UN) expert agencies, programmes and funds, Bretton Woods Institutions and concerned bodies of the UN Secretariat.

Equally, during the G8 Summit on 10 July 2009 in L'Aquila, the Heads of State pledged to mobilize USD 20 billion as a Food Security Initiative in support of the sustainable agriculture and rural development. Additionally, Global Agriculture and Food Security Programme (GAFSP) was established in April 2010. The purpose of establishing the GAFSP was to provide more funding to the World Bank for the purpose of generating immediate fund to the public and private organizations on granting support to the regional and internal strategic plans for improving farming and food security (Mundial, 2006; Loisel, 2009).

2.6 Farm Credit

Anthony (2010) and Monke (2015) defined farm credit as an important instrument used to support the agricultural productivity of a poor farmer through smoothening and reduce their vulnerable output constraints. It is also the way and manner of enhancing the productive capability of the poor through financing their investment in relation to human and physical capital (Ahiakpor & Asmah, 2012). Similarly, the demand for credit can be seen as productive investments that usually come from those poor who are less risk-averse and enables them to overcome liquidity constraints. Additionally, it is possible to undertake investment that can boost production, employment, marketing and income (Seibel, 2010; Monke, 2015).

Additionally, farm credit can be drawn as a certain amount of money, where formal and informal financial institutions are prepared to impart out to poor farmers under certain conditions that warrant receipt and payment (Saibel, 1985). Likewise, Ijere (1998) described farm loans or advancing as a frequently conceived as any of the available credit machineries used to finance farm activities, including the bill of exchange, bank cards, loans and bankers' acceptance. Besides, it can be specified as a potent instrument used to encourage agricultural production in a weakened economic system (Onyechanya & Ukoha, 2007).

In addition, farm credit can be defined as a total amount of money available to lend out to the needy individuals or groups of farmers with the agreement of repayment over a period of time in a future (Miriam, Patrick & Ifechukwu, 2014). It is equally recognized as an outflow of fund to the needy farmer with the intentions of making the repayment with some additional fund or reward for the utilization of the fund over a period of time (Nwosu et al., 2010). It can be a procedure of gaining the command of money, goods and services for the purpose of agricultural activities based on repayment conditions (Anthony, 2010). It is given out by individuals or groups, government or non-government organizations (NGOs), formal or informal financial institutions to the farmers as farm production capital or ennoblement money to support the productivity (Ammani, 2013; Chisasa, 2014a).

To add, farm credit is recognized as the main requirement and core factor in the growth and promotion of agricultural production and economic growth. It is also running a very vital role in the agricultural development and evolution (Ammani, 2012). The scheme allows farmers to fit their needs and economies of scale through

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the functions of innovative engineering sciences that enable them to improve their yield and market (Ijere, 1998). Equally, agricultural credit is an endeavour to increase agricultural yield or output by way of enabling farmers to reach his/ her socioeconomic and development targets. In addition, the availability of the farm credit leads poor farmers to efficiently play a vital role in the economy (Onyechanya & Ukoha, 2007). FOA (2008 & 2013) and Brewer et al. (2013) summarized it as an ingredient or central factor in the process of accelerating agricultural mechanization and modernization.

International Finance Co-operation (IFC) (2011) reported that, agricultural finance serves as the essential services used by government ministries of agriculture and financial institutions to provide the fund with the intention of boosting the sector. This is made out through the preparation of farm credit and related services to the individuals and the group of farmers either directly or indirectly. Likewise, it is regarded as a path and manner of official disbursement of money and related inspection and repairs to the underprivileged and rural farmers in the developing economy (Rosenzweeng, 1993).

Consequently, Mkpado and Arene (2013) indicated that rural finance is a function of agricultural financial services due to the fact that, individual and group of enterprise and farmers in the rural areas make use of the facilities toward produces, processing and market boost of their farm produce. The examples of rural financial services include: the provision of farm credit, money transfer, savings hedging, insurance and guarantees among others. Additionally, Monke (2015) explained the following three types of farm credit (F.C) as:

i. Operating farm credit: This is regarded as a short-term farm credit for consumable farm input such as: feed, seed, fertilizer and fuel among others. Specifically, instalment farm credit is for intermediate-term financing of durables farm input such as farm working equipment and breeding stock.

ii. Real estate farm credit: This refers to long-term farm credit (up to 40 years) used for the purchase, rent or maintainers of land, buildings and houses. This type of agricultural credit has a statutory mandate to serve agriculture, agribusinesses and rural homeowners.

Furthermore, Monke (2015) grouped and explained the types of farm credit to eligible borrowers and their scope of financing system as follows:

i. Full-time farmers are those individual farmers with over 50% of their assets and income from agriculture. Hence, FC can be utilized for agriculture, family and non-agricultural needs (including vehicles, education, household improvements, and living expenses.

ii. Part-time farmers are the individual farmers who own, farmland or produce agricultural products, but make less than 50% of their income from farming.

Consequently, FC can be utilized for agriculture and family demands. Also, farming related concerns FC can lend to businesses that process or market the farm output, ranch, or aquatic products if more than 50% of the business is owned by farmers. In addition, FC can also lend to commercial enterprises that offer services to farmers and ranchers, such as crop spraying and cotton ginning. The extent of financing is based on the quantity of the business's farm-related income. Equally, rural

homeowners FC can be loaned for the purchase or construction and refinancing of single-family homes in rural areas (2,500 population limit) (Monke, 2015).

Furthermore, farm credit can finance a certain farmer-owned cooperatives and agricultural exports. World Bank, (2003), Akanji (2006), Eyo (2008), Porter (2010), Seibel (2010) and Ahlen (2012) makes categories of agricultural financial programmes into the following approaches:

i. Formal Credit training desirable category includes financial institutions by the regime, such as agricultural banks, rural branches of community banks, co-operatives organization and government owned institutions and an entry to public finance and special rediscount facilities from central banks. They are usually financed the production of priority commodities easily as their loan repayment is linked to marketing facilities.

ii. Semi-formal credit category includes credit unions, co-intelligence officers, community banks and NGOs. These types of institutions are established by agricultural communities with the assistance of the government and international NGOs. Their primary functions are to aid the credit delivery, solving problems that may arise and to secure and arrange credit repayments.

Therefore, subsidies have been frequently applied to reduce targeted borrowers' commitments in a specific enterprise and to establish the low factor profitability of farm investment. Under this approach a number of financial establishments have been set and operated through rural banks and insurance societies (FOA, 2014).

2.6.1 The Nigerian Government Approach in Agricultural Financial System

The agricultural financial system is viewed as a more encompassing name of agricultural credit, which is a subdivision of agricultural economics. It is a financial system to the growth of agribusiness through the planning and management of banks and financial services. It is also a systematic approach to the rural infrastructure through the provision of fiscal services (Ijere, 1998). Oguoma, Ben-chendo and Henri- Ukoha (2010) Awe (2012) and Odufote (2012) stipulated that, Nigerian governments established various programmes and outlines with the objectives of providing credit facilities and services in order to rejuvenate the past image of the Nigerian agricultural sector through Nigerian Agriculture, Cooperative and Rural Development Bank was founded in 1973 by the Nigerian government after the complementary establishment of regional and State credit agencies. This was commenced after the State's creation and as an emphasis was given to the agricultural sector (Ugwu & Kalu, 2012).

Similarly, Awe (2013) reported that, Nigerian Agriculture, Cooperative and Rural Development Bank serve as a direct lending to the farmers in order to improve agricultural output. Also, the Agricultural Credit Guarantee Scheme was created in 1978 to promote the access of credit facilities to farmers by introducing guarantee for farm lending granted by commercial banks for agricultural production. This gave a farmer the opportunity to obtain a maximum of 50,000.00 Naira per farmer and one million Naira for a group of farmers. This scheme was set to solve the problem of small, medium and large scale farmers in terms of access to credit for agriculture as well as to support the government aims on agricultural production (Oguoma, Ben-chendo & Henri- Ukaha, 2010; Atagana & Kalu, 2014).

Others include: the Rural Banks, Micro-Finance, People's Bank of Nigeria and Community Banks, which share the same aims that is to promote agriculture through the mobilizations of savings and credit disbursement to the poor farmers and traders. These banking schemes were also ready to offer banking facilities for the welfare of underprivileged farmers and dealers in urban and rural communities (Fedelis & Ogwumike, 2002; Ugwa & Kalu, 2012). Similarly, Family Support Programme of 1994 and Family Economic Advancement Programme of 1997 were also aimed at facilitating farm credit to the women association and self help groups in the rural and urban communities (Akanji, 2006). Among the programmes and the schemes are the National Food Security Plan, the 3rd National Fadama Development, National Agricultural Land Development Authority, Nigeria Agriculture, Rural and Cooperative Bank, Agricultural Credit Guarantee Scheme Fund, Agriculture Development Bank among others (Philip et al., 2009; Odufote, 2012).

2.6.2 Government and NGOs in Financing Agricultural Output of Nigeria

The following are the combined efforts of both government and nongovernment organizations towards promoting agricultural finance and services in Nigeria. The NGOs' credit supply approach to agricultural development in Nigeria was introduced under the ACGSF in 1991. It had also started operation in 1992 with the aim of providing credit to the farmers and to facilitate the growth of the farm output through the motivation of the individual and group of farmers. In addition, NGOs are motivating farmers to organize themselves and form groups on the basis of common aims and objectives to obtain micro credit (Mkpado & Arene, 2007). Similarly, Adetiloye (2012) and Asiabaka and Owen (2012) revealed that the main sources of NGOs fund include: Group borrowing from banks, governments, local and

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international donors such as; United Nation Development Project and European Union among others. Also, the study of Mkpado and Arene (2007) found that the Farmer's Developmental Union in Oyo State remained the strongest and most dynamic farmers' group in the Southwestern Nigeria which is located in Ibadan of Oyo State. It main interest is to mobilize savings and disbursement of the micro credit, enlighten its members on the new technical know-how of the modern farming system, marketing and the general economic support.

More so, Women Farmers' Advancement Network was established in Kano State, Nigeria with the aim of performing micro-credit disbursement to the women farmers and receives farm output for the repayment in order to support these women farmers. It also impacts education, hand crafts and environmental sanitations to the members (WOFAN, 2016). Likewise, Lion's Micro Credit Association is located in Nsuka Enugu State, Southeastern part of Nigeria with the aim of self-help and micro farm and entrepreneurial credit with a simple repayment system (Mkpado & Owen, 2007; Asiabaka & Owen, 2012; Adetiloye, 2012).

2.6.3 The Role of Commercial Banks to the Agricultural Sector in Nigeria

The Nigerian government approves the commercial agriculture credit scheme in March, 10, 2009 and it will serve for seven (7) years that is from 2009 to 2016 with the disbursements of 200 Billion Naira. The commercial banks are to charge nine percent (9%) interest to the farmers with the aim of supporting agriculture and related projects. In addition, below are the lists of Nigerian commercial banks participating in the commercial agriculture credit scheme, the united bank for Africa (UBA), Diamond Bank, Zenith Bank, Unity bank, Fin bank, main street Bank,

Guarantee trust Bank, Enterprise Bank, Skye Bank, Access Bank, Eco Bank, Citi Bank and Stanbic I.T.B.C. Bank (Odufote, 2012).

Additionally, 30 out of 37 States, including federal capital territory Abuja were engaged in using the credit scheme in order to finance their various agricultural development projects. The fund is open to the participating financial institutions to finance private, commercial, agricultural activities and agricultural projects at the State government level. However, due to the effect of interest charges six (6) banks already failed before 2016. More so, the credit scheme failed due to the factors associated with the programme and financial institutions which include: lack of market values, poor incentives and disciplines as well as the fact that the supply is mostly subjected to political considerations and interests and neglected real rural farmers and the sector (Odufote, 2012).

Atagana and Kalu (2014) argued that, inadequate farm credit is among the major constraints of agricultural production in Nigeria. This is in line with the viewed of Anthony (2010) who asserted that poor farm credit to the rural farmers and the agro-allied is the key driver for the declining agricultural output in Nigeria. In addition, the exploitative nature of farm credit in Nigeria in terms of interest rate, which is charged by the conventional financial institutions, also contributes to the emergence of serious challenges of farm credit in the agricultural sector of Nigeria (Ugwu & Kanu, 2012). Equally, interest charges by the conventional financial institutions are against Muslims' belief worldwide. This is in line with the study of Putri and Dewin (2011) and Ogunbado and Ahmed (2015) that the conventional farm credit system is contrary to the Shariah principle in relation to the socio-economic activities.

Despite the institutional weaknesses of the agricultural and commercial banks, their contributions are essential to the growths of the sector. Since, this grassroots level of the financial institutions remains the main provider of financial services in the agriculture and rural areas. Specifically, in Western Africa, financial institutions are the channel of the agriculture and rural developments in countries include: Nigeria, Mali, Burkina Faso, Ghana and Madagascar etc. (Aredo, 1993; Elston, Chen, & Weidinger, 2016). Similarly, In East Africa, the agricultural Savings and Credit Cooperatives (SACCOs) established a relationship between farm credit and agricultural output as such it serves as a channel of making farm credit available to the smallholder producers of cash crop such as: coffee, cotton, coffee and dairy among others (Piprek, 2007; Kessy, Mushi, Stray-Pedersen & Botten, 2016).

2.6.4 Relationship between Farm Credit and Agricultural Output

Farm credit can be regarded as a procedure of gaining control over a certain amount of money, goods and services in the field of agriculture on the basis of making repayment with incentive in a future agreed time (Simtowe, Zeller & Diagne, 2009; Chisasa & Makina, 2014). Additionally, the study of Tibi and Edebiri (2015) established a relationship between micro farm credit and output for poverty alleviation. This is in line with the study of Piprek (2007) that credit to the farmers is impacted in the output in which SACCOs joined and established the relationship between credits and farm output. Besides that, Ahmad (2011) studied the impact of credit on agricultural output in Pakistan. Secondary data were generated for the period of 1974 to 2008. The result reported a significant role of institutional credit in the agricultural sector. Anthony (2010) established a relationship between credit to the farmers and agricultural output in which the data were extracted from the CBN

annual report, NBS, and internet publication in relation to the agricultural production in Nigeria. Equally, the study of Ammani (2012) recommended that, credit should be available to the farmers in order to produce high output and reach economic growth. Similarly, Kaleem and Abdul Wajid (2009) found that the purchase of the farm inputs and other farm activities necessitated the reason for agricultural credit.

Besides that, Brewer, Wilson, Featherstone and Langemeier (2013) established a relationship between the profitability of the credit compared to the farm output of a single and multiple farm credit systems of Kansas farms in the United States of America. Chisasa (2014a) revealed a positive result in South Africa. Data were collected from 362 smallholder farmers and analysed by structural equation modeling approach with multi-stage sampling technique and it underpins the study with the capital structure theory. In another study, Chisasa (2014b) reported a positive credit and agricultural output in a study regarding the finance and growth in the agricultural sector of South Africa. Data from 500 respondents were captured and analysed through SPSS-SEM and Analysis of Moment Structures (AMOS).

Similarly, Khan and Lodhi (2014) reported a positive result from a study on the, financial Development and output growth in Pakistan. Data were collected through the Vector Auto Regressive (VAR) model for the period of 1980-2012. Tibi and Edebiri (2015) reported a positive and significant relationship between farm credit and agricultural production through the investigation of farmers' access to micro credit and poverty alleviating in the Ethiope East Area of Delta State, Nigeria. Data were generated from Primary and secondary sources from 70 respondents. Similarly, Ikinleye and Ighodaro (2012) in Ahiakpor and Asmah (2012) reported a positive

relationship between farm credit and agricultural output in Nigeria. Data were generated from 1971 to 2010 and analysed through the autoregressive distributed lag model.

Adeola and Ikpesu (2014) reported a positive, but weak result between bank lending and agricultural output in Nigeria. Data were generated from the CBN Statistic and time series for the period of 1981-2013 with the adoption of the Vector Autoregressive approach. Furthermore, Chisasa and Makina (2014) revealed a positive finding between credit and agricultural production in South Africa. Time series data were generated for the period of 1973-2009 and Johansen and Juselius' (JJ) co-integration approach was used during the analysis. On the other hand, Faridi reported a negative result from a study entitled Finance and Agricultural Export in Pakistan. Data were generated the period 1972–2008 and analysed by Johansen's co-integration technique.

Additionally, Adetiloye (2012) reported a negative a relationship between credit and agricultural output in Nigeria. Data from the period 1978 to 2006 were used. Also, the study recommended that further awareness campaigns on youth involvement in agricultural production as well as improvement of the ACGSF management are carried out. Omonijo, Toluwase, Oludayo and Uche (2014) reported a negative relationship between credit and agricultural output in Isan-Ekiti, Nigeria. Data were generated from 773 questionnaires and analysed by descriptive statistics. Next, Reyes, Lensink, Kuyvenhoven and Moll (2012) studied access to credit on the productivity of vegeTable and fruit growers in Chile. Data were gathered from a survey conducted in 2006 and 2008 with 177 farmers. The findings show a negative

relationship between credit and farm output of vegetable and fruit. The study also, reported a negative relationship between farm credit and agricultural output in Peru.

Chasisa (2014a) established a positive relationship between bank lending and agricultural output in South Africa. Data were collected from three hundred and sixty two (362) respondents and analysed by SPSS and the Cobb-Douglas function was underpinned the study. Similarly, in another different study, Chisasa (2014b) reported a positive relationship between credit and agricultural output in South Africa. The Survey was commenced on the aggregate of three hundred numbers (300) farmers. Data were analysed through descriptive statistics through the ordinary leased square multiple and regression statistical technique.

On the other hand, Ammani (2012) revealed a positive result in a study that investigates the relationship between formal credit supply and agricultural production in Nigeria. Data were generated from secondary sources and analysed by regression models. Also, the breakdown of the results showed a positive and significant relationship between crop and formal credit. Also, the second results indicated a positive and significant relationship between livestock and formal credit. The third revealed a positive and significant relationship between fishes and formal credit. Tasie (2012) evaluated the effect of the International Fund for Agricultural Development which regarded the credit supply on rural farmers in Rivers State, Nigeria. The study reported a positive relationship between credit and agricultural output. Besides that, Kaleem and Abdul Wajid (2009) reported a positive finding from their study. Data were generated from secondary sources. Also, the literature of the study also indicated that Grameen Bank statement revealed a positive relationship

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between credit and individual farmers and output and household performance in Bangladesh. More so, the study reported a significant relationship between credit and agriculture. Data were collected through a structured questionnaires administered from 90 farmers with the use of the multi-stage sampling technique.

Next, Simtowe, Zeller and Diagne (2009) reported mixed results in their study on the potential contributions of farm credit toward enhancement of hybrid maize production among smallholders in Malawi. Data were collected from the Malawi farm credit policy from the early 1980s to 1990s. In addition, Okuthe, Ngesa and Ochala (2013) reported mixed results from their study of improved sorghum in Homabay District, Ndhiwa division in Kenya. Their studies used survey methodology and ex-post-facto research while data from different locations were collected from 105 farmers. Their findings show that sorghum output is positively influenced by the farm credit and negatively influenced by the non-group farmers. Results of data analysis also interpreted that the adoption of improved sorghum varieties was better than the adoption of technologies.

Furthermore, Dang, Leatham, McCarl and Ximing-Wu (2013) reported mixed findings in their studies entitled efficiency measurement concerning the system to farm credit in the United States of America. Also, the Quarterly unbalanced panel data were considered from January 2000 to December, 2011 as captured on the Farm Credit Administration web site, as the study analysed Farm Credit System of five banks as well as other members. Furthermore, the five banks were statistically examined by descriptive statistics of the variables in terms of the logarithm. Also, Okuthe, Ngesa and Ochola (2013) reported mixed results in Southern Kenya. Besides

that, Ngaruko (2014) reported mixed results from the study entitled farmers' determinants of participation in relation to the farm credit market in the republic of Tanzania. Data were captured from the contract of 75 agro credits in Western Tanzania whereas, neoclassical economics as well as perspectives of new institutional economics were considered in relation to the determinants' farm credit demand and repayment approaches respectively.

Meanwhile, Mkpado and Arene (2007) established a negative relationship between farm credit and agricultural output. Data were reserved through randomly selected stratified sampling from different micro finance, financial institutions using the multiple regression technique and descriptive statistics. Similarly, Ugwa and Kanu (2012) reported a negative relationship between farm credit and the agricultural output. Data were collected and reviewed from the CBN, NPC and time series information from GDP, agricultural output and revenue from export as well as the available information from 1960 to 2009. Kofi and Akwaa-Sekyi (2013) studied Micro credit impact on the rural agriculture of Sunyani Communities. Data were captured from 103 selected farmers from the rural bank customers to answer close-ended questions. Data were analysed by the Paired samples t-test to determine the impact of the credit intervention in agriculture. The result found that farm credit is negatively impacted on agricultural output. Similarly, Amadi (1989) established a relationship between credit and fisheries in Nigeria. Data were gathered from financial institutions and the result shows a negative financing.

Similarly, Anthony (2010) reported a negative result in his study entitled agricultural credits on the economic growth of Nigeria. Data were collected for publication from

the CBN annual report, statement of account and statistical bulletin, while the NBS and internet publication used were from the period of 1986 to 2007. Equally, Atagana and Kalu (2014) analysed that farm credit is negatively impacted in agricultural output. The Data were analysed by using a linear model based on the production function of the theory of production over the finding of the impact of the ACGSF In providing credit in agricultural development. Awe (2013) analysed that farm credit positively influenced agricultural production output. Data were captured and analysed through the Vector Repressiveness Model and the time series data from 1980 to 2009 were considered.

Furthermore, Klinefelter and Person (2005) revealed a positive finding on the relationship between credit and farm production in Philippines. Additionally, Oguoma, Ben-chendo and Henri-Ukoha (2010) examined Agricultural credit Guarantee scheme fund, and reported that farm credit positively influenced the agricultural output growth and development in Nigeria. Similarly, Nwosu et al. (2010) studied that farm credit under ACGSF has a positive contribution with regard to the agricultural output in Nigeria. Equally, Furthermore, Klinefelter and Person (2005) revealed a positive finding on the relationship between credit and farm production in Philippine. Mattthew and Uchechukhu (2014) reported mixed results between farm credit and agricultural output in rural areas of Nsuka local government of Enugu State, Nigeria. Data were generated from sixty small scale farmers through questionnaire and interview technique as well as descriptive statistics was employed in the data analysis. In addition, Onyenchenya and Ukala (2007) revealed mixed results between farm credit and agricultural output and study were conducted on Nigeria Agriculture Cooperatives and Rural Development Bank. Data were gathered

by using a Random sample of ninety small scale farmers. Moreover, Oyeyinka and Bolarinwa (2009) reported mixed result between credit agricultural outputs in rural areas of Oyo State, Nigeria. Data were gathered through the systematic simple random sampling method where a questionnaire was distributed to one hundred and thirty farmers. Brambilla and Guido (2006) explained that credit is positive and significant in Zambian cotton farms where farmers took farm credit from a giving institution while disposing the farm output to another institution which leads to the increase in the interest rate and other administrative charges that resulted in less profit in cotton production.

Furthermore, Poulton et al. (1998) examined that small scale farmers' cash-crop in a liberalized market of cashew and cotton in Tanzania, Pakistan and Ghana. Their findings indicated that farm credit has positively and significantly influenced the agricultural output. Consequently, a new channel of agricultural financing emerged from Gulf countries in relation to the large land acquisition in Africa and other developing economics. Even more so, Pension funds became an additional key player in the field of agricultural investment as such, it engaged in the purchase of food commodities and farmland. The investment reached over USD 100 billion in agricultural commodities as well as USD 5-15 billion on farmland acquisitions. Also, its portfolio invested in farmland was significantly sound in the year, 2015 (Visser, 2016; Venkatesan, 2016; Gugger, Bidwai, Josh & Garcia-Bailo, 2016).

2.7 Farmland

Land is a gift from Allah to the mankind for the purpose of crop growing and animal rearing as a source of comfort, safety and quality of life. It is also a fundamental element of plant and animal life. Land can be defined as a solid portion of the earth that is supporting farming and related activities (Miyata, Minot & Dinghuanhu, 2009). Likewise, it is a fundamental resource for ensuring agricultural production and security. Also, farmland is described as a top layer of the earth space, contained unconsolidated materials and riches in nutrients needed by plants to sustain the growth of healthy plants (Allatiyari, Poshtiban & Koudinya, 2013; Chisasa, 2014b).

According to Maletta (2014) farmland can be seen as a major factor of agricultural production. Farmland refers to a fertile portion of soil being utilized for a purpose of crop planting and space occupied for rearing of animals, poultry, fisheries and forest reservations. It is also comprised of pasture. It is equally, remains a factor of production and served as a pillar of some kind of agricultural production, including processing and marketing (Kan, Haim, Rapeport-Rom & Schechter, 2008).

Additionally, farmland has an important feature on making the advancement of the agricultural production and economic growth. On the other hand, if there is no access to land, agriculture cannot adequately develop, even if and only if technical expertise, financing or marketing are available. Furthermore, Maletta (2014) reported that agricultural production employed the use of land space. As, defined by the Food and Agriculture Organization Statistics (FAOSTATS) glossary there are three major categories of farmland such as:

i. Arable land is described as a type of land which is used temporarily for agricultural practice and pasture as well as kitchen garden and land fallow (lower than five years). On the other hand, the abundant land in relation to shifting cultivation is not part of this category. Also, data in respect of Arable land are not meant to show the amount of land that is viable for cultivation.

ii. Land with permanent crops: land use for cultivation with long- time crops that do not have to be replanted for many years (such as coffee and cocoa), land under shrubs and trees, land for producing flower such as jasmine and roses and nurseries (except those for forest plants which classified under forest). Permanent pastures and meadows: Land permanently underutilized (five years or above) to grow forage crops, either growing wild or cultivated (grazing land or wild prairie).

Consequently, land tenure is an important determinant underlying the farmer to his/her farmland. Additionally, farmland occupation and utilization have been the origin of legal and social issues between communities (Hangh & Sheno, 2007). The Land tenure system is necessary for the developmental objectives of the agriculture sector in terms of structure and distribution of the equitable farmland (Trukhachev, Ivolga & Leschva, 2015). Farmland can be seen as an agricultural input uses to support multiple numbers of productive activities includes food supply, rearing of animals, forestry, fishery as well as a recreational Centre (FAO, 2013; Krul, 2015).

Therefore, it is very essential for the agricultural enterprises and financial institutions to support the existence of a minimum level of farmland development. Since, farmland is featured the attainment of long-term profitability in agriculture and agro-

business activities (Ngaruko, 2014). It is also one of the most sensitive factors of agricultural production and agribusiness advancements. As reported by FAO (2008) that access to farmland is strongly important for full time and potential farmers. This is in line with the view of Awe (2013) that, farmland should be given to potential farmers in order to accelerate agricultural output and it related activities for a sustainable economic growth and development.

2.7.1 Government Programme on Agricultural Land Development in Nigeria

The Nigerian governments were initiated a lot agricultural development schemes with the aim of enhancing agricultural land and productivity. Philip et al. (2009), Ugwu and Kanu, (2012) revealed some of the government policies which include:

i. The National Agricultural Land Development Authority and Agricultural Development were established with the aim of promoting agricultural production through the provision of land to the farmers. Also, is to encourage both private and public organizations to participate in the agricultural activities, whereas Thailand and China became worthy partners.

ii. National Accelerated Food Production Programme was planned to encourage private farmers to engage in agricultural investment in the area of maize, rice and cassava. Also, agro service centres were introduced to serve as a place for the supply of important farm inputs such as seeds, fertilizers, herbicides, insecticides etc.

iii. River basin development authority was established to promote agricultural land with aimed at providing water supply to the sector and this served as a facilitator to control the constraints in the agricultural sector in Nigeria.

Despite the initiatives of the governments and donor organization in promoting agricultural finance and service. Also, new investment in the field of financing agriculture emerged from the high-income food deficit countries. The Gulf countries have been acquiring large land in Africa and elsewhere. Data from the industry experts and internet sources reported that a total of over USD 4.5 billion committed to farmland investments in sub-Saharan Africa. Also, a range of 15 to 20 million hectares of farmland remain under negotiation for the investment in Africa, Latin America and Asia (Nijbroek & Andelman, 2016; Meyer, 2016).

2.7.2 Relationship between Farmland and Agricultural Output

Farmland can be determined as a pillar of agricultural productions in terms of sustainable life and socio-economic growth (Chisasa, 2014b). Farmland remains the ingredient of agriculture as well as other aspects of economic growth and maturity (Charbelin et al., 2014). Additionally, Lashgarara, Ehtesham and Omidi (2014) explained that farmland under organic agriculture is now over twenty six million hectares globally. According to Ridhwan (2013) that the size of the farmland determines the significant level of the agricultural commercialization, household work as well as bank decision on the farm credit ratio.

Also, Kan, Haim, Rapoport-Rom, Shechter and Smith (2008) reported a decline of the farmland in the agricultural land in Israel. Also, a positive mathematical programming model was used and reported that the changes were from 15% to 6%. Jayne, Chamberlin and Headey (2014) found that the challenges of the farmland are also a major issue that leads to the failure of the agricultural output, as well as a major obstacle to the poverty reduction. Similarly, inadequate farmland is a serious

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constraint to the growths of agricultural output and economic growth. In addition, land reform professionals proved that inadequate farmland is the most critical challenge which is hindering the development of agricultural output (Tenaw, Islam & Perviaian, 2009; Holden & Otsuka, 2014).

Also, the study of Jayne, Chamberlin and Headey (2014) further reported an inverse (negative) relationship between farmland and agricultural output and further explained that Arable land decreases from 68% to 24-22% in Zambia, Ghana and Kenya. The exploitation of land remains the agents that have been clarified as basic influences on agricultural activities. Arable land is always attracting the population and become densely populated areas and this leads Africa to witness high competition to occupy the fertile land. Also, Rezvanfar and Mohammadi (2012) established a positive result on size of farming land by observing factors of Soil Conservation in Iran. Data from 250 questionnaires were analysed by SPSS.

Meanwhile, Nkonde1, Jayne1, Richardsonl and Place (2015) revealed mixed results in Sub Saharan Africa used data from Zambia. Also, the study explained that, farm size is not uniform across the farm productivity within the zone. Also, relatively large farms (medium-scale farms) enjoy labour efficiency on productivity. More so, Davidova, Fredriksson, Gorton, Mishev and Petrovici, (2012) revealed a negative relation from the European Union new member countries. Data were generated from primary source and literature on livelihood sustainability.

Additionally, Davidova, Fredriksson, Gorton, Mishev and Petrovici, (2012) reported a negative result from the European Union State. Data were collected through the

primary source and literature on livelihood sustainability. Besides that, Chasisa (2014a) established a positive relationship between farmland and agricultural output in South Africa. Data were collected by using a survey involving three hundred and sixty two respondents from the North West region and Mpumalanga provinces and the research used ordinary least squares to examine the Cobb-Douglas function of agricultural input and output. In a different study, Chisasa (2014b) established a positive relationship association between farmland and agricultural output in South Africa. The survey engaged three hundred farmers. Descriptive statistics, ordinary leased square multiple, and regression statistical technique were used for the during data analysis.

The study of Chisasa, (2014c) revealed a positive result between land and farm output in Mpumalanga and North West, South Africa. Data were gathered through 500 smallholder farmers and analysed by SEM. On the other hand, Davidova, Fredriksson, Gorton, Mishev, and Petrovici (2012) reported a negative result between land size and farmers' output from the five new European Union member States. Data were generated from the primary and the literature. The Agricultural Policy of European Union is not suited to most of the poor subsistence farmers. Equally, Minten and Barrett (2008) studied agriculture and poverty in Madagascar. Data were analysed by the production function and flexible marginal returns. The result indicated that Land has a little effect on agricultural productivity and formal land titling is insufficient to change the performance of the agriculture output. Furthermore, Onyenchenya and Ukala (2007) revealed that land size is positively related to the agricultural input and output. Data were gathered through questionnaires from 90 small scale farmers. More so, Jiang, Deng, and Seto, (2013)

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performed another study in China. Data were analysed by the panel econometric methods. As urban expansion has sacrificed the agricultural land, the study show mixed findings. The area of farmland is negative, while, industrial sector and agricultural land use intensity reported a negative result. However, positive impact was established between GDP per capita and agricultural investments intensification of agricultural land.

Gretton and Salma (1997) established mixed findings on the relationship between agricultural production, land degradation and the Australian agricultural industries, which encompass the experimental analysis of the agriculture of New South Wales with the consideration to a statewide model. More so, Thapa, (2007) reported a negative relationship between farm size and productivity: empirical evidence from the Nepalese mid-hills in Italy. Data were analysed by regression equations. Additionally, Olujenyo (2008) reported a positive result in relation to the agricultural production determinants and profitability in Ondo State, Nigeria. Data were collected through 100 questionnaires by the random sampling technique and analysed by the descriptive statistics, gross margin analysis, production function and the Ordinary Least Square (OLS).

Likewise, Knowler and Bradshaw (2007) revealed a positive relationship between farm size and farming production in India. The study compared other farm production pattern in Nepal, India and other South-Asian countries. Similarly, Jayne, Chamberlin and Headey (2014) established an inverse relationship between farmland and agricultural output and further explained that Arable land decreased from 68% to 24-22% in Zambia, Ghana and Kenya. The exploitation of land remains the agents

that have been clarified as basic influences on agricultural activities. Arable land is always, attracted the population and become densely populated areas and this leads Africa to witness high competition in terms of fertile land.

Equally, Bhalla and Roy (1988) reported a positive relationship between farm productivity and the role of land quality and further concluded that the study stylized the inverse relationship between farm size and output of agricultural commodities per hectare due to the omission of soil quality. The study further reported a positive relationship between farm size and agricultural output in Bangladesh, Peru and Thailand. Data were analysed by the cross section random sample research of 250 farm households in the affected areas. Di-Falco (2014) reported a negative relationship between farm soil degradation and agricultural output in Ethopia. Data were gathered from the cross section and panel data. The research provides evidence of the effects of different dimensions of social capital for innovation adoption across households holding different levels of risk aversion.

In addition, Xiao, Xianjin, Taiyang, Yuntai and Yi (2013) reported a negative relationship between farmland fragmentation and agricultural output in China. Data were gathered and analysed through the summary and comparison analysis approaches. Mattthew and Uchechukwu (2014) revealed a negative relationship between farmland and farm output in Enugu State Nigeria. Data were collected from sixty rural farmers from Nsuka local government areas. Also, the Descriptive statistics was employed during the analysis. More so, Okuthe, Ngesa and Ochola (2013) reported a negative relationship between farmland and sorghum agricultural output in South Western Kenya. The data were analysed by cross-tabulation and

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chi-square test revealed no significant relationship between land ownership and agricultural output.

Garrett, Lambin and Naylor (2012) reported a negative relationship between farmland tenure and soybeans production yield (Output) in Brazil. Data were captured from the county level. On the other hand, Simtowe, Zeller and Diagne (2009) reported a positive relationship between farmland and agricultural output in rural areas of Malawi. The Data were analysed by the treatment effect model. Similarly, Maletta (2014) revealed, that farmland is related to agricultural output. Also, he explained that agricultural development refers to land utilized for agricultural output. As global population has been increasing faster, which is already reaching almost seven billion, and is expected to reach nine billion by 2050, the more farmland will be demanded to meet the need of the growing population, and this will be tempered with available farmland.

Bastian et al. (2002) established a survey that reported a positive relationship between farmland values and agricultural output. The data were analysed through the Geographic Information System (GIS) on examining the recreational and scenic amenities associated with farmland. Also the model of hedronic price is specified by the GIS examination. It is considered to estimate the importance of amenity and agricultural output, land features or price per acre for a wyorning sample of agricultural parcels. The findings indicated that the specification farmed across various functional forms. Also the land prices sampled are explained by the degree of environmental amenities and attitude on agriculture were statistically significant. Kan, Haim, Rapoport-Rom and Shechter (2008) reported a positive relationship

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between farmland and agricultural output in relation to environmental facilities and optimal land used for agricultural production in Israel. The study used a positive mathematical programming model for captured data. The study revealed that changes in farmland, increase farmer's welfare by 2.4 percent nationwide up to 15 percent or the regional stage. Regional farming scale on profit and loss level amounted to 6 percent. Due to the nature of the decreasing return-to-scale of ameinity benefits function and the cross- regional variability sensitively appears in the way and manner in which the country is regionally divided.

Rez vanfar, Shiri and Kanigohar (2012) established an empirical study which shows that farmland is positive and significant to the agricultural output in Iran. Data were gathered through two hundred and fifty questionnaires. Equally, Allahyari, Poshtiban and Koundinya (2013) reported a positive relationship between farmland and agricultural output in the Guida area of Iran. Also, questionnaires were used at the time of data collection. Equally, the study finding indicated that, economics factors impacted more on agricultural land changes in Guilan. Also, this is followed by the management, social and relevant policy making as well as personal and technical impacted more than land use changes. In addition, the growth of population and expansion of the physical face of the cities was the most influential social factor in changing the farmland.

Muyanga and Jayne (2014) examined an empirical study and revealed a negative relationship between farmland and small scale agriculture in Kenya. Data were collected through a structural model and measure the impact of density population on farm input and farm output prices, size of farmland and ultimately on small scale

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farmers' behaviour and intensification of agriculture and evidence is classified from a five-round panel survey between the year 1997 and 2010, where 40 per cent of the rural dwellers occupied 5 percent of the farmland. Also, a finding shows a positive relationship between population density and the yardstick of farmland intensification which is roughly five hundred KM^2/persons. As, the study indicated that the rising in population density is not related to future increases in farmland intensification. Equally, some intensification measures actually indicated the alarming decline of farmland ahead of this densely populated area.

Jayne, Chamberlin and Headey (2014) established a positive relationship between farmland and agricultural output. Also, their study concentrated on land pressure, evaluation of farming styles and development plans in Africa. The research synthesizes how markets, people and governments are responding to the increasing land pressures in Africa, concentrated on key findings from different contributions over this special issue. The finding revisits Baserupian agriculture as an important response to farmland constraints that consist of non-farm diversification, urban-rural migration and reduced soil fertility rates. Additionally, the existing factors that are influencing the potentialities of rural production include temperature, rainfall, soil equality etc. (Chamberlin et al. 2014).

Also, the increased moisture retention, organic matter and other rehabilitations of land is attributed to the agricultural output. In addition, inorganic fertilizers to farmland are preconditions for improving agricultural output in high populated rain fed farming system of Africa (Tittonett & Giller, 2013). Chamberlin et al. (2014) established a mixed finding on the relationship between land and agricultural output

through the understanding of the existence of an arable land in the African sub-Saharan region data that were sourced through high-resolution spatial information, budgets of farms, a Statement of the farm profitability of rural small scale and large-scale growth in new areas. The finding reported that economic factors encouraged the medium-scale farmers, over the control of large portions of farmland than less privileged farmers.

Equally, Farmland related conflicts also arise when the livelihood of the family has relied on farmland as their main source of income as a result of scarce non-agricultural opportunities. Also, the study revealed that issues in relation to farmland remain a dangerous phenomenon on the socio-economic and political development of a nation (Allahyari, Poshtiban & Koundinya, 2013). Trukhachev, Ivolga and Lescheva (2015) established a positive relationship between the land and agricultural output in Russian land reforms in the 1990s. They further argued that the diversification of forms of property is to establish the conditions for multi-functional farming and sustainable condition of rural development.

Similarly, Holden and Otsuka (2014) reported a positive between farmland and agricultural output in their study on the importance of land tenure and land market in relation to the population pressure on land in Africa. Also, Tenaw, Islam and Parviainen (2009) reported that, property right was secure and the removal of farmland market restriction has the viability to form both equity and efficiency benefits, but there is a high level of risks and elite occupied a large portion of farmland areas with inequitable and inefficient outcomes. In addition, the effects of property right and on land tenures on agricultural activities in Bangladesh, Ethiopia

and Namibia. Similarly, land professionals claim that the major challenge to increase farm output is inadequate land and population increase as well as the land shortage which influences the farm output, but it is the land structure with regard to the lack of ownership of land and changes in the condition of the climate (Tenaw, Islam & Parviainen, 2009).

Nkonde, Jayne, Richardson and Place (2015) reported mixed results on the relationship between farmland and output as the study commence on sub Saharan African. The first source of data is the Agricultural Commercialization Survey (ACS) of emergent farming households in Zambia conducted in 2013. Also, the Indaba Agricultural Policy Research Institute (IAPRI) of Zambia conducted the survey for this primary source of data. Medium-scale farming households in this study were defined as farmers owning land between 5 and 100 hectares. The survey was conducted in six administrative districts of Zambia from 72 districts namely: Chibombo, Choma, Chongwe, Kalomo, Mpongwe and Mumbwa.

Otsuka, Liu and Yamauchi (2015) reported an inverse relationship between farm size and agricultural productivity in South Asia. The study indicated the efficiency of the small farms over large farms. In addition, they revealed another inverse relationship in the sub-Saharan Africa. The inverse relationship has seldom the productivity of subsistence crops in Southeast Asia, which showed that small farms produced at least farm crop compared to the large. Similarly, Valbuena, Erenstein, Tui, Abdoulaye, Claessens, Duncan and van Wijk, (2012) established mixed findings in Sub-Saharan Africa and South Asia. Data were generated from 12 sites in 9 different countries across Sub-Sahara Africa and South Asia. More so, Sadegh, Khalil and Ali (2012)

reported a positive result in relation to the Land consolidation strategy and the development of rice in the republic of Iran. Data were received from 188 farmers and Factor analysis was employed by using a stratified random sampling method.

Mohammadizadeh and Maghsoudi (2014) reported a positive relationship between lands fragmentation and farm production in Iran. The study reported that the undervalued of farmland in some countries such as Ukraine, Russia, Brazil, Argentina, Paraguay, and several African countries, China and India were led to undertake a systematic investment in farm infrastructure. Also, the strategy involved the development of new markets for farm machinery storing and processing equipment as well as related sectors. In addition, this strategy attracted private equity to the growing markets of the agricultural value chains (Griffith, Redding, & Van Reenen, 2004). According to Rankin, Kelly, Galvez-Nogales, Dankers, Ono, Pera and Vandecandelaere (2016) that most of the land and agri-investment are now changing towards a long term investment plan which involved substantial capital investments of farm working capital, management and farm infrastructure.

2.8 Farm Infrastructure

Infrastructure can be defined as average necessary facilities which are supporting the sustenance of the human life in relation to the production and distributions of the goods and services (World Bank, 2008). Infrastructure can be seen as an ingredient of capital accumulation for the rise of the production process (Felloni, Wahl, Wanschneider & Gilbert, 2001). It can also refer to the facilities used to standardize the lifestyle of the individual or group of people to fill the necessary prerequisite for the modern style of production. Among the necessary facilities in terms of the

production and distributions they are modern farming equipments and machineries (Philips et al., 2009; Agatana & Kalu, 2014). Furthermore, farm Infrastructure can be described as a modern farming science and technology employed to improve agricultural productivity. Among the modern farm equipment and machineries, they include: tractors and harvesters, planters among others (Murphy, 2015).

In addition, the presence of reliable farm infrastructure resulted in the increase in both outputs per capita and output per unit of land. Hence, farm facilities were the key players by reducing transaction costs in terms of input, output, processing and marketing of agricultural activities within (Gajigo & Lukoma, 2011). More so, the strong support for rural infrastructure innovations will improve the standard of living and enhancement of livelihood of the rural dwellers. Similarly, a proper use of the farm infrastructure facilities will accelerate agricultural output and the economic growth (Anthony, 2010). This indicated that the improvement of farm infrastructure will lead to the expansion of agricultural output and other socioeconomic activities.

2.8.1 Infrastructural Intervention in Agricultural Sector of Nigeria

Eze, Lemchi, Awulonu and Okon (2010) opined that the aims of the government on agricultural schemes and programmes are to achieve a certain vision in the economy through the following:

i. To provide employment opportunities for the Nigerian youth and able bodies more especially the rural dwellers.

ii. To provide financial institutions to the needy farmers for the purpose of upgrading food supply for local consumption and export. This serves as a channel of earning income to the individuals and groups of farmers as well as to the entire nation.

iii. To provide education, training and technical knowhow to the Nigerian farmers through workshops, seminars and extension services that involve planning.

iv. To provide food security to the nation is among the aims of the establishment of the agricultural schemes/programmes through purchase of the farm output during a harvest boom period in order to avoid the wasting of the farm output.

v. To facilitate agricultural produce market by promoting both importations of farm input and exportations of farm output.

vi. Others include: The construction of good road and bridges as well as water supply and electricity towards promoting the movements of the farm input and output. These infrastructures help to facilitates farm input and output from the farm to the market and from the market to farm area as well as a warehouse among others.

2.8.2 Achievement of Infrastructural Intervention in Nigerian Agriculture

Nwosu et al. (2010), Anthony (2010), Ugwu and Kanu (2012), Eze, Lemchi, Awulonu and Okon (2010) and Ungwa, Haruna and AbduSalam (2014) stated the following recorded achievements of the government by agricultural programmes:

i. A construction of feeder roads in the rural areas allowed farmers to access their farms with transportation from farm to the market almost in all parts of Nigeria. For instance, the directorates of food, road and rural infrastructure were the popular programmes that achieved the construction of feeder roads and water supplied in the Nigerian rural areas.

ii. Supplied innovations/facilities to the individual farmers and associations: This was done in a higher capacity by the various levels of governments to the small, medium and large scale farmers in Nigeria with the farm inputs which include: purchase of tractors, and harvesters among others.

iii. Encouraged ffarmers associations and environmental sanitations as a great achievement of the agricultural programmes in Nigeria. Because, so many farmers' associations and group were formed such as: women farmers associations, youth's associations, self help organizations, markets unions and Fadama farmers' association among others.

iv. The employment opportunities were provided to youth and women through inculcations of farming training to the skill, semi skilled or unskilled farmers with addition of some incentives which tagged them to the farming activities. Dandago, 2005, p. 66-68.

v. The financial services were provided to small, medium and large scale farmers through Farmers' Union and schemes such as; Federal Commercial Agriculture Credit and Micro-Finance Banks among others.

vi. Among others include: Family Economic Advancement Programme which was established in 1997 to replace Family Support Programme of 1994. Thereby, the mentioned programmes were equally set to facilitate social welfare, employment and health's services for the farmers and self-help groups, women association in rural communities of Nigeria (Akanji, 2006).

2.8.3 NGOs Infrastructural Intervention in Agricultural Production

Mkpado and Arene (2007) explained the following aims and objectives in relations to the NGOs toward agricultural output in Nigeria:

i. To provide financial services to its member farmers and traders in order to become self-reliant on agricultural production and agribusiness activities with the simple repayment system that will favour the poor farmer.

ii. To promote marketing for agricultural output both locally and internationally through the involvement of small scale manufacturers as group members.

iii. To inculcate the culture of savings and banking to the group/ union members to become self-reliant in the community.

iv. To educate the rural women and youth, farmers need to know the importance of nation building through environmental sanitations and health education and utilizations of the health in life.

Hence, the mentioned objectives will enable groups to engage themselves in socio-economic and political development.To provide employment opportunities to their beneficiaries in order to eradicate   poverty between their members and the country in general (Ogwumeke, 1998).

2.8.4 Failure of NGOs towards Infrastructural Intervention in Agriculture

The studies of Adegbite (2009), Akanji, (2006), Ogwumike (1998) and FAO (2008) reported the following failure of NGOs during the executions of their projects in Nigeria as:

i. Embezzlement of peer fund and corruption are becoming the order of the day in many Nigerian NGOs, and the nature of their expenditure has not given impact to the beneficiaries.

ii. Clashes and group disintegration: this is happening due to the fact that some of the NGO's are biased which culminate in so many disputes and crimes due to the injustice among the officials and the beneficiaries.

iii. Crop failure and other calamities caused by the fire, floods and droughts among others. The issues of crop failure are a serious problem in the NGO's due to the difficulties encountered during loan repayments from the beneficiaries.

iv. Diversion from the initial aims and objectives of the NGOs resulted in serious issues in Nigeria because of the involvement of officials into National politics and the related activities.

v. Inadequate loan supervision and repayment system also remain an issue in the activities of the NGOs. This is because some of the officials and beneficiaries are ignorant about the activities of the NGOs.

Similarly, the report of World Bank (2011) indicated the problems of agricultural Infrastructure in relation to the Sub-Saharan Africa as:

i. Poor road network which lies in the crucial infrastructure issues and agricultural productivity. Roads link farmers not only with their input markets, but also with their product markets.

ii. Lack of efficient transportation links and substandard roads decrease farmers' margins by increasing the cost of inputs and reducing their accessibility to their product market.

iii. Insufficient irrigation technology is another problem of agriculture input as such if, agriculture in a region continues to be dependent on rainfall is a substantial shock to the farm outputs.

iv. Poor storage facilities lead to sa erious waste of farm output during the harvesting period.

Next, Ador, Shafiai and Ismail (2014) confirmed that the poor infrastructure remains a serious obstacle to the growth of agricultural output. For example; inadequate modern farm equipment, poor quality roads, inadequate transportation and communication among others. Similarly, inadequate health centres, farmer's illiteracy, problem of output market as well as the insufficient storage facilities and technology have been named as a major constraint in the development of agricultural output and thus resulting in some crops remaining unsold. For instance, failure of transportation and market communications network leads to the inability of moving the food grains from surplus areas to the deficit areas (Philip et al., 2009; Owen, 2012; Asogwa & Okwoche, 2012; Innocent & Adetila 2014).

Despite the insufficient farm infrastructure engineered by the poor agricultural financing in the developing countries where Nigeria is of no exception, there are examples of banks, microfinance institutions and agricultural lending bodies that entertained agricultural sector. Additionally, in Latin America and the Caribbean from 1980s and 1990s donor bodies were financing agriculture through the NGOs financial system approach to the farmers. Several NGOs, financial bodies have been transformed into regulated financial institutions with the use of the new technologies. Specifically, the uses of mobile phone banking to cut down farmers' transaction costs of payment and deposit services helped farmers in overcoming the problems of purchase and the disbursement of the agricultural inputs and output (Barrientos & Hulme, 2009).

2.8.5 Relationship between Farm Infrastructure and Agricultural Output

It is highly recognized that infrastructure in agricultural activities remains the necessary ingredients for pre-condition of gathering capital and the rise in agricultural output (Wandschneider & Gilbert, 2001). Collier and Dercon (2014) viewed that farm infrastructure is a catalyst towards the progress of agricultural productivity. Also, the relationship between farm infrastructure and agricultural output is impacted in the socio-economic activities and general welfare of the citizens. This is related to the improvement of the infrastructure of the rural communities in terms of providing modern farming equipment and technologies which include: electricity, health centres, transportation and communication among others (Miriam, Patrick & Ifechukude, 2014).

Anthony (2010) established a relationship between farm infrastructure and output in Nigeria. Further explanations indicated that farm infrastructure remains a key driver for increasing the agricultural output. The increase in output yields agricultural surplus and rural welfare such as: afford better houses, mobile phone, and nutritious food. In line with this, a proper utilization of farm infrastructure requires the provision of technical advancement and organizational changes (Atagana & Kalu, 2014). In line with this the Bangladesh government tried to improve the standard of farmers through the introduction of farm infrastructure on processing and marketing (World Bank, 2008).

Qureshi, Yamin, Ilyas, Withy and Khan (2013) reported a positive relationship between Information Communication Technologies (ICT) and agricultural output from Rajanpur, Multan, Muzaffargarh, Thatta, Badin, Kohat and Hangu in Pakistan.

Data were captured through 250 questionnaires from 33 villages and analysed through SPSS. In addition, the Institute of Technology and Management conducted group discussion in Islamabad where ministry officials, policy makers, University professors and civil representatives were invited to express their opinion on the ICT implementations in the mentioned communities.

Gholifar, Asadi, Akbari and Atashi (2010) studied Apple Waste Management in Iran. Data were collected through questionnaires. Also, a sample of 200 apple farmers and 78 extension experts were selected through the stratified random sampling method. The results revealed that post harvesting problem, pre-harvesting natural problem, farm infrastructure and harvesting problems were the four factors that led to the apple waste. These factors could totally explain 66.38 percent of the variance of the variables. Eze, Lemchi, Ugochukwu, Eze, Awulonu and Okon (2010) studied the policies in agricultural financing and rural development in Nigeria. The study recommended that the government should strategically upgrade rural infrastructure and increase competition in farm output.

Olujenyo (2008) studied Agricultural Production Determinants and Profitability in Ondo State, Nigeria and revealed that labour, education and cost of non-labour farm inputs were positively related to farm output. Data were captured through a structured questionnaire with 100 farmers and analysed by Least Square and production functions. More so, Obayelu, Olarewaju and Oyelami (2014) reported a negative result on the relationship between rural infrastructure and production of Cassava in Ogun State, Nigeria. Data were collected based on a Cross-Sectional Survey of 120 cassava farmers selected with a multistage random sampling technique

from 10 villages. Descriptive statistics were used to generate the composite rural infrastructure index.

In contrast, Thanh, Sukprasert and Yapwattanaphun (2015) reported mixed results. Data were collected through primary source by the structured questionnaires. The findings revealed that agriculture and agrochemical had negative effects as well as moderated the perceptions of using modern technology. Also, the study revealed positive results in relation to the agricultural programmes on Television, education and ethnic group respectively.

More so, Qureshi, Yasmin, Ilyas and Khan (2013) reported a positive relationship between E-chapel and farm output. They further argued that ICT is an infrastructure for the export of agricultural output in Indian rural areas. The intervention of this modern technology to the farmers provides basic knowledge with regard to the risk management and related farming issues. In addition, the technology has positively empowered farmers to face world challenges of agricultural output. Similarly, their study further mentioned the example of the Ghanaian farmers who make use of mobile phones to simplify the search cost price of tomatoes from about 400 kilometers far away from their farms through text messages. Equally, Murphy (2015) reported that farmers' markets remain a long popular site of local cultural exchange and a small retail trade in Europe and Australasia. Also, farmers' markets in New Zealand are motivated. Franken, Pennings and Garcia (2012) reported mixed findings in a study entitled contracts in crop production and marketing strategies. Data were accounted through complementary survey. Birjandi (2011) reported a positive finding from the studied entitled Wheat Production and the role of farm

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advisors in Qazvin province, republic of Iran. Data were collected from 112 Farm Advisors through the questionnaires and analysed by SPSS.

Gholifar, Asadi, Akbari and Atashi (2010) reported mixed results from Iran. Data were generated and analysed through SPSS. Okwu and Umoru (2009) studied women farmers' agricultural and information accessibility in Apa, Benue State of Nigeria. Data were generated through 65 questionnaires and analysed by descriptive and inferential statistics. The study reported mixed result in relation to the needs of fertilizers and pesticides etc. Omonijo, Toluwase, Oludayo and Uche (2014) tackled the Impacts of Development Programme on Rural Dwellers Agriculture in Isan-Ekiti, Nigeria. Data were collected through 773 questionnaires and analysed by descriptive statistics. The study revealed a positive and significant result in relation to the increase in new farm infrastructure such as fertilizers and pesticide etc.

Davidova, Fredriksson, Gorton, Mishev, and Petrovici (2012) reported a Negative result from the study on European Union new members. Data were generated through the primary survey and literature on livelihood sustainability using the cluster analysis. Rahmana and Yousif (2016) reported mixed results from their study entitled the role of agricultural extension in the Gezira State of Sudan republic. Data of 100 samples were collected from the small scale farmers in the growing season of 2014/2015 and analysed by percentage, chi-square test and frequency distribution. Similarly, Asogwa and Okwoche (2012) reported a positive relationship between technological infrastructure in relation to the transportation and marketing sorghum farm output in South West Kenya. More so, Chisasa (2014a) established a negative relationship between human labour and agricultural output in South Africa. Survey

data involved 362 respondents from North-west and Mpumalanga Provinces where the study used Ordinary Least Squares and underpinned by the Cobb-Douglas production function. Similarly, in another study Chisasa (2014b) reported a negative relationship between farm infrastructure and agricultural output in South Africa. Data were generated from three hundred numbers (300) of participating farmers and analysed by OLS. Felloni, Wahl, Wandschneider and Gilbert (2001) revealed mixed results on the relationship between infrastructure and agricultural output. Data were analysed by Cobb-Douglas' theory of production function on 86 countries.

In addition, electricity and transportation infrastructure positively impacted the agricultural output in many ways which include: Firstly, transportation and electricity are directly part of the agricultural production function as intermediate inputs. Secondly, they linked distance agricultural production and market areas; this is important in perishable farm outputs. Thirdly, road network can positively affect the availability of farm inputs, such as fertilizer, insecticides, herbicides and technology. This means that electricity and roads become important when agriculture and agro-allied activities become mechanized as well as when the processing plants of agricultural output become available in the production area and it is becoming advantageous (Felloni, Wahl, Wandschneider & Gilbert, 2001).

Temu, Nyange, Mttee and Kashasha (2013) reported a negative relationship between farm infrastructure and agricultural output in Tanzania. Data were captured based on the secondary data and Cobb-Douglas production function was used and analysed by descriptive statistics. Similarly, Ngaruko (2014) established a negative relationship between educations and agricultural output in Tanzania. Data were received from

seventy five agro credit contracts in western Tanzania and they were analysed based on production function. Also, Okuthe, Ngesa and Ochola (2013) established a positive relationship between technology and the growths of sorghum in South Western Kenya.

Similarly, Ibrahim, Zhou, Li and Chen (2013) reported a negative and significant relationship between extension services and farmers output in Kano State, Nigeria. Multistage sampling technique was used, in which three local governments were randomly selected. Secondly, three wards (divisions under local government) from the selected local governments (Danbatta, Gaya and Madobi) were randomly selected. Thirdly, three villages (one from each ward) were selected. The total number of sample respondents was 120 farm households from each village. Data collected were analysed through SPSS. Gholfar, Asadi, Akbari and Atashi (2010) reported a positive relationship between infrastructure and Apple in Islamic republic of Iran. A sample of two hundred apple farmers and seventy eight extension workers were selected through the stratified random sampling technique. Data were gathered through a questionnaire and the validity of the questionnaire was examined by experts in Znjan. The result of the study shows four problems which include: poor infrastructure, post harvesting and pre-harvesting and harvesting were influenced the west of Apple. While, problems of transportation, storage facilities, harvesting practices, packaging, selling and consumption should be also be considered.

Okuthe, Ngesa and Ochola (2013) empirical report shows that farm technological infrastructure is positively impacted in agricultural output with regard to the sorghum of small scale farmers of Southwestern Kenya. Similarly, communication technology

is strengthening the agricultural extension and agricultural output in Malawi. The authors argued that the extension workers were in need of training with regard to Communication for Development (C4D), a body of knowledge for resolving problems, such as integration, participation and capacity building for them to connect more effectively with working partners. The research proposes a C4D approach for strengthening the work of extension workers in Malawi. Also, it made a recommendation that, inadequate human resource thwarting government's efforts. Also, strengthening farm extension workers remain the backbone of solving Malawi's development problems (Agunga & Manda, 2014).

Obayelu, Olarewaju and Oyelami (2014) revealed a negative relationship between farm infrastructure and cassava-based farming in Odogbolu Local Government Area, Ogun State, Nigeria. The study was based on a cross-sectional survey of 120 cassava farmers selected with a multistage random sampling technique from 10 villages. Descriptive statistics were used to generate the composite rural infrastructure index, which revealed that 5 out of the 10 sampled villages were under-developed. In contrast, Adepoju and Salman (2013) reported mixed results with regard to the relationship between rural infrastructure and agricultural productivity with evidence from Surulere and Ife local government areas of Ogun and Oyo States of Nigeria. Data were collected through the use of structured questionnaires administered on one hundred and sixty respondents from the study areas. The data collected were analysed using descriptive statistics and total factor productivity model to explain the effects of the available infrastructure on the farmers' productivity. Asogwa and Okwonche (2012) established a positive relationship between market/welfare and Sorghum marketing in Benue State, Nigeria. Data were gathered through structured

questionnaires and analysed by t-test statistic, percentages and marketing margin analysis. The study recommended higher relationship between feeder roads, storage facilities and agricultural output.

In contrast, Rezvanfar and Mohammadi (2012) established a positive relationship between extension-education and size of farmland in Iran. Data from 250 samples were collected through questionnaires and analysed by SPSS software. Abimbola and Oluwakemi (2013) explained the impact of infrastructure in relation to the livelihood diversification and welfare of rural agriculture in relation to their income from the agricultural output in Ondo State, Nigeria. Data were collected from 143 respondents and analysed by regression model and multinomial legit. The finding shows that infrastructure had positively influenced agricultural output.

Ammani (2012) reported a positive and significant relationship between technology and agricultural productivity in Nigeria. The study used the theory of production functions as well as time series data for the period 1981-2009. Rasouliazar, Hosseini and Mirdamadi (2010) revealed a negative result related to advisory services' Network and agricultural output in Western Azerbaijan province. The population of this approach consisted of specialists who delivered services to the rural farmers. Cochran formula was used and 306 respondents were selected. The findings indicated that specialists faced many problems and they include: problem of infrastructure facilities, lack of educated farmers, inadequate cooperation among associate institutions and related organizations. Also, the finding revealed that factors affecting network effectiveness include: education, farm infrastructure, managerial,

economic, policy- making and the factors accounted for fifty nine percent of the variance regarded the effectiveness of advisory service.

Reyes, Lensink, Kuyvenhoven and Moll (2012) reported that education had positively and significantly influenced the production of vegetable and fruit in Chile. Data were gathered simultaneously from a survey conducted in 2006 and 2008 with 177 farmers. Similarly, Berger and Di Falco (2014) reported a negative relationship between water supply and agricultural output in Ethiopia. Data were gathered from cross section and panel data. The research provides evidence of the effects of different dimensions of social capital for innovation adoption across households. The study of Adegbite (2009) indicated that the growth of farmer's socio-economic, sustainability and agribusiness companies relied solidly on modern infrastructure and financial inclusions.

Braverman and Guasch (1986) argued that the availability of less interest financial inclusions resulted to the technical increase of production output as a result of efficient and technical innovations of production input. On the other hand, the study of Mohammed et al. (2017a) reported that *Murabahah* financing remain a free interest financial inclusion on the support of the production of agricultural input and output. Equally, the report of IRTI (2012), AISA (2012), Hussain (2016) and Hendri (2016) revealed the significance of *Murabahah* finance in relations to farm credit, farmland, farm infrastructure and agricultural output.

2.9 *Murabahah* Finance (Mark-Up)

The word *Murabahah* is etymologically derived from *Radh,* which means an increase, and in the Shariah terminology, it means to sell a particular commodity at a higher price than its original price. It is also referred to *'sihah,* from the famous encloypedia. Also, *Murabahah* was defined by Allahah Ibn Nujaim Misri as follows: "*To sell with a (margin of) profit over and above the actual* cost" (Bahrur-Raiq, 6/107). Likewise, *Murabahah* was defined by Ftawa Alhidiya as; "*Murabahah* has been from *Raabaha*; and in the Holy Shariah, *Murabahah* refers to a sale where one sells an item for a certain profit over and above the cost for which one has acquired it''(Qasmi 2009, p.210-224). Also, *Murabahah* has been defined by Allamah Ibn Rushd Maliki as: *Murabahah* has been derived from *Raabaha*. The word *Murabahah* is constructed on the pattern of *mufa'ala*. Technically, spoken it means to sell something for a profit over and the original price (Qasmi, 2009, p.210-224). Ibn Qudamah defines *Murabahah* as:

> "*selling for the cost price plus a specified profit, provided that both the seller and the buyer know the cost price. The seller says, my capital, or the cost price is a hundred, and I sell it to you for a profit of ten.' This is permitted and there is no doubt about its legitimacy. No scholar is reported to have regarded it with legal `dislike' (karahah)''* (Homoud, 1987, p. 7).

Murabahah (cost-plus financing) can also be defined as a contract in which client or farmer who wishes to buy equipment or goods requests the bank to purchase the items and sell them to him at a declared profit (Hendri, 2016). Likewise, *Murabahah* finance is defined as a financing for the purchase of goods and services and reselling the input of the client or customer that allows the customer to make purchases without having to take out a loan and pay interest (Siddiqi, 2006). Similarly, *Murabahah* finance can be seen as a type of Shariah financing in which the seller

reveals his cost to the buyer and the two agree upon a profit margin that they will add to the cost to arrive at a final price (Bello, 2006).

Hassan, Sattar, Tousif, Nasir, Sadiq and Yasmeen (2012) viewed that *Murabahah* finance is a mutually stipulated margin of profit in a sale transaction, where the cost of the commodity is known or made known to the buyer. The parties negotiate the profit margin on cost and not the cost per se. If the payment of the sale price is deferred, it also becomes *Mu'ajjal.* The due date of the payment of the price must be fixed in an unambiguous manner. Other terms used for similar transactions are instalment sale, cost-plus/mark-up based sale, etc. Imam Shafi'i who says,

> *"If a man shows, certain goods to another and says, 'buy this for me and I will give you so much profit', and the second man buys it; then the transaction is permitted. However, the one who has made the promise has the right of withdrawal. If he buys, it makes no difference whether he pays immediately or at a later date. So, the first sale is valid, but there is no commitment as to the other; they are at liberty (ibid)'' (*Khan, 1996).

This example of Imam Shafi has led Homoud to evolve the financing mode called *Bay'al Murabahah li al 'amir bil shira* which replaces interest with mark-up in financial advances. As can be seen, the mark-up principle of finance results from incorporating deferred payment in *Murabahah*. In the mark-up, the financier benefits from the difference between the immediate and deferred prices of the goods (Homoud, 1987, p. 7). This is in line with the report of Ibn Qudama that, "*It is permissible if the seller of a commodity says that he sells it by such (excess) amount if the payment is after a certain time*" (Kahf, 1990).

Similarly, Kahf and Khan (1992) classified *Murabahah* financing into two different modes of payment: either paying the total amount at the time of the sale in cash or

paying on credit. In addition, one can pay with credit, also known as *bay' al-muajjil* in Arabic, in two ways: payment of the lump sum at some point in the future or payments in installments. Also, the term *Murabahah* in modern times, however, is not used to indicate just this price's determination method, but rather to indicate a financing instrument that uses this price determination method as well as a purchase on credit through bay' *almuajjil*. Similarly, *Murabahah* has evolved to mean both a sale which price is determined on a cost-plus basis and that is financed on credit, or *bay' al-muajjil.* Additionally, in modern times, the trader's role as financier has been taken over by banks (Ayub, 2007, p. 215-240; Obaidullah, 2015).

Saleem (2007) argued that *Murabahah* financing has a good effect on reducing inflation, as it involves the use of the agency contract with the borrower who can buy goods of its demand, at discounted or lowest possible price for its proposed lender as agent; it ensures that lower prices are used in contracts, no need for borrowed interest based loans. Besides that, the study of Obaidullah (2008 & 2015) described the positive influence of *Murabahah* finance in the fields of agriculture, trade and agro-business in relation to the marketing of input and output globally. Taqi (2008) and Hendri (2016) argued that *Murabahah* is suitable for agriculture, agro-business and agro-allied industries in terms of the provision of working capital on a relatively short-term basis to finance the acquisition of farm input such as; fertilizer, high quality seeds, herbicides. Likewise, the product is sensitive to the purchase of the farm output in a form of raw materials, consumable commodities and merchandise. Additionally, Saeed et al. (2013) indicated that the following steps remain considered when using *Murabahah* towards financing working capital:

i. *Murabahah* financing products requested by bank customers who issued trade instruments which include: purchase orders as well as other attendant evidence of trade transactions which indicated the existence of an availability of the market for the products requested from the bank.

ii. The eventual repayment of the financing financing exposure includes a prearranged mark-up for the *Murabahah* finance. Such working capital financing caters to domestic transactions only.

Specifically, working capital financing under *Murabahah* principle is provided in the following manner: The customer requests the bank to provide financing for his working capital requirements by purchasing equipment and raw materials or semi finished products under the principle *Murabahah*. The above steps indicated that banks can purchase or appoint the customer as its agent to purchase the required goods utilizing its own funds. The bank subsequently sells the goods to the customer at an agreed price on a mark-up basis. The bank allows the customer to settle the sale price on a deferred term as may be agreed upon between the parties (Sardar et al., 2013; Hendri, 2016).

Similarly, Ayub (2007) and Hendri (2016) described *Murabahah* mode of trade financing through the Letter of Credit (LC) instrument negotiated from foreign countries as requested by an eligible customer. The total importation cost plus a pre-arranged mark-up is then repaid to the Islamic bank upon the resale of the imported item. The LC under *Murabahah* is provided as follows:

i. The customer informs the bank of his LC requirements and requests the bank to purchase/import the goods indicating thereby that he would purchase the goods from the bank on their arrival under the principle of *Murabahah*.

ii. The bank establishes the LC and pays the proceeds to the negotiating bank using its own funds. The bank sells the goods to the customer at a price comprising its cost and profit margin for settlement by cash or on a deferred basis in accordance with the *Murabahah* principle. For example, If the cost price = $700 and the profit margin = $300, 97, the *Murabahah* price = $1000.

Similarities between *Murabahah* Financing and Conventional Financing

Saqib et al. (2013) and Hanif (2014) reported that, *Murabahah* finance as an Islamic Financial Institutions (IFIs) product operates in the same society where conventional financing do and perform all those functions which are expected from a financial institution. There is no restriction on the provision of such services by *Murabahah* finance except that the service is against Shariah. However, there exists a difference in the mechanism of funds mobilization from savers to entrepreneurs as described:

i. Short term loans are provided to customers to meet working capital requirements of firms by conventional banks. Similarly, *Murabahah* finance is very useful for short term financial requirements of business organizations and individuals. Since, *Murabahah* financing is an asset based financing and anyone can request for an IFI for the provision of an asset generally used for Halal (lawful) purposes.

ii. Medium to long-term loans are provided for the purchase or building of fixed assets by firms to expand or replace the existing assets. Under the Islamic financial system requirement of firms and individuals, they are fulfilled through *Murabahah* finance, and it resembles the conventional financing with the only

difference in terms of the provision of asset and not cash to clients as well as the nature of risks and returns.

iii. Agricultural financing can be divided into short-term, medium and long-term. Short-term farm credit is required by farmers for seeds and fertilizers and long-term loans are required to develop the additional farmland and purchase of farm infrastructure. Normally, farmers return these loans after selling the agricultural output.

iv. Conventional financing provides farm credit facility by charging interest. On the other hand *Murabahah* finance is provided without interest rate through the provision and purchase of the farm credit, farmland, farm infrastructure as well as farm output in the form of raw materials.

2.9.1 The Difference between *Murabahah* and Conventional Financing

The Islamic commercial law prohibits Riba (interest) as it is an excess demanded by the creditor over the principal amount, from the debtor, without any counter value or compensation (Quran 2:278-2:280; Quran 30:39). According to the basic philosophy of Islamic law an individual is entitled to profit because of the capital employed (along with risk) and the work carried out. On the other hand, in conventional financing this condition is missing and hence the creditor is not entitled to any profit. Taqi (2008) describes "*The first and the most glaring mistake is to assume that Murabahah is a universal instrument which can be used for every type of financing offered by conventional interest based banks*" (p.148).

Additionally, Saqib, Nazeer, Khan and Zafar (2013) differentiated between *Murabahah* financing and conventional financing based on the summarised financing

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approaches as follows: *Murabahah* finance is essentially an investment based transaction involving the sale and purchase of real commodities on profit (mark-up). However, conventional financing is related to a loan transaction that is based on borrowing and repayment of the counter value of the borrowed amount. As a *Murabahah* transaction is exposed to the usual marketing risk, the risk of loss becomes an inherent characteristic of *Murabahah*. However, conventional financing lending with interest rate based loan runs no such risk.

In case of a *Murabahah* financing, there is an involvement of personal labour and production. Furthermore, the lender of a conventional financing becomes entitled to an excess (interest) over the loan amount without any personal effort/work. Khan (1996) reported more differences between the conventional concept of debt financing and the *Murabahah* concept of financing through deferred sale. In *Murabahah* financing, debt creation depends on trading in real goods and services. Debt creation is basically a phenomenon of the goods and services market. On the other hand, conventional financing is essentially a monetary phenomenon. Though the creation of debt serves a financial purpose, it cannot be treated similar to debt financing in which debt default is penalized by an automatic increase in interest.

Furthermore, Usmani (2008) and Saeed, Ashraf, Zaidi, Lodhi, Ahmad, Awan and Malik (2013) differentiated between the conventional and *Murabahah* financing in relation to the major practical implications on volatility as follows: Interest rates are observed to be volatile and many conventional banking products are floating-rate products. The rates on such loans are automatically adjusted upwards or downwards in line with changes in interest rates. Differently, *Murabahah* financing is determined

by the contract which is not allowed to float with changes in the interest rates or any other rate. Conventional financing convert fixed rate facility into a floating rate facility by making the debt rollover at periodic intervals. At the end of a specific time period, a new fixed rate (reflecting current market conditions) replaces the old rate.

Meanwhile, *Murabahah* finance does not permit a roll over fixed rate. A rollover in *Murabahah* finance would imply that another separate *Murabahah* is booked on the same item. This practice, needless to say, is not only counter intuitive, but also inadmissible in Shariah. More so, *Murabahah* financing conforms to the Shariah and free from *Riba*, excessive Gharar and other prohibitions. Equally, Ayub (2007, p. 215-240) stipulated the Shariah permission for *Murabahah* finance as:

> "*A sale is valid either for ready money or for a future payment provided the period be fixed, because of the words of the Holy Qur'an 'Trading is lawful' and also because there is a tradition of the holy Prophet (peace be upon him) who purchased a garment from a Jew, and promised to pay the price at a fixed future date by pledging his iron breast-coat. It is indispensably a requisite of business, but the period of payment should be fixed. Uncertainty in the period of repayment may occasion a dispute and jeopardize the execution of the transaction since the seller would naturally like to demand the payment of the price as soon as possible, and the buyer would desire to defer it*" (Ayub, 2007, p. 215-240).

2.9.2 *Qur'an* and Prohibition of Trade with *Riba*

The initial legitimacy of the *Murabahah* finance is based on where Allah forbids interest, but allows trade as found in *Al-Qur'an, Surah al-Bakara* (2):275-280:

> 275 "*Those who eat riba will not stand (on the Day of Resurrection) except like the standing of a person struck by Satan leading him to insanity. That is because they say: "Trading is only like riba."Whereas God has permitted trading and forbidden riba*".

> 276:"*Allah will destroy Riba (usury) and.will give increase for sadaqat (deeds of charity, alms) and Allah likes not the disbelievers, sinners*".

277:" Truly those who believes, and do deeds of righteousness, and perform As-Salat (iqamat-as Salat), and give Zakat, they will have a reward with their Lord. On them shall be no fear, nor shall they grieve".

278:"O you who conceive! Be afraid of Allah and throw up what remains (due to you) from Riba (Usury) (from now onward), if you are (in truth) believers".

279:"And if you do not it, then need a notice of war from Allah and His messenger, simply if you atone, you shall receive your capital sums. Deal not unjustly (by asking more than your capital sums), and you shall not be dealt with unjustly (by receiving less than your capital sums)".

280:"And if the debtor is in a hard time (has no money), then give him time till it is comfortable for him to give back; but if you postpone it by means of charity that is safer for you, if you did but know".

Furthermore, *Murabahah* financing was approved by the Prophet as part of Shariah oriented public policy (Rasmin, 2014). The most underlying cause of initiating *Murabahah* financing was to aid the small scale farmers and traders who lack money to sustain crops and their trading (Hassan et al., 2012; Sardam et al., 2013). Consequently, the modern Islamic financial institutions used *Murabahah* financing as a modern value of financing mostly trading and agriculture. Since, it is an essential element of control poverty, unemployment, inflation as well as a promoter of Islamic financial discipline in the fields of trade and agricultural production (Siddiqi, 2006; Ayub, 2007, p. 215-240; Sukmana & Kassim, 2010).

2.9.3 The Traditional Jurists Had Some Differences on *Murabahah* Finance

Ayub (2007, p. 215-240) found some differences from Islamic school of Thoughts in relation to the *Murabahah* financing as follows:

i.   The Hanafi School permits the seller to include in the base price of *Murabahah* all expenses he has incurred in relation to it, which have somehow modified the object (tailoring, dyeing of cloth) and those which

have not modified it but were incurred for the object (transportation, storage costs and commission etc.).

ii.   The Malikis divide the expenses into three groups: expenses that directly affect the object of the sale and that can be added to the base price of the object; expenses that are incurred after the profit has been calculated and do not directly alter the sale object, like services which the seller might not have provided himself with (transportation and storage expenses), which can also be added and expenses which represent the services that the seller could have provided himself with but did not provide, such as packing charges and sales commission etc. Shafi'es also Stated that the expenses of the last category cannot be added to the cost.

iii.   The Hanbalis' view is more pragmatic, according to which all expenses can be added with mutual consent, provided that the buyer is informed about the break-down of these expenses. However, if, the purchaser detects cheating after he has used that commodity or it has been destroyed in his hands, he is not entitled to make any deduction from the price according to Imam Abu Hanifa and his disciple Muhammad, because the commodity against which he has to practice his right of the option does not exist. If the seller gives an incorrect Statement about the original price/cost of goods, the buyer, according to Imam Malik, may rescind the sale unless the seller returns to him the difference between his real and the stated cost, in which case the sale is binding.

Additionally, the Hanafis give the buyer unqualified option to rescind, while the Hanbalis consider the sale binding after the return of the difference between the

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correct and the Stated costs. The Shafiʿes have two versions, one of which agrees with the Hanbalis and the other with the Hanafis. Furthermore, Ayub (2007, 215-240, p.) summarized the determinants of *Murabahah* finance agreed by all the various school of thoughts as follows:

i. The buyer and the seller should be qualified to enter into a contract. The offer and acceptance must include the certainty of price, time of payment, mode of payment, date of delivery, and place of delivery.

ii. The seller should either be the owner of the object for sale or an agent of the owner. The subject of the sale must exist at the time of sale.

iii. The subject of the sale must be in the physical or constructive possession of the seller at the time of sale. Constructive possession means the buyer has taken the goods under his or her control and has taken ownership risk of the goods. The sale must be instantaneous. A sale attributed to a future date or contingent upon a future event is void.

iv. The subject of the sale should be lawful and an object of value.

v. The sale must be unconditional.

The mentioned determinants are the valid conditions of *Murabahah* mode of finance in relation to trade and agricultural productivity. This is in line with the principle of Shariah (Ayub, 2007, p. 215-240). Furthermore, Ogunbado (2011) reported that, Prophet Muhammad engaged in trade and pastoral agriculture and Prophet Adam also practiced agriculture. Therefore, trade and agriculture are part of the Shariah principle of life as well as business and investment. Thus, this agriculture is one of the legitimate earnings for livelihood, employment, trade and investment. It is also mentioned to be the science of occupation of cultivating the soil, producing crops

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and raising livestock and defined as "the practice of cultivating the land or raising stock" (Ogunbado & Ahmed, 2015).

According to Ibn Khaldun (1967) agriculture can be defined as a cultivation and growth of plant through irrigation, proper treatment, improvement of the soil (observance of) the suiTable season and care for them by applying these things in a way that will benefit them and help them grow. More so, the study of Ogunbado (2011) explained that the legality of agriculture as a legitimate earning to sustain the life has been referred in many places in the Holy Qur'an such as:

It is He Who sendeth down rain from the skies: with it We produce vegetation of all kinds: from some We produce green (crops), out of which We produce grain, heaped up (at harvest); out of the date-palm and its sheaths (or spathes) (come) clusters of dates hanging low and near: and (then there are) gardens of grapes, and olives, and pomegranates, each similar (in kind) yet different (in variety): when they begin to bear fruit, feast your eyes with the fruit and the ripeness thereof. Behold! In these things there are signs for people who believe (Al-Qur'an, Surah Su–rah al-'An'am (6):99).

And the earth We have spread out (like a carpet); set thereon mountains firm and immovable; and produced therein all kinds of things in due balance. And We have provided therein means of subsistence, for you and for those for whose sustenance Ye are not responsible (Al-Qur'an, Surah al-Hijr (15): 19-20).

It is He Who has spread out the earth for (His) creatures: Therein is fruit and date-palms, producing spathes (enclosing dates). Also corn, with (its) leaves and stalks for fodder, and sweet-smelling plants. Then which of the favours of your Lord will ye deny? (Al-Qur'an, Surah al-Rahman (55):10-13).

Life sustainability through agriculture is as old as life itself. It was mentioned that the first farmer was Prophet Adam (father of mankind). When he was sent down from heaven, Angel Gibrael brought him wheat and asked him to plant it. The wheat was planted, watered and harvested, after the harvest; it was threshed, milled and backed

(Ogunbado & Ahmed, 2015). In other words, early civilizations also sustained themselves through agricultural production. Additionally, Mohammed et al. (2017) argued that agriculture is the backbone of the world economy in terms of food security, employment opportunities and sustainable living. Additionally, the study recommended that, *Murabahah* finance is expected to moderate the relationship between farm input and output. This is in line with the findings of Baron and Kenny (1986) that the existence of mixed findings necessitated the inclusion of the moderating variable on the relationship between the study variables.

2.9.4 The Moderating Influence of *Murabahah* Finance

Murabahah finance can be seen as an alternative to interest-based financial transactions which assumes importance only when it is transacted on a deferred payment basis. This means that the terms of payment in the *Murabahah* finance did not necessarily involve credit; they could either be cash or credit and the transaction must involve the sale of goods at a price which includes a profit margin agreed by both parties (Mohammed et al., 2017; Hendri, 2016). In the context of banking and other financial institutions, *Murabahah* financing, upon request by the customer, the bank purchases an equipment or asset from a seller or supplier and resells the equipment to the customer either on the spot or on a deferred payment basis (payment in the future) (Mohsin, 2005). Also, the use of the mark-up of the Islamic banks has received its highest academic support from Homoud (1975). In his analysis of the *Murabahah*, Homoud quotes Ibn Qudamah who, according to Homoud defines *Murabahah* as:

> *"Selling for the cost price plus a specified profit, provided that both the seller and the buyer know the cost price. The seller says, `my capital, or the cost price, is a hundred, and I sell it to you for a profit of ten. This is permitted and there is no doubt about its legitimacy. No scholar is reported to have regarded it with legal `dislike' (karahah)"* (Homoud, 1987, p. 7).

Rasmin (2014) testified that, interest is absolutely prohibited by the Shariah but that does not mean that the capital is costless, though *Riba* is banned from Islamic financing; however, profits earned from legal trading are permissible under Shariah and also supported. Meanwhile, *Murabahah* finance or transaction takes place between three parties: the seller of the product, the customer or purchaser of the product, and the Islamic bank. This means that Islamic bank purchases the goods or farm input from the customer farmer and re-sells on forward sales or deferred basis with an agree margin of profit (Shafiai, 2011). In addition, *Murabahah* financing is designed to meet the needs of their customer related to remittance, savings, financing, investment and risk and cost management that are affiliated to the Shariah principle (Obaidullah, 2008). Consequently, modern Islamic banking uses *Murabahah* to purchase goods on behalf of their customers and sell it to them under agreed price and profit margin without the inclusion of any interest rate and other prohibitions (Aburaida, 2014).

2.9.5 Islamic Economics and Finance Approaches on *Murabahah* Finance

The first Islamic Banking experiment was done in 1963 by Ahmad ElNajjar as "Nasir Social Bank" in the Egyptian town of Mit Ghamr under the premise of a savings bank following, profit Sharing but with the interest free concept and was later declared as an interest-free commercial banking (Ahangar, Padder, & Ganie, 2013). Islamic banks evolved in two phases. The first and practically unsuccessful,

but historically, a significant experience started in Egypt in 1963. During this phase of Islamic banking, the concept of the *Murabahah* finance remained undiscovered. The second and present successful phase of Islamic banking started in 1974 with the establishment of the Dubai Islamic Bank, United Arab Emirates, and the Islamic Development Bank (IDB) Jeddah, in 1975 (Iqbal & Molyneux, 2016).

The Islamic economics organized its first conference in the 21st to 26th, 1976 in Makkah, Saudi Arabia, called to support the services of Islamic financial institutions globally. With the establishment of these and several other specialized banks, the practices of Islamic financing principles were initiated. To start their operations, it was natural for these banks to face tough challenges in innovating financial instruments (Khan, 1996). Moreover, data of early operations undertaken under the Islamic financing principles are available in case of the Islamic Development Bank (IDB). Sale-based financing, i.e., *Murabahah* is shown for the first time in IDB operations in the year 1397H (1976). More so, the Quantitative value of this operation was US $ 50.52 million, substantially high compared to other modes of operations, and then undertaken by the bank. Since its first known use in 1975, by the IDB, the mark-up has achieved an overwhelming position as a mode of asset management by the Islamic banks (Khahf, 1990; Khahf, 1992; Khan, 1996).

Consequently, the Islamic financial institutions are now the most growing and accepted financial industry globally, which is operating in over 75 countries through 300 institutions and the Islamic financial institutions promote Islamic banking through borrowing, savings and other functions of economic investments on risk sharing. Today, the Islamic banking industry is considered to be a strong and

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dynamic industry in the world, which is a competitive alternative to conventional financing in Muslim countries (Jonson, 2013; Iqbal & Molyneux, 2005 & 16).

 Bank Negara Malaysia's Shariah Resolutions in Islamic Finance (2010) explained that, the growing and the different demands of the global community for the involvement of the Islamic financial products have been increasing. This assertion had driven the attention of the Shariah professionals to improve the products to the level of higher competition and innovations. Among the Shariah financial products used by the modern Islamic financial institutions towards promoting socio-economic growth and development are as follows: *Musharakah* finance (equity partnership), *Mudaharabah* (silent partnership), *Murabahah* (mark-up), *Ijarah* (lease), *Istisna'* (commissioned or pre-ordered production) and *Qardhassan* (benevolent loan) among others (Lai & Lau, 2010; Ringim, 2014).

Meanwhile, the classification of all the Islamic banking products operate according to Shariah principles of economic Profit and Lost Sharing (PLS) and mark-up which prohibit interest rate, exploitations, gambling, and speculations in order to promote economic growth and development. Specifically, *Musharakah* and *Mudarabah* Profit Loss-Sharing (PLS) and *Murabahah* (mark-up) are the two major principles of Islamic economics, banking and finance (Khan, 1996; Soeleman & Lestari, 2015).

Mushaarakah is a kind of partnership contract between two or more parties to finance a kind of business joint venture in which both parties provide its share as a capital in the form of cash or in kind. With the aim of sharing the incurred profit of the business at an agreed ratio, as well as losses will also be shared according to the

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ratio of capital shared. Currently, the *Musharakah* principle is applied in financing investment (Monsoor, 2005; Aburaida, 2014). Meanwhile, *Mudarabah* is also a Shariah financial contract between two parties over a particular joint venture (business). Among the partners they include: *rabbul mal* (investor) capital provider, and the *mudarib* as the manager of the joint venture (entrepreneur). Any profits incurred from the business will be shared as initially agreed by the partners while in case of losses, investors will solely bear it at all (Ayub, 2007, p. 215-240; Ringim, 2014). In their earlier stages of operation, PLS arrangements were enthusiastic by some Islamic banks.

However, *Murabahah* principle emerged as a basis of an overwhelming proportion over a very short period of operating the Islamic banking system (Khan, 1996). As the name implies, the study of Aburaida (2014) described *Murabahah* finance as one of the Shariah financial transactions which Islamic bank purchases goods and sells it to their customers at a price that includes a profit margin agreed by both parties. In this contract, the market price of the item must be clearly stated at the time of the sale agreement and both parties should agree on the profit margin. Additionally the *Murabahah* financing principle is more consistent with the traditions of current conventional commercial banking in terms of professionalism, bank staff orientation, language, terminology, services and technology. Specifically, *Murabahah* finance is more advantageous compare to PLS in terms of asset accumulation (Khan, 1996; Ringim, 2014). Table 2.1 below provides information in relation to asset accumulation between PLS and *Murabahah* finance in some Islamic banks (Khan, 1996).

Table 2.1
Asset accumulation of some Islamic Banks

	PLS	*Murabahah* finance
Banks in Islamic Republic of Pakistan	13	87
Banks in Islamic Republic of Iran	37	52
Islamic Development Bank	04	81
Faisal Islamic Bank, Egypt	03	52
Islamic Bank for Investment and Development, Egypt	02	75
Al Barakah Turk Finance House, Turkey	05	94
Jordan Islamic Bank, Jordan	05	65
Bangladesh Islamic Bank	NA	65
Sudanese Islamic Bank	NA	54
Tadamon Islamic Bank	NA	61
Qatar Islamic Bank	NA	98
Bank Islam Malaysia Berhad	NA	94

Notes: Not Available (NA) (source, Khan, 1996).

The above Table 2.1 indicated asset accumulation in some selected Islamic financial institutions where customer's participation has led to the accumulation of assets. The accumulated assets were compared between PLS and *Murabahah* finance as such customers showed higher preference on *Murabahah* finance. Specifically, asset accumulation of *Murabahah* financial product ranges from 98-52 against PLS with an assets ranged from 37-Nill. This revealed that *Murabahah* finance has a higher concentration of assets as well as becoming more popular and acceptable to the customers globally (Khan, 1996). This is in line with the study of Obaidullah (2008) and Hendri (2016) that, *Murabahah* finance is more acceptable among the available Islamic micro finance products in terms of financing farm credit, farmland, farm infrastructure and agricultural output.

According to Obaidullah (2015) *Bai muajjal-Murabahah* (credit-cost plus sale) is a sale where the payment of the price is deferred to a future date. Often it includes the features of a *Murabahah* named *muajjal-Murabahah* referring to a sale where the

payment is in future time plus the agreed mark-up price. This indicated that *Murabahah* finance is the most popular product among the Islamic Micro Financial Institutions (IsMFI) products accounting for over two-third of the total Islamic micro finance portfolio. The mechanism may be described as a farmer needs to purchase farm input from a supplier and the bank buys the input in a certain price and resells the input to the farmer while the repayment is either in full or in parts. Dhumale and Sapcanin (1999) revealed that, the Islamic finance models are more applied to the micro finance. Specifically, the enrolment of *Murabahah* is more advantageous over the PLS in terms of the administrative costs and risks to the financial institutions as well as the borrowers as seen in Table 2.2 below.

Table 2.2

Application of PLS and Murabahah Finance in Islamic Banking and financial institutions

Issues	PLS	*Murabahah* finance
Most applicable for capital	Fixed assets (investment capital) and potentially Working capital	Working capital and investment working capital
Cost to borrowers	Potentially higher because of higher profit sharing with the microfinance program as a result of higher risk	Lower
Initial acceptance by borrowers	Higher	Lower
Risk to borrowers	Lower if no predetermined minimum profit is allowed	Higher
Risk to the programme	Higher if no predetermined minimum profit is allowed	Lower
Administrative costs	The administration is potentially complex, although this could be resolved by predetermining a minimum profit. Still, costs of loan administration and monitoring are high given the complexity of the repayment schedule	Initial higher transaction costs because of the large number of buy-sell transactions. Costs of loan administration and monitoring are substantially lower, however, because the repayment schedule is simple
Enforcement	Difficult if profit must be determined for installment, because most borrowers do not keep sufficiently accurate account	Less difficult because the program owns the goods until the last instalment is paid

Source: Adewale and Mustafa (2013).

The above Table indicated the way and manner PLS differ with Murabahah finance in terms of the micro finance model as such *Murabahah* finance is more advantageous over the PLS financing in terms of the capital application, cash to borrowers, acceptability by the borrowers, risk to borrowers, risk to the programme, easy administrations and enforcement as explained in Table 2.2 above. Thus, the *Murabahah* mode of financing is more relevant to the objective of the micro financial programme towards the purchases and resells of the commodities to the micro entrepreneurs, plus agreed mark-up for administrative services (Dhumale & Sapcanin, 1999).

Additionally, Norton Rose Fulbright Manual (2013) revealed that *Murabahah* finance was used towards the provision of the $526,000,000 as a working capital during the start-up project of Al-Waha petrochemical manufacturers of insecticide and herbicide in the Middle East. The project financing system leads to the growing of the Islamic financial institutions. Similarly, Hendri (2016) conducted a qualitative research method and analysed the farm working capital through the influence of *Murabahah* in relation to the farm input and output in Pakistan. As such, the influence of *Murabahah* finance over farm working capital is classified as seen in Table 2.3 below.

Table 2.3

Classification of Murabahah finance on farm working capital

Purpose	*Murabahah* Finance
Use of farm credit to purchase crop production input such as: seeds, fertilizers, insecticides, sprayers manual etc. Purchase of Poultry farmland and feed, birds/day old chickens, feed raw materials, vaccinations, vitamins and medicines for poultry, sawdust, wood, coal, water filter equipment for poultry feed, Dairy cattle farmland and planting of fodder and feed grinders, feed mixing machinery, or container of milk or feed, vaccinations, vitamins and other medicines for animals Utensils; food animals, calf feeders, bracelets, rope/chain mail, etc. Fish farms purchases of fuel, rations and ice, packing/ processing, cleaning supplies needed for the export of the farm output.	In a *Murabahah* financing, Islamic Banking Institutions (IBI) to buy these inputs from the market and sold to farmers at a certain price on a cost + profit. Preferably, this should be buying and selling right away where IBI makes purchases from the open market and sells them to customers. This can be done through arrangements with suppliers of inputs. In the event of difficulties in direct sales and purchases, contract agents (representatives) can be created in which farmers (or others) will act as an agent of IBI to purchase the necessary goods.

Source: Hendri (2016).

The above Table indicated the influence of *Murabahah* finance towards the acquisitions of farm credit, farmland, farm infrastructure and agricultural output. The analysis of the Table also indicated that *Murabahah* provided equipment which includes: seeds, fertilizers, pesticides, labour, electricity and water as a farm working capital for the growth of the output. The study further revealed that *Murabahah* is significant towards the planting and processing, harvesting and storing as well as the consumption of the products (Hendri, 2016). To add, the suggestion of the study indicated the role of *Murabahah* finance in relation to the medium and long term

agricultural financing remain relevant to the issues of farm credit, farmland, farm infrastructure and agricultural output as seen in Table 2.4 below.

Table 2.4
Murabahah in financing future's farm input and output

Purpose	Suggested Financing Model
1. Maintenance of agriculture, machinery, application and other working capital cost of labour, farmland, water supply, the cost of other needs.	1. *Murabahah* is convenient to the purchase of farm equipment from the market and sold to farmers based on mark-up.
2. Financing transportation, refrigeration of agricultural products, motorcycles for dairy farmer.	2. *Murabahah* can also be used towards the purchase of such asset, in this case bank can purchase the farm equipment and sold to farmers plus cost plus.
3. Livestock financing includes: Purchase of farmland, fort cow or buffalo milk producer, the purchase of a young buffalo, cattle, sheep and goats for maintenance of meat production, cold storage tank milk, milk and meat refrigerated storage and refrigerated containers, vehicle distribution such as motorcycles, pick-ups.	3. *Murabahah* can also be used for livestock rearing in terms of the purchase of the farmland and equipment from the market and sold to farmers based on mark-up.

Source: Hendri (2016).

Specifically, the above Table indicates the suggested influence of *Murabahah* finance on the relationship between farm input and output. More so, the product is beneficial to the subsistence and commercial farmers, agribusiness and agro-allied industries, farmer's co-operation and financial institutions as well as investors and government at all levels (Hendri, 2016). Similarly, the study of Hussain (2016) described *Murabahah* finance as a sale which financial institutions revealed the price of farm input purchased and resold to the farmers plus the mark-up price agreed by both farmers and financial institutions. More so, the study further highlighted that Islamic banks can purchase and resell farm output as well as farm working tools,

machineries and equipment. Likewise, *Murabahah* can provide working capital in cash in form of farm credit.

Sardar et al. (2013) reported a positive influence of *Murabahah* finance in relation to credit to the farmers, farm infrastructure and farm produce in Pakistan. Data were captured from the secondary source and analysed through the development analysis. Also, Gundogdu (2016) reported that *Murabahah* finance was used towards the marketing of wheat through electronic trading in Istanbul, Turkey. Al Baraka Turkish Finance House and other special finance houses used *Murabahah*-based finance in Turkey. The financing was made in short-term programme for the purchase of infrastructure such as equipment and machineries as well as raw materials and semi-finished goods. Similarly, *Murabahah* provided during the purchase of land and buildings as well as borrowers received cash credit in a form of *Murabahah* financing (Saqib et al., 2014).

IRTI (2012) reported that, the International Trade Finance Corporation (ITFC) used *Murabahah* structure towards providing the sum of US$40 million to the farmers as farm credit during the supply chain transactions of wheat exportation in Kazakhstan. Equally, Bank Negara Malaysia, Bursa Malaysia and Islamic financial industry and Securities Commission had collaboratively initiated an electronic Shariah web-based commodity trading platform named Commodity *Murabahah* House (CMH). The study reported that *Murabahah* finance was used towards the export of Crude Palm Oil (CPO). Additionally, CMH recognized the use of *Murabahah* towards the international marketing of Crude Palm Oil (http://www.bnm.gov.my). Similarly, Hussain and Alhabshi (2016) reported a positive influence of *Murabahah* finance

towards the provision of farm infrastructure in the process of boosting the farm output in Kashmir, India. Data were captured from the secondary source during the financial crisis of 2008-2009. Similarly, the study of Mohammed and Hussien (2012) reported a positive influence of *Murabahah* finance on credit to the farmers, irrigation farmland and the Supply of farm working machineries in Sudan. Data were collected through a list of official credit supply of the Gezera irrigation scheme.

Mohammed et al. (2017) explored the influence of *Murabahah* finance on the relationship between farm credit and farm produce in Kano State Nigeria. Data used the quantitative research method through the structural equation model (Smart-PLS 3.0). The study found that *Murabahah* finance can provide an efficient, timely farm credit to the State farmers. Likewise, the study of Hanif (2014) established a significant relationship between farm output and *Murabahah* in relation to the finance of farm credit, farmland and farm infrastructure in Pakistan. Similarly, Saqib1, et al. (2013) reported that *Murabahah* finance is significant towards the provision of farm infrastructure to the small land holdings in the production of sugar cane in developing economies.

Hassan et al. (2012) reported a positive influence of *Murabahah* finance in relation to the farm output through the provision of the working capital in Pakistan. Data were captured from 120 farmers and analysed by SPSS 16.0. Also, the study interviewed bank customers and managers. Similarly, Mohammed et al. (2016a) established relationship between farm infrastructure and agricultural output in Kano State, Nigeria. Data were reviewed from the previous studies and recommended that *Murabahah* finance can moderate the relationship of the study variables. The study

indicated the way and manner farm infrastructure among include: transportation, communication and storage facilities were impacted on agricultural output. More so, Saeed, Ashraf, Zaidi, Lodhi, Ahmad, Awan and Malik (2013) analysed the influence of *Murabahah* finance in Pakistan. Data were captured by means of conducting personal interviews with the selected Islamic and Conventional Banks in Pakistan. Data were gathered from Meezan Bank and reported a positive influenced *Murabahah* finance towards purchased of pesticides and seeds.

Additionally, Bank Alfalah provided farm credit through *Murabahah* finance of a maximum of 50 Million Rupiah (1.00 USD is equivalent to 105.68 Rupiah) for a 5-year period. Also, the product was used in the finance of farm infrastructure in order to improve the dairy production and marketing. Equally, Habib Bank Limited used *Murabahah* finance to facilitate the activities of farm input and output through over 800 branches in Pakistan. The study revealed that rural farmers used *Murabahah* finance to purchase quality seeds, fertilizer, pesticides, agricultural machineries and fertilizers as well as Tobacco products. Likewise, Livestock, Poultry and Fishery farming were positively influenced from the period of 1 to 3 as well as 3 to 5 years (Saeed, 2013).

More so, the United Bank of Pakistan provided *Murabahah* finance as farm credit to hire farm labour, purchase seeds, fertilizers, and pesticides etc. Also, the bank used the products to settle the development of farmland for fisheries, poultry and livestock as well as the purchase of a tractor, harvester and planters etc. Likewise, the Bank of Punjab of Pakistan provided a maximum sum of Rupiah 2,000,000 as a farm credit through *Murabahah* finance to purchase high quality Seeds, fungicides, fertilizers

and pesticides. Furthermore, Kissan Dost Lease Finance Facility provided 10 Million Rupiah in the form of *Murabahah* finance for the 3 to 5 years. This mode of financing had assisted the farmers with farmland. The Kissan Dost Green House Finance Scheme encouraged farmers with *Murabahah* to establish farmland with Green Houses in order to increase the growth of vegetables (Saeed, 2013). Likewise, Metallic or Bamboo construction distributed 50 Million loans for 5 years in a form of *Murabahah* towards financing farmers in relation to the purchase of farmland and caring of livestock for dairy products (Saeed at al., 2013). Suharsono and Candra (2013) used qualitative research method and revealed a positive role of *Murabahah* finance on the relationship between credit to farmers and provision of farm output. Specifically, a total amount of 12,600,000 Rupiah was given to three groups of farmers with 4.200.000 Rupiah per group of farmers for 3 years.

Also, Galfy and Khiyar (2012) provided empirical evidence on the role of *Murabahah* finance to real GDP growth through farm output in India. The study found that *Murabahah* finance has the potential to influence agricultural output through the provision of transportation and good road, fertilizers and storage facilities and farm working machineries as well as provision of farmland. Galfy and Khiyar (2012) reviewed and found various indicators of Islamic banking industry's contribution to economic growth and performance during the 2008 financial crisis. The study observed that *Murabahah* finance significantly contributed to the farm input and output to the extent that the product remained a tool for macro-economic growth and financial stability. Besides that, Rahmana and Yousif (2016) assessed the role of the private agricultural extension sector in Gezira State, Sudan. Data were generated from 100 small scale farmers and analysed by percentage, frequency

distribution and chi-square test. The result showed a significant change in the farm credit, farm infrastructure and the farm produce due to the high influence of the *Murabahah* mode of financing. Similarly, the study by Mohammed et al. (2016b) reported the moderating influence of *Murabahah* finance on the relationship between farmland and farm infrastructure and agricultural output in Kano State Nigeria. The study proposes a model that might be good for the Kano State ministry of agriculture, financial institutions and farmer's cooperatives to tackle the problems. In addition, the study introduced *Murabahah* finance as a potential moderating variable.

Mohammed et al. (2016b) studied the influence of *Murabahah* finance on the relationship between farm credit and agricultural output in Nigeria. Their study considered PLS in relation to the data analysis. The finding shows that *Murabahah* finance is an essential element in the growth of agricultural output. AISA (2012) reported a positive relationship between *Murabahah* finance and agricultural production in Afghanistan. Data were generated from Ghazanfar micro finance bank financial statement which indicated the disbursement of *Murabahah* finance for a period of 6 to 12 months with a given amount of Af 20, 000 to Af.60, 000 to the individual farmers and traders and Af.5, 000 and 30,000 for groups. Furthermore, the loan was upgraded to Af.150, 000 for an individual with a maximum period of 18 months for the second round. The study added that the level of *Murabahah* financing ranges between Af. 2.5 million ($50,000) and Af.100 million ($2 million) with the profit margin between 15 and 20 percent of the purchased assets. Similarly, *Murabahah* financing takes place between three parties: the seller of the product, the customer or purchaser of the product and the Islamic bank which summarized as the customer asks the seller for a price quote on a specific product. Also, the customer

contacts the bank and promises to buy the product from the bank over time, at the cost plus a margin, if the bank agrees to buy the product from the seller and resells it to the consumer. More so, the bank purchases the product from the vendor and makes complete payment.

Consequently, *Murabahah* financing can be used for cash credit in order to settle overhead costs such as machines fuelling, payment of wages and salaries with regard to labour, purchase and clearance of the farmland as well as purchase of farm machineries and equipment. In another development, Dhumale and Sapcanin (1999) reported that, the micro finance bank programme in Yemen provided $150,000 loans to more than 1,000 borrowers and 30 percent were women targeted to promote trading, agribusiness and agriculture. Similarly, Obaidullah and Mohamedsaleem (2007) established a positive relationship between *Murabahah* financing and paddy farmland production in Sri-Lanka. Notwithstanding, Aburaida (2014) reported a positive relationship between *Murabahah* and farm credit in a study entitled rural finance as a tool for poverty reduction in Sudan. Also, the study further explained that, *Murabahah* financing was among the successful products after the Islamization of Sudan's banking industry. Even more so, Mohsin (2005) studied the practice of Islamic banking products in the agricultural sector of Sudan. The study found that *Murabahah* finance provided credit to the farmers, farmland, farm infrastructure and agricultural output. Equally, the following Table will show the contributions of Shariah products including *Murabahah* finance to the agricultural sector of the Sudan republic compared to the other sectors of the economy from the period of 1992-1996.

Table 2.5
Agricultural Sectors

Type of sector	1992	1993	1994	1995	1996
Agriculture	4.4	7.2	14.0	11.6	35.6
Industry	2.0	3.2	7.2	10.4	25.2
Service & social	2.6	4.0	9.2	10.0	36.0

Source: Central Bank of Sudan; Almasarafi number 19, Khartoum cited in Mohsin (2005).

The above Table indicated that, the agricultural sector was the highest contributor to the GDP of Sudan republic. For instance, in 1992 the agricultural sector provided 4.4 million and increase to 7.2 in 1993 to 14.0 in 1994 and 11.6 and increased in 1996 to 35.6 million all in Sudan Dinar. Also, *Murabahah* finance was among the Islamic financial products used in the sector. Specifically, the study analysed the contribution of *Murabahah* finance as 53%, 52%, 54%, 49% and 30% respectively. Furthermore, the study suggested that Sudanese government should provide more free interest financial institutions and services to suit farm credit, cultivation land and storage facilities (Mohsin, 2005). Hilmy (2013) reported a positive impact of the relationship between *Murabahah* finance and paddy farmland in Sri Linka. More so, Mastoor (2014) established a positive relationship between *Murabahah* finance and paddy farmland cultivation in Afghanistan. Data were captured through Secondary source from Maiwand Bank. Similarly, Mohammed and Hussien (2012b) investigated the financial stand of wheat growers of commercial finance in the Gezira region of Sudan republic. Data were collected from 60 farmers during the 2003/2004 season. The result indicated a positive relationship between *Murabahah* finance which provided farm facility for the production of wheat. Also, Saqib et al. (2014) studied the application of *Murabahah* Islamic banking instrument for the sugarcane industry

in developing countries. The study indicated that *Murabahah* finance has impacted the relationship between farm working capital and sugar cane products as well as the sugar mills. The study further explained that the *Murabahah* arrangement allowed banks to purchase sugarcane directly from the farmer and sell the same, after adding its own mark-up to the cost, to the sugar mill owner on deferred payment. All the three parties stand to benefit from this arrangement. The farmer will get the price of his crop promptly and at its farmland, sugar mill will also be secure.

Putri and Dewi (2011) reported a positive relationship between *Murabahah* finance on farm input and output from Indonesian Islamic rural banks. Furthermore, Ahmad (2014) mentioned that Islamic banks use the concept of *Murabahah* sale to satisfy the requirements of various types of financing, such as financing of raw materials, farm working machineries and equipment as well as consumer durables. This is in line with the views of Mohsin (2005) and Husseini (2003) that, *Murabahah* finance is among the successful Islamic financial products in the agricultural sector of Sudan republic. Next, the study of Plusquellec (1990) and Mohammed and Husseini (2012) reported the influence of *Murabahah* finance in two irrigation projects in Sudan which include:

i. Gezera irrigations' agricultural project in Sudan, which covered the total irrigation area estimated at 8, 800km^2 depending on the gravity system for irrigation. The canals and ditches reached a total length of 10,000 km^2 and the project distributed 102,000 tenants with an average area of 20 ''Feddans'' and each tenancy demonstrates the size of the beneficiaries and volume.

ii. Rahad agricultural project with 300,000 ''feddans'' represents the first phase
of the project, with the total number of 13,700 farmers as the project
beneficiaries.

In addition, the above indicated that *Murabahah* financing remains an instrument of
promoting socio-economic growth and development. This is in line with the
suggestions of Obaidullah (2008 & 20015) and Hendri (2016) that *Murabahah*
financing is the most popular Islamic financial product in terms of providing short,
medium and long time agricultural financing. This is in line with the study of
Mohammed et al. (2016a & b; 2017a & b) *Murabahah* is expected to moderate the
relationship between farm credit farmland, farm infrastructure and agricultural
output. Likewise, the studies made a recommendation that *Murabahah* finance
should be considered towards providing farm input and output. Besides, the studies
of Chamber (1988), Anthony (2010), Ammani (2012 & 2013) and Chisasa (2014a &
b) used Cobb-Douglas theory of production function and established a relationship
between agricultural production input and output.

2.10 Underpinning Theory

This research is relevant to the Cobb-Douglas theory of production as the basic
objective of the agricultural production is to ensure sustainable production input and
output for the economic growth (Chambers, 1988; Chisasa, 2014a). Similarly,
Murabahah finance is one of the modern Islamic financial institutions tools being
widely used towards financing trading and agricultural input and output for
sustainable economic growth and development (Siddiqi, 2006; Ayub, 2007, p. 215-
240). Therefore, it is relevant here to consider the theory of production based on the

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production function of Cobb-Douglas, so as to work as an underpinning theory in this research, since the, theory has established the relationship between the production input and output. It is also concerned with the measurement of the physical production by way of measuring the changes in the determinants or factors or input of production to the volume of output (King & Levine, 1993; Chambers, 1988; Chisasa, 2014a; Musafiri & Muzabaev, 2014).

2.10.1 Cobb-Douglas Theory of Production Function

This research uses the theory of production to support the combination of the variables. With the help of Cobb-Douglas estimated econometrically what is known today as the "Cobb-Douglas" production function which plays a paramount role in the history of economics (Musafiri & Muzabaev, 2014). Similarly, Levinsohn and Petrin (2000) stipulated that, economists had related the estimation of the Cobb-Douglas function on computing output to inputs since the early 1800s. As proposed by a Cobb-Douglas theory of production function the technical increase in capital, land and labour served as factors of production and the higher the efficiency of the production (King & Levine, 1993; Chambers, 1988; Chisasa, 2014a). Similarly, Cobb and Douglas (1928) hypothesized the production as a function of labour (L) and capital (K). The Cobb-Douglas production function (as it later became known), is still the most ubiquitous tool in theoretical and empirical analyses of growth and productivity. It is widely used to represent the relationship of an output to input. Essentially, it considers a simplified view of the economy in which production output (P) is determined by the amount of labour (L) involved and the amount of capital (K) invested. In addition, the studies of Chambers (1988) Anthony (2010) and Musafiri and Muzabaev (2014) revealed the consensus that, production function is coefficient

towards determines the proportional increase or decrease between production input and output as mathematically expressed y = f (x).

Consequently, Cobb-Douglas theory of production function can be used to predict the current study's hypothesis. This is because the study focuses on efficient technical increase in capital, land and labour (input) as factors of production, which brought along higher yield of the production (Musafiri & Muzabaev, 2014; Chisasa, 2014a). Specifically, the current study considered the production input as: farm credit, farmland, farm infrastructure and *Murabahah* finance as well as production output as agricultural output. It could also be represented in a mathematical equation as output is a function of input, which is: y = (x). Additionally, theory of economic development has supported the Cobb-Douglass theory of production function through the inclusion of the financial products in the production input and output for the economic growth and development (King & Levine, 1993).

2.10.2 Theory of Economic Development

The theory of economic development supported the theory of production function, because it explained that the financial system in the field of production serves as a key driver on influencing other relevant factors of production in achieving economic growth and development. Data were analysed from 80 countries and they reported that the availability of the financial services is highly significant to the growth of the real per capita GDP, the rate of physical capital accumulation, and the increased efficiency of the physical capital employed. Furthermore, the theory of economic development argued that the provision of services by the financial inclusion (money

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and capital markets) is the driver for technical efficiency for production towards economic growth and development (King & Levine, 1993).

Gurley and Shaw (1955), Tobin (1963) and Ismail and Ahmad (2006) reported that, financial inclusion is an essential ingredient in terms of supporting the production input and output towards sustaining economic growth and development. Besides that, Gurley and Shaw (1955) viewed that the major contribution of financial institutions is to supply funds to the borrowers to purchase farm input in order to improve deficit units of production. Similarly, Tobin (1963) argued that the main function of the financial inclusion is to provide a portfolio preference for production. Meanwhile, the main role of the financial development is to boost the correlation and efficiency between the production input and output for the future economic growth. The theory argued that financial inclusion influencing the production function in terms of savings mobilizations and disbursement, risk management, production monitoring and evaluation as well as technological innovation and economic development (King & Levine, 1993). Diamond (1984 & 1991) reported that the theory of economic development has proven that financial inclusion is an optimal contract to increase the output of production. The study also indicated that borrowing is significant towards providing finance for the working capital of production.

2.10.3 Rural Credit Market Theory

The theory of economic development has been supported by the rural credit market theory. According to Braverman and Guasch (1986) the theory came with the assertion that the charging of interest rate of the conventional financial institutions contributes to the failure of the output. On the other hand, the availability of less

interest financing is subject to the technical increase in the agricultural output as a result of efficient and technical innovation in the farm input. This indicated that the technical innovation leads to the maximization and utilizations of the farm credit, farmland, farm infrastructure and agricultural output as well as *Murabahah* finance. In addition, Braverman and Guasch (1986) argued that high interest rate is subject to the high risk of borrowers. Besides that, Braverman and Luis Guasch, (1986), Hoff and Stiglitz (1996), Rauchhaus, (2009, p. 871) and Chisasa (2014a) Stated that, low interest rate remains a significant factor on improving the farmer's welfare and income, reduces rural poverty as well as becoming a source of enhancing rural employment and economy. More so, in the light of practical experience rural credit market is almost perfectly competitive with the market clearing equilibrium, where high interest rates are subjected to the high risk of the borrowers.

Consequently, the above theoretical approaches established the relationship between farm credit, farmland and farm infrastructure and agricultural output. It is also indicated that the relationship remains valid and functional to the agricultural production which is characterized by technical efficient changes in agricultural input and output (Braverman & Guasch, 1986; Chambers, 1988; Chisasa, 2014). Likewise, *Murabahah* finance serves as the financial inclusion which is a facilitator of agricultural production input and output (Obaidullah, 2015; Hendri, 2016). Equally, the theory of rural market credit supported the first and the second theories with the assertions that agricultural financial inclusion with low interest rate, cost and risk financial inclusions lead to a significant increase in output. On the other hand, this theory highlighted the danger associated with the inclusion of the interest rate to agricultural production (Chisasa, 2014a).

Therefore, the first theory explained that, the technical increase in production input is a proportional increase in the production output and vice versa. Also, the second theory covers the financial inclusion as a moderator towards attaining sustainable production input and output. Equally, the third theory signified the essence of the two theories in the field of agricultural production with the assertion that the interest rate remain a serious constraint to the growth of agricultural productivity. Theoretically, the framework of the research can establish the relationship between the agricultural input and output as seen in figure 2.1.

Theoretical Framework of the Research

INDEPENDENT VARIABLES   DEPENDENT VARIABLE
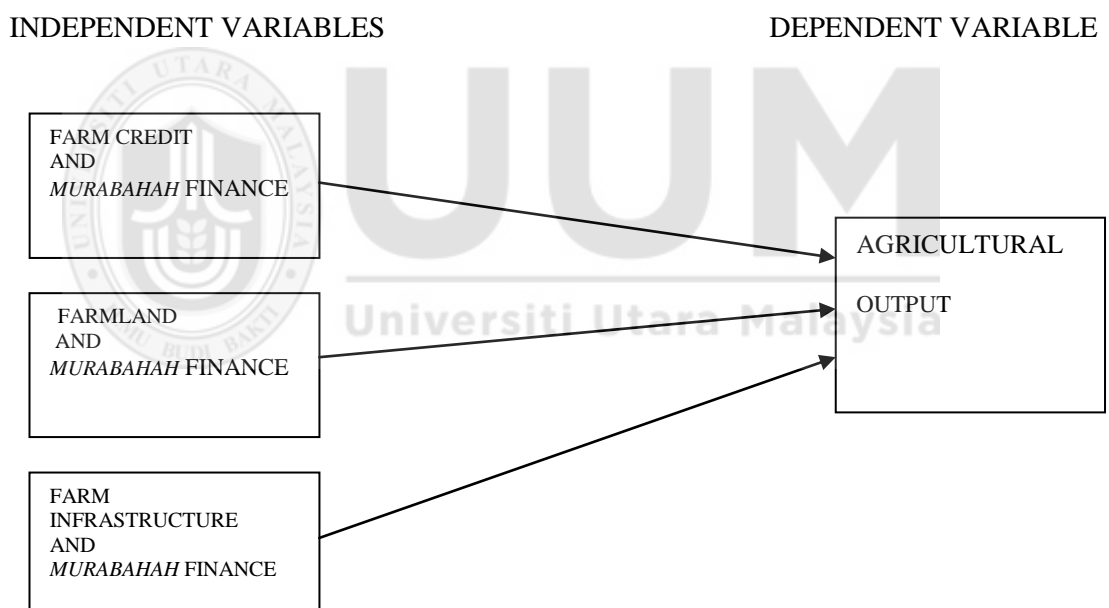
Figure 2.1:
Research Framework

The above theoretical framework as indicated by the directions of the arrows explains the relationship between agricultural production input and agricultural production output and that *Murabahah* finance serves as the moderator on the relationship between agricultural input and output. This in line with Cobb-Douglas

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production based function as the theory that, established the relationship between production input and output (Chambers, 1988; King & Levine, 1993).

Similarly, economist had related output to inputs since the early 1800s. The estimated OLS regression $Q_t = \beta \ (L_t)^\alpha \ (K_t)^\beta$, where Q_t, L_t, and K_t represent (aggregate) output, labour, and capital, respectively, and β is a constant, showing that the elasticities came remarkably close to the observed factor shares in the American economy, that is, $\alpha = 0.75$ for labour and $\beta = 0.25$ for capital (Cobb-Douglas estimated the regression imposing constant returns to scale in per capita terms, standard errors and R were not reported) (King & Levine, 1993). Thus, based on the said theory, the model specification of the research constructs as the following agricultural production function is estimated below:

y =f (x)

Therefore, Agric Output (AO) = f (farm credit (FC), farmland (FL), farm infrastructure (FI)), which represents as:

$AO = \beta_{0 +} \beta_{1 \ FC +} \beta_{2 \ FL+} \beta_{3 \ FI} + \beta_{4MF +} \varepsilon_{i,}$

Where; AO = Agric Output = f (farm credit, FL = farmland, FI = farm infrastructure), β_0 = Constant, $\beta 1 - \beta_3$ = coefficients, ε_i = Error term. Cobb-Douglas theory of production function shows off a mathematically established relationship between production input and output. Therefore, this study only used the Cobb-Douglass theory of production function formula to establish and prove the relationship of the study variables. Assume that the formula *AOT = F (FC*, FL*, and FI*)* governs the relationship between the study variables as: AOT, FC, FL and FI.

Assume that function (F) is continuously differentiable. For example, let us consider the outcome of the factors as: AOT yield price (p), FC paid interest rate (i), FL attracts rent (r) and FI deliver services (s). For every output (p), FC interest rate (i), FL rent (r), FI service (s).

Let, FC (i,r,s,*p*), FL (*i,r,s, p*) and FI (i,r,s,*p*) to maximize profit in production,

pF (FC*, FL*, FI*) - iFC- rFL - sFI.

The first order condition for an interior maximum is as follows:

pFC(FC*,F L*,FI*) = i (1),

pFL(FC*,F L*,FI*) = r (2),

pFI(FC*,FL*,FI*)=s (3)

Where *Ffc* denotes the partial derivative of *F* with respect to its first variable *FC*, and *Ffl* is with respect to *FL* as well as *Ffi* is with *FI*. Assume now that the fraction of output paid to *FI* is constant *α*. For Cobb and Douglas they chose *α* = 0.75. The constancy can be written:

$(1 - \alpha) pF (FC^*, FL^*, FI^*) = i FC^*$ (3)

$\alpha pF (FC^*, F L^*, FI^*) = s FL^*$ (4)

Dividing (1) by (3) gives:

$$\frac{1}{FC *} = \frac{FFC(FC *, FL *, FI *)}{(1 - \alpha) F(FC *, FL *, FI *)}$$

Furthermore, the supporting theory used by this study is the study of theory of the economic development that established the relationship between productive sectors and financial inclusion. The theory revealed that financial inclusion is the essential facility towards the technical efficiency of the success of the production sector. Similarly, the third supporting theory which is the rural credit market theory emphasized the efficiency of the farm financing with less interest. This is

harmonious with the arguments of King and Levine (1993), Gurley and Shaw (1955),
Tobin (1963) and Ismail and Ahmad (2006) who asserted that, financial inclusion
remain a significant factor in terms of supporting the production input and output for
the growth and development of the economy. Thereby, the theory indicates that farm
financing is a technical innovation toward the maximization of farm output on
employing the full capacity of the farm input. Also, the theory explained that,
agricultural production requires no interest rate, and agricultural financing risk
(Braverman and Luis Guasch, 1986; Hoff & Stiglitz, 1996; Rauchhaus, 2009, p. 871;
Chisasa, 2014a).

2.10.4 Methodological Differences

Based on the literature reviewed indicated that the different methods of research
analysis were used in such studies which include the studies of Anthony (2010),
Chisasa (2014a, 2014b & 2015), Ammani (2012 & 2013), Dang, Leatham and
Bagheri (2014), Atagana and Kalu (2014), Sukprasert and Yapwaltanaphum (2015),
Abu and Ochoche (2015), Ayegba and Ikani (2013), Heady and Jayne (2014),
Ricker-Gilbert et al. (2014), Muyanga and Jayne (2014) and Josephson et al. (2014)
among others. Also, the study differs in terms of observations of mixed results or
inconsistent findings from the previous studies related to the farm credit, farmland,
farm infrastructure and agricultural output. In additions, this study differs from the
previous one due to the various recommendations and suggestions of the studies
including: Olaitan (2006), Iganiga (2008), Eyo (2008), Ammani (2012 & 2013),
Ayegba and Ikani (2013) and Chisasa (2014a & 2014b). Therefore, this research
filled the gap by incorporating the moderating variable of *Murabahah* finance on the

relationship between farm credit, farmland, farm infrastructure and agricultural output in Kano State, Nigeria.

More so, previous researches considered single independent variable in relation to the dependent variable. For instance: farm credit or farmland or farm infrastructure and agricultural output (Holden & Otsuka, 2014; Qureshi, Yasmin, Ilyas, Withy & Khan 2013; Chisasa, 2014a). On the other hand, this research combined farm credits, farmland and farm infrastructure in a single model with *Murabahah* finance as a moderator. Equally, in regard of Kano State, previous researches considered the direct relationship of conventional mode of financing in relations to the study variables. In contrast, this research considers the Shariah mode of finance on the relationship between the variables since *Murabahah* finance is a Shariah mode of financing agriculture and trade, agribusiness and agro allied industries. It also has the potentials of free interest, free gambling, and free manipulation (Ayub, 2007, p. 215-240; Kaleem & AbdulWajid, 2009; Hilmy, 2013; Mastoor, 2014). Based on the above theoretical designation, research framework and methological differences, this research developed the following hypotheses based on the literature reviewed in order to predict the research constructs.

2.11 Development of Hypotheses

In line with the theoretical justifications and prior empirical studies (e.g., Chambers, 1988; Anthony, 2010; Ammani, 2012; Chisasa, 2014a), hypotheses for this study have been advanced for empirical testing and validation. The present study has five constructs, namely, farm credit (FC), farmland (FL), farm infrastructure (FI) as the independent variables, *Murabahah* finance (MF) as the moderating variable, and

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agricultural output (AOP) as the dependent variable. Consequently, in this study, six hypotheses have been advanced for testing and validation, which were concerned with relationships among the study variables and the effect of *Murabahah* finance between the relationships of the variables. Notwithstanding, agricultural output as a dependent variable of the research can be regarded as a total outcome of land utilization for crop growing, rearing of animals, fisheries, forestry management as well as all related agriculture and agribusiness activities (Chisasa, 2014a & 2015).

2.11.1 Farm Credit and Agricultural Output

Farm credit can be defined as a certain amount of money borrowed or received from formal or informal financial institutions for the purpose of improving agricultural output with a condition of repayment (Olayinka & Bolarinwa, 2009). Also, studies indicated that there is a significant relationship between farm credit and agricultural output (Nwosu, Oguoma, Ben-condo & Henri-Ukoha, 2010; Adetiloye, 2012; Awe, 2013; Leatham, Macarl & Vimingwu, 2013; Bewer, Wilson, Feather-stone, 2013). Therefore, it is expected that farm credit will influence the agricultural output. Hence, the following hypothesis is developed:

H1: There is a significant relationship between farm credit and agricultural output in Kano State, Nigeria.

2.11.2 Farmland and Agricultural Output

Farmland can be defined as a top portion of the earth which is supporting plants growth, rearing of animals, fisheries and other related agricultural activities (Miyata, Minot & Dinghuanhu, 2009). Studies show that there is a significant relationship between farmland and agricultural output (Jayne et al., 2014; Ricker-Gilbert et al.,

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2014; Muyanga & Jayne, 2014; Josephson et al., 2014; Headey et al., 2014). Hence, it is expected that farmland will influence agricultural output. Therefore the study hypothesizes that:

H2: There is a significant relationship between farmland and agricultural output in Kano State, Nigeria.

2.11.3 Farm Infrastructure and Agricultural Output

The farm infrastructure here can be defined as necessary facilities that influence factors of production with regard to agricultural productivity (Atagana & Kanu, 2014). Studies show that there is a positive and significant relationship between farm infrastructure and agricultural output (Abinbola & Oluwakemi, 2013; Miriam, Patrick & Ifechukude, 2014). Hence, the following hypothesis is developed:

H3: There is a significant relationship between farm infrastructure and agricultural output in Kano State, Nigeria.

2.11.4 Moderating Effect of *Murabahah* Finance

In line with the recommendations of Mohammed et al. (2017) *Murabahah* finance is to be incorporated as a potential moderator on the relationship between farm credit and agricultural output. Therefore, this study employed *Murabahah* finance as a potential moderator on the relationship between farm credit and agricultural output. This is in line with the the studies of Mohsin (2005), Saqib et al. (2014), Abraida (2014), Obaidullah (2015) and Hendri (2016). Hence, the following hypothesis is developed:

H4: *Murabahah* finance moderates the relationship between farm credit and agricultural output in Kano State, Nigeria.

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Equally, in line with the literature reviewed, there is the existence of mixed results on the relationship between farmland and agricultural output. In line with the study of Baron and Keny (1986) moderator is needed to be incorporated between the variables that reported inconsistent findings. Therefore, this study considers *Murabahah* finance as a potential moderator on the relationship between farmland and agricultural output. This is done due to the studies of Hilmy (2013), Mostoor (2014), Saqib, Nazeer, Khan and Safar (2014). Hence, the following hypothesis is developed:

H5: *Murabahah* finance moderates the relationship between farmland and agricultural output in Kano State, Nigeria.

Furthermore, the study of Hendri (2016) and Mohammed et al. (2016b & 2017) suggested the inclusion of *Murabahah* finance to moderate the relationship between farm infrastructure and agricultural output. Therefore, this study makes the inclusion of *Murabahah* finance as a potential moderator on the relationship between farm infrastructure and agricultural output. This is in line with the findings of Mohammed and Husseini (2012), Mostoor (2014) and Aburaida (2014). Hence, the following hypothesis is developed:

H6: *Murabahah* finance moderates the relationship between farm infrastructure and agricultural output in Kano State, Nigeria.

2.11.5 Summary

The chapter discusses the general introduction about all the issues in relation to the current research variables and the moderator. It started by providing many definitions related to the concepts of agricultural output. The chapter looked into the definitions, likewise, the theoretical understanding of the dependent variable and the independent

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variables with the moderating variable (*Murabahah* finance). Issues and empirical findings in respect of each of the predicting variables to the criterion variable were all established. Additionally, the relationship between the independent variables as well as moderator to the dependent variable was provided with relevant studies. Furthermore, theoretical underpinning which is a Cobb-Douglas theory of production function, theory of economic development and rural market theory were seen to offer support to the possible relationship between the theories as the entire constructs established the relationship. The theoretical framework and Hypothesis development were all revealed in this chapter.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The above chapter discusses the literature that is relevant to research variables, which include farm credit, farmland, farm infrastructure and agricultural output while *Murabahah* finance is the moderator. In addition, this chapter covers and discusses the research methodology, nature and philosophy of research design which include: population and sample size, sampling technique, unit of analysis, operationalization and measurement of the concept, questionnaire design, reliability, validity data collection and data analysis techniques.

3.2 The Nature and Philosophy of the Research

Research philosophy, also known as research paradigm, is defined by Guba and Lincoln (1994) as the "basic belief system or world view that guides the investigation" (p.105). Research philosophy can be classified into two major categories, namely; positivist paradigm and interpretive paradigm (Bryman & Bell, 2007; Myers, 2009, 2013). Positivist paradigm, also called the scientific paradigm, is a philosophical contribution of a French philosopher Auguste Comte (1798–1857) (Koval, 2009; Mack, 2010; Moore, 2010). The doctrine of positivism has been the most widely practiced research paradigm in social sciences (Neuman, 2011). The Positivists believe that social reality can be studied independent from the researcher (Scotland, 2012). Likewise, Positivists assume that social life can be represented quantitatively using the correlation and experimentation to determine the cause and effect relationships between variables (Creswell, 2009).

Taken together, positivists employ the deductive inquiry (Tashakkori & Teddlie, 1998), which aims to test the hypotheses that reflect causal relationships between variables that are based on theories and empirical evidence (Bryman & Bell, 2007; Creswell, 2009; Deshpande, 1983; Perlesz & Lindsay, 2003). More so, the major goal of deductive research is to draw conclusions that are generalizable, which also allow for a revision of the theory (Bryman & Bell, 2007; Deshpande, 1983). In summary, Neuman (2011) describes positivists as researchers who advocate value-free science, seek precise quantitative measures, test causal theories with statistics, and believe in the importance of replicating studies. In contrast, interpretive paradigm, also known as anti-positivist or constructivist, is a philosophical underpinning of a German philosopher and mathematician, Edmund Husserl (1859-. 1938) (Mack, 2010; Willis, 2007). Unlike the positivist paradigm, the interpretive philosophical approach assumes that human social life can be qualitatively studied through an array of means, including direct observation, interviews, and case studies, among others (Neuman, 2011).

More so, interpretivists view social reality as subjective and socially constructed, with both researchers and participants interacting to understand a phenomenon from an individual's perspective (Creswell, 2009; Guba & Lincoln, 1994). The purpose of this study was to test a hypothesized structural model. The model theorized that *Murabahah* finance has a significant moderating effect on the relationships between farm credit, farmland, farm infrastructure and agricultural output. The study also hypothesized that farm credit, farmland and farm infrastructure have a significant influence on the agricultural output. In relation to the aim of the study, a total number of six Objectives were put forward and six hypotheses formulated and tested.

Based on the research model developed, the present study focuses on theory testing and verification rather than developing a new theory, thus, employing a deductive research approach. Therefore, drawing on the philosophical assumptions discussed above, the present study largely adopts the positivist paradigm, based on objectivism as the underlying ontological and epistemological positions.

3.3 Research Design

The current study adopted a quantitative research approach to assess the structural relationship among the variables that include farm credit, farmland, farm infrastructure and agricultural output and the *Murabahah* finance as a moderator. Also, the study considers the Partial Least Squares modeling (Smart PLS) of Structural Equation Modeling (SEM) (PLS-SEM) for data analysis to test several hypotheses formulated from the literature reviewed. Consequently, the research also adopts the cross-sectional research design in which data was collected once during the whole research work.

The data is analysed and interpreted in statistics, while drawing a conclusion or making inferences about the population of the research at one point in time, cross-sectional research design is adopted over time in the longitudinal research design because of the resource constraint of the researcher in terms of time and money (Sekara & Bougie, 2010). Similarly, survey research methods were considered as the most appropriate because they are widely used by researchers who are interested in collecting information about a very large population that cannot be observed directly (Keeter, 2005; Tanur, 1982). The target populations of the study were the individual

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farmers who are farmers in Kano State whereas the unit of analysis in this research is small scale farmers (respondents of the questionnaire).

Based on the above, this research is designed to empirically prove the hypothesis of the literature reviewed which is in line with the above theoretical framework. Similarly, the design of the research was based on the operational definitions and measurement of the research concepts. Also, the population of the study was 511,780 registered farmers of Kano State with 764 sample size based on Kresie and Morgan (1970) Table and a systematic random sampling technique was proposed upon individual farmers as the unit of analysis as well as the respondents of the research questionnaire. Consequently, this research considered Smart PLS-SEM to analyse the primary data captured through questionnaires for analysis as well as conclusions and recommendations of the study. However, it is further discussed as follows:

3.3.1 Population

The population can be defined as a total number of people in a group, things or items of the researcher's interests and wishes to research. Also, the population can be demonstrated as an assembly of people that have similar behaviour that the investigator can point out and investigate. In addition, the authors indicated that the population of the research represents a category of things, items or people who have common identification that the researcher can recognize for study (Sekaran & Bougie, 2010; Creswll, 2012). This study considered the categories of the farmers in Kano State, as the population of the research in order to choose the sample for data collection. Therefore, this research considered the population of 511,870 registered

small scale farmers under the Kano State Ministry of Agriculture (Federal Ministry of Agriculture (FMA), 2014).

 Similarly, this research focused on the production of the small scale agricultural output in Kano State, Nigeria. Specifically, Kano State is the most populous and among the agrarian and Shariah compliant States in Nigeria with an estimated population of over 15 million (http//:www.kanostate.net). In addition, the State is among the important Nigeria's State in terms of supplying the agriculture output both locally and internationally. Likewise, the State farmers are dispersed in different villages and units across the three senatorial districts. Therefore, the population of the study consists of the State's Subsistance or small scale farmers.

3.3.2 Sampling Size

Sample can be seen as a small number out of the total number of the population that is ready to be in some criteria of the sampling considerations. Also, as the portion of the population of concern to be investigated, it can also be regarded as a sub-collection that is considered out of the population concerned. Equally, Sample is a manner in which a group of individuals or items are picked from a caring population. According to Creswell (2012) sample can be defined as a sub-set of the concerned population that the investigator designs to research to represent the concern population. Furthermore, the sample serves as a representative of the entire whole which is chosen to be the delegates. The sample is used due to the following reasons; the collection of information from each population is impossible; the use of sample than the total population may give better, reliable and accepTable results, less fatigue and less error in gathering the data (Sekaran & Bougie, 2010).

Therefore, the sample size for this research was drawn from Kriejcie and Morgan, 1970. In order to consider and determine FMA (2014) sample size. The survey blueprint covers 511,870 registered farmers in Kano State. According to Kriejcie Morgan (1970) sample determination of 382 farmers was chosen as a sample as well to reduce error during sampling and responding to the non-response situations. Hair, Wolfinbarger and Ortinall (2008) recommended that the sample size can be multiplied by two. In addition, Alrech and Settle (1995) argued that, the lesser the sample sizes the greater possibility of error and that the higher the sample the better and the more accurate result will be determined. Therefore, 764 served as the aggregate number of questionnaires for distribution.

3.3.3 Sampling Technique

The systematic sampling technique was adopted in this study. Systematic sampling is a process that involves randomly selecting an initial starting point on a list, and thereafter every number element (nth element) in the sampling frame is selected (Hair, Money, Samouel & Page, 2007). Also, systematic sampling is described as a procedure where a starting point is selected by a random process and then every nth number on the list is selected. The sampling interval is regarded as the number of population elements between each unit selected from a given sample (Zikmund, Babin, Carr & Griffin, 2010).

Notwithstanding, this study selected the populations of Kano State farmers as sample, whereas, Ifeoma and Agwu (2014) and Mohammed and Umar (2017) categorise them into Subsistence farmers and Commercial farmers. Subsistence farmers refer to small scale farmers who engaged in farm productivity with the aim

of household consumption and sales the surplus for their daily needs. Farmers from this category are characterized by traditional or primitive farm working tools such as hoes, cutlasses, local seeds as well as insufficient modern farm input to boost their productivity. Commercial farmers refer to large scale farmers who are focused on producing just one case of a crop or type of livestock, primarily for marketing functions. This category of farmers produces output for commercial purposes. Consequently, this study considered 511,870 total populations of the registered Subsistence farmers in Kano State (FMA, 2014).

In line with the study of Hair, Money, Samouel and Page (2007) the current study considered a numbered element from the interval numbers of the total population of the Kano State's subsistence farmers and divided by the sample size (population/sample) which means 511,870 divided by 764 = 670. At the starting point the researcher selected a number between 1 to 670, 671 to 1,340, 1,341 to 2010, 2011 to 2680, 2681 to 3350, 3351 to 4020, 4021 to 4690, 4691 to 5360, 5361 to 6700,…… 511, 870 (i.e. up to the last sample to be selected, that is sampled element number 511870). Thereby the selected number between the population intervals is considered for the sample element of this study. Next, 674 sample element was selected from the interval of 511,870 population (see appendix, C).

Some of the benefits attached to this type of sampling technique are that they are simple to use, the systematic sampling technique allows a researcher to add a systematic element to a random selection of subjects; the researcher guaranteed that the population will be evenly sampled; it reduces the potential for human bias in the selection of cases to be included in the sample; and it allows the researcher to make a

statistical conclusion within the sample (Sekaran, 2003; Hair et al., 2007; Zikmund et al., 2010; Sekaran & Bougie, 2010).

The current study used the technique of systematic sampling which is regarded as suiTable due to the consideration of the prior studies that have adopted the technique (Zakeri, Jafari, Tavili, Sangooni, & Soltoni, 2013; Sour, Arzan, Feizizadeh, Tavilli, & Alizadeh, 2013; Ghambarali, Alibaygi, Rasekhi, Pezeshki, Ghasemi, & Akbari, 2013; Alizadeh, Alipour, & Hasanzadeh, 2013; Asgharnezhard, Akbarlou & Karkaj, 2013; Zakeri, Jafari, Tavili, Sangooni & Soltoni, 2013; Albueku, & Ogbouma, 2013; Albueku, & Ogbouma, 2013; Shehu & Mahmood, 2014a).

3.3.4 Units of Analysis

The unit of analysis can be described as what the research is all about or who is being investigated in a research. As in social science research, the unit of analysis is classified into; individual, group or organization (Creswell, 2012; Kumar, Abdul Talib & Ramayah, 2013). Therefore, small scale farmers of Kano State were considered as the unit of analysis for this research since the research examined the influence of *Murabahah* finance on agricultural output while individual or subsistence or small scale farmers were the respondents.

3.4 Operationalization and Measurement of the Concept

Operational definition serves as a way in which a researcher intends to explain, define and measure the entire research variables and the variables on this research only (Creswell, 2012).

3.4.1 Agricultural Output

In this research, agricultural output is operationalized as an act of land cultivation, animal rearing, poultry, fisheries and forest management with the aim of food generation to the man and the supply of raw materials for the industries for the growth of the economy. Agricultural output scale was adapted from the works of Chisasa (2014a), Chisasa and Makina (2013), Adetiloye (2012) and Olujenyo (2008) and Cobb-Douglas (1928) and it has ten items. Specifically, all the ten items were forwarded to the respondents. The research uses five point Likert scale where a point is given to each item ranges from 1-5. The highest point scores for this variable is 10 items multiply by 5 points = 50 points which shows that agricultural output is significant in the Kano State economy. The lowest score is 10 points (10 multiply by 1 point) which signifies that agricultural output is not significant in the Kano State economy. This research adapted all the ten items from Chisasa (2014a).

3.4.2 Farm Credit

In this research farm credit is operationalized as a process of getting control on a certain amount of money and related services with the aim of improving the production of agricultural output on a certain agreed condition of repayment at a future period of time. Farm credit adapted ten items from the work of Kaleem and Abdulwajid (2009), Reyes, Lensink, Kuyvenhoven and Moll (2012), Okuthe, Ngesa and Ochala (2013), Chisasa (2014a). Consequently, a total of ten items were forwarded to the respondents. The research uses the five point Likert scale where a point is being given to each item that ranges from 1-5. The highest point scores for this variable is 10 items multiply 5 points = 50 points which show that farm credit is significant to the agricultural output. Then the lowest point scores are 10 points (10

items multiply by 1 point) which shows that farm credit is not significant in the agricultural output.

3.4.3 Farmland

In this research farmland is operationalized as any available soil that supports the growing of crops and rearing of livestock, fishery, poultry and related activities for the purpose of food supply and raw materials to the industries for economic growth. Farmland with six items was the concept adopted from the work of Allahyari, Postitiban and Koundinya (2013), Rezvanfar and Mohammadi (2012), Rasouliazar, Hsseini and Mirdamadi (2010), Gholifar, Asadi, Akbari and Atashi (2010), Tenaw, Islam and Perviavi (2009) and Bhalla and Roy (1988 & 1985). All the six items were forwarded to the respondents. The research uses five point Likert scale where a point is given to each item ranging from 1-5. The highest scores for this variable is 6 items multiply by 5 points = 30 points which show that farmland is significant to the agricultural output. Then the lowest point scores is 6 points (6 items multiply by 1 point) which shows that farmland is not significant in the agricultural output.

3.4.4 Farm Infrastructure

In this research farm infrastructure is operationalized as any necessary facility employed to support the production of agricultural input and output. The examples of infrastructure facilities include: electricity, warehouses, skill labours, school, health's centre, good roads, transportations, technology among others. Farm infrastructure with eight items was adapted from the work of Resouliazar, Hosseini and Mirdamadi (2011), Birjandi (2011), Reyes, Lensik, Kuyvenhoven and Moll (2012), Olujenyo (2008), Felloni, Whahl, Wandscneider and Gilbert (2001). All the eight items were

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forwarded to the respondents. The research uses five point Likert scale where a point is given to each item that ranges from 1-5. The highest score for this variable is 8 items multiply by 5 points= 40 points which shows that infrastructure is significant to the agricultural output. Then the lowest score is 8 points (8 items multiply by 1 point) which shows that infrastructure is not significant in the agricultural output.

3.4.5 *Murabahah* Finance

Murabahah finance can be operationalized as a Shariah financial product used to purchase farm input and services and it is resold to farmers in cash or by deferring payment based on an agreed price and profit margin. *Murabahah* finance items were adapted from the work of Juwairiyah (2011), Ahsanul, Osman and Ismail (2009), Rammad and Zurbruegg (2007), Dasuki and Abdullah (2007), Erol and ElBdour (1989) and Haron, Ahmad and Plsnisek (1994). All the five items were forwarded to respondents. The research intends to use five point Likert scale where a point is given to each item ranging from 1-5. The highest score for this variable is 5. The highest scores for this variable is 5 items multiply by 5 points = 25 points which shows that *Murabahah* finance is significant to the agricultural output. Then, the lowest point score is 5 points (5 items multiply by 1 point) which shows that *Murabahah* finance is not significant in the agricultural output.

3.5 Questionnaire Design

A structural questionnaire involving the questions with multiple choices was used in this research. This means that a five point Likert scale is used in this research. This is in line with the view of Krosinic and Fabrigar (1997) that, considering a scale that has midpoint provides accurate and accepTable results. Similarly, Elmore and Beggs

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(1975) stated that a five point scale is highly considered and simple on adding more number from five to seven or nine as the case may be. Also, the reliability of the rating improvement is not guaranteed. In addition, Neuman and Robson (2008) argued that five point scale is the most accepTable, appropriate and good results provider due to the evidence from previous researches who have used five points.

Therefore, section (A) covers the information regarding dependent variables. Section B- H., looks into the independent variables, as follows: Section, (B) covers the information on the relationship between farm credit and agricultural output. Section (C) highlights the information on the relationship between farmland and agricultural output. Section (D) contains the information on the relationship between farm infrastructure and agricultural output. Section (E) deals with the information on the moderating effect of *Murabahah* finance on the relationship between farm credit and agricultural output. Section (F) highlights ample information on the moderating effect of *Murabahah* finance on the relationship between farmland and agricultural output. Section (G) revealed the information on the moderating effect of *Murabahah* finance on the relationship between infrastructure and agricultural output. Section (H) sheds light on the demographic information of the respondents. Therefore, the questions covered nine items in the questionnaire.

3.6 Pilot/Preliminary Test

A pilot test was commenced in the current research, with the aim to test the validity and reliability of the research instrument. Also, before the arrival of the real research work, the pilot study was able to prove all the potential problems contained in the survey instrument and adjust prior to the real research work. Similarly, pilot study is

an essential tool for actualizing the validity and reliability of the survey instrument. This is in line with the study of Sekaran and Bougie (2010) that the validity of the survey is to testify the measuring level of the variables by the measuring instrument and it is expected to measure what it is expected to measure. Also, the reliability of the measurement is to measure the level of which the instrument is free from error.

3.6.1 Reliability Test

Researchers employed different method to test reliability as such Cronbach's alpha coefficient is among the popular method used in relation to testing the inter-item consistency (Sekaran & Bougie, 2010). It also covers the answering level of the respondents with regard to the consistency of each and every item. Furthermore, after running the test of reliability through SPSS v20 M3 as per soft ware Windows, it was revealed that all the research measures reached a high level reliability standard that ranges from 0.71 to 0.87. This report is in line with the condition of Cronbach's alpha coefficient of 0.60 which is considered as an average reliability level, as well as the fact that a coefficient of 0.70 or move level indicates that the instrument has a high level of reliability standard (Nunnally, 1978; Hair et al., 2010; Sekaran & Bougie, 2010). Also, it can be considered from the findings of the pilot test which indicated that the Cronbach's alpha level of the respective study constructs all were above 0.70 as indicated in Table 3.1 below. Therefore, the current research established a yardstick of 0.70, and it can be concluded that all the variables of this study are reliable thereby the removal of any of the item would be unnecessary.

3.6.2 Validity Test

To ensure the satisfaction of the measuring instrument, this study employed content/face validity as such consultations were applied with some samples of the respondents. Also, a panel of experts to judge the appropriateness of the items was considered which include: Professionals or experts from Universiti Utara Malaysia, Senior lecturers in the Islamic Business School and some Ph.D. students with a research experience mostly in the study area were consulted for the clarity and the test of the study measuring instrument. Additionally, some extension workers and farm managers were also consulted for their input. On account of this, few items were re-phrased and re-worded appropriately to measure the study construct as well as to enable them to be understood by the respondents. More so, questionnaires were translated into Hausa language by the Department of Nigerian languages, Bayero University, Kano-Nigeria in order to simplify the content.

This was done within two weeks in the month of March 2016. After taking into account the observations of experts, the researcher adapted an improved version of the instrument, which was administered in the pilot study. In most pilot tests, the sample is generally small (Fink, 2003), although it is common to increase it to 100 responses (Dillman, 2007). Therefore, a total of 60 copies of the questionnaires were randomly and personally-administered. Out of the distributed questionnaires, 52 were collected and 6 were not properly completed, so only 46 responses were considered for analysis as can be viewed in Table 3.1 below.

Table 3.1
Reliability Test results of Pilot study

Constructs		Number of Items	Cronbach's Alpha
1	Agricultural output	10	0.76
2	Farm credit	10	0.85
4	Farm Infrastructure	8	0.71
5	*Murabahah* finance	5	0.81
	Total	39	
	Total	39	

Table 3.1 indicates the summary of the variables' reliability results as the findings of

the pilot test indicated that the Cronbach's alpha level of the study constructs were

all above 0.70. Therefore, the current research established a yardstick of 0.70, and it

can also be concluded that all the constructs of this study are reliable, thereby there is

no need to remove any of the items.

3.7 Data Collection Procedure

In the current research, the actual data collection started after the proposal defence

and lasted for four months. In the initial stage of data collection, an official letter was

collected from the Othman Yeop Abdullah Graduate School of Business (OYAGSB),

introducing the researcher and also explain the purpose of the study. This was to

enable the researcher to get support from the Directors in the federal and state

ministries of agriculture and rural development Kano state office, who acted as the

liaison persons for the researcher. In the second stage of data collection, a survey

package was sent to the Directors who assisted in administering the questionnaires.

The survey package was in a fullscap size envelope with a cover letter, the

questionnaire and a pen with UUM logo to motivate the participants in the survey. The cover letter clearly highlights the background and purpose of the study. The cover letter also provides instructions on how to answer and return the questionnaire. To further increase the willingness of the participants to partake in the survey, their anonymity and confidentiality were confirmed in the cover letter (see Appendix A).

In order to have the completed questionnaires returned within the shortest possible time, the hand delivery collection method was used, so as to suit the peculiarity of small scale farmers of Kano State as our targeted population. The hand delivery collection is a good device in settings where a sound research culture is not recognized. Empirical evidence shows the rate of return of postal questionnaires in Kano State and Nigeria in general is very low as the response rate is between 3 percent and 4 percent respectively (Asika, 1991; Ringim, 2012).

The survey was conducted through self-administration of questionnaires. The chosen survey method is costly compared to a postal survey. Notwithstanding, the researcher favours this method because of its outstanding benefits. One of such benefits is that the researcher can collect the entire completed questionnaire within a short period of time. Also, researcher can give additional explanation on items that need clarification by the respondents as the questionnaire was translated into Hausa language. Additionally, the researcher can persuade the respondents to take part in the survey and can give their sincere opinions (Bichi, 2004; Sekaran & Bougie, 2010).

3.8 Technique of Data Analysis

A combination of both descriptive and inferential statistics was used as the method of data analysis. Descriptive statistics, according to Babbie (1990), provide a method of reducing large data to manageable summaries to permit easy understanding and interpretation. More specifically, Structural Equation Modelling (SEM) was employed in the data analysis. Given that this research examines the influence of functional quality, technical quality, corporate image, perceived value, customer culture and switching costs on behavioural intention and actual customer behaviour, the test of the hypothesised relationships presented in the conceptual model is more appropriate conducted using SEM (Bollen, 1990).

Nel, Heerden, Chan, Ghazisaeedi, Halvorson and Steyn (2011) argued that, SEM overcomes the potential analytical problems of measuring the relationships among variables, especially if the model is complex like the one in this study. Also, SEM is one of the most powerful statistical tools in the area of social and behavioural sciences that has the ability of testing several relationships simultaneously. Also, the present trend of using more sophisticated analytical techniques like SEM in the services marketing related research has been found to be growing increasingly in popularity.

3.9 Structural Equation Modelling (SEM)

According to Tabachnick and Fidell (2007), Structural Equation Modelling (SEM) is a collection of statistical techniques that allow a set of relationships between one or more independent variables, either metric or non-metric, and one or more dependent variable, either continuous or discrete, to be examined. More so, SEM, both

independent and dependent variables can be analysed as factors or measured variables; just as the technique evaluates whether the model provides a reasonable fit to the data and the contribution of each of the independent variables and dependent variables. SEM examines the structure of interrelationships expressed in a series of equations similar to those of multiple regressions. Put differently, it provides estimates for a series of separate but interdependent, multiple regression equations simultaneously by specifying the structural model (Hair, Bush, & Ortinau, 2006).

3.10 Data Analysis Technique

The present research has employed the Partial Least Squares Structural Equation Modling (PLS-SEM) that is PLS path modeling (World 1974, 1985) using smart PLS 2.0M3 software (Ringle et al., 2005) on testing the model through the required multiple steps which involve the specification of the inner and the outer models. The model specification is a stage that deals with the set-up of the inner and outer models that display the relationship between the study variables. The outer model is known as the measurement models and it is used to evaluate the relationship between the indicator variables and the corresponding variables.

Once the inner and the outer models have been specified, the next step is running the PLS algorithm. Then the results were used to evaluate the reliability and validity of the variables as well as the determination of the value of the individual item reliability, internal consistency reliability, content validity, discriminant validity and convergent validity. Therefore, the current research has applied a two-step process in regard of the evaluation and reporting of PLS-SEM path findings. This is in line with

the studies of: Henseler, Ringle and Sinkovics (2009), Hair et al., (2012), Hair, Ringle and Sarsted (2013) and Hair et al., (2014) that, the two-step process includes:

(1)   Assessment of Measurement Model

(2)   Examining the individual item reliability

3.10.1 Reasons for Using PLS-SEM

PLS path modeling was considered as the most suiTable technique in this study for several reasons: First of all, even though PLS path modeling is similar to the conventional regression technique, it has the advantage of estimating the relationship between the variables (structural model) and relationship between indicators and their corresponding latent variables (measurement model) simultaneously (Chin, Marcolin & Newsted, 2003). Secondly, as at the outset of the research, a lot of researches have been conducted regarding the independent and dependent variables of this research. Also, the available literature indicated that the moderating effect of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output has not been exploded. Furthermore, the goal of this research is to predict the effect of farm credit, farmland, farm infrastructure and *Murabahah* finance in boosting the agricultural output of Kano State, Nigeria. This research requires a path modeling approach because it has been suggested that if a research is predicting or is an extension of any existing research, the PLS path modeling should be employed (Hullands, 1999; Hair et al, 2011).

Thirdly, the smart PLS 2.0 M3 software was selected as the tool of analysis for this research, because of its friendly graphical user interface, which helps user to create a moderating effect for path models with interaction effects that resulted in more

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advantageous path modeling software, e.g. Analysis Of Moment Structure (AMOS) and SPSS among others (Temme, Kreis & Hildebrand, 2006; 2010). Fourth, the PLS path modeling is described as the most superior equation model that estimates and calculates better and are accurate compared to the regression for application testing and assessment. Similarly, Lacobuch, Salelanha and Deng (2007), Preacher and Hayes (2004), have stated that PLS-SEM is the solution to address the error in measurement and provide exact and accurate estimation effects of the application modeling (Chin, 1999 a). Fifth, the PLS path modeling was also considered suitable in the present study because it has been used in many previous studies in the field of Islamic economics, Accounting, Marketing, Human resource management, and other management related disciplines (Gorondutse & Hilman, 2014; Kura, 2016; Kura, Shamsudin, & Chauhan, 2015; Shehu & Mahmood, 2014).

Meanwhile, several steps were considered during the data analysis. Firstly, the collected data were screened through SPSS to ensure that it is suitable for the PLS analysis. Secondly, to ascertain the measurement model of the Individual item's reliability, internal consistency reliabilities, convergent validity and discriminate validity will also be calculated through smart PLS 2.0 M3, software (Hair et al., 2011). Thirdly, after the analyses the main PLS-SEM path was run, a supplementary PLS-SEM analysis (i.e. Moderator analysis) was commenced. Hence, by following Henseler and Chin (2010b) and Henseler and Fassoh's (2010a) approaches to adopted analysis of the moderating effect of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output. Finally, this step ascertains the strength of the moderating effects (Cohen, 1988).

3.10.2 How to Use PLS-SEM

When set to use PLS-SEM a researchers need to follow a process of multi-stage which includes: models specification of inner and outer, data collection, data examination, actual estimation of the model and results evaluation. According to Hair et al. (2014) the following is the in-depth introduction of stages of the use of PLS-SEM which includes:

Model specification: This stage serves as a stage of specifying the inner and outer set-up of the model. Specifically, the structural model or inner model reveals the relationship between independent and dependent variables. However, the outer models or popularly known as measurement models are used for the evaluation of the relationships between the variables and their corresponding indicators (Hair et al., 2014).

Outer model evaluation: The evaluation of the outer model is the stage of running the PLS-SEM algorithm. Also, after the specification of the inner and outer models, the next stage is to run PLS-SEM algorithm where it will evaluate the study constructs reliability and validity as a means of outer models measures of the study constructs. Even more so, the outer models assessment inculcate confidence to the researcher over the study with constructs by testifying the accuracy and measurement representation for assessment of the inner model relationships as the basic step (Hair et al., 2014).

Additionally, at a step of evaluating outer models, the investigator must make difference among the two measures of the constructs as they are reflective and

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formative. Cronbach and Meehl (1955), Ringle et al. (2011) and Hair et al. (2014) classified constructs measurement into two different approaches as:

Reflective indicators: This comprised of representation of a set of all possible items covered by the conceptual constructs of the study domain. The findings of the study make reflective of the items which are changeable or flexible and highly correlated whereas, the omitted values would not change the originality or construct meaning in relation to the study domain. Meanwhile, the reflective indicators are linked with the study constructs through the item loadings that stand as bivariate correlations reported between the study constructs and the indicator. Next, the reflective outer model assessment, then the investigator should quantify the measurement reliability and validity by means of following the steps as the first step is to consider the composite reliability towards the evaluation of the measurement of the study constructs in relations to the reliability of the internal consistency as the Cronbach's alpha on the assessment is traditionally used (Henseler et al., 2012; Hair et al., 2014).

Also, composite reliability is highly appropriate in measuring the reliability of the internal consistency based on the following reasons as: The first reason is that, the composite reliability is more advantageous over Cronbach's alpha because it does not assume the equality of all indicator loadings in the population as it is among the PLS-SEM algorithm working principle. This indicated that composite reliability is based on indicators in their respective individual reliabilities on the process of model estimation. The second reason is that, the composite reliability can accommodate so many indicator loadings without underestimation. This means that the reliabilities of

different indicators can be accommodated by the composite reliability of PLS-SEM (Henseler et al., 2012).

While, underestimation of reliability of the internal consistency occurs in Cronbach's alpha due to its type of sensitivity towards the number of items appeared in the scale. As such, the underestimation of the internal consistency reliability used to occur during the measurement. The second step is to make the validity assessment another channel of evaluating the reflective indicators. As the name implies validity is an examination through noticing a construct's convergent validity as well as discriminant validity. The convergent validity is supported when each and every study item has 0.70 and above outer loadings as well as when each and every construct's average variance extracted (AVE) reaches 0.50 and above. Moreover, AVE serves as a grand mean value in relation to the squared loadings of the indicators set as well as it is equivalent to the construct communality. Also, 0.50 of AVE indicated that the construct explains is greater than half of its indicator variance. Additionally, Discriminant validity appears to represents the extent to which the construct is distinct from other constructs or the construct empirically measures its main target (Hair et al., 2014).

Fornell and Larcker's (1981) criterion is one of the methods used for assessing the appearance of discriminant validity as this method indicated that the construct shares are more variance with its indicators than with other constructs. Thus, to test this approach, the AVE of every construct has to be greater than the greatest squared correlation with any other constructs. Henseler et al. (2009) option is the second option for assessing the existence of discriminant validity which is verifying the

indicators' cross loadings as this method is considered as more liberal. The method indicated that the loadings of every indicator within the constructs are greater than the cross loadings values on other constructs.

Formative indicators: The principles underlying the formative measurement are basically different as earlier indicated from the reflective approach. Although, PLS-SEM has the opportunities to test models through the use of formative indicators, but it must be connected with considerable attention given to the disciplines. As the study of Hair et al. (2012a & 2012b) indicated that a lot of researchers are utilizing the method without considering the specific steps that are necessary to considered when assessing the formative outer models. In the first step and foremost, an investigator needs to evaluate the content validity of the study construct measures through the use of expert assessment. Also, the evaluation of the content validity indicators evaluates the extent of capturing the main facets of the study construct as if a significant item is omitted may resulted to the alteration in the context of the construct items. Equally, the empirical assessment of formative outer models needs to evaluate convergent validity as well as the fact that the measurement associated with other measures has to serve the same issues (Hair et al., 2014).

Also, this evaluation is done through the means of analysis of the redundancy analysis of each formatively measured of the construct as it is correlated with a single-item measurement or alternative reflective with the same construct. More so, it is important to be aware that the analysis of the redundancy needs to gather data from the original measures of the constructs and the alternative measures. Also, the outer model indicators in relation to each construct have to be tested in regards to the issue

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of collinearity. In the line with the multiple regressions, a higher value of collinearity among two and above formative indicators leads to seriously bias in the results. Specifically, from the weights attached to the formative indicators of the construct. This indicated that each indicator has contributed to the construct, and influence other indicators of the same construct which could be reversed as well as their significance would be underestimated due to the increased standard errors (Hair et al., 2012a & 2012b).

Finally, an investigator has to assess the significance as well as the indicator of relevance of each and every formative indicator. Thus, normal distribution does not assume that it is a problem in PLS-SEM. Similarly, the investigator has to use the bootstrapping routine in order to determine the significant weight level of each indicator. Additionally, Bootstrapping serves as a resampling method that covers a huge number of subsamples from the main data which serve as a replacement to each subsample in relation to the estimate models. As this way an investigator must obtain a larger number typically 5,000 and above as per model estimates and this can be considered to compute a standard error of each and every model parameter. Likewise, the drawing on the standard error and the significance of each and every parameter can also be determined the estimate of the t-values (Hair et al., 2014).

Furthermore, the evaluation of the indicators relevance is involves the comparing of the indicators weights to determine the relative contribution towards forming the construct (Hair et al., 2014). On the other, if the weight of the indicator is not significant, the investigator can also assess the loading (bivariate correlation) between the insignificant construct and indicator in order to quantify whether to

reject the indicator from the outer model of the study. However, the elimination of the formative indicators from the study model is generally exceptional, as the theory of formative measurement requires that the research measures fully covers the entire domain of the study construct. This simply indicated that omitting a measuring indicator is similar to omitting a segment of a construct (Hair et al., 2014).

Inner model evaluation: This stage indicated that once outer model has eestablished the reliability and validity, several steps should be taken to assess the hypothesized relationships within the inner model of the study. Consequently, this approach of PLS-SEM is not the same with CB-SEM because the model is utilizes the sample data to gather proper parameters to predict the study endogenous constructs. As, opposed the measures estimate which simplify the difference among the covariance matrix and observed sample covariance matrix being estimated by the study model. Due to this, PLS-SEM did not accommodate a statistic of standard goodness-of-fit as well as the prior approach towards establishing a corresponding statistics which has proven to be a great problem.

Instead, the evaluation of the model's standard is based on its possibility to predict the study endogenous constructs (Hair et al., 2014). Furthermore, the following conditions facilitate the evaluation: The coefficient of determination (R^2) and cross-validated redundancy (Q^2), also the path coefficients as well the effect size (f^2). Likewise, prior to this evaluation, the investigator should test the inner model in order to find the issues of potential collinearity. This is because the inner model estimates research results from the sets or groups of regression analyses as well as

their values. Furthermore, the significance of the findings can be subject to the appearance of biases as if study constructs are more correlated (Hair et al., 2014).

On the other hand, Fornell-Larcker conditions disclose the problems of collinearity in the inner model at the beginning of the model assessment process. However, this is not an issue if, formatively measured constructs are applied. Since, AVE that made the foundation of the Fornell-Larcker evaluation cannot serve as a reasonable measure for formative indicators. The collinearity evaluation in the inner model is necessary when the study model covers formatively measured constructs (Hair et al., 2014). Therefore, the following are the evaluation conditions:

Coefficient of determination (R^2): As this R^2 serves as a measure of predictive the accuracy of the model. Likewise, another view in relation to R^2 is the representation of the combined effect of the exogenous variable (s) on the endogenous variable (s). Consequently, this effect ranges from 0 to 1 in which 1 represents the accuracy of the complete prediction as a result of R^2 is covered by different disciplines. As such scholars have to depend on a "rough" rule of thumb in relation to the acceptable R^2 at which 0.75 as substantial and 0.50 as moderate as well as 0.25 as weak levels for predictive accuracy. Even though, R^2 remain a reasonable tool towards assessing the value of a PLS model as well problem can occur on too much reliance on R^2. The current approach use to indicate the problem of investigator towards comparing other study models with the similar endogenous constructs. Also, reliance on R^2 may lead an investigator to make a selection of the less efficient study model (Henseler et al., 2009; Hair et al., 2011).

Cross-validated redundancy (Q^2) refers to the means for evaluating the predictive relevance of the inner model as the measure was originated from sample re-use method which omits a segment of the data matrix. Also, estimates the model measures as well as predicts the omitted segments by using the estimates. Likewise, the lesser the difference appears between predicted and the original qualities the higher the Q^2 and the accuracy of the model prediction. Specifically, if the value of Q^2 is greater than zero in relation to a given endogenous construct this will indicate the predictive relevance of the path model of such construct (Henseler et al., 2009).

Based on this, it is necessary to compare Q^2 value to zero in order to quantify either whether we can predict the endogenous construct (Hair et al., 2014). Furthermore, after running a PLS model, the estimation of the path coefficients is provided to stand for the hypothesized relationships linking the constructs. Also, path coefficient values are harmonized on a series from +1 to -1, as such if the coefficients are near to +1 it indicates that the relationships is strong positive as well as if the coefficients near to -1 it means that the relationships is strong and negative. Although values nearly to -1 or R^2 1 are usually significant in statistic and the standard error need to be gathered by   utilizing the bootstrapping towards testing for the significance (Hair et al., 2014). Additionally, after the verification on whether there are significant relationships within the study variables, the investigator should consider the relevance of significant relationships.

Effect size (f^2): The effect size is determined through Cohen's f^2 calculation, whereas, f^2 is computed by identifying changes in R^2 as when a given construct is delete from the model of study. Also, to calculate the f^2, the investigator has to estimate the two

PLS path models. Specifically, the first path model has to be a full model as precise as the study hypotheses as well as the elasticity of the R^2 of the full study model or R^2 included. The second model most identical with the exception of the classified exogenous construct is deleted from the study model as well as yielding of the R^2 which is R^2 excluded or reduced model (Cohen, 1988).

Based on the value of f^2, the effect size of the lost construct for a given endogenous construct would be determined as the following representation including; 0.02 as small and 0.15 is medium as well as 0.35 being large effects (Cohen, 1988). This indicated that, if an exogenous construct strongly contributes towards explaining the endogenous construct, and the change between R^2 included and R^2 excluded will be greater as well as resulting in a greater f^2 value. Hence, following formula is used towards the calculations of the effect size as:

$$\text{Effect size}: f^2 = \frac{R^2_{\text{Included}} - R^2_{\text{Excluded}}}{1 - R^2_{\text{Included}}} \qquad (3.1)$$

Consequently, the increase in the use of the PLS-SEM is due to the existence of a various ranges of research methodology which increases the technique's toolbox. The existence of such extensions and the approaches lead an investigator to indicate a compound model. More so, the PLS path model recognises a direct relationship between different sets of constructs. Furthermore, more complex models can simply be conceivable which include; the estimation of the study's moderating effects and mediating effects as well as models with a hierarchical component (Cohen, 1988). Additionally, methodological advances consider the issue of the structures of the heterogeneous data that threaten the results' validity. More so, one stream of

investigation in this approach deals with multi-group analysis methods to evaluate whether the measurement (path coefficients) varies significantly within two and above groups of data. Equally, the second stream covers the treatment of the study's unobserved heterogeneity, which means heterogeneity that are not qualified to a single observable study's variables which include demographic variables through the means of latent set method (Hair et al., 2014).

Moderation can be seen as an occurrence of a given effect or influence of an exogenous study construct over endogenous construct, which relies on the value of another study variable to moderate or influence the relationship. For instance, in the analysis of the relationship between financial capabilities and firm performance, the study of Wilden et al. (2013) reported that the effect of the performance is contingent over the intensity that the competitive firms have been facing. Likewise, it affects the organizational structure of the competitive firm. Meanwhile, research has indicated several methods for estimating moderating effects through PLS-SEM, whereas, the study of Rigdon et al. (2010) added more value to this approach. Additionally, the argument of Henseler and Chin (2010) assessed the approaches in respect of the moderation through PLS-SEM on the utilization of the reflective and formative measures as well as the predictive power or statistical power.

3.11 Chapter Summary

This chapter revealed the relationship between the study variables as indicated in the theoretical framework and hypotheses development as well as the operationalization of the research variables. This chapter discussed the variables and the adoption of a cross-sectional study design and the population of registered subsistence farmers in

Kano of Nigeria. The chapter also explains the approach of the sampling technique used in selecting the population sample of this research. Also, explanations of the measuring instrument and the approach of the data collection were all presented. The report and result of the pilot study. Also, measurement model of the study (reliability and validity tests) with the evaluation of the structural model and reason for using PLS, were explained. More so, PLS-SEM was discussed as a method of data analysis through SPSS v20 as well as Smart PLS in relation to preliminary data analysis and descriptive statistics. Finally, this chapter revealed how to use PLS and the meaning of moderation.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the results of the data analysed using the PLS path modelling. The initial data screening and preliminary analysis are then discussed. The results of the descriptive statistics for all the latent variables are reported. Next, the main results of the present study are presented in two main sections. In section one; the measurement model was assessed to determine the individual item's reliability, internal consistency reliability, convergent validity and discriminant validity. Results of structural model are reported in section two (significance of the path coefficients, level of the R-squared values, effect size, and predictive relevance of the model).

4.2 Data Analysis

The present study employed the PLS path modelling (Wold, 1974, 1985) using Smart PLS 2.0 M3 software (Ringle et al., 2005) to test the theoretical model. The PLS path modelling is considered as the most suiTable technique in this study for several reasons: First of all, even though the PLS path modelling is similar to the conventional regression technique as well as it has the advantage of estimating the relationships between constructs (structural model) and relationships between indicators and their corresponding studdy latent constructs (measurement model) simultaneously (Chin, Marcolin, & Newsted, 2003; Duarte & Raposo, 2010; Gerlach, Kowalski & Wold, 1979; Lohmöller, 1989).

The Structural Equation Modeling (SEM) is regarded as a Multivariate analysis which involves the application of statistical methods that simultaneously analyze

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multiple variables. The variables typically represent measurements associated with individuals and organizations. The measurements are often obtained from surveys or observations that are used to collect primary data, but they may also be obtained from databases consisting of secondary data (Rigdon, 1998; Babin et al., 2008). Hair (2014) classified SEM into two types that include: SEM. Covariance-based SEM (CB-SEM) is primarily used to confirm (or reject) theories (i.e., a set of systematic relationships between multiple variables that can be tested empirically). Next, the PLS-SEM (also called PLS path modeling) is primarily used to develop theories in exploratory research. It does this by focusing on explaining the variance in the dependent variables when examining the model.

More so, PLS-SEM is the second-generation technique of SEM which is evolving as a statistical modeling technique which is used in a valuable data analysis for exploratory research purposes. This is most especially in research contexts that are simultaneously data-rich and theory skeletal. Likewise, PLS-SEM is regarded as an interactive approach that maximizes the explained variance of endogenous constructs (Henseler, Ringle & Sinkovics, 2009; Ringle, Gatz, Wetzels & Wilson, 2009; Hair, Ringle & Sarstedt, 2011; Hair et al., 2012a; Henseler, Ringle, & Sarstedt, 2012).

4.2.1 Justification for Using Partial Least Squares (PLS) Technique

The technique of the PLS-SEM is also regarded as a second generation structural equation modeling which is in line with the study of Wold (1982). This is a relatively new method which is working well with the structural equation models that contain latent variables as well as cause-and-effect relationships series (Gustafsson & Johnson, 2004). Secondly, the PLS-SEM method is flexible and a good tool for

building a statistical model and for predicting (Ringle, Wende, & Will, 2012). Similarly, PLS-SE has been described as a superior model which performs better estimations compared to regressions when it comes to assessing moderation (Brown, 1997; Preacher & Hayes, 2004; Mattanah, Hancock, & Brand 2004). Equally, it has been revealed that PLS-SEM can report the measurement error and estimate the moderation effect accurately (Chin, 1998a).

Therefore, this research examined the moderating effect of *Murabahah* finance on the relationships between farm credit, farmland, farm infrastructure and agricultural output by using the structural model through the use of the PLS-SEM method as the most appropriate technique of prediction. The aspect indicated that, most social science research tends to face the problem of data normality (Osborne, 2010) as well as the fact that the PLS path modeling is less concerned about the normality of the data, since, PLS relatively treats non-normal data well (Chin, 1998a). Also, PLS-SEM offers a more valid results compared to other techniques such as; SPSS, AMOS and others where the results reported less clear conclusions with several analyses separately (Bollen, 1989). More so, Tabachnick and Fidel (2007) reported that PLS-SEM is among the acceptable statistical tools considered in the social as well as behavioural sciences due to its ability to examine a lot of relationships at once. Additionally, Smart PLS path modeling was considered to establish the validity of the measurement as well as the structural models.

4.3 Response Rate

An aggregate number of 764 questionnaires were distributed to the Kano State farmers located in Northwestern, Nigeria. Similarly, several telephone calls and SMS were sent to remind the participants who were unable to answer their questionnaires within the period of four weeks. These were commenced in order to retrieve a higher number of distributed questionnaires from the respondents. Meanwhile, a total number of 496 questionnaires were retrieved from 764 initially distributed to the participant's farmers. While, 49 were rejected from the 496 returned questionnaires, due to the insufficient answers in the completed questionnaires.

Notwithstanding, 447 questionnaires remained valid for the current research analysis and it covers a total of 59% participation of the targeted farmers. This indicated that 59% participation was regarded as sufficient for the analysis of this research and this range between 5 and 10 times of the sample size of the aggregate number of the targeted research variables (Bartlett, Kotrlik & Higgins, 2001; Hair et al., 2010a). Therefore, 59% response rate is valid and adequate for the data analysis in relation to this research as an aggregate number of 447 (59%) farmers who participated. Similarly, this is relevant to the arguments of Chin (1998b), Hair et al. (2010) and Wong (2013) that, PLS accepted a minimum sample number of the responses and as a result of this, the participation of the farmers remained valid and adequate for this research. Table 4.1 below will show the summary of the response rate of the distributed questionnaires.

Table 4.1
Responses and Overall Response Rate

Details	Responses/Rate
Number of distributed questionnaires	764
Number of questionnaires returned	496
Number of returned and usable questionnaires.	447
Number of returned and excluded questionnaires.	49
Number of questionnaires not returned	268
Response rate	65%
Adjusted response rate	59%

4.4 Data Screening and Preliminary Analysis

The issues of data cleaning and screening with regard to the multivariate analysis are very essential, because they assist researchers to recognize any violations in the multivariate data analysis (Hair et al., 2007). Similarly, data screening allows researchers to understand the nature of the available data for research analysis. Furthermore, 496 questionnaires were retrieved and computed in SPSS software for cleaning and assessment. The meaningful findings started from the screening and cleaning of the available research data that go into the research analysis. The reason of the data screening is to assess the following: the finding of the missing value, the examination of the outliers and examination of the normality test and the assessment of the multicollinearity (Hair et al., 2010b; Tabachnick & Fidell, 2007).

4.5 Missing Value Analysis

This is the second step in the process of data screening which is to identify the missing values (Hair et. al., 2006). As initially mentioned, 496 questionnaires were

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retrieved from the farmers. Another 71 were randomly missed, which accounted for 0.35 % due to the inability of the correspondents to complete the questionnaires correctly. Although there is no universal percentage of missing values in a data set for making a valid statistical inference, scholars have agreed with the 5% missing rate or less as non-significant as indicated in the studies of Schafer (1999). Thus, researchers considered the mean substitution as the easiest approach of the missing values replacement, if the percentage of missing data is up to 5% or less (Raymond, 1986; Tabachnick & Fidell, 2007). Based on this, the current study randomly replaced 71 missing values by mean substitution as Table 4.2 show.

Table 4.2
Number of Detected and Replaced Missing Values

Result Variable	Number of Replaced Missing Values
AOP	17
FC	16
FL1	6
INF	16
MF	5
Gender	1
Age	3
Education	3
Farm Type	1
Employees	2
Grand total	71 out of 20,115 data points
Percentage of missing values	0.35%

Note: Percentage of missing values are obtained by dividing the total number of randomly missing values for the entire data set by total number of data points multiplied by 100.

4.6 Assessment of Outliers

Barnett and Lewis (1994) defined Outliers "as observations or subsets of observations which appear to be inconsistent with the other set of the data" (p. 7). Based on the regression- analysis, the appearance of the outliers can seriously distort the estimates of regression coefficients in the data set as well as leading to unreliable results (Verardi & Croux, 2008). As a result of this, the analysis of frequency statistics was commenced, and no any value was found to remain outside the expected range. Furthermore, standardized values were also used to examine the univariate outliers by using the cut-off of ±3.29 ($p < 0.001$) and this is in line with the recommendation of Tabachnick and Fidell (2007).

Based on the current criterion of detecting outliers, there was no case found using standardized values in relation to the univariate outliers in this research. After that, multivariate outliers were checked through Mahalanobis distance (D2). Mahalanobis distance (D2) can be defined as a distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables (Tabachnick & Fidell, 2007).

Meanwhile, in relations to the current research, there is the existence of 39 observed constructs with the threshold of chi-square of 70.71 ($p = 0.001$) Mahalanobis values that appeared more than the threshold were identified and deleted. Following this criterion, 17 multivariate outliers were detected and subsequently deleted from the dataset because they could affect the accuracy of the data analysis technique. Thus, after removing 17 multivariate outliers, the final dataset in this study was 430 as can be seen in Table 4.3 below.

Table 4.3
Multivariate Outliers Detected and Deleted

Respondents Number	Mahalanobis distance (D2)
13	86.51078
87	70.94145
109	108.37683
148	77.03599
163	76.8094
164	122.20468
174	73.07535
182	73.16584
183	78.68634
201	75.32147
222	72.53553
261	77.45071
290	80.00826
293	90.02467
315	70.94145
337	108.37683
374	84.25183

Note. N = 39; df = 38; X2 = 70.71; p = .001; D2 = $\geq$ X2

4.7 Normality Test

Previous studies, such as: Cassel, Hackl and Westlund (1999) and Reinartz, Haenlein and Henseler (2009) assumed that PLS-SEM established accurate model estimations in a non-normal position. On the other hand, Hair et al. (2012) argued that researchers should perform a normality test on the research data. The highly skewed or kurtosis data can easily inflate the bootstrapped standard error in the study (Chernick, 2008). This will lead to underestimate the significance of the path coefficients (Dijkstra, 1983; Ringle, Sarstedt, & Straub, 2012a).

Furthermore, this study employed a graphical method in order to check for the normality of the collected data. In addition, a sample of 200 and above is advised to use graph rather than to only study the statistical value associated with the skewness and kurtosis. Also, large sample of data decreases the appearance of standard errors that resulted in the increase in the value and structure of the skewness and kurtosis (Tabachnick & Fidell, 2007). This justified the appearance of graphical method of testing normality not relying on the statistical methods alone. Therefore, the current research employed histogram and normal probability graphs towards maintaining the assumptions (Field, 2009). The following graph in figure 4.1a and b will indicate that the data collected for this research follows the normal direction. Since, the entire histogram bars were closed to a curve of normality. In addition, Figure 4.1a and Figure 4.1b show that the current research has achieved the assumption of data normality.
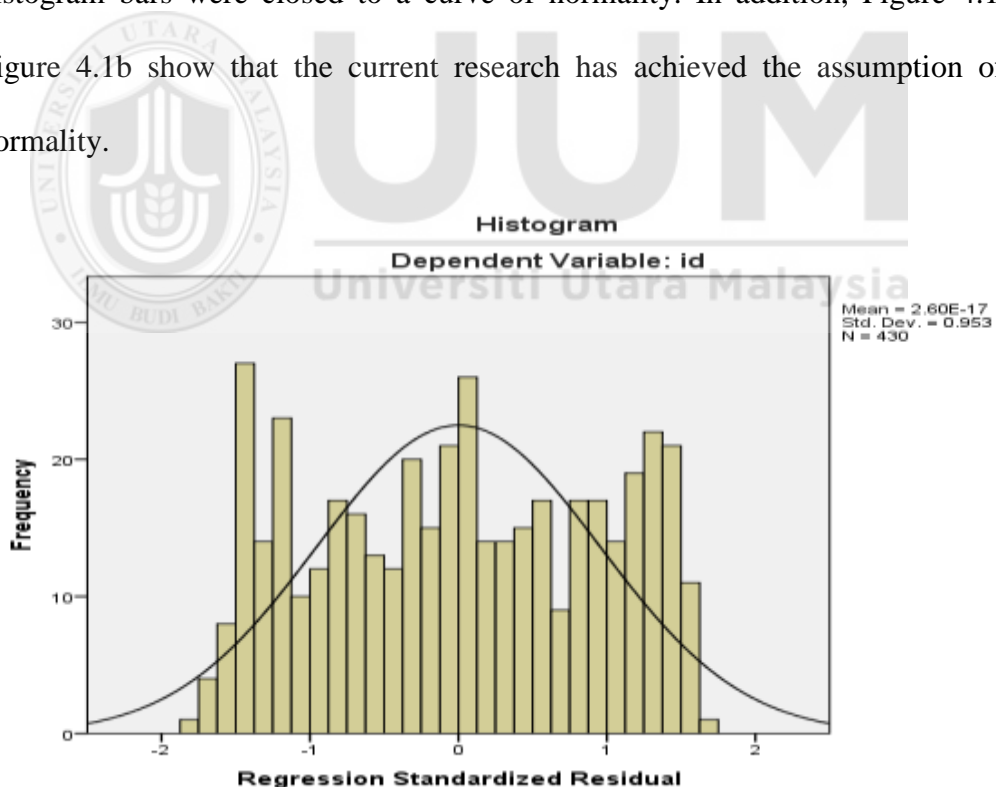
Figure 4.1a
Histogram and Normal Probability Plots

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: id
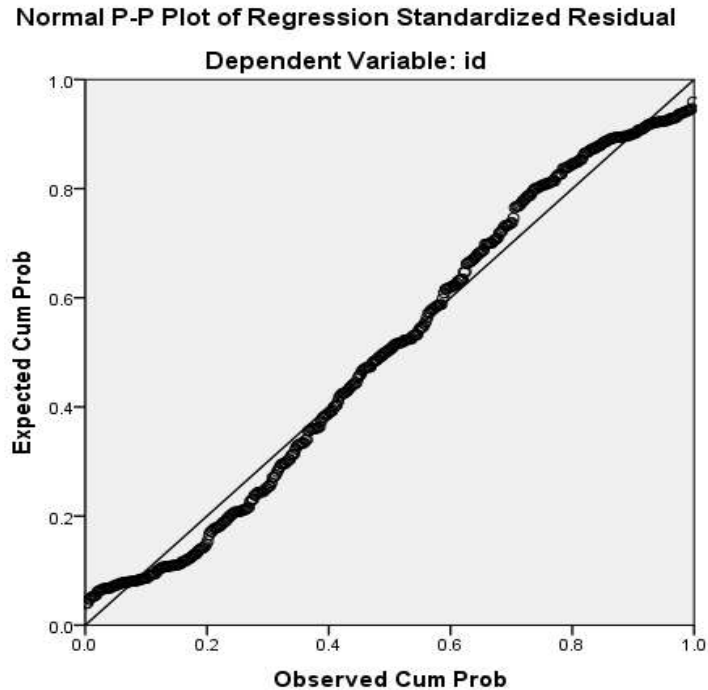
Figure 4.1b
Histogram and Normal Probability Plots

4.8 Multicollinearity Test

Multicollinearity can be seen as a way and manner in which exogenous latent constructs are highly correlated. Thus, the presence of multicollinearity in the exogenous latent constructs can distort the estimation of the regression coefficients as well as the test of significance (Hair, et al., 2006). Also, multicollinearity accelerates the standard errors in relation to the coefficients as well as the fact that it can render the non significant coefficients statistic (Tabachnick & Fidell, 2007). Furthermore, this study used two ways to detect multicollinearity which is in line with the studies of Peng and Lai (2012). The first way is the examination of the correlation matrix with regard to the exogenous latent constructs. This is in line with the study of Hair, Black, Babin and Anderson (2010) that, 0.90 and above correlation coefficient indicated the existence of the multicollinearity among the exogenous latent constructs as can be seen in Table 4.4 below.

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Table 4.4
Correlations Matrix

	AOP	FL	INF	MF	FC
AOP	1				
FL	.520**	1			
INF	.287**	.196**	1		
MF	.253**	.180**	.245**	1	
FC	.072	.064	-.546**	.089	1

**. Correlation is significant at the 0.01 level (2-tailed).

The above Table (4.4) indicates that, the correlations of the exogenous latent variables were entirely sufficient because they are less than the suggested 0.90 and above. Thus, the values of threshold indicate that the exogenous latent constructs of this research were not correlated and happened to be independent. Also, after the examination of the matrix correlation of the exogenous latent variables, the variance inflated factor (VIF) and tolerance value were applied in order to find the Multicollinearity in this research. This is in line with the suggestion of Hair, Ringle and Sarstedt (2011) that Multicollinearity has become an issue if the VIF value is above 5 and tolerance value is below 0.20. From Table 4.5, The VIF values and tolerance values as well as condition indices are regarded in the exogenous latent variables of this research.

Table 4.5
Results of Multicolinearity Test

	Collinearity Statistics		
	Tolerance	VIF	Condition Index
FL	0.91	1.10	7.52
INF	0.58	1.72	11.59
MF	0.86	1.16	13.83
FC	0.63	1.59	23.83

More so, the Table 4.5 above revealed that there is no existence of multicollinearity between the study's available exogenous latent variables, since; the entire VIF values were lower than 5, while tolerance values were above 0.20, as argued by Hair *et al.* (2011). Thus, the issue of multicollinearity does not exist in the ongoing research.

4.9 Non-Response Bias

Lambert and Harrington (1990) defined non-response bias as "the differences in the answers between non-respondents and respondents" (p. 5). In order to estimate the possibility of non- response bias, Armstrong and Overton (1977) suggested a time-trend extrapolation approach, which entails comparing the early and late respondents. They argued that late respondents share similar characteristics with non-respondents. To minimize the issue of non-response bias, Lindner and Wingenbach (2002) recommended that a minimum response rate of 50% should be achieved. Following Armstrong and Overton's (1977) approach, the present study divided the respondents into two main groups: those who responded within 30 days (i.e., early respondents) and those who responded after 30 days (i.e., late respondents) (c.f., Vink & Boomsma, 2008). Based on these, 159 responses were gathered within 30 days while

270 farmers were compiled after 30 days (4.6). In particular, an independent samples t-test was conducted to detect any possible non-response bias on the main study variables including agricultural output, farm credit, farmland, farm infrastructure and *Murabahah* finance as show in Table 4.6.

Table 4.6
Results of Independent-Samples T-test for non-response Bias

Variable	Grouping	N	Mean	Std. Deviation	Std. Error Mean	Levene's Test for Equality of Variances	
						F	Sig.
AOP	Early response	159	3.6661	.74756	.05929	2.908	.089
	Late response	270	3.6198	.80312	.04888		
FL	Early response	159	3.6614	.76763	.06088	.436	.510
	Late response	270	3.6167	.79812	.04857		
INF	Early response	159	2.4622	.65003	.05155	1.415	.235
	Late response	270	2.4431	.58838	.03581		
MF	Early response	159	2.6127	.55551	.04405	.017	.895
	Late response	270	2.5648	.54283	.03304		
FC	Early response	159	3.3843	.79278	.06287	.094	.759
	Late response	270	3.3441	.78912	.04802		

As indicated in Table 4.6, the findings of independent-samples t-test reported that the equal variance significance values for each of the five main research variables were all above 0.05 significance level of Levene's test in relation to the equality of the variances as Pallant (2010) and Field (2009) viewed. Hence, this argued that the assumption of equal variances among early as well as the late participants has not been discarded. Based on this it can be summarized that non-response bias was not a significant concern in the current study. In line with the recommendation of Lindner and Wingenbach's (2002) this study is free from the issue of non-response bias since it achieved 59% response rate.

4.10 Demographic Profile of the Respondents

This sub-head explained the demographic nature of the participating farmers. The demographic characteristics examined include: Gender; Age; Level of education; Farm business, Employee, and Farming type as can seen in Table 4.7 below.

Table 4.7
Demographic Analysis

	Frequency	Percentage
Gender		
Male	383	89.1
Female	47	10.9
Age		
18 -29 years	181	42.1
30- 39 years	175	40.7
40- 49 years	70	16.3
50 years and above	4	.9
Education		
Primary	71	16.5
SSCE	111	25.8
ND/NCE	169	39.3
Degree/HND	71	16.5
PGD/Masters	8	1.9
Farming Type		
Crop Farmer	33	7.7
Pastoral	188	43.7
Poultry	209	48.6
Number of Employees		
1-9 employees	295	68.6
10-49 employees	115	26.7
Farming Level		
Large scale farmer	11	2.6
Medium scale farmer	48	11.2
Small scale farmer	371	86.3

As explained by Table 4.7 above, 383 (89.1%) farmers in the sample were male, while the remaining 47, representing 10.9% were female. Also, 181 (42.1%) of the farmers were in the age group of 18-29 years which is represented by 1. This is

followed by those in the age group of 30-39 years with 175 (40.7%) represented by the age group of 40-49 years, there were 70 (16.3%) represented by 3. The group of 60 and above were accounted for 4 (0.9%) represented by 4. Additionally, in terms of Education, 71 (16.5%) were primary school leavers, followed by SSCE 111 (25.8%), ND/NCE 169 (39.3 %), HND/Degree 71 (16.5 %) and PG/Masters 8 (1.9 %). In terms of farming type, only 33 (7.7%) were crop farmers, 188 (43.7%) were pastoral and 209 (48.6 %) poultry. Equally, farming size reported 11 (2.6 %) for large scale farmers, 48 (11.2%) for medium farmers and 371 (86.3%) for small scale farmers. Meanwhile, 295 (68.6%) employed labour from 1-9, 115 (26.7%) employed labour from 10-49 and 4 (4.5%) employed labour from 50-249. Thus, missing data, and outliers were checked and treated accordingly.

4.11 Descriptive Analysis of the Latent Constructs

This section concentrated primarily on the descriptive statistics for the latent variables. Specifically, the study used Descriptive statistics on computing means and standard deviations in relation to the latent variables as indicated in Table 4.8 below.

Table 4.8
Descriptive Statistics

(N =430)	Mean	Std. Deviation
AOP	3.64	0.78
FL	3.63	0.79
INF	2.45	0.61
MF	2.58	0.55
FC	3.36	0.79

Meanwhile, the above Table explained the entire mean of the study latent variables which indicated that the mean ranged between 2.45 and 3.64. Furthermore, the mean and standard deviation for the farm credit are 3.36 and 0.79 respectively. Similarly, 3.63 and 0.79 represented the mean and standard deviation of the farmland respectively. Equally, 2.45 and 0.55 represented the mean and standard deviation of the farm infrastructure. On the other hand, the descriptive statistics scores of the *Murabahah* finance indicated that, 2.58 and 0.55 represented the Mean and standard deviation respectively. Likewise, the scores 3.64 and 0.78 respectively represented the mean and standard deviation of the agricultural output.

4.12 Assessment of PLS-SEM Path Model Results

The current research adopted the process of the two-step to evaluate as well as report the PLS-SEM path results, as viewed by Henseler, Ringle and Sinkovics (2009) as shown in Figure 4.2 below.
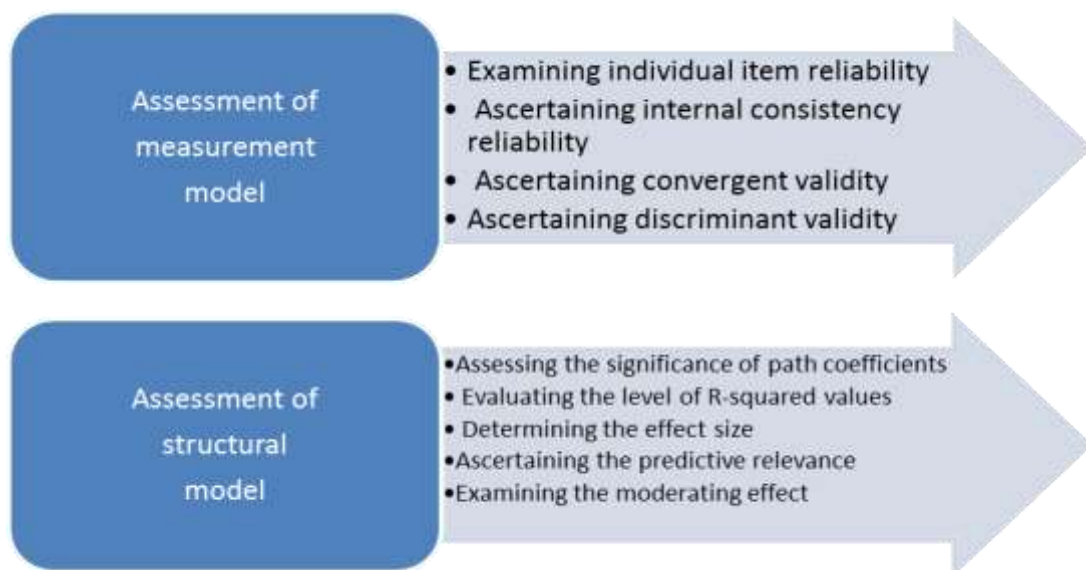
Figure 4.2
Two-Step Process of PLS Path Model Assessment
Source: (Henseler et al., 2009).

4.13 Assessment of Measurement Model

The issue of assessment of the research measurement model includes determining individual item reliability and internal consistency reliability also, content validity and convergent validity as well as discriminant validity (Hair et al., 2011; Hair et al., 2014).
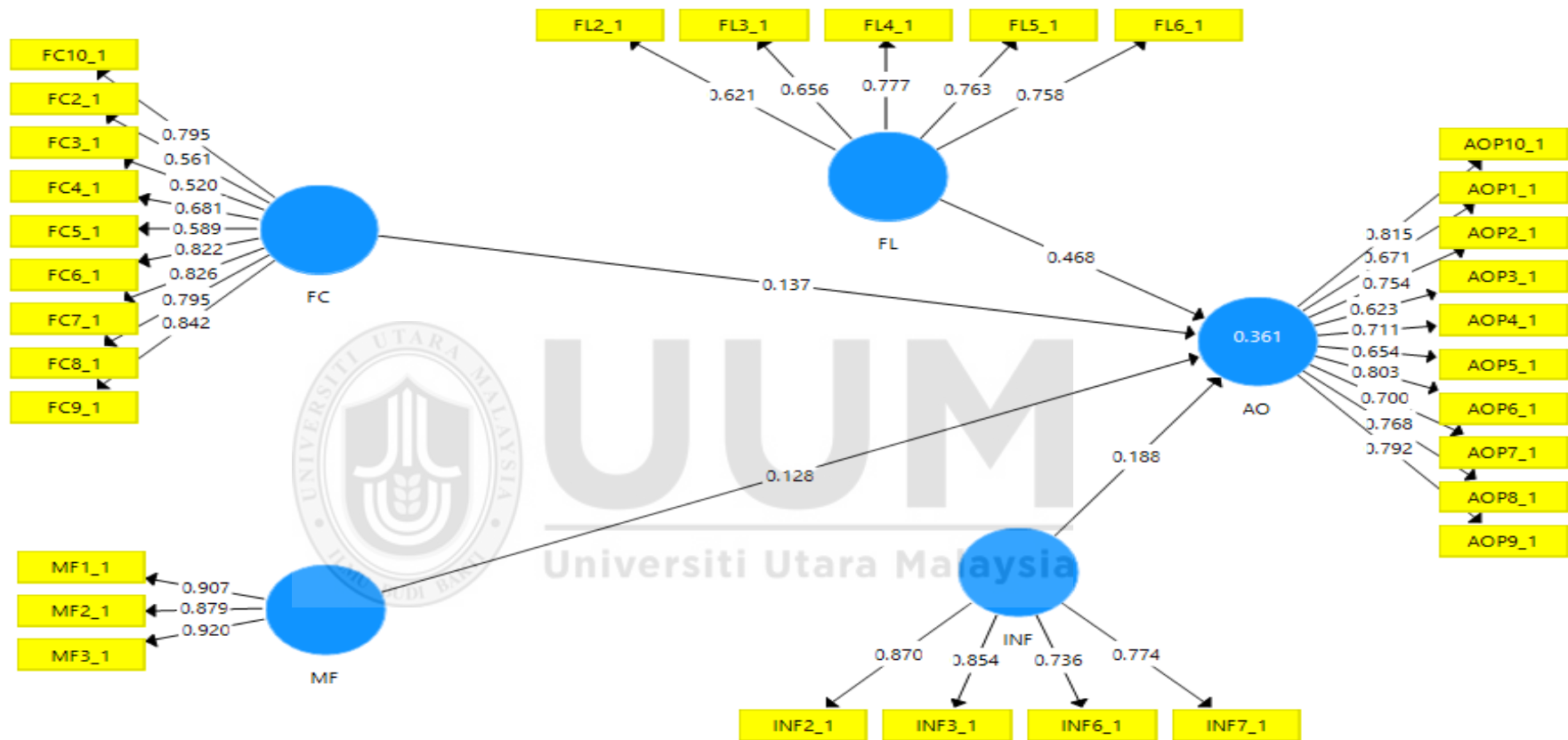
Figure 4.3a

Measurement Model

4.14 Individual Item Reliability

The assessment of the individual item reliability is described as an examination of outer loadings of each and every research construct. This is in line with the rule of thumb for the determination of items loading which is between 0.40 and 0.70 (Hulland, 1999; Hair et al., 2012; Hair et al., 2014). Meanwhile, 39 items were used in this research whereas 31 items reached the range of 0.501 to 0.951. Likewise, 8 were less than 0.40 and 0.70. However, the study of Bergkvist (2015) reported that, there is no difference between few items and multiple-items in predicting the validity of the measurement. This is supported by the argument of Leslie, Hayduk and Levente (2012) that the use of two or more items is sufficient to validate the measurement for a given study. Likewise, the study of Bergkvist and Rossiter, (2007) expatiated that there is no difference in assessing the validity of the measurement by small or large number of items. Based on these arguments the items of this study are sufficient to validate the measurement of the current research.

4.15 Internal Consistency Reliability

The Internal consistency reliability can be seen as a level to which all items on a given scale are in position for measuring the same study concept (Sun et al., 2007). Similarly, the Cronbach's alpha coefficient and composite reliability of coefficient are all considered as good estimators of the internal consistency reliability of a given research (McCrae, Kurtz, Yamagata, & Terracciano, 2011; Peterson & Kim, 2013). Based on this, the current research considered the Composite reliability coefficient to ascertain the internal consistency of the adapted measurement. This is in line with the studies of Barclay, Higgins and Thompson (1995) and Gotz, Liehr-Gobbers and Krafft (2010) that Composite reliability coefficient measure is less biased based on

the reliability compared to the Cronbach's alpha coefficient. This is because the Composite reliability coefficient assumes that, all the research items have equally contributed to the construct without specifying the level of individual participation to the loadings. Meanwhile, Cronbach's alpha can be under or over estimated on scale reliability. Table 4.9.will show the reliability of the Composite reliability coefficient.

Table 4.9
Reliability and AVE

Constructs and indicators	Loadings	Composite Reliability	Average Variance Extracted (AVE)
AO		0.92	0.54
AOP10_1	0.81		
AOP1_1	0.67		
AOP2_1	0.75		
AOP3_1	0.62		
AOP4_1	0.71		
AOP5_1	0.65		
AOP6_1	0.80		
AOP7_1	0.70		
AOP8_1	0.77		
AOP9_1	0.79		
FC		0.91	0.53
FC10_1	0.80		
FC2_1	0.56		
FC3_1	0.52		
FC4_1	0.68		
FC5_1	0.59		
FC6_1	0.82		
FC7_1	0.83		
FC8_1	0.80		
FC9_1	0.84		
FL		0.84	0.52
FL2_1	0.62		

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FL3_1	0.66		
FL4_1	0.78		
FL5_1	0.76		
FL6_1	0.76		
INF		0.88	0.66
INF2_1	0.87		
INF3_1	0.85		
INF6_1	0.74		
INF7_1	0.77		
MF		0.93	0.81
MF1_1	0.91		
MF2_1	0.88		
MF3_1	0.92		

Another reason indicated that composite reliability coefficient considered the different loadings as well as it interpreted in a form of Cronbach's alpha. However, the scale reliability may be over or underestimated by Cronbach's alpha. This means that any of the above is reliable if the internal consistency value is above 0.70. It is satisfactory for a given study model as well as the fact that 0.60 shows unsatisfactory reliability. Moreover, the measurement of internal consistency reliability through composite reliability coefficient was in line with the rule of thumb (Bagozzi and Yi, 1988). This is supported by Hair et al (2011), with the argument that 0.70 or more remain a satisfactory level of the composite reliability coefficient. As Table 4.9 indicated the composite reliability coefficient of the latent constructs one after the other ranged from 0.84 to 0.93, whereas all are above 0.70 as the minimum accepted standard. Based on this, the internal consistency reliability measures in this research are satisfactory as trecommended by Bagozzi and Yi (1988) and Hair et al. (2010).

4.16 Convergent Validity

Convergent validity can be regarded as the extent to which research items highly represent the targeted latent construct and really correlate with the next measures of the latent construct of the research (Hair et al., 2006). Similarly, Convergent validity was examined by assessing the Average Variance Extracted (AVE) of the latent construct at the individual level, as suggested by Fornell and Larcker (1981). More so, adequate convergent validity can be achieved by 0.50 at AVE values of each of the latent constructs as in line with Chin's (1998) recommendation. Table 4.9 shows an adequate convergent validity at high loadings (>.50) on their various constructs.

4.17 Discriminant Validity

Discriminant validity can be regarded as a situation that each and every latent construct is different from one and another within a given research (Duarte & Raposo, 2010). Also, Fornell and Larcker (1981) added that, discriminant validity used to be achieved through AVE. This achievement used to come across by means of comparing the statistical correlations of the latent constructs by considering the square roots of the average variance extracted. Equally, discriminant validity was determined through conditions of Chin's (1998) which is the criterion by comparing the indicator loadings with other reflective indicators in the cross loading Table.

Consequently, 0.50 and above are acceptable in respect of the rule of thumb in evaluating the statistical discriminant validity (Fornell & Larcker, 1981). More so, Table 4.9 above shows the average variances' extracted values which range from 0.52 and 0.81 which are acceptable values. Additionally, Table 4.10 indicates the correlations between latent constructs compared to the average variances extracted in

square root which are shaded in bold values. Table 4.10 equally indicates that the square root regarded to the average variances extracted all were above the correlations between the research latent constructs. This is in line with the suggestion of Fornell and Larcker (1981). Based on this the current research had sufficient discriminant validity.

Table 4.10
Results of Discriminant Validity Based on Fornell-Larcker Criterion

	AO	FC	FL	INF	MF
AO	**0.73**				
FC	0.11	**0.72**			
FL	0.54	0.06	**0.72**		
INF	0.33	-0.11	0.24	**0.81**	
MF	0.24	-0.29	0.16	0.40	**0.90**

Note: Entries shown in bold face represent the square root of the average variance extracted.
Source: The Researcher.

More so, as initially mentioned, discriminant validity can be obtained through the comparison of the cross-loadings and indicator loadings as appeared in the above Table. Similarly, to obtain sufficient discriminant validity, all the existing indicator loadings have to be above cross-loadings values. Meanwhile, Table 4.11 below will demonstrate cross examinations between reflective and loading indicators as in line with the study of Chin (1998). Therefore, this indicated that, there is sufficient discriminant validity for future statistical analysis because the entire values of loading indicator were above the values of cross loadings.

Table 4.11

Cross loadings

	AO	FC	FL	INF	MF
AOP10_1	**0.81**	0.01	0.41	0.32	0.25
AOP1_1	**0.67**	0.04	0.32	0.23	0.14
AOP2_1	**0.75**	0.17	0.48	0.20	0.09
AOP3_1	**0.62**	0.09	0.32	0.13	0.03
AOP4_1	**0.71**	0.11	0.40	0.21	0.17
AOP5_1	**0.65**	0.09	0.34	0.15	0.12
AOP6_1	**0.80**	0.14	0.47	0.30	0.22
AOP7_1	**0.70**	0.01	0.35	0.24	0.18
AOP8_1	**0.77**	0.04	0.40	0.30	0.25
AOP9_1	**0.79**	0.06	0.41	0.31	0.25
FC10_1	0.09	**0.80**	0.00	-0.09	-0.22
FC2_1	0.06	**0.56**	0.04	-0.10	-0.06
FC3_1	0.02	**0.52**	0.01	-0.08	-0.15
FC4_1	0.07	**0.68**	0.07	-0.14	-0.26
FC5_1	-0.01	**0.59**	0.01	-0.18	-0.22
FC6_1	0.06	**0.82**	0.05	-0.09	-0.29
FC7_1	0.11	**0.83**	0.12	-0.07	-0.27
FC8_1	0.10	**0.80**	0.00	-0.11	-0.17
FC9_1	0.06	**0.84**	0.05	-0.03	-0.26
FL2_1	0.31	0.05	**0.62**	0.12	0.10
FL3_1	0.41	-0.05	**0.66**	0.18	0.17
FL4_1	0.42	0.09	**0.78**	0.19	0.12
FL5_1	0.44	0.09	**0.76**	0.20	0.09
FL6_1	0.35	0.04	**0.76**	0.14	0.11
INF2_1	0.31	-0.05	0.16	**0.87**	0.31
INF3_1	0.32	0.02	0.21	**0.85**	0.29
INF6_1	0.20	-0.25	0.20	**0.74**	0.38
INF7_1	0.22	-0.19	0.20	**0.77**	0.36
MF1_1	0.23	-0.26	0.17	0.35	**0.91**
MF2_1	0.19	-0.29	0.13	0.35	**0.88**
MF3_1	0.23	-0.23	0.14	0.38	**0.92**

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4.18 Assessment of Significance of the Structural Model

Having satisfied with the measurement model, this research also assessed the structural model as the critical assessment condition. The current research used the standard bootstrapping criteria with a total number of 5000 bootstrap statistical samples and 430 cases in finding the significant level of the path coefficients (Hair et al., 2012; Hair et al., 2014). Therefore, figure 4.3 and Table 4.12 indicates the structural model with full estimates with the moderator variable (*Murabahah* finance).
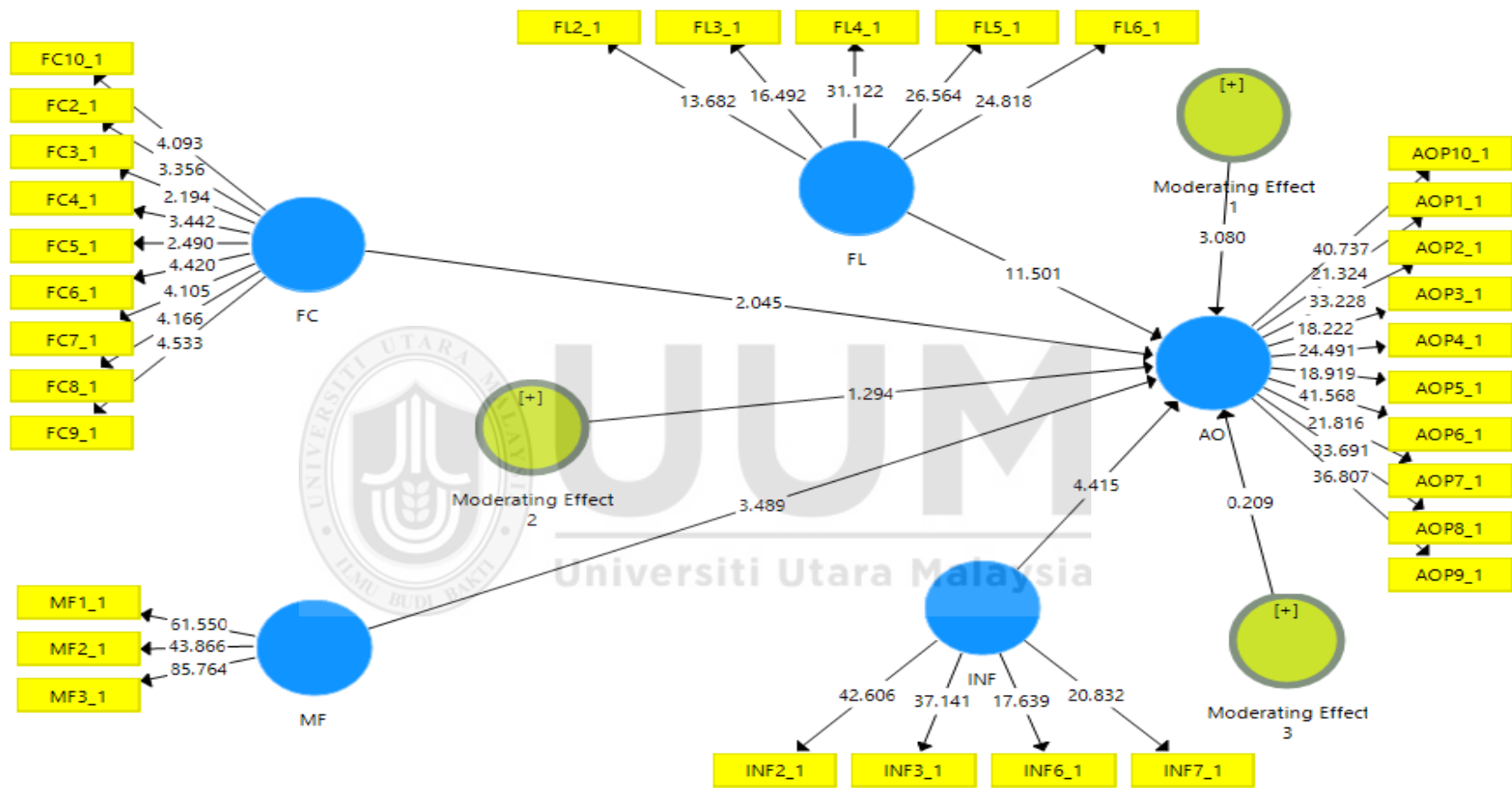
Figure 4.3b
Structural Model Assessments with Moderator (Full Model)

4.19 Hypothesis Prediction

After full model assessment, the results as reported in figure 4.3 and Table 12. Hypothesis 1 predicted a significant relationship between farm credit and agricultural output. The finding had supported the proposed Hypothesis 1 as path coefficient supported at ($\beta = 0.12$, t = 2.05, pv = 0.02, p < 0.05). Hypothesis 2 also predicted a significant relationship between farmland and agricultural output. The path coefficient supported at ($\beta = 0.44$, t = 11.50, pv = 0.00, p < 0.05). Also, Hypothesis 3 predicted a significant relationship between farm infrastructure and agricultural output. The path coefficient supported at ($\beta = 0.19$, t = 4.41, pv = 0.00, p < 0.05).

Furthermore, Hypothesis 4 predicted that *Murabahah* finance moderates the relationship between farm credit and agricultural output. The finding had supported the proposed hypothesis as the path coefficient supported at ($\beta = 0.17$, t = 3.08, pv = 0.00, p < 0.05). Also, Hypothesis 5 proposed that *Murabahah* finance moderates the relationship between farmland and agricultural output. The finding revealed that the path coefficient supported at ($\beta = -0.10$, t = 1.29, pv = 0.10, p < 0.10). More so, Hypothesis 6 predicted that *Murabahah* finance moderates the relationship between farm infrastructure and agricultural output. However, the empirical result show that Hypothesis 6 was not supported as presented by the path coefficient ($\beta = -.01$, t = 0.21, pv = 0.42, p < 0.42). This indicated that *Murabahah* finance did not moderate the relationship between farm infrastructures and agricultural output as can be seen in Table 4.12 below.

Table 4.12
Summary of Hypotheses Testing Structural Model Results

Hypotheses	Relations	Beta	SE	t-value	p-value	Findings
H1	FC -> AO	0.12	0.06	2.05	0.02	Supported**
H2	FL -> AO	0.44	0.04	11.50	0.00	Supported***
H3	INF -> AO	0.19	0.04	4.41	0.00	Supported***
H4	FC * MF -> AO	0.17	0.06	3.08	0.00	Supported***
H5	FL * MF -> AO	-0.10	0.07	1.29	0.10	Supported*
H6	INF * MF-> AO	-0.01	0.05	0.21	0.42	Not supported

Note: ***Significant at 0.01 (1-tailed), **significant at 0.05 (1-tailed), *significant at 0.1 (1-tailed).

4.20 Assessment of Variance Explained in the Endogenous Latent Variables

This assessment is another critical condition on the examination of the structural model in PLS-SEM which means that the R-squared value is popularly recognized as the coefficient of determination (Hair et al., 2012). Similarly, the R-squared value remains the representative of the proportion of the variation in the dependent variable (s) which can be explained by one or above predictor variables (Hair et al., 2006; Elliott & Woodward, 2007; Hair et al., 2010). Equally, R-squared value, usually accepted base in the context of the research (Hair et al., 2010). According to Falk and Miller (1992), the R-squared value of 0.10 is the minimum level to be accepted. Consequently, PLS-SEM described the R-squared value of 0.67 as substantial and 0.33 as moderate as well as 0.19 as the weak value (Chin, 1998). The following Table 4.13 shows the R-squared values of agricultural output, which is the dependent variable of this research.

Table 4.13
Variance Explained in the Endogenous Latent Variables

Latent Variable	Variance Explained (R^2)
Agricultural Output	0.36

As shown in the above Table, the current research model explained 0.36 as a total existing variance in relations to agricultural output. This indicated that the four sets of exogenous latent variables (farm credit, farmland, farm infrastructure and *Murabahah* finance) entirely explained the accumulated variance of 0.36 associated to agricultural output. Therefore, endogenous latent variables of this research have achieved the acceptable levels of the *R*-squared value is on the moderate level. Hence 0.36 falls in the range of moderate values 0.33 to 0.67 as justified by the studies of Falk and Miller (1992) and Chin (1998).

4.21 Assessment of Effect Size (f^2)

Effect size indicates the relative effect of a particular exogenous latent variable on endogenous latent variable(s) by means of changes in the *R*-squared (Chin, 1998). It is calculated as the increase in *R*-squared of the latent variable to which the path is connected, relative to the latent variable's proportion of unexplained variance (Chin, 1998). Thus, the effect size could be expressed using the following formula (Cohen, 1988; Wilson, Callaghan, Ringle, & Henseler, 2007):

$$\text{Effect size}: f^2 = \frac{R^2_{\text{Included}} - R^2_{\text{Excluded}}}{1 - R^2_{\text{Included}}} \tag{4.1}$$

Cohen (1988) describes f^2 values of 0.02, 0.15 and 0.35 as having weak, moderate, strong effects respectively. Table 4.14 shows the respective effect sizes of the latent variables of the structural model.

Table 4.14
Effect Sizes of the Latent Variables

Latent Variables	f^2	Effect Size
FC	0.03	Small
FL	0.32	Medium
INF	0.04	Small
MF	0.02	Small

Table 4.14, above shows that farm credit, farm infrastructure and *Marabahah finance* have small effect sizes respectively. Meanwhile, farmland has moderate effect size on agricultural output as an endogeneous variable based on Cohen (1988) recommendation.

4.22 Assessment of Predictive Relevance

This research used Stone-Geisser test towards predictive relevance of the model through utilization of blindfolding criteria. Also, the Stone-Geisser test is used for predictive relevance mostly in a supplementary statistical examination of goodness-of-fit in PLS-SEM. Equally, blindfolding condition is utilized mainly on endogenous latent variables that the operative has a reflective measurement model. Additionally, the reflective measurement model specifies that an unobservable concept causes variation in a set of observable indicators (Geisser, 1974; Stone, 1974; McMillan & Conner, 2003; Duarte & Raposo, 2010; Sattler, Völckner, Riediger & Ringle, 2010). Thereafter, this research utilized the blindfolding toward obtaining the predictive relevance. This is because the entire endogenous latent variables in the research model were highly reflective and they abided by the blindfolding condition. On the

other hand, the application of the cross-validated redundancy measure (Q^2) was also put into consideration in order to examine the predictive relevance in the model. This indicated that, Q^2 is a condition used to measure the way and manner a model predicts the omitted cases in relation to the research data (Chin, 1998; Hair et al., 2014). This also shows that a given research model with Q^2 statistic (s) above zero contains a predictive relevance. Likewise, a given research model that revealed a higher positive Q^2 values is associated with higher predictive relevance (Stone, 1974; Geisser, 1974; Henseler *et al.,* 2009; Ringle, Sarstedt, & Straub, 2012b; Hair et al., 2013). Table 4.15 captures the findings of the cross-validated redundancy Q^2 test.

Table 4.15
Construct Crossvalidated Redundancy

	SSO	SSE	Q² (=1-SSE/SSO)
AO	4 300.00	3 538.24	0.18
FC	3 870.00	3 870.00	
FL	2 150.00	2 150.00	
INF	1 720.00	1 720.00	
MF	1 290.00	1 290.00	

As indicated in Table 4.15 above, the Q^2 measure of cross-validation redundancy for the entire endogenous latent variables ware more than zero, which means that this research reached predictive relevance of the proposed model (Chin, 1998).

4.23 Testing Moderating Effect

The present study applied a product indicator approach using Partial Least Squares Structural Equation Modelling to determine the estimate the strength and magnitude of the moderating effect of *Murabahah* finance on the relationship between farm credits, farmland, farm infrastructure and agricultural output. The product term

approach is considered more appropriate for this study. According to Henseler and Fassott (2010a) "given that the results of the product term approach are usually equal or superior to those of the group comparison approach....." (p. 721).

To apply the product indicator approach in testing the moderating effects of *Murabahah* finance on the relationship between farm credits, farmland, farm Infrastructure and agricultural output, the product terms between the indicators of the latent independent variables and the indicators of the latent moderator variable need to be created. Hence, these product terms would be used as indicators of the interaction term in the structural model (Kenny & Judd, 1984). Furthermore, to ascertain the strength of the moderating effects, the present study applied Cohen's (1988) guidelines for determining the effect size (see Table 4.14).

It could be recalled that Hypothesis 4 stated that *Murabahah* finance moderates the relationship between farm credit and agricultural output as shown in Table 4.12 and this relationship is stronger (i.e. more positive) which signified that farmers with *Murabahah* finance may produce more than those with none. Similarly, Figure 4.4 indicated that the interaction terms representing farm credit x *Murabahah* finance (β = 0.17, t = 3.08, p < 0.00) was also statistically significant and therefore, Hypothesis 4 was fully supported. Following the procedures recommended by Aiken and West (1993) and Dawson and Richter (2002) this study used the information from the path coefficients to plot the moderating effect of *Murabahah* finance on the relationship between farm credit and agricultural output as can be viewed from Figure 4.4 below that moderating effect of *Murabahah* finance and farm credit is stronger (i.e. more positive) as the indicator of High MF shifts upward ahead of

indicator with Low MF. This means that, farmers with *Murabahah* finance have more advantage of producing higher agricultural output than farmer with no *Murabahah* finance.
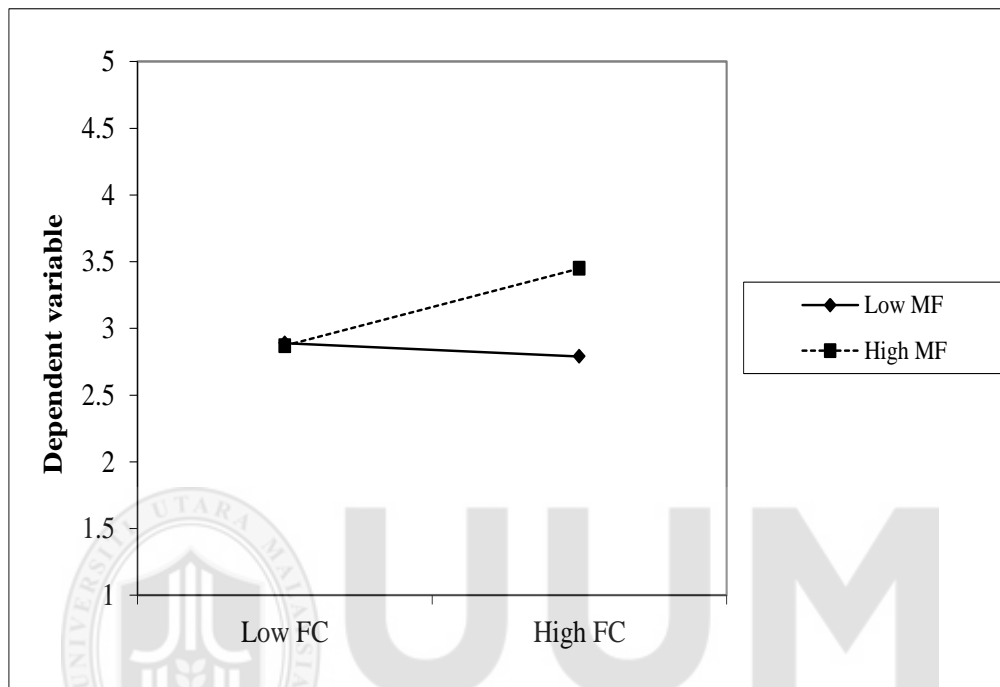
Figure 4.4
Moderating effect of Farm credit

Equally, Hypothesis 5 posited that *Murabahah* finance moderates the relationship between farmland and agricultural output. The empirical findings show that the relationship is weak ($\beta = -0.10$, t = 1.29, pv = 0.10, p < 0.10). This means that farmer with *Murabahah* finance is likely to produce more than the farmer with none as clearly shown in Table 4.12. Similarly, Figure 4.5 demonstrated the movement of the indicator upward of Low MF to High MF indicating a significant interaction of *Murabahah* finance on the relationship between farmland and agricultural output. Graphically, this result is illustrated that *Murabahah* finance moderated the

relationship between farmland and agricultural output and therefore, the relationship is weak (i.e. less positive).
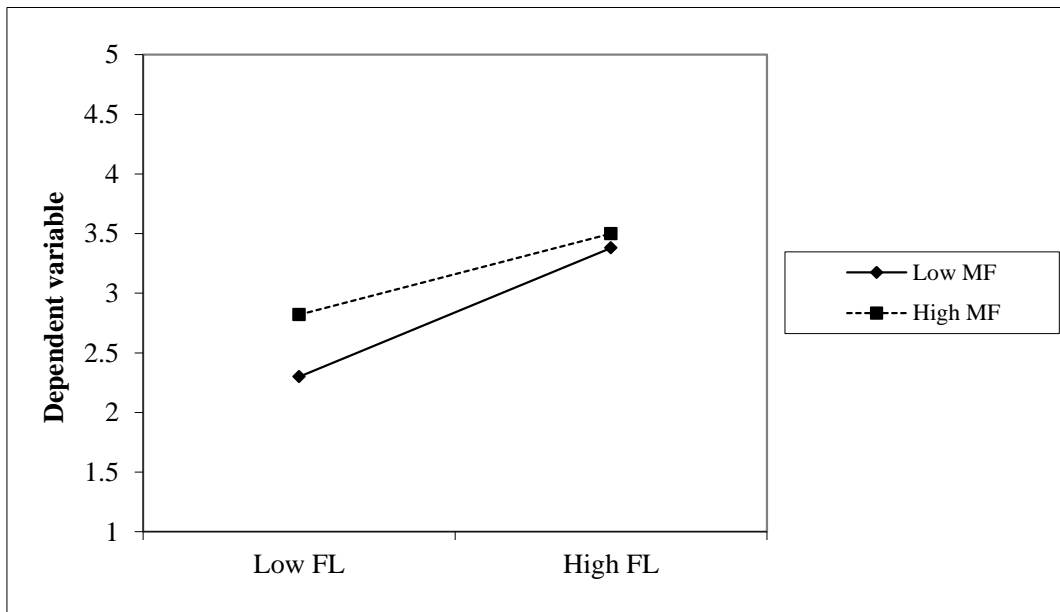
Figure 4.5
Moderating Effect of farmland

However, the results shown in Table 4.12 did not support Hypothesis 6, which posited that *Murabahah* finance moderates the relationship between farm infrastructure and agricultural output. Similarly, Hypothesis 6, which predict an interaction between farm infrastructure and *Murabahah* finance with regard to its effect on the incidence of agricultural output, was not supported. Hence, it does not require a Figure as recommended by Aiken and West (1993) and Dawson and Richter (2002). Specifically, this relationship is more negative (β = -.01, t = 0.21, p > 0.42). This result confirmed the assertion of Ringim (2014) that there is inadequate awareness on Islamic financial products in Kano state because majority of the State farmers are located in the 36 rural local government areas. While, the banks with Shariah financial products (*Murabahah* finance) were situated in the 8 metropolitan local governments in the State.

4.24 Determining the Strength of the Moderating Effects

This justifies the examination of the strength in relation to the moderating effect of *Murabahah* finance on the relationship between farm credit farmland, farm infrastructure and agricultural output. The strength of the moderating effects was examined by comparing the determinants of the coefficient (*R*-squared value) of the real model effect with the value of the *R*-squared of the full research model that covers the whole exogenous latent variables as well as the moderating variable (Henseler & Fassott, 2010a; Wilden, Gudergan, Nielsen, & Lings, 2013; Cohen, 1988). Therefore, the formula below was used in calculating the strength of the moderating effects of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output.

$$\text{Effect size:} \quad f^2 = \frac{R^2_{\text{model with moderator}} - R^2_{\text{model without moderator}}}{1 - R^2_{\text{model with moderator}}} \qquad (4.2)$$

Moderating effect sizes (f^2) values of 0.02 can be considered as weak, effect sizes of 0.15 as moderate while the effect sizes above 0.35 may be regarded as strong (Henseler & Fassott, 2010a). However, according to Chin et al. (2003), a low effect size does not necessarily mean that the underlying moderating effect is insignificant. "Even a small interaction effect can be meaningful under extreme moderating conditions, if the resulting beta changes are meaningful, then it is important to take these conditions into account" (Chin et al., 2003, p. 211). The result which indicated the strength of moderating effects of *Murabahah* finance is presented in Table 4.16. Following Henseler and Fassott's (2010b) and Cohen's (1988) rule of thumb for determining the strength of the moderating effects, Table 4.16 shows that the

moderating effect was small (c.f., Henseler, Wilson, Götz, & Hautvast, 2007; Wilden et al., 2013).

Table 4.16
Strength of the Moderating Effects Based on Cohen's (1988) and Henseler and Fassott's (2010) Guidelines

Included	Excluded	f-squared	Effect size
0.39	0.36	0.05	Small

4.25 Results Summary

As explained, the entire results covered the relationship between the all the study independent and dependent variables as well as the moderating effects. Table 4.17 below presents the summary of the whole tested findings in relation to the proposed research Hypothesis.

Table 4.17
Summary of Hypotheses Testing Structural Model Results

Hypotheses	Relations	Beta	SE	t-value	p-value	Findings
H1	FC -> AO	0.12	0.06	2.05	0.02	Supported**
H2	FL -> AO	0.44	0.04	11.50	0.00	Supported***
H3	INF -> AO	0.19	0.04	4.41	0.00	Supported***
H4	FC * MF -> AO	0.17	0.06	3.08	0.00	Supported***
H5	FL * MF -> AO	-0.10	0.07	1.29	0.10	Supported*
H6	INF * MF-> AO	-0.01	0.05	0.21	0.42	Not supported

Note: ***Significant at 0.01 (1-tailed), **significant at 0.05 (1-tailed), *significant at 0.1 (1-tailed).

4.26 Summary

In summary, this chapter explains the reasons for considering the PLS path modeling toward testing this research theoretical model. This is in line with the determination of path coefficient significance which was presented as major findings of this

research. Meanwhile, the self-report method was used and it provided a statistical support regarding the moderating effects of *Murabahah* finance on the relationship between agricultural outputs and the research independent variables. Similarly, the path coefficients revealed a positive relationship between farm credit and agricultural output. Also, it revealed a positive relationship between farmland and agricultural output. In addition, it revealed a positive relationship between farm Infrastructure and agricultural output.

More so, the issue of the moderating effects of *Murabahah* finance on the relationship between the three independent and the dependent variables was covered. Notwithstanding, the PLS path indicated that, *Murabahah* finance was positive and significantly moderated the relationships between farm credit and farmland while, farm infrastructure and agricultural output had not supported the proposed hypothesis 6. Thereby, hypotheses 4, 5 supported, while, Hypothesis 6 did not support the initial prediction. However, more discussions in relations to the results revealed, research implication, limitations, the gap for future finding and conclusion will be established in Chapter 5.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter discusses the major research results presented in the previous chapters by relating the findings to the theoretical perspectives and past studies in relation to the agricultural output. This chapter is specifically organized as follows: Section 2 recapitulates the results of the research, while, Section 3 discusses the research results in relation to the past researches and underpinning theory. Similarly, section 4 explains the implications of the research. Chapter 5 revealed the noted research limitations which lead to the suggestions for future research findings and directions. The final section drew the conclusion of the research.

5.2 Recapitulation of the Research Results

The main objective of the current research is to determine the moderating effect of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output among the Kano State farmers. Generally, the current research has succeeded in enhancing the knowledge of the major determinants of agricultural input and output (farm credit, farmland, farm infrastructure and agricultural output) as they answered the research questions below:

1. Is there any relationship between farm credit and agricultural output in Kano State, Nigeria?

2. Is there any relationship between farm credit and agricultural output in Kano State, Nigeria?

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3. Is there any relationship between infrastructure and agricultural output in Kano State, Nigeria?

4. Is there any moderating role of *Murabahah* financing play on the relationship between farm credit and agricultural output in Kano State, Nigeria?

5. Is there any moderating influence of *Murabahah* finance on the relationship between farmland and agricultural output in Kano State, Nigeria?

6. Is there any moderating influence of *Murabahah* finance on the relationship between farm infrastructure and agricultural output in Kano State, Nigeria?

Meanwhile, the research predicted a direct relationship and moderating effect between exogenous latent variable as well as endogenous latent variables with the total of six hypotheses in which five were supported while, one was not supported. Furthermore, the findings of the PLS path model revealed that farm credit was positively related to agricultural output. Also, farmland had a positive relationship with agricultural output. More so, farm infrastructure was indicated to have a positively and significant relationship with agricultural output. With regard to the *Murabahah* finance as a moderator on the relationship between the current research exogenous and endogenous latent variables also the results provided an empirical support for all 2 of the 3 hypotheses. Specifically, it was reported that *Murabahah* finance moderated the relationship between farm credit and agricultural output. The results also revealed that *Murabahah* finance moderated the relationship between farmland and agricultural output. However, *Murabahah* finance was not the moderator to the relationship between infrastructure and agricultural output.

5.3 Discussion

The current section discusses the research results in relation to theories and the results of the past studies. The structured subheadings of discussion are arranged based on the research questions.

5.3.1 The Influence of Farm Credit, Farmland, Farm Infrastructure on Agricultural Output

The first three research questions are to find the relationship between farm credits, farmland, farm infrastructure and agricultural output. In line with these research questions, the first three objectives of this study were to examine the relationship between farm credit, farmland, farm infrastructure and agricultural output.

5.3.1.1 Farm Credit and Agricultural Output

Agriculture is seen as a science or act of soil utilization, animal rearing, forestry and fisheries for the purpose of supplying food and raw materials to the industries for food security and economic growth (Oludiran, Akinleye & Ighodaro, 2012; Ogunbado & Ahmed, 2015). Also, agricultural output refers to the outcome of such soil utilization and the combination of all factors of agricultural production (Anthony, 2010). This is in line with the theory of production function of Cobb-Douglas (1928) that, production input is subject to the influence of the output of the same production. This indicated that agricultural production input (farm credit) influences the production output (agricultural output) (Chambers, 1988; Chisasa, 2014a). Hence, this study hypothesizes that farm credit had a positive and significant

relationship with the agricultural output. In order to prove the influence, this research had formulated a hypothesis and it was tested by the PLS path modeling.

Furthermore, the result of research question (1) supported the proposed Hypothesis (1), because it revealed a significant and positive relationship between farm credit and agricultural output. This indicated that the efficient increase in farm credit is proportionate to the increase in agricultural output, and this suggested that the agricultural output is increased by farm credit, which is in line with the theory of production function by Cobb-Douglas (1928), supported by Schumpeter's (1911) economic theory of development and rural market theory-based financial intermediaries. Thus, farm credit instituted by a farmer should theoretically be able to increase agricultural output. The positive relationship between farm credit and agricultural output is consistent with the findings of Chisasa, (2014a) who stated that when farm credit is provided to farmers, there will be more agricultural output.

Also, Ammani (2012) result is similar to this study. He reported that farm credit serves as an accelerator of the agricultural output. The current research hypothesized that, farm credit had a positive and significant relationship with agricultural output. As the research predicted, the study revealed a significant and positive relationship between farm credit and agricultural output. This finding seems to suggest that farmers who receive farm credit are more likely to produce higher agricultural output (Tasie, 2012; Ahungwa, Haruna & Abdulsallam, 2014).

Based on the studies of Anthony (2010), Cobb-Douglas' theory of production function suggests that farm credit plays a significant role towards the increase of the

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agricultural output. Since, farm credit is described as a capital factor of production which serves as a machinery of combining all other factors of production input and output. Specifically, a sufficient combination of factor input of production resulted in the increase in the production output (Chisasa, 2014c).

Moreso, the significant positive relationship between farm credit and agricultural output reported in the present study is not surprising because previous researchers also reported similar results (Atagana & Kalu; 2014; Awe; 2013; Ahungwa, Haruna & Abdulsallam; 2014; Chisasa; 2014a; Oludiran, Akinleye & Ighodaro, 2012). In particular, a significant positive relationship was found between farm credits. This is in line with the definition of credit to the farmers of Anthony (2010). Similarly, the studies of: Onyechanya and Ukoha (2007), Chisasa (2014b), Simtowe and Lestari (2015), reported that farmers who received the high level of farm credit also have access to the agricultural output control.

5.3.1.2 Farmland and Agricultural Output

Furthermore, Allatiyari, Poshtiban and Koudinya (2013) found that, farmland played an inhibitory influence on rural production. Regarding the hypothesis, as predicted, the PLS path modeling results indicated that farmland was found to have a positive relationship with agricultural output. This finding indicates that farmland, which characterized by soil fertility depends on farmer's effort when it comes to combining factors of production (Chambers, 1988; Kan, Haim, Rapeport-Rom & Schechter, 2008; Miyata, Minot & Dinghuanhu, 2009, Chisasa, 2014b). Furthermore, this particular result is consistent with the existing research on the agricultural output: Garrett, Lambin and Naylor (2012), Tui, Abdoulaye, Claessens, Duncan and

vanWijk (2012), Jiang, Deng, and Seto (2013), Chamberlin and Headey (2014), Mattthew and Uchechukwu (2014), Muyanga and Jayne (2014), Chisasa, (2014a).

More specifically, these previous studies have found a positive relationship between farmland and agricultural output considered to be fixed by nature. Similarly, the result is in line with the Cobb- Douglas' theory of production function (1928) that, all factors of production (farm input such as land) are subject to either positive or negative influence to the production output (agricultural output) as well as the fact that it is supported by Schumpeter's (1911) economic theory of development and rural market theory based financial intermediaries.

5.3.1.3 Farm Infrastructure and Agricultural Output

Regarding hypothesis 3, this study proposed that farm infrastructure had a positive and significant relationship. Thus, the result of the current research is in support of the Hypothesis 3 that, farm infrastructure is found to have a positive and significant relationship with agricultural output. This indicated that farm infrastructure is a significant predictor of agricultural output. The linkage between farm infrastructure and agricultural output also validates the proposition of the Cobb-Douglas' theory of production as supported by Schumpeter's (1911) theory of economic development and rural market theory based financial intermediaries which illustrated that, farm infrastructure increases farmers' output. The results are in line with the studies of Gholfar, Asadi, Akbari and Atashi (2010), Ammani, (2012), Okuthe, Ngesa and Ochola (2013) that, an increase in farm infrastructure has a proportional increase in agricultural output in the farming setting. This suggests that the farm infrastructure is

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critically important for maximizing the occurrence of agricultural output in the field of agricultural production.

Similarly, farm infrastructure is a factor of production whereby farmer is given the liberty to use their initiatives towards selecting suitable farm infrastructure (Chisasa, 2014b; Qureshi, Yasmin, Ilyas & Khan, 2013, Murphy, 2015). As such, this system of agricultural input would motivate farmers towards achieving positive performance, and this translated into increased agricultural output. This finding is also consistent with the literature which supports the positive relationship between infrastructure and agricultural output (Asogwa & Okwonche, 2012; Abinbola & Oluwakemi, 2013; Miriam, Patrick & Ifechukude, 2014).

5.3.2 Moderating Effect of *Murabahah* Finance

Murabahah finance is introduced to moderate the relationship between farm credit, farmland, farm infrastructure and agricultural output. As such, *Murabahah* finance is defined as a Shariah financing system in which the financial institution has purchased goods and services on behalf of their customers (farmers) and sells it to the customer with an agreed price and profit margin either in cash or deferring payment (Ayub, 2007, p. 215-240; Hilmy, 2013; Mohammed, et al., 2017). This study also proposes that *Murabahah* finance is a moderator on the relationship between farm credit, farmland, farm infrastructure and agricultural output, because of the Cobb-Douglas' production theory, economic theory of development and rural market theory in respect of the financial intermediaries. Similarly, previous research findings have revealed that, farmers with efficient agricultural input are likely to have a higher agricultural output (Chisasa, 2014a).

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In additionally, Saeed (2013), Suharsono and Candra (2013) and Hendri (2016) revealed that *Murabahah* finance is an important considerable factor towards the provision of farm input such as: farm working capital and equipments among others. Specifically, *Murabahah* finance provides among including money in cash, fertilizer, seed and transportation in a form of farm input to improve the output. Based of this assertion *Murabahah* finance serves as a channel of providing farm capital as one among the factors of agricultural production.

The studies of Obaidullah (2015) and Mohammed et al. (2017) that, *Murabahah* finance provide farm working capital to improve agricultural production. Following this argument, the fourth research question is whether *Murabahah* finance moderates the relationship between farm credit and agricultural output. In line with this research question, the fourth objective of ongoing research is to analyse the moderating effect of *Murabahah* finance on the relationship between farm credit and agricultural output. Also, the fifth hypothesis was whether *Murabahah* finance moderates the relationship between farmland and agricultural output.

Based on this research question, the fifth objective of this study was to examine the moderating effect of *Murabahah* finance on the relationship between farmland and agricultural output. The sixth hypothesis was whether *Murabahah* finance moderates the relationship between farm infrastructure and agricultural output. In line with this research question, the sixth objective of this study was to examine the moderating effect of *Murabahah* finance on the relationship between infrastructure and agricultural output.

5.3.2.1 Moderating Effect of *Murabahah* Finance on Farm Credit, Farmland, Farm Infrastructure and Agricultural Output

In correlation, a moderator is a third variable that affects the correlation of two variables. Also, an analysis framework of correlation described moderator as a third variable that affects the zero-order correlation between two other variables, or the value of the slope of the dependent variable on the independent variable. This indicated that, moderator variable is a third variable that affects the strength of the relationship between a dependent and independent variable. Furthermore, moderating effect can be represented as an interaction between a focal independent variable and a factor that specifies the appropriate conditions for its operation. Consequently, the effect of a moderating variable is featured statistically as an interaction between independent, dependent and moderating variables (Baron & Kenny, 1986).

Additionally, moderating effect can be described as an influence of the third variable between the relationships of the two variables. It also refers to the occurrence of the change due to the introduction of another variable on the relationship between the independent and the dependent variables. The occurrence of the effect depends on the intervention of the third introduced variable or moderator. It is also consider as an examination of the role of a moderating factor on the existing relationship between exogenous and endogenous constructs (Wilden et al., 2013).

Similarly, the role of moderating factor occurs when the relationship between independent and dependent variables depends on a moderating variable. Due to that the moderating factor influences the strength of the relationship between independent and dependent variables. Also, moderating factor plays a fundamental role in relation to the qualitative or quantitative amount of social support towards the strength of the

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relationship between predictor and criterion variables. Specifically, the role of a moderating factor is to influence the relationship between a predictor and outcome variables (Hair, 2014).

This section proposes three research hypotheses and they are tested through PLS path modeling (i.e., H4, H5, and H6). In line with the current study, the moderating effect is the major contribution of the current research. Also, explanations of the moderating effect of *Murabahah* finance could be explained theoretically and from the prior empirical studies for possible justifications for the new findings.

Firstly, the results indicated that *Murabaha*h finance moderated the relationship between farm credit, farmland and agricultural output, whereas, farm infrastructure was not supported the Hypothesis (H6). This is in line with the concept of theory of economic development that, financial intermediary is a catalyst of increasing productivity for socio-economic growth and development (King & Levine, 1993). It also, appears to be relevant to the rural credit market theory which explained a strong link between free interest financial inclusion and the growth of agricultural production and economic growth (Braverman & Guasch, 1986).

However, *Murabahah* finance is a free interest mode of financing trade and agricultural activities (Obaidullah, 2015; Hendri, 2016). This suggests that farmers with *Murabahah* finance had a higher agricultural output than farmers without *Murabahah* finance. Hence, it strengthens and influences the relationship between farm credit, farmland, farm infrastructure and agricultural output. Furthermore, building on the general hedonistic perspective, farmers seek to minimize the cost of farm input and maximize the agricultural output in their agricultural production

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(Chambers, 1988; Ammani, 2013). This is in line with the theory of production function that, an efficient increase of farm input is subject to the proportional increase in the production of agricultural output (Chambers, 1988).

The Effect of *Murabahah* Finance on Farm Credit and Agricultural Output

The current study revealed that *Murabahah* finance had moderated the relationship between farm credit and agricultural output as such; it indicated that it supported Hypothesis 4 designated by the study. This is in line with the recommendation of Mohammed et al. (2016c) that, *Murabahah* finance is expected to moderate the relationship between farm credit and agricultural output as it serves as an interest free mode of financing agriculture and related activities. This seems to be congruent with the argument of the rural credit market theory that, farm credit with free interest is subject to increase agricultural production and socio-economic growth as well as economic development (Braveman & Guasch, 1986).

This suggests that *Murabahah* finance acted as a buffer between farm credit and agriculture, such as farmers with *Murabahah* finance engaged in higher agricultural output than farmers without *Murabahah* finance. In other words, this finding suggests that farmers with the *Murabahah* finance are likely to produce and acquire better agricultural input as well as producing higher agricultural output which is in line with the study of Hendri (2016). According to the theory of economic development, financial intermediaries lead to higher productivity in a given economy (King & Levine, 1998). Gurley and Show (1955) and Ismail and Ahmad (2006) argued that, financial inclusion is an essential ingredient towards supporting production input and output.

Secondly, result regarding the moderating effect of *Murabahah* finance on the relationship between farm credit and agricultural output is in line with the studies of Rasmi and Markon (2014) and Saeed (2013) that, famers with *Murabahah* finance were more able to produce, harvest, store, process and marketing their product than those without *Murabahah* finance. More so, farmers with *Murabahah* finance may have been more able to utilize their resources due to getting access to financial intermediaries for better improvement of farm input and output. The accessibility is making farmers more active and motivated to adopt a new technical knowhow of production as in line with the Cobb-Douglas theory of the production function that, an efficiency of farm input is subject to the yield a sufficient output (Mohammed & Umar, 2017).

The Effect of *Murabahah* Finance on Farmland and Agricultural Output

The study reports that *Murabahah* finance moderates the relationship between farmland and agricultural output with a support to the Hypothesis 5 (H5) developed by the study. This appears to be congruent with the study of Bashir and Mohammed (2017) that, *Murabahah* finance is anticipated to moderate the relationship between farmland and agricultural output. The result also in line with the theory of economic development which viewed that, financial intermediary influences the relationship between production input and output for a sustainable economic growth and development (Diamond, 1984 & 1991). Equally, rural credit market theory stipulated that, interest free financial inclusion is the foundation of agricultural growth and development (Hoff & Stiglitz, 1996; Chisasa, 2014a).

However, *Murahahah* finance is a free interest Islamic financial product used to finance agriculture and related activities. This indicated that, *Murabahah* finance is a

key driver towards provision of productive land which lead to straighten the relationship between farmland and agricultural output (Sardar et al., 2013; Bashir & Mohammed, 2017). The study suggests that farmers with *Murabahah* finance had a higher advantage of producing agricultural output than farmers without *Murabahah* finance which is in line with the studies of Hilmy (2013). Specifically, Cobb-Douglas theory of production function analysed that, availability land as a factor of production is subject to the proportional increase of production output (Chambers, 1988; Chisasa, 2014a).

The Effect of *Murabahah* Finance on Farm Infrastructure and Agricultural Output

Murabahah finance did not support Hypothesis (6) as to moderate the relationship between farm infrastructure and agricultural output. This research predicted that *Murabahah* finance acted as a buffer between farm infrastructure and agricultural output. Additionally, non accessibility to *Murabahah* finance can also decrease the agricultural output. This is in line with the theory of rural credit market that, interest rate is subject to the decrease in agricultural output (Hoff & Stiglitz, 1996). While, *Murabahah* finance is a free interest Islamic financial product used towards financing agricultural input and output as well as related activities. This indicated that, farmers operating without *Murabahah* finance have less advantage of employing additional farm infrastructure than those without *Murabahah* finance (Mostoor, 2014).

Similarly, Husseini (2003), Hendri (2016) and Rahman and Yousif (2016) argued that, farmers with no access to *Murabahah* finance are likely to produce lower

agricultural output. Hence, *Murabahah* finance has features of free interest, gambling and exploitation among others. According to Braverman and Guasch (1986) that, interest rate discourages farmers from employing farm infrastructure such as: modern farm storage facilities, tractors, riggers, harvesters, and planters, transportation and communications among others.

Equally, Chisasa (2014a) stated that, farm facilities with interest rate endangered the position of rural farmers towards the provision of farm infrastructure which include: tractor, planters, electricity, transportation and communication among others. Similarly, Mohammed and Umar (2017) reported that, lack of free interest or low cost and risk financial inclusion declines the growth of farm infrastructure and economic growth. These supported the argument that, farmers with conventional financial inclusion are in the position of having lower agricultural output. The study of Obaidullah (2015) and Mostoor (2014) stipulated that, *Murabahah* finance provides free interest financial inclusion to the growth of agriculture and related activities. As such, financial institutions buy farm input on behalf of the farmer and resell the input to the farmer on agreed price and mark-up either on the spot or via deferred payment without interest rate.

Therefore, this result indicated that, *Murabahah* finance did not moderates the relationship between farm infrastructure and agricultural output as the resulted was not support the Hypothesis 6 (H6). One possible reason for the lack of significant moderating effect of *Murabahah* finance on the relationship between farm infrastructure and agricultural output may have to do with the insufficient awareness of *Murabahah* finance by the small scale farmers of Kano State (Ringim, 2014).

5.4 Research Contributions

5.4.1 Theoretical Implications

This research forms a theoretical framework based on past studies in relation to empirical facts and theoretical recommendations or gaps from previous literature. It was also supported and explained from the theoretical perspectives, namely the theory of production based on the Cobb-Douglas (1928), Schumpeter's (1911) economic theory of development and rural credit market theory. The current research incorporated *Murabahah* finance as a moderating variable to better explain and understand the relationship between farm credit, farmland, farm infrastructure and agricultural output. Based on the research findings and discussions, the current study has made several theoretical contributions in the research and discipline of Islamic economics and finance with respect to the farm credit, farmland, farm infrastructure and agricultural output.

5.4.1.1 Additional Empirical Evidence in the Domain of Theories

The current research revealed the theoretical implication by contributing more empirical facts in the domain and model theories of agricultural productions. The theory posits that agricultural input (farm credit, farmland, farm infrastructure) employed by farmers should theoretically be able to increase farmer's output through the efficient combination of the farm input. The current research has advanced the theory by analyzing a broad range of agricultural output with *Murabahah* finance as a moderator, instead of focusing on the relationship between farm credit, farmland, farm infrastructure and specific agricultural output such as rice, maize, groundnut, tomatoes among others. The approach is crucial because it concentrated on narrow

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forms of agricultural output, providing an incomplete view of agricultural output (Philip et al., 2009; Owen, 2012; Asogwa & Okwoche, 2012; Ammani, 2012 & 2013; Innocent & Adetila, 2014).

Consequently, this research, has theoretically contributed to the domain of the theory of production function of Cobb-Douglas (1928), Schumpeter's (1911) economic theory of development and rural credit market theory. The theories revealed that the successful intervention of the financial and services intermediaries is the roots of technical efficiency of any production in terms of purchases of input and output on achieving economic growth and development. This indicated that, *Murabahah* Shariah economic and finance product is added to the domain of economic development theory as an essential pillar used to support agricultural production in terms of the farm input and output. Additionally, empirical studies proved that agriculture is the foundation of the sustainable economic growth and development (King & Levine, 1993; Anthony, 2010; Chisasa, 2014a & 2015).

Likewise, the major impact of this study to the theory is that financial institutions supply money to the borrowers to purchase farm input for the growth of the deficit units (Gurley & Shaw; 1955; Tobin; 1963; Ismail & Ahmad, 2006). Specifically, the current study makes a significant contribution to the theory of the rural credit market, as, the theory emphasized that, simple interest rate, less cost and risk form of agricultural finance and services tend to have a high technical innovation on the maximization and utilizations of the farm input and output. This indicated that, the *Murabahah* finance as the Islamic mode of financing remain to be included in the theory as a way that enhances farmers' income, rural employment as well as reduces

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rural poverty and unemployment (Braverman & Luis Guasch, 1986; Hoff & Stiglitz, 1996; Rauchhaus, 2009, p. 871; Chisasa, 2014c; Bashir & Mohammed, 2017).

Equally, the current research has tested the moderating influence of *Murabahah* finance on the relationship between farm credit and agricultural output. This is in line with some previous empirical studies that reported a positive relationship between farm credit and agricultural output which includes: Chisasa (2014a), Ammani (2012), Tibi and Edebiri (2015), Chisasa and Makina (2014), Tasie (2012) Kaleem and AbdulWajid (2009), Dang, Leatham and Bagheri (2014), Atagana and Kalu (2014) and Awe (2013). However, other researches that investigated the negative relationship between farm credit and agricultural output are: Faridi (2012), Adetiloye (2012), Reyes, Lensink, Kuyvenhoven and Moll (2012) and Kofi and Akwaa-Sekyi (2013). Whereas, Ayegba and Ikani (2013) and Toluwase, Oludayo and Uche (2014). Reported mixed results.

Furthermore, researches were conducted to look at the positive relationship between farmland and agricultural output among which, include: Rezvanfar and Mohammadi (2012), Rez vanfar, Shiri and Kanigohar (2012), Allahyari, Poshtiban and Koundinya (2013), Jayne, Chamberlin and Headey (2014), and Chisasa (2014a & 2015). In contrast, other researches which found a negative or inverse relationship between farmland and agricultural output are: Davidova, Fredriksson, Gorton, Mishev, and Petrovici (2012), Garrett, Lambin and Naylor (2012), Tui, Abdoulaye, Claessens, Duncan and van Wijk (2012), Jiang, Deng and Seto (2013), Di-Falco (2014), Chamberlin and Headey (2014), Mattthew and Uchechukwu (2014), and Muyanga

and Jayne (2014). Furthermore, Chamberlin et al. (2014), and Nkonde, Jayne, Richardson and Place (2015) reported mixed findings.

Notwithstanding, other researches revealed a positive relationship between farm infrastructure and agricultural output and they are: Gholfar, Asadi, Akbari and Atashi (2010), Reyes, Lensink, Kuyvenhoven and Moll (2012), Ammani (2012), Okuthe, Ngesa and Ochola (2013), Qureshi, Yamin, Ilyas, Withy and Khan (2013). On the other hand, the finding that revealed a negative relationship between farm infrastructure and agricultural production includes: Gholifar, Asadi, Akbari and Atashi (2010), Franken, Pennings and Garcia (2012), Temu, Nyange, Mttee and Kashasha (2013), Adepoju and Salman (2013), Chisasa (2014b), Ngaruko (2014), Obayelu, Olarewaju and Oyelami (2014). Furthermore, Felloni et al. (2013), and Nkonde1, et al. (2015), AbdelRahmana and Yousif (2016) reported mixed results.

Therefore, the current research variables revealed inconsistent research results. Consequently, Ayegba and Ikani (2013), Yunusa (2014), Omonijo, Toluwase, Oludayo and Uche (2014), Muhammed Zaheer and Khan (2014), Tendai (2014), Marwa, (2014), Ngaroko (2014), Chisasa (20014a), and Tibi and Edebiri (2015) recommended and suggested that, further research should look for an alternative agricultural financing and services model with free interest rate and exploitation on the growth of agricultural input and output.

Based on the above, the current study makes an inclusion of *Murabahah* finance as an alternative model of financing agriculture as well as a moderator on the relationship between the study variables. This is also in line with the study of Baron

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and Kenny (1986) that moderating variable is introduced into a situation where there is an unexpected weak or findings with inconsistencies on the relationship between the independent variable (predictor) and dependent variable (criterion variable).

The study of Mohammed et al. (2017) made recommended the inclusion of *Murabahah* finance to moderate the relationship between farm input and agricultural output in Kano State, Nigeria. The current research has approached the existing gaps Through the inclusion of *Murabahah* finance as a moderating variable to facilitate the understanding on the influence of farm credit, farmland, farm infrastructure and agricultural output of Kano State of Nigeria.

Additionally, in testing Cobb-Douglas (1928) theory of the production function, the current research results indicated that the agricultural input (farm credit, farmland, and farm infrastructure) had significantly and positively influenced the agricultural output of Kano State. Based on the results, it can be concluded that the Shariah mode of financing agriculture and related issues by the Islamic financial institutions, mostly full pledge Islamic Banks and conventional banks with window operation on Islamic financial products played a significant role in promoting agricultural output.

5.4.2 Significant Moderating Role of *Murabahah* Finance

The current research reported facts from an empirical direction regarding the relationship between farm credit and agricultural output as a way previous studies reported significant results. They include: Ammani (2012), Awe (2013), Bagheri (2014), Atagana and Kalu (2014), Ahungwa, Haruna and Abdulsallam (2014) and Chisasa (2014a). However, other researches investigated the negative relationship

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between farm credit and agricultural output: OlumuyiwaAkinrole (2014), Marwa (2015), Sukprasert and Yapwaltanaphum (2015) and Abu and Ochoche (2015).

Furthermore, researches were conducted to look at the positive relationship between farmland and agricultural output: Heady and Jayne (2014), Jayne et al. (2014), Ricker- Gilbert et al. (2014), Muyanga and Jayne (2014), Josephson et al. (2014), Headey et al. (2014), Jayne et al. (2014). In contrast, other studies found a negative relationship between farmland and agricultural output: Allahyari, Poshtiban and Koundinya (2013), Mohammadizadeh and Maghsoudi (2014), Maletta (2014), Sitko and Jayne (2014), Shai, Bai and Chen (2014), Jayne, Chamberlin and Headey (2014), Holden and Otsuka (2014) and Trukhchev, Ivolga and Lscheva (2015).

Notwithstanding, other researches revealed a positive relationship between farm infrastructure and agricultural output: Asogwa and Okwonche (2012), Abinbola and Oluwakemi (2013), Miriam, Patrick and Ifechukude (2014). On the other hand, the previous finding suggested on a negative relationship between farm infrastructure and agricultural output: Qureshi, Yamin, Withy and Khan (2013 and Collier and Dercon (2014). Specifically, the mentioned findings mainly concentrated on direct relationship between the variables of this study with the absent of the moderating variable. Hence, the current research makes an inclusion of *Murabahah* finance as a moderator on the relationships of the variables due to the following reasons: Firstly, *Murabahah* finance may be able to override the scarcity of the farm input in relation to the production of the agricultural output, because farmers with *Murabahah* finance are self sufficient than those without it (Hilmy, 2013; AISA, 2012).

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Secondly, *Murabahah* finance is expected to moderate the relationship between farm credit, farmland, farm infrastructure and agricultural output because farmers with sufficient and effective farm input tend to produce higher agricultural output (Mohsin, 2005; Obaidullah, 2015). They also tend to minimize the production cost and maximize farm profit (Ayub, 2007, p. 215-240; Hendri, 2016). Taken as a whole, the current research has added more value and empirical fact to the body of knowledge in the area of Islamic economics and finance with regard to the agricultural input and output. Equally, the research results could be a solid foundation in relation to future researches on Islamic economics and finance on agricultural input and output as well as economic growth and development.

5.4.3 Practical Implications

The finding of the current research has practical implications for the agricultural sector of Kano State. Firstly, the results suggest that perceptions of Kano State farmers on the Shariah mode of finance and services are important towards promoting the agricultural output in Kano State. Also, Kano State farmers can make considerable efforts in utilizing Shariah agricultural finance and services with the aims of increasing the agricultural output (Ringim, 2014). Secondly, the findings suggest that farm inputs were related to agricultural output.

In particular, the farm credit, farmland and farm infrastructure were found to be positively related to the agricultural output in the entire sample. Thus, full pledge and window operation financial institutions could increase the likelihood of farmers toward engaging themselves in Shariah farm facilities by providing a simple condition that will lead to positive farmer's participation (Dandago, Muhammad &

Osein, 2013; Ringim, 2014). For example, the management of the Shariah financial products might establish farmer's awareness through the mass media as well as increase the discussion through symposiums and workshops.

Finally, as stated at the outset of this report, agricultural input and output make a prevalent and costly phenomenon in the agricultural production (Ammani, 2013). Therefore, the results of the current study suggest that besides the conventional agricultural input, Shariah mode of financing agriculture and related ones should be given a serious consideration in the agricultural sector of Kano State. In particular, the moderating role of *Murabahah* finance suggests that effective *Murabahah* financing can maximize the tendencies of farmers to produce more agricultural output. Thus, the Kano State ministry of agriculture could consider *Murabahah* finance as a selection criterion when making decisions.

5.4.4 Methodological Implications

The present study has a number of methodological implications. One of them lies in assessing the criterion variables using a specific measure. Specifically, in an attempt to fill a methodological gap suggested by Bowling and Gruys (2010), the present study assessed the agricultural input on agricultural output constructs as identified by the subject experts including: scholars and agricultural professionals (Bowling & Gruys, 2010). Furthermore, the present study removed all irrelevant items from the Chisasa (2014a) bank credit and agricultural output and added relevant items in order to capture the level of agricultural output in the context of the study. By adding the relevant items and removing the irrelevant ones from the original scale, this study purified and tested the measure of agricultural output in Kano State, Nigeria, which

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is culturally different from the setting in which this measure was initially developed. Another methodological contribution of this study is related to the use of the PLS path modeling to assess the properties of each latent variable.

Specifically, the present study has succeeded in assessing the properties of each latent variable in terms of the convergent validity, as well as discriminant validity. Properties examined were the individual item reliability, average variance explained (AVE) and composite reliability of each latent variable. Also, the Convergent validity was assessed by examining the value of AVE for each latent variable. Furthermore, the discriminant validity was determined by comparing the correlations among the latent variables with the square roots of AVE. The results of the cross loadings matrix were also examined to find support for the discriminant validity in the conceptual model. Thus, this study has managed to use one of the most robust approaches (PLS path modeling) to assess the psychometric properties of each latent variable illustrated in the conceptual model of this study.

5.4.5 Policy Implications

The findings of this study empirically proved on the significant relationship between determinants of agricultural output in Kano State, Nigeria. These findings reveal that the farm credit, farmland, farm infrastructure are positively related to the agricultural output in Kano State, Nigeria. It also proved that the *Murabahah* finance was found to moderate the relationship between farm credit and farmland. In turn, *Murabahah* finance was not found to moderate the relationship between farm infrastructure and agricultural output. The finding of this study would be important to policy makers such as Kano State ministry of agriculture and commerce in designing the future

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programmes for agriculture. As the agricultural inputs are vital issues that need to be considered to produce a sound agricultural output, some concepts used in the study can be considered in the curriculum design and other training programmes.

Central Bank of Nigeria would equally benefit from the outcome of the present study, as it will serve as a guide in resource allocation and offer a guideline to commercial banks, micro finance, and farmer's cooperatives in assisting agricultural production. The finding is equally relevant to various governments' right from the local, State and federal governments, in having information regarding agricultural output that allows them to develop different policy initiatives for improving agriculture, agribusiness and agro-allied industries in their respective domains. The findings would help farmers and investors by giving them an empirically tested outcome on some determinants of agricultural output, and for them to better understand the effects of variables under study for improving the agricultural output. This would help them develop good strategies regarding the development of their respective agricultural production so as to be relevant and gain potential competitive advantage. The findings would also serve as a frame of future reference to academia, students and stakeholders. The findings would equally help in making relevant recommendations.

Additionally, this study encourages small scale farmers towards becoming self-reliance on tackling the period of difficulty in getting finance from the government and conventional financial institutions. Specifically, the finding inculcates the idea of strategic financial discipline and management to the small scale farmers. This will help in solving the issue of collateral as one of the major factor that militate banks from offering credit facilities to the small scale farmers. Therefore, this study encourages

farmers to have a good cash flow, profit and retained earnings that may encourage financial institutions to provide financial services to them. It could also encourage government, its agencies, financial institutions as well as NGOs to configure their strategic orientations towards supporting agricultural input and output.

More so, the findings of this study would encourage other financial institutions to participate in agricultural financing through Shariah products so as to encourage farmers to produce higher agricultural output in Kano state and Nigeria in general. Certainly, the finding of this study increased awareness to the farmers, financial institutions and government about the connection between *Murabahah* finance, farm credit, farmland, farm infrastructure and positive agricultural output. It is well established that if, government and financial institutions show concern to small scale farmers, the farmers are likely to produce and engage more in agricultural activities that can benefit the economy entirely.

Moreover, the findings of this study indicate that, government and financial institutions can motivate farmers to partake in serving the community through provision of employment, food security and poverty eradication among others. Hence, the study highlighted the impact of *Murabahah* finance towards the enhancement of economic sustainability, growth and development. This further implies that management are encouraged to develop the use of the Shariah financial approach towards promoting socio-economic growth and development. The current study has statistically revealed the importance of *Murabahah* finance as a significant moderating factor for transferring the effects of Shariah financing on financial stability, creativity as well as economic growth and development. Furthermore, this study revealed that, agricultural output can be achieved by *Murabahah* financing in a positive significant level. This implies that,

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Murabahah finance can serve as a process that enables farmers to develop agricultural financing outside the interest rate, high risk and cost. Hence, *Murabahah* financing can enable farmers to produce higher farm produce with superior quality based on market demand. This in turn can lead to high farm produce market satisfaction and result in superior agricultural output. Thereby, the findings highlighted farmer's financial institutions, investors, NGOs, farmer's cooperatives and managers recognize that, *Murabahah* finance is vital for farmer's sustainability and economic growth. More importantly, the study lead to the understanding of agriculture and Shariah financial environment are always essential in creating necessary economic growth and development.

5.5 Limitations and Future Research Directions

Even though this study has provided support for a number of the hypothesized relationships between the exogenous and endogenous variables, the findings have to be interpreted with consideration given to the study's limitations. First of all, the present study adopts a cross-sectional design which does not allow for causal inferences to be made from the population. Therefore, a longitudinal design in the future needs to be considered to measure the theoretical constructs at different points in time to confirm the findings of the present study. Secondly, the present study adopts a systematic random sampling in which all elements of the target population were not captured, like the extent to which sample size represents the entire population and cannot be known (Lohr, 2009). The use of systematic sampling has limited to the extent that the findings of the study can be generalized to the population. Therefore, future research needs to go beyond the systematic sampling if the sample frame can be obtained so that the simple random sampling technique

could be employed. Hence, when the sample frame is obtained the findings of the study can be generalized to the entire farmers in Nigeria.

Thirdly, agricultural output was assessed using self-report measures. According to Bennett and Robinson (2000), self-report measures are valid in agricultural output, particularly when anonymity was assured during the data collection. Furthermore, the use of self-reports is associated with common method variance and social desirability bias (Dodaj, 2012). Although this study attempts to reduce these problems by ensuring anonymity and improving scale items as Stated by Podsakoff et al. (2003) and Podsakoff et al. (2012), that, it is possible that the participants in such study might have under-reported their problems on survey questionnaires.

Therefore, in the future, researchers may wish to employ other strategies to assess agricultural output and input problems. More specifically, the organizations' ratings of agricultural input and output should be used to control for the common method variance and social desirability bias. It is also important to note that the agricultural input and output data reported in this study was subjective. Research demonstrates that subjective data is valid and reliable for example, to assess the farmer's opinion on the agricultural input and output (see, for example, Ferris et al., 2009; Holtz & Harold, 2010). Meanwhile, it is expected that *Murabahah* finance, which is a Shariah financing system might strengthen the relationship between farm credit, farm land, farm infrastructure and agricultural output. Finally, the moderating effect of *Murabahah* finance moderated the relationship between farm credit and agricultural outputs. Similarly, *Murabahah* finance was found to positively moderate the relationship between farmland and agricultural output. Meanwhile, *Murabahah*

finance did not moderate the relationship between farm infrastructure and agricultural output. Therefore, further research is necessary to verify whether other Shariah moderating variables may strengthen this relationship. Specifically, further research is encouraged to examine whether or not another Shariah mode of financing might moderate the relationship between farm credit, farmland, farm infrastructure and agricultural output.

5.6 Recommendations

Taken together, the present study has provided additional evidence to the growing body of knowledge concerning the moderating role of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output. Results from this study supported the key theoretical propositions. In particular, the current study has successfully answered 5 out of the 6 research questions and objectives despite some of the limitations. While there have been many studies examining the underlying causes for the decline of the agricultural output, however, the present study addressed the theoretical gap by incorporating *Murabahah* finances as a significant moderating variable.

This study also lends theoretical and empirical support for the moderating role of *Murabahah* finance on the relationship between farm credit, farmland, farm infrastructure and agricultural output. The study has also managed to evaluate how *Murabahah* finance theoretically moderates the relationships between the research variables. The theoretical framework of this study has also added to the domain of the theory of production, theory of economic development and the rural market theory by examining the influence of agricultural input and output by way of

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examining the effect of farm credit, farmland, farm infrastructure and agricultural output. Also, the theories stipulated that, agricultural output is a function of technical efficiency of farm credit, farmland and farm infrastructure for the economic growth and development. By contrast, *Murabahah* finance serves as an essential facility between the relationship of the agricultural input and output in the economic growth of Kano State, Nigeria.

In addition to the theoretical contributions, the results from this study provide some important practical implications to the Kano State government through the ministry of agriculture, full pledge Islamic bank (Ja'is bank) and window Islamic banking operators (Stanbic ITBC, Kyestone bank), farmers' cooperative, subsistence and commercial farmers, agro-business and agro-allied industries, stakeholders and managers, both public, privates and NGOs. More so, the limitations of the current study, and several future research directions were all drawn.
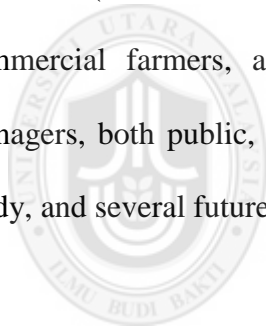
REFERENCES

Aburaida, K. M. M (2014). Rural Finance as A Mechanism for Poverty Alleviation In Sudan, With An Emphasis On Salam Mode. *European Scientific Journal,* 7(26).

Adegbite, D. A. (2009). Repayment Performance of Beneficiairies of Ogun State Agricultural Andmulti-purpose Credit Agency (Osamca) in Ogun State, Nigeria (2004-2007). *American-Eurasian Journal of Sustainable Agriculture*, 3(1), 117-125.

Adepoju A. O., & Obayelu O., A. (2013). Livelihood diversification and welfare of rural households in Ondo State, Nigeria. *Journal of Development and Agricultural*, 5(12), 482-489.

Adepoju, A. A., & Salman, K. K. (2013). Increasing agricultural productivity through rural infrastructure: Evidence from Oyo and Osun States, Nigeria. *International Journal of Applied Agriculture and Apiculture Research*, 9(1-2), 1-10.

Adetiloye, K. A. (2012). Agricultural financing in Nigeria: an assessment of the Agricultural Credit Guarantee Scheme Fund (ACGSF) for food security in Nigeria (1978-2006). *Journal Economics*, 3(1), 39-48.

Adeyemi, A. (2013). Assessing the Effects of Taxation System on Nigerian Economic Growth. In Proceedings of 2013 International Conference on Poverty Alleviation Income Redistribution & Rural Development in Developing Countries (p. 185).

Ador, S. F., Shafiai, M. H. M., & Ismail, M. A.(2014). Islamic Micro Financing for Sustainable Oil Palm Farming: Case of Independent Smallholders Prosiding Perkem ke-9 (2014) 1 - 13 ISSN: 2231-962X.

Afganistan Investment Support Agency (AISA) (2012); Access to Finance Research Department:*http://www.aisa.org.af/Content/Media/Documents/Estimating-BFI-Afghan81120141314464 82553325325.pdf*.

Agricultural Credit Guarantee Fund (ACGF) (2014). Central Bank of Nigeria (CBN) Bulletin Report. Retriveed from: *https://www.cbn.gov.ng/documents/acgsf.asp.*

Agunga, R., & Manda, L. Z. (2015). Communication for strengthening agricultural extension and rural development in Malawi. *Journal of Development and Communication Studies,* 3(1), 1-16.

Ahangar, G. B., Padder, M. U., & Ganie, A. H. (2013). Islamic banking and its scope in India. *IRACST–International Journal of Commerce, Business and Management* (IJCBM), 2(5), 266-269.

Ahemed R. Ommani, (2013). Factors that Influence the Interest of Youths in Agricultural.Retrivedfrom:*http://ijbssnet.com/journals/Vol_4_No_3_March_2013/31.pdf*.

Ahiakpor, F., & Asmah, E. E. (2012). A Brief Survey of the Literature on Microfinance and Agriculture. Faculty of Social Sciences, University of Ghana, Legon, 9(1), 73.

Ahlén, M. (2012). Rural Member-Based Microfinance Institutions: A field research assessing the impacts of SACCOS and VICOBA in Babati district, Tanzania.

Ahmad, A. (1987). Development and Problems of Islamic Banks: Jeddah. *Saudi Arabia, Islamic Research and Training Institute and Islamic Development Bank*, 152.

Ahmad, A. (1993). Contemporary Practices of Islamic Financing Techniques. Research Paper, (20). Islamic Research and Training Institute Islamic Development Bank, Jeddah 21413kingdom Of Saudi Arabia. Retrived from:*http://ieaoi.ir/files/site1/pages/ketab/english_book/contemporary_practices_of_islamic_financing_techniques.pdf*.

Ahmad, N. (2011). Impact of institutional credit on agricultural output: A case study of Pakistan. *Theoretical and Applied Economics Volume XVIII 2011), No. 10(563), pp. 99-120.*

Ahmad, N. (2015). Analysing the Price Discovery Function of Crude Palm Oil Futures Before and After Shari'ah-Compliance. *Asian Academy of Management Journal,* 20(2), 147-161.

Ahmed, A. (2010). Global Financial Crisis: an Islamic Finance Perspective. *International Journal of Islamic and Middle Eastern Finance and Management,* 3(4), 306-320.

Ahmed, A. S., Suleiman, A., & Aminu, A. (2013). Social and Economical Analysis of Small Scale Maize Production in Kura Local Government Area of Kano State, Nigeria. *International Journal of Agricultural Science*, 3(1), 37-43.

Ahmed, E. M., & Ammar, A. (2015). Islamic Microfinance in Sudanese Perspective. *Journal of Business and Fin Aff*, 4(149), 2167-0234.

Ahmed, H. (2002). A Microeconomic Model of an Islamic Bank, Research Paper: King Fahd National Library Cataloging-in-Publication Data. Information Retrieved from: https://books.google.com/books?isbn=1786358999

Ahmed, H. (2014). Islamic Banking and Shari'ah Compliance: A Product Development Perspective. *Journal of Islamic Finance*, 3(2), 15-29.

Ahsanul. H., Osman, J., & Ismail. Z., (2009), "Factors Influences Selection of Islamic Banking: A study on Malaysian Customer Preference. *American journal of Applied Science,* 6(5), 922-928.

Ahungwa, G. T., Haruna, U., & Abdusalam, R. Y. (2013). Trend Analysis of the Contribution of Agriculture to the Gross Domestic Product of Nigeria (1960-2012). *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS) e-ISSN: 2319-2380, p-ISSN: 2319-2372.Volume 7, Issue 1, Ver. IV (Feb. 2014), PP 50-55.*

Akanji, O. O. (2006). Micro Finance as a Strategy for Poverty Reduction. Central Bank of Nigeria *Economic and Financial Review*, 39(4), 23-34.

Akoum, I. F. (2008). Globalization, Growth, and Poverty: The Missing Link. *International Journal of Social Economics*, 35(4), 226-238.

Akter, S. D., Ambra, J., & Ray, P. (2011). An Evaluation of PLS Based Complex Models: The Roles of Power analysis, Predictive Relevance and GoF index. Proceedings of the Seventeenth Americas Conference on Information Systems, Detroit, Michigan August 4th-7th.

Albueku, S.O., & Ogbouma, S. (2013). Extent of Implementation of the 2009 National Sport Policy of Nigeria: Implementation for Sport Science, Exercise, and Sport Medicine. *Academic Research International*, 4(2), 541-549.

Al-Gazzar, M. M. (2014). The Financial Performance of Islamic vs. Conventional Banks: An Empirical Research on the Gcc & Mena Region. Retrived from: *http://www.bue.edu.eg/pdfs/BAEPS/Manar%20Mahmood%20Al-Gazzar.pdf.*

Ali, S. S. (2011). Islamic banking in the MENA region. The World Bank and Islamic Development Bank, retrieved from World Bank and resources database: http://siteresources.worldbank.org/intmnaregtoppovred/resources/menaflagsh ipislamicfinance2_24_11.pdf.

Ali, S., & Farrukh, F. (2013). Islamic Banking: Is the Confidence Level of Being an Islamic Banking Employee Better than Conventional Banking Employee? *Journal of Business Studies Quarterly 2013, Volume 4, Number 3.*

Alizadeh, S., Alipour, H., & Hasanzadeh, M. (2013). Market Orientation and Business Performance among SME Based in Ardabil Industrial City – Iran. Chapter of *Arabian Journal of Business and Management Review*, 2 (7), 38-47.

Al-Jarhi, M., & Hussein, K. A. (2002). Operational Efficiency in Islamic Banking: The Sudanese Experience. Manuscript, Islamic Research and Training Institute, IDB,Jeddah:*http://www.irti.org/English/Research/Documents/IES/090.pdf*.

Allahyari, M. S., Poshtiban, A., & Koundinya, V. (2013). Effective Factors on Agricultural Land Use Change in Guilan Province, Iran. Mediterranean *Journal of Social Sciences*, 4 (11), 744.

Alreck, P.L., & Settle, R.B. (1995). *The survey research handbook* (2nd ed.). Boston: Irwin.

Al-Salem, F. H. (2009). Islamic Financial Product Innovation. *International Journal of Islamic and Middle Eastern Finance and Management*, 2 (3), 187-200.

Alvaro Reyes1 2, Robert Lensink2 3, Arie Kuyvenhoven2 and Henk Moll2 (2012) Impact of Access to Credit on Farm Productivity of Fruit and Vegetable Growersin Chile. Selected Poster prepared for presentation at the *International Association of Agricultural Economists* (IAAE) Triennial Conference, Foz do Iguaçu, Brazil, 18-24 August, 2012.

Amadi, I. F. (1989). Financing Agriculture: Contribution of the Credit Institutions to Fisheries Development in Nigeria. Nigerian Institute for Oceanography and Marine Research Victoria Island Lagos Nigeria ISBN-978-2345-044.

Ammani, A. A. (2012). An Research into the Relationship between Agricultural Production and Formal Credit Supply in Nigeria. *International Journal of Agriculture and Forestry*, 2(1), 46-52.

Ammani, A. A. (2013). Impact of Market-Determined Exchange Rates on Rice Production And Import In Nigeria. *International Journal of Food and Agricultural Economics* (IJFAEC), 1.

An Exploratory Research Regarding Islamic Banking. *Journal of Business Studies Quarterly,* 4(3), 27.

Anthony, E. (2010). Agricultural Credit and Economic Growth in Nigeria: An Empirical Analysis. Approach with Special Reference to Poverty Eradication in Pakistan. *International Journal of Economics, Management and Accounting, 20(1).*

Anyanwu, S. O., Ibekwe, U. C., & Adesope, O. M. (2010). Agriculture Share of the Gross Domestic Product and its Implications for Rural Development. *Report and Opinion*, 2(8), 26-31.

Apata, T. G. (2010). Linkages between Crude-oil Exploration and Agricultural Development in Nigeria: Implications for relevant qualitative data collection and analysis to improve rural economy. In Third Wye City Group Conference on Agricultural and Rural Household Statistics Economic Research Service, May (pp. 24-25).

Aredo, D. (1993). The informal and semi-formal financial sectors in Ethiopia: a study of the Iqqub, Iddir, and savings and credit co-operatives (No. 21). Not Avail. *http://dspace.africaportal.org/jspui/bitstream/123456789/32382/1/RP21.pdf.*

Armstrong, J. S., & Overton, T. S. (1977). Estimating Nonresponse Bias in Mail Surveys. *Journal of Marketing Research* 14, 396-402.

Asgharnezhard, L., Akbarlou, M., & Karkaj, E.S. (2013). Influences of grazing and enclosure on carbon sequestration puccenilla distans (Jacq) parl and soil carbon sequestration (case study: Gomishan wetlands). *International Journal of Agronomy and Plant Production,* 4(8), 1936-1941.

Asiabaka, C. C., & Owens, M. (2002). Determinants of adoptive behaviors of rural farmers in Nigeria. In AIAEE Proceedings of the 18th Annual Conference. Durban, South Africa.

Asogwa B.C, Abu, O. & Ochoche (2014). Analysis of peasant farmers' Access to agricultural credit in Benue State, Nigeria. *British journal of economics, management & Trade* 4 (10); 1525-1543.

Asogwa, B. C., & Okwoche, V. A. (2012). Marketing of agricultural produce among rural farm households in Nigeria: The case of sorghum marketing in Benue State. *International journal of Business and social science,* 3(13), 269-277.

Atagana, S., & Kalu, C. (2014) Evaluation of Fund for Agricultural Credit Guarantee Scheme in Nigeria: A Tool for Economic Growth and Development. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume 19, Issue 6.*

Aubert, D. (2002). The impact of socio-economic characteristics on demand for food and nutrition in Tanzania (Doctoral dissertation, Diss., Technische Wissenschaften ETH Zürich, Nr. 14510, 2002).

Aurangzeb, M., Nigar, S., & Khan, M. (2007). Labour requirements model for the wheat crop under mechanized and traditional farming systems in The NWFP: A case research of Peshawar District. *Sarhad Journal Of Agriculture*, 23(1), 177.

Avishay B. and J. Luis G. (1986) Rural Credit Markets and Institutions in Developing Countries: Lessons for Policy Analysis from Practice and Modern Theory World Development, Printed in Great Britain. *Pergamon Journals Ltd.* Vol. 14, No. 10/11, pp. 1253-1267.

Awe. A.A (2013). Mobilization of Domestic Financial Resources for Agricultural Productivity In Nigeria. *Australian Journal Of Business And Management Research Vol,* 2(12), 01-07.

Ayegba, O., & Ikani, D. I. (2013). An Impact Assessment of Agricultural Credit on Rural Farmers in Nigeria. *Research Journal of Finance And Accounting*, 4(18), 80-89.

Ayub, M. (2007). Understanding Islamic finanance. West Sussex Willey & Sons Ltd.

Bacon, D. R., Sauer, P. L., & Young, M. (1995). Composite reliability in structural equations modeling. Educational and Psychological Measurement, 55, 394-406.

Bagheri, N., & Bordbar, M. (2014). Factor analysis of agricultural mechanization challenges in Iran. Agricultural Engineering International: *CIGR Journal*, 16(1), 167-172.

Bagozzi, R., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16, 74-94.

Bank Negara Malaysia's Shariah Resolutions in Islamic Finance (2010), the second edition of Bank Negara Malaysia's Shariah Resolutions in Islamic Finance documents Shariah rulings madeby Bank Negara Malaysia's Shariah Advisory Council (SAC) (*http://*www.bnm.gov.my**).**

Barclay, D., Higgins, S., & Thompson, R. (1995). The partial least squares approach to causal modeling: Personal computer adoption and use as an illustration. Technology Studies (2), 285–374.

Barnett, V., & Lewis, T. (1994). Outliers in statistical data. New York: Wiley.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology,* 51(6), 1173.

Barrett, C. B. (1996). On price risk and the inverse farm size-productivity relationship. Journal of Development Economics, 51(2), 193-215.

Barrientos, A., & Hulme, D. (2009). Social protection for the poor and poorest in developing countries: reflections on a quiet revolution: commentary. Oxford Development Studies, 37(4), 439-456.

Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, 19(1), 43-50.

Bashir, A. A., & Mohammed, A.I. (2017). Moderating Effect of Murabahah on The Relationship Between Farmland, Farm Credit and Agricultural Output In Kano State Nigeria. Asia International Multidisciplinary Conference 2017 Ognized by: Universityy Technology Malaysia (UTM), Jahor Bahru, Malaysia.

Bećirović, S. (2011). The role of microfinance in the agricultural development of the cross-border region of Sandzak, International Conference "SMEPP 2011", Novi Pazar: International University of Novi Pazar, pp. 259-269.

Beddington, J., Asaduzzaman, M., Fernandez, A., Clark, M., Guillou, M., Jahn, M., & Wakhungu, J. (2012). Achieving food security in the face of climate change: Final report of Commission on Sustainable Agriculture and Climate Change. *https://cgspace.cgiar.org/bitstream/handle/10568/35589/climate_food_commission-final-mar2012.pdf.*

Begum, H., Alam, M. R., Alam, A. S. A., & Awang, A. H. (2015). Islamic microfinance as an instrument for poverty alleviation. *Advanced Science Letters*, *21*(6), 1708-1711.

Bello, G.I (2006). An analysis of the viability of Islamic Banking in Kano State, Nigeria. (Doctoral dissertation, Usman Dan fodio University Sokoto-Nigeria).

Bencivenga, Valerie R., and Bruce D. Smith,, (1991), "Financial Intermediation and Endogenous Growth," Review of Economic Studies, LVIII, 195-209.

Benedict, P., Ahmed, A. H., Ehrich, R., & Lintner, S. F. (1982). Sudan: The Rahad Irrigation Project. Available from the National Technical Information Service, Springfield Virginia. 22161, as PB 84-242676.

.Bergkvist, L. (2015). Appropriate use of single-item measures is here to stay. Marketing Letters, 26(3). *http://scholar.google.com/citations?user=bwoU6pcAAAAJ&hl=en*.

Bergkvist, L., & Rossiter, J. R. (2007). The predictive validity of multiple-item versus single-item measures of the same constructs. *Journal of marketing research, 44(2), 175-184.*

Bhalla, S. S., & Roy, P. (1988). Mis-specification in farm productivity analysis: the role of land quality. Oxford Economic Papers, 40(1), 55-73.

Bijttebier, P., Delva, D., Vanoost, S., Bobbaers, H., Lauwers, P., & Vertommen, H. (2000). Reliability and Validity of the Critical Care Family Needs Inventory in a Dutch-speaking Belgian sample. *Heart & Lung: The Journal of Acute andCritical Care,* 29, 278-286.

Bollen, K. A. (1989). Structural equations with latent variables. Series in probability/ mathematical statistic cite: *http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471011711.html*.

Border, K. C. (2004). On the Cobb-Douglas Production Function. California Institute of Technology. Division of the Humanities and Social Sciences.

Bowling, N. A. (2010). Effects of job satisfaction and conscientiousness on extra-role behaviors. *Journal of Business and Psychology*, 25(1), 119-130.

Braverman, A., & Guasch, J. L. (1986). Rural credit markets and institutions in developing countries: Lessons for policy analysis from practice and modern theory. World development, 14(10-11), 1253-1267.

Brewer, B., A. Wilson, C., M. Featherstone, A., & R. Langemeier, M. (2014). *Business and Economics Journal,* 14, 1-7.

Cassel, C., Hackl, P., & Westlund, A. H. (1999). Robustness of partial least-squares method for estimating latent variable quality structures. *Journal of Applied Statistics, 26, 435-446.*

Cavana, R. Y., Delahaye, B. L., & Sekaran, U. (2001). Applied business research: Qualitative and quantitative methods. Singapore: Markono Print Media Ltd.

Central Bank Of Nigeria (CBN) (2014) Financial Report Bulleting. Retrieved at *http://www.central-bank*

Central Bank of Nigeria (CBN) Bulletin (2015).Report of the Activities of the Business Unit from April - June, 2015 Development Finance Department (Dfd) Report of the Activities of the Business Unit from April - June, 2015.

Central Bank of Nigeria (CBN). Report of the Activities of the Business Unit for the Month Of August, 2014 Development Finance Department (Dfd) – Report of the Activities of the Business Unit for the Month of August, 2014s.

Chambers, R. G. (1988). Applied production analysis: a dual approach. Cambridge University Press.

Chatterjee, S., & Yilmaz, M. (1992). A Review of regression diagnostics for behavioral research. Applied Psychological Measurement, 16, 209-227.

Chernick, M. R. (2008). Bootstrap methods. A guide for practitioners and researchers (2nd ed.). Hoboken, New Jersey: John Wiley & Sons, Inc.

Chin, W. (2010). How to write up and peport PLS analyses. In V. Esposito Vinzi, W. W. Chin, J. Henseler & H. Wang (Eds.), Handbook of Partial Least Squares (pp. 655-690): Springer Berlin Heidelberg.

Chin, W. W. (1998a). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), Modern Methods for Business Research (p. 295-336). Mahwah, New Jersey: Laurence Erlbaum Associates.

Chin, W. W. (1998b). The partial least squares approach for structural equation modeling. In George A. Marcoulides (Ed.), Modern Methods for Business Research, Lawrence Erlbaum Associates, Lawrence Erlbaum Associates, Mahwah, NJ, 295-336. 232.

Chin, W. W. (2010). How to write up and report PLS analyses. In Esposito, V., et al. (eds.), Handbook of Partial Least Squares (655 – 688). New York: Springer-Verlag.

Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo Simulation study and an electronic-mail emotion/adoption study. Information Systems Research, 14, 189-217.

Chin, W.W. (1998a). Issues and opinion on structural equation modeling. MIS Quarterly, 22, 1, VII-XVI. Chin, W. W. (1998b). The partial least squares approach for structural equation modeling. In George A. Marcoulides (Ed.), Modern Methods for Business Research, Lawrence Erlbaum Associates, Lawrence Erlbaum Associates, Mahwah, NJ, 295-336. 232.

Chisasa, J. (2014a). An Econometric Analysis of Bank Lending and Agricultural Output in South Africa: A Survey Approach. *Journal of Applied Business Research (*JABR), 31(1), 163-174.

Chisasa, J. (2014b). The finance-growth nexus in South Africa's agricultural sector: a structural equation modeling approach. Bank and Banking system, volume 9, issue 4.

Chisasa, J. (2015). An Econometric Analysis of Bank Lending And Agricultural Output In South Africa: A Survey Approach. *Journal of Applied Business Research,* 31(1), 163.

Chisasa, J. A (2014c). Diagnosis of Rural Agricultural Credit Markets in South Africa: Empirical Evidence from North West And Mpumalanga Provinces. Banks and Bank Systems, Volume 9, Issue 2, 2014.

Chisasa, J., & Makina, D. (2014). A diagnosis of rural agricultural credit markets in South Africa: empirical evidence from North West and Mpumalanga provinces. Banks and Bank Systems, 9(2), 100-111.

Chong, R., Abdullah, R. F. S., Anderson, A., & Amin, H. (2009). Economics of Islamic Trade Financing Instruments. *International Review of Business Research Papers,* 5(1), 230-241.

Claessens, S. (2006). Access to financial services: A review of the issues and public policy objectives. The World Bank Research Observer, 21(2), 207-240.

Clement A. U. Ighodaro 2012 In Ahiakpor, F., & Asmah, E. E. (2012). A Brief Survey of the Literature on Microfinance and Agriculture. Faculty of Social Sciences, University of Ghana, Legon, 9(1), 73.

Cohen, A., & Vigoda, E. (2000). Do good citizens make good organizational citizens? An empirical examination of the relationship between general citizenship and organizational citizenship behavior in Israel. Administration & Society, 32(5), 596-624.

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences, 2nd edn. Hillsdale, NJ: Laurence Erlbaum Associates. Inc CIT0006.

Collier, P., & Dercon, S. (2014). African Agriculture in 50Years: Smallholders in a Rapidly Changing World? World Development, 63, 92-101.

Collins, E. J. T. (1976). Migrant labour in British agriculture in the nineteenth century. The Economic History Review, 29(1), 38-59.

Conway, J., & Lance, C. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business and Psychology*, 25, 325-334.

Cornia, G. A. (1985). Farm size, land yields and the agricultural production function: An analysis for fifteen developing countries. World development, 13(4), 513-534.

Creswell, J. W. (1994). Research design: qualitative & quantitative approaches. London: SAGE Publications.

Creswell, J. W. (2013). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.

Creswell, J.W. (2012). Educational research: planning, conducting and evaluating quantitative and qualitative research. (4thed.). Edward brothers, inc.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. psychometrika, 16(3), 297-334.

Dandago K.I (2005). Beyond Slogans, How States Hold the Ace for Nigeria's Industrialisation, Kano, Nigeria. ISBN: 978-8130- 05-4.

Dandago, K.I, AD. Muhammad & U.A.Oseini (2013). Essentitials of Islamic Banking and Finance in Nigeria. Publish in Abuja.

Dang, T., Leatham, D., A. McCarl, B., & Wu, X. (2014). Measuring the efficiency of the Farm Credit System. Agricultural Finance Review, 74(1), 38-54.

Daud, M., Yussof, I. M., & Abideen, A. (2011). The establishment and operation of Islamic Banks in Nigeria: Perception research on the role of the Central Bank of Nigeria. *Australian Journal of Business and Management Research* Vol, 1(2).

Davidova, S., Fredriksson, L., Gorton, M., Mishev, P., & Petrovici, D. (2012). Subsistence farming, incomes, and agricultural livelihoods in the new member States of the European Union. Environment and Planning C: Government and Policy, 30(2), 209-227.

Deininger, K. W., & Byerlee, D. (2011). Rising global interest in farmland: can it yield sustainable and equiTable benefits?. World Bank Publications.

Demeke, M., Pangrazio, G., & Maetz, M. (2008). Country responses to the food security crisis: Nature and preliminary implications of the policies pursued. Agricultura SupportService, FAO.*http://www.fao.org/docs/up/easypol/932/policy-trends_125en.pdf.*

Dhumale, R., & Sapcanin, A. (1999). An application of Islamic banking principles to microfinance. Technical Note, A research bt yhe Regional Bureau for Arab States, UNDP, in cooperation with the Middle East and North Africa Region, World Bank.

Diagne, A., & Zeller, M. (2001). Access to credit and its impact on welfare in Malawi(Vol.116): *https://ideas.repec.org/p/fpr/resrep/116.html*.

Diamond, D.W. (1984). Financial Intermediation and Delegated Monitoring, The Review of Economic Studies, 3, pp. 393-414.

Diamond, D.W. (1996). Financial Intermediation as Delegated Monitoring: A Simple Example, FederalReserveBank of Richmond Economic Quarterly, 3 (8), pp. 51-66.

Dijkstra, T. (1983). Some comments on maximum likelihood and partial least squares methods. *Journal of Econometrics*, 22, 67-90.

Dipeolu, A. O., Adebayo, K., Ayinde, I. A., Oyewole, O. B., Sanni, L. O., Pearce, D. M., & Westby, A. (2000). Fufu marketing systems in South-West Nigeria. Natural Resources Institute (NRI), Report, 2626.

Dobermann, A. (2016). Looking forward to 2030: Nitrogen and the Sustainable Development Goals. *http://www.ini2016.com/1711*.

Dodaj, A. (2012). Social Desirability and Self-Reports: Testing a Content and Response-Style Model: *http://ejop.psychopen.eu/article/download/462/pdf*.

Duarte, P., & Raposo, M. (2010). A PLS model to study brand preference: An application: *https://www.researchgate.net/.../227061764*.

Dunlop, P. D., & Lee, K. (2004). Workplace deviance, organizational citizenship: *http://static1.1.sqspcdn.com/static/f/1438607/20434389/1348739126887/workplace+ deviance.pdf*

Dusuki, A and Abdullah N (2007). Why do Malaysian customers patronize Islamic bank? *International journal of Bank Marketing*. 25(30): 142-160.

Ehsani, K. (2003). Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman. International Review of Social History, 48(03), 361-399.

El Qorchi, M. (2005). Islamic finance gears up. Finance and Development, 42(4), 46. *http://www.imf.org/external/pubs/ft/fandd/2005/12/qorchi.htm*

Elhiraika, A. B. (2003). On the experience of Islamic agricultural finance in Sudan: challenges and sustainability. Research Paper, (63). *J.KAU: Islamic Econ.,* Vol. 18, No. 2, pp. 63-65 (2005 A.D/1426 A.H).

Elias, K (1991), Islamic Banking in Egypt, Lund, Sweden: Team Offset. *http://www.irti.org/English/Research/Documents/IES/139.pdf.*

Elliott, A. C., & Woodward, W. A. (2007). Statistical analysis: Quick reference guidebook with SPSS examples. Thousand Oaks, CA: Sage Publications. *http://www.worldcat.org/title/statistical-analysis-quick-reference-guidebook-with- spss-examples/oclc/64084846?page=citation*

Elston, J. A., Chen, S., & Weidinger, A. (2016). The role of informal capital on new venture formation and growth in China. Small Business Economics, 46(1), 79-91.

Erol, C., El-Bdour, R. (1989). Why do Malaysian customers patronize factors of bank customers towards Islamic Bank'', *International journal of Banking Marketing*, 7(6), 31-9.

Eyo, E. O. (2008). Determinants of Success of Micro-Finance Schemes Serving the Agricultural Sector in Akwa Ibom State, Nigeria. *Pakistan Journal of Social Sciences,* 5(2), 173-176.

Eze, C. C., Lemchi, J. I., Ugochukwu, A. I., Eze, V. C., Awulonu, C. A. O., & Okon, A. X. (2010, March). Agricultural financing policies and rural development in Nigeria. In 84th Annual Conference, March 29-31, 2010, Edinburgh, Scotland (No. 91677).

Ezike, J. E., & Ogege, S. (2012). Nigerian foreign trade policy: Its impact on non-oil exports. *Journal of Economics and International Finance*, 4(8), 192-200.

Falk, R. F., & Miller, N. B. (1992). A primer for soft modeling. Ohio: The University of Akron Press.

FAO, I. (2013). WFP, the State of Food Insecurity in the World 2013. . *http://www.fao.org/docrep/018/i3434e/i3434e.pdf*.

FAO, J., & FOODS, M. H. I. (2004). Food and Agriculture Organization of the United Nations. Rome, *http://www.fao.org/faostat/en/*

Faridi, M. Z. (2012) reported a negative result between finanace and agricultural in Pakistan.*http://www.iiste.org/Journals/index.php/PPAR/article/viewFile/24951/25554*.

Farrar, S. (2011). Accommodating Islamic banking and finance in Australia. *University of New South Wales Law Journal,* 34(1), 413-442.

Ferris, D. L., Brown, D. J., & Heller, D. (2009). Organizational supports and organizational deviance: The mediating role of organization-based self-esteem. *Organizational Behavior and Human Decision Processes*, *108*(2), 279-286.

Field, A. (2009). Discovering Statistics using SPSS (3rd ed.). London: Sage Publications.

Food and Agriculture Organization. (2008). The State of Food and Agriculture 2008: Biofuels: Prospects, Risks and Opportunities. Food & Agriculture Org. *http://www.fao.org/docrep/011/i0100e/i0100e00.htm*

Fornell, C., & Bookstein, F. L. (1982). Two structural equations models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research,* 19, (4), 440-452.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with unobservable variables and measurement error. *Journal of Marketing Researc* 18, 39-50.

Furqani, H., & Mulyany, R. (2009). Islamic banking and economic growth: Empirical evidence from Malaysia. *Journal of Economic Cooperation and Development,* 30(2), 59-74.

Gaffney, M. (1994). Land as a distinctive factor of production. Land and taxation, 39-102. *http://www.wealthandwant.com/docs/Gaffney_LaaDFoP.html*

Geisser, S. (1974). A predictive approach to the random effect model. Biometrika, *http://www.scirp.org/(S(lz5mqp453edsnp55rrgjct55))/reference/ReferencesPapers.aspx?ReferenceID=1960151*.

Ghambarali, R., Alibaygi, G., Rasekhi, B., Pezeshki, V., Ghasemi, S., & Akbari, Z. (2013). Challenges of sustainable rural development from perspective villagers. *International Research Journal of Applied and Basic Sciences*, 7(5), 253-258.

Gholifar, E., Asadi, A., Akbari, M., & Atashi, M. P. (2010). Effective factors in agricultural apple waste in Islamic Republic of Iran: *A comparative study. Journal of Human Ecology*, 32(1), 47-53.

Goi, C. L. (1970). E-Banking in Malaysia: Opportunity and challenges. *The Journal of Internet Banking and Commerce*, *10*(3), 1-11.

Goldman, M. (2006). Imperial nature: The World Bank and struggles for social justice in the age of globalization. Yale University Press.

Gorondutse, A. H., & Hilman, H. (2014). Meditation Effect of Organizational Culture on the Relationship between Commitments of Business Social Responsibility (BSR) on Performance of SMEs: Partial Least Square (PLS) Approach. *European Journal of Social Sciences* 41 (4), 624-638.

Govereh, J., Jayne, T. S., & Nyoro, J. (1999). Smallholder commercialization, interlinked markets and food crop productivity: Cross-country evidence in eastern and southern Africa. *Michigan State University, Department of Agricultural Economics and Department of Economics*, *39*.

Green, P., Tull, D., & Albaum, G. (1988). Research for marketing decisions. Eaglewood Cliffs, NJ: Prentice Hall. *Journal of Environmental Management, 52, 335-351. Dennis,* D. (1998).

Greenwood, J, and Boyan J. (1990), "Financial Development, Growth, and the Distribution of Income," *Journal of Political Economy*, XCVIII (1990), 1076-1107.

Gretton, P., & Salma, U. (1996). Land degradation and the Australian agricultural industry. Industry Commission.

Gretton, P., & Salma, U. (1997). Land degradation: links to agricultural output and profitability. *The Australian Journal of Agricultural and Resource Economics,* 41(2), 209-225.

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Greyling, J. C. (2012). The role of the agricultural sector in the South African economy (Doctoral dissertation, Stellenbosch: Stellenbosch University).

Griffith, R., Redding, S., & Van Reenen, J. (2004). Mapping the two faces of R&D: Productivity growth in a panel of OECD industries. Review of economics and statistics, 86(4), 883-895.

Gruys, M. L., & Sackett, P. R. (2003). Investigating the dimensionality. *https://experts.umn.edu/en/publications/investigating-the-dimensionality-of-counterproductive-work-behavi.*

Gudarzi Farahani, Y., & Sadr, S. M. H. (2012). Analysis of Islamic Bank's Financing and Economic Growth: Case Research Iran and Indonesia. *Journal of Economic Cooperation and Development,* 33(4), 1-24.

Gugger, C. K., Bidwai, S., Joshi, N., & Garcia-Bailo, B. (2016). Differences in Whole Grain Consumption Patterns by Ethnicity: Results from NHANES 2011–2012 and the Food Patterns Equivalents Database 2011–2012. The FASEB *Journal, 30(1 Supplement*), 901-17.

Gul, Abdullah (1991), "Ratio Analysis and Islamic Banks", Jeddah: IRTI (unpublished). Research Division, Islamic Research and Training Institute, Islamic Development Bank. The author is grateful to Muhammad Nejatullah Siddiqi and Bechir El Younsi for their useful comments on an earlier version of the paper.

Gustafsson, A., & Johnson, M. D. (2004). Determining attribute importance in a service satisfaction model. *Journal of Service Research*, 7, 2, 124-41.

Hair, J. F. Jr., Money, A. H., Samouel, P., & Page, M. (2007). Research Methods for Business. UK: John Wiley & Son Ltd.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010a). Multivariate data analysis (7th ed.). Upper Saddle River, New Jersey: Prentice Hall.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010b). "Multivariate data analysis": A global perspective. New Jersey: Pearson Education, Inc.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). Multivariate data analysis (6th ed.). Upper Saddle River, NJ: Pearson/Prentice Hall.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). A primer on partial least squares structural equation modeling (PLS-SEM). Thousand Oaks: Sage Publications.

Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2007). Research method for business. West Sussex, England: John Wiley & Sons Ltd.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, *19*(2), 139-152.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. Long Range Planning, 46(1–2), 1-12.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science,* 40, 414-433.

Hair, J. F., Wolfinbarger, M. F., Ortinau, D. J., & Bush, R. P. (2008). Essentials of marketing research. McGraw-Hill/Higher Education.

Hair, J.F., Money, A.H., Samouel, P., & Page, M. (2007). Research method for Business. West Susex, England: John Wiley and Sons Ltd.

Haneef, M. A., Pramanik, A. H., Mohamed, M. O., Muhammad, A. D., & Amin, F. M. (2015). Integration of Waqf and Islamic Microfinance for Poverty Reduction. *Statistical, Economic, and Social Research and Training for Islamic Countries (SESRIC) & International Islamic University Malaysia (IIUM).*

Hanif, M. (2010). Theory and Practice of Islamic Banking: Financial Reporting Perspective. Available at SSRN 1731551.

Hanif, M. (2014). Differences and similarities in Islamic and conventional banking. *http://www.software602.com/*

Haron, S., Ahmad, N., & Planisek, S. (1994),''Bank patronage factors of Muslim and non-Muslim customers. '*'International journal of Bank Marketing.* 12(1), 32-40.

Harriette, G.C., Spall, V., & Toren, M.A. (2007). Elegibility criteria of randomized control trials published in high impact general medical journal: A systematic sampling review. *The Journal of the American Medical Association*, 297(11), 1233-1240.

Hassan, M. T., Sattar, M. A., Tousif, M. A., Nasir, N., Sadiq, M., & Yasmeen, M. (2012). Role of Islamic Banking in Agriculture Development in Bahawalpur, Pakistan. *International Journal of Learning and Development*, 2(3), 123-138.

Hassanat, A. B., & Al tarawneh, G. A. (2015). Gambling-free lottery, a new Islamic lending ticket. *Journal of Islamic Accounting and Business Research*, 6(1), 42-54.

Hassani, M. (2010). Islamic banking and monetary policy: experience of Iran. *International review of business research papers,* 6(4), 430-443.

Hayduk, L. A., & Littvay, L. (2012). Should researchers use single indicators, best indicators, or multiple indicators in structural equation models?. *BMC medical research methodology*, *12*(1), 159.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. Communication monographs, 76(4), 408-420.

Headey, D. D., & Jayne, T. S. (2014). Adaptation to land constraints: Is Africa different?. Food Policy, 48, 18-33.

Hendri, D. (2016). Shariah Financing for Farmers Poverty Reduction. Jebi (Jurnal Ekonomi dan Bisnis Islam), 1(1), 33-52.

Hendriks, S. L., & Lyne, M. C. (Eds.). (2009). Does Food Security Improve when Smallholders Access a Niche Market?: Lessons from the Embo Community in South Africa. African Centre for Food Security.

Henseler & H. Wang (Eds.), Handbook of Partial Least Squares (pp. 449-485): Springer Berlin Heidelberg.

Henseler, Christian M. Ringle and PLS (E.G., Hulland, 1999), *https://www.Escholar.Manchester.Ac.Uk/.../datast*.

Henseler, J., & Chin, W. W. (2010a). A Comparison of Approaches for the Analysis of Interaction Effects Between Latent Variables Using Partial Least Squares Path Modeling. Structural Equation Modeling: *A Multidisciplinary Journal,* 17(1), 82-109.

Henseler, J., & Chin, W. W. (2010b). A comparison of approaches for the analysis of interaction effects between latent variables using partial least squares path modeling. *Structural Equation Modeling*, 17(1), 82-109.

Henseler, J., & Fassott, G. (2010). Testing moderating effects in PLS path models: An illustration of available procedures. In Handbook of partial least squares (pp. 713-735). Springer Berlin Heidelberg.

Henseler, J., & Fassott, G. (2010a). Testing Moderating Effects in PLS Path Models: An Illustration of Available Procedures. In V. Esposito Vinzi, W. W. Chin, J. Henseler & H. Wang (Eds.), Handbook of Partial Least Squares: Concepts, Methods and Applications (pp. 713-735). Berlin et al.: Springer.

Henseler, J., & Fassott, G. (2010b). Testing Moderating Effects in PLS Path Models: An Illustration of Available Procedures. In V. Esposito Vinzi, W. W. Chin, J. Henseler & H. Wang (Eds.), Handbook of Partial Least Squares (pp. 713-735): Springer Berlin Heidelberg.

Henseler, J., & Sarstedt, M. (2013). Goodness-of-fit indices for partial least squares path modeling. Computational Statistics, 28, 565-580. doi: 10.1007/s00180-012-0317-1.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least Squares path modeling in international marketing. In R. R. Sinkovics & P. N. Ghauri (Eds.), Advances in International Marketing (Vol. 20, pp. 277-320). Bingley: Emerald.

Henseler, J., Wilson, B., Götz, O., & Hautvast, C. (2007). Investigating the moderating role of fit on sports sponsorship and brand equity. *International Journal of Sports Marketing & Sponsorship,* 8, 321-329.

Herbst, J. (2014). States and Power in Africa: Comparative Lessons in Authority and Control: Comparative Lessons in Authority and Control. Princeton University Press.

Hilmy, H. A. (2013). Introducing Salam as an alternative financing tool for paddy field cultivation in Sri Lanka (special reference to Eastern province). Soth Eastern University of Sri Lanaka.

Hoellinger, F. (2011). Agricultural Finance–Trends, Issues and Challenges. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Bonn. Germany.

Holden, S. T., & Otsuka, K. (2014). The roles of land tenure reforms and land markets in the context of population growth and land use intensification in Africa. Food Policy, 48, 88-97.

Holly Qu'an. (2:275-280).

Holtz, B. C., & Harold, C. M. (2010). Interpersonal Justice and Deviance. *http://www.camden.rutgers.edu/pdf/holtz.pdf.*

Homoud, S. H. (1987, June). The Application of Murabaha Sales from Simple Investment to the Formation of an Islamic Capital Market, with the Case of Baraka Bank of Bahrian as a Practical Model. In workshop on Investment Strategy in Islamic Banking: Applications, Issues and Problems, Royal Academy for Islamic Civilization Research, Amman.

Huck, S. W., Cormier, W. H., & Bounds, W. G. (1974). Reading statistics and research (pp. 74-102). New York: Harper & Row. *http://www.readingstats.com/Sixth/bio.htm*

Huck, S.W. (2004). Reading statistics and research. Boston, MA: Pearson. *https://www.amazon.com/Reading-Statistics-Research-Schuyler-Huck/dp/013217863X.*

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. Strategic management journal, 20(2), 195-204.

Hussain, H. (2016). Islamic Value Chain Financing: A Case for Sustainable Financing ISSN 2462-1757. of Small Farmers in Kashmir. International *Journal of Agriculture, Forestry and Plantation,* Vol. 2 (February.)

Hussein, K. A. (2003). Operational efficiency in Islamic banking: the Sudanese experience. Islamic Research & Training Institute (IRTI), Working papers.

Ibn Khaldun, (1967). The Muqaddimah: An Introduction to History. Franz Rosenthal (Tran). *https://issuu.com/ibtra/docs/v11_n4_article5.*

Ibrahim, H., Zhou, J., Li, M., & Chen, Q. (2014). Perception of Farmers on Extension Services in North Western Part of Nigeria: The Case of Farming Households in Kano State. *Journal of Service Science and Management* No.2, Vol.7.

Ibrahim, M. F., & Kamarudin, R. (2014). The Islamic Home Financing In Malaysia Istisna'base On Debt: *Qualitative Approach.Labuan E Journal Of Muamalat And Socirty,* Vol.8, 2014, p.27-38.

Iganiga, B. O., & Asemota, A. (2008). The Nigerian unorganized rural financial institutions and operations: A framework for improved rural credit schemes in a fragile environment. *Journal of Social Sciences*, *17*(1), 63-71.

Ijaz, M. Islamic Modes of Financing (n.d). Associate Professor, SZIC, University of the Punjab, Lahore, Pakistan.AL-ADWA37:27.

International Fund for Agricultural Development (IFAD). (2014). Youth and Agriculture: Key Challenges and Concrete Solutions. *http://www.fao.org/3/a-i3947e.pdf.*

Iqbal, M., & Molyneux, P. (2005). Thirty years of Islamic banking: history and performance*. http://www.kau.edu.sa/Files/320/Researches/51049_21186.pdf*.

Iqbal, M., & Molyneux, P. (2016). Thirty years of Islamic banking: History, and prospects.Springer.*https://www.springer.com/de/book/9781403943255.*

IRTI., (2012) Knowledge Review Financing Agri-business Vol.1.No.02. P.3. *http://www.isdb.org/irj/go/km/docs/documents/IDBDevelopments/Internet/English/IRTI/CM/downloads/IKR/IRTI_Knowledge_Review_Vol.1_No.2.pdf.*

Isife, B. I., & Onyeocha, V. C. (2014). Analysis of Linkages among Organizations Involved in Agricultural and Rural Development of Ogba Area in Rivers State, Nigeria. *Nigerian Chapter of Arabian Journal of Business and Management Review*, *2*(9), 36-42.

Ismail, A.G. and I. Ahmad (2006). Does the Islamic Financial System Design Matter? Humanomics, 22 (1), pp.5-16.

James Tobin & William C. Brainard (1963). Financial Intermediaries and the Effectiveness of Money Controls,the American Economic Review, 2 (53), pp. 383-400.

Jayne, T. S., Chamberlin, J., & Headey, D. D. (2014). Land pressures, the evolution of farming systems, and development strategies in Africa: A synthesis. Food Policy, 48, 1-17.

Jiang, L., Deng, X., & Seto, K. C. (2013). The impact of urban expansion on agricultural land use intensity in China. Land Use Policy, 35, 33-39.

Ringim, J. K., (2014). Perception of Nigerian Muslim account holders in conventional banks toward Islamic banking products. *International Journal of Islamic and Middle Eastern Finance and Management*, 7(3), 288-305.

John G. Gurley & E.S. Shaw (1955). Financial aspects of Economic Development, The American Economic Review, 4 (45), pp. 515-538.

Johnson, K. (2013). The role of Islamic banking in economic growth.''The role of Islamic banking in Economics Growth (2013). CMC Senior thesis. Paper 612. *http:// scholarship, Claremont. Edu/cm theses/612*.

Julius, A. (2012). Small-Scale Farmer's Perception on the Impact of Grazing Livestock Animals on Crop Production in Abuja, Nigeria. Trends in Agricultural Economics, 5(4), 115-123.

Juwairiah, M. (2011). A Study on the Customer's Acceptance Towards Islamic Banking Product Among Non-Muslim in Dual Banking System (Doctoral dissertation, Universiti Utara Malaysia).

Kahf, M. (1990). The Concept of Credit in Islamic Economics. IRTI, Islamic Development Bank.

Kahf, M., & Khan, T. (1992). Principles of Islamic financing. research paper, (16). IRTI, Islamic Development Bank.

Kaleem, A. (2008). Application of Islamic Banking Instrument (Bay [Salam) For Agriculture Financing In Pakistan. Islamic Finance for Micro and Medium Enterprises, 131.

Kaleem, A., & Abdul Wajid, R. (2009). Application of Islamic banking instrument (Bai Salam) for agriculture financing in Pakistan. *British Food Journal*, 111(3), 275-292.

Kan, I., Haim, D., Rapaport-Rom, M., & Shechter, M. (2009). Environmental amenities and optimal agricultural land use: The case of Israel. Ecological Economics, 68(6), 1893-1898.

Kano State Budget, 2015 (http://www.KanoState.gov.ng)

Kano State Budget, 2016 (http://www.KanoState.gov.ng)

Kano State, free encyloypedia 2016 (http://www.kanostate.net).

Karbasioun, M., Mulder, M., & Biemans, H. (2008). Changes and problems of agricultural development in Iran. *World Journal of Agricultural Sciences*, 4(6), 759-769.

Kenny, D. A., & Judd, C. M. (1984). Estimating the nonlinear and interactive effects of latent variables. Psychological Bulletin, 96, 201-210.

Kessy, J., Msuya, S., Mushi, D., Stray-Pedersen, B., & Botten, G. S. (2016). Integration of Microfinance Institutions and Health Programs in Northern Tanzania. PARIPEX-Indian *Journal of Research,* 5(1).

Khaleequzzaman, M., & Shirazib, N. S. (2012). Islamic Microfinance–an Inclusive Approach with Special Reference to Poverty Eradication in Pakistan. *International Journal of Economics, Management and Accounting,* 20(1).

Khan (2008). Reported the influenced of *Murabahah* finance provide farm credit to improve the output of milk, cheese and yoghurt in Islamic Bosnia & Herzegovina. Data Islamic Relief captured from Germany initiatives *https://www.microfinancegateway.org/library/islamic-microfinance-theory-policy-and-practice*

Khan, T. (1996). An analysis of risk sharing in Islamic finance with reference to Pakistan (Doctoral dissertation, Loughborough University).

Kheng, Y.K., June, S., & Mahmood, R. (2013). The determinants of innovativeness work behavior in the knowledge intensive business services sector in Malaysia. Asian Social Science, 9(15), 47-59.

Khoja, E. M., Ghuddah, D. A. S. A., Sale, M., Sale, S., & Istisna'a, S. A. L. E. (1995). Instruments of Islamic Investments. *http://www.iefpedia.com/english/wp-content/uploads/2009/12/Instruments-of-Islamic-Investments.pdf.*

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. The quarterly journal of economics, 717-737.

King, Robert G., and Ross L. (1992a), "Financial Indicators and Growth in a Cross Section of Countries," World Bank Working Paper No. 819, 1992a.

Kloeppinger-Todd, R., & Ritchie, A. (2006). *Meeting Development Challenges: Renewed Approaches to Rural Finance*. World Bank. Agriculture and Rural Development Department.

Knowler, D., & Bradshaw, B. (2007). Farmers' adoption of conservation agriculture: A review and synthesis of recent research. Food policy, 32(1), 25-48.

Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. Educational and Psychological Measurement, 30, 607-610.

Krosnick, J. A., & Fabrigar, L.R. (1997). Desingning rating scales for effective measurement in surveys. In L. Lyberg, P. Biemer, M. Collins, E. De Leeuw, C. Dippo, N. Schwars and D. Trewin (Eds.), Survey measurement and process quality. New York: John Wiley & Sons, Inc.

Kura, K.M., (2016). Re-examining the relationship between perceived workgroup norms, self-regulatory efficacy and deviant workplace behaviour. African *Journal of Economic and Management Studies* 7 (3), 379-396.

Kura, K.M., Shamsudin, F.M., & Chauhan, A. (2015). Does self-regulatory efficacy matter? Effects of punishment certainty and punishment severity on organisational deviance. SAGE Open 5 (2), 1-14.

Lai, M. M., & Lau, S. H. (2010). Evaluating mutual fund performance in an emerging Asian economy: The Malaysian experience. *Journal of Asian Economics,* 21(4), 378-390.

Lambert, D. M., & Harrington, T. C. (1990). Measuring nonresponse bias in customer service mail surveys. *Journal of Business Logistics*, 11(2), 5-25.

Lang, T., & Barling, D. (2012). Food security and food sustainability: reformulating the debate. *The Geographical Journal,* 178(4), 313-326.

Langat, R. C. (2013). Determinants of lending to farmers by commercial banks in Kenya (Doctoral dissertation, University of Nairobi).

Lee, C., & Green, R. T. (1991). Cross-cultural examination of the Fishbein behavioral intentions model. *Journal of international business studies,* 289-305.

Lele, S. M. (1991). Sustainable development: a critical review. World development, 19(6), 607-621.

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-selectional research designs. *Journal of Applied Psychology*, 86, 114-121.

Lindner, J. R., & Wingenbach, G. J. (2002). Communicating the handling of nonresponse error in Journal of Extension Research in Brief articles. *Journal of Extension,* 40(6), 1-5.

Little, R. J. A., & Rubin, D. B. (1987). Statistical Analysis with Missing Data. New York: John Wiley & Sons, Inc.

Lohr, S. (2009). Sampling: design and analysis. Pacific Grove CA: Duxbury Press. *https://books.google.com/books/about/Sampling*.

Loisel, C. (2009). REDD Initiatives Outside the UNFCCC an October, 2009 Update. *http://theredddesk.org/sites/default/files/resources/pdf/2010/report_2_ongoing_redd_outside_the_unfccc.pdf*.

Maletta, H. E. (2014). Land and farm production: Availability, use, and productivity https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2484248

Mansoor K. M., & Ishaq B. M. (2008). Islamic banking and finance: on its way to globalization. *Managerial Finance*, 34(10), 708-725.

Marques, M. J., Schwilch, G., Lauterburg, N., Crittenden, S., Tesfai, M., Stolte, J., & Karkani, A. (2016). Multifaceted Impacts of Sustainable Land Management in Drylands: A Review. Sustainability, 8(2), 177.

Marwa, N. (2014). Micro, Small and Medium Enterprises' External Financing Challenges: The Role of Formal Financial Institutions and Development Finance Intervention in Tanzania. *International Journal of Trade, Economics and Finance,* 5(3), 230-234.

Mascarilla-Miró, Ò. (2009). The commodity markets. Paradigmes: Economia productiva i coneixement, (2).

Mastoor, S. A. (2014). Islamic Banking System in Afghanistan (No. 0200302). *International Institute of Social and Economic Sciences*.

Mattthew, A. O., & Uchechukwu, A. A. (2014). Rural Farmers Sources and Use of Credit in Nsukka Local Government Area of Enugu State, Nigeria. Asian *Journal of Agricultural Research*, 8(4), 195-203.

Matuschke, I. (2009, August). Rapid urbanization and food security: Using food density maps to identify future food security hotspots. In *International Associaton of Agricultural Economist Conference. Beijing, China* (pp. 16-22).

McCrae, R. R., Kurtz, J. E., Yamagata, S., & Terracciano, A. (2011). Internal consistency, retest reliability, and their implications for personality scale validity. [Article]. Personality & Social Psychology Review (Sage Publications Inc.), 15(1), 28-50.

McMillan, B., & Conner, M. (2003). Using the theory of planned behaviour to understand alcohol and tobacco use in students. Psychology, Health & Medicine, 8, 317-328.

Meyer, D. F. (2016). Solutions for Economic Development in Rural Regions: the case of the northern free State Region. Economic and Social Development: Book of Proceedings, 466.

Miyata, S., Minot, N., & Hu, D. (2009). Impact of contract farming on income: linking small farmers, packers, and supermarkets in China. World Development, 37(11), 1781-1790.

Mkpado, M., & Arene, C. J. (2007). Effects of Democratization of Group Administration on the Sustainability of Agricultural Micro Credit Groups in Nigeria. *International Journal of Rural Studies* (IDRS), 14(2).

Mohammadi, Y., & Fami, H. S. (2009). Investigation of the agricultural water management mechanisms in Zarindasht County, Fars Province, Iran. *American Journal of Agricultural and Biological Sciences,* 4(2), 110-117.

Mohammed, A. I, Bashir, A. A, Ogunbado, A. F., Sani, A.M, Salisu, Y. & Yakubu, S. M. (2016) *Murabahah* finance as a potential moderator on the relationship between farm infrastructure and agricultural output in Kano State, Nigeria. International Conference Organized by: School of government, Universiti Utara Malaysia (UUM), Sintok, Keda, ISBN 978-983-44661-7-6.

Mohammed, A. I. Bashir A.A, 7 Ogunbado, T., (2016). The Viability of Salam Finance in the Growth of Agricultural Production in Kano State, Nigeria. *Asian Journal of Multidisciplinary Studies, 4(12).*

Mohammed, A. I., Bashir A.A, 7 Ogunbado, T (2017). The Effect on Farm Credit and Farm Produce in Kano State, Nigeria. *International Journal of Innovative Knowledge Concepts*, 3(1).

Mohammed, A. I., & Isah, U. G. (2016). Salam in Financing the Green Enterprenueship Education In Nigeria. *Asian Journal Of Multidisciplinary Studies*, *5*(1).

Mohammed, H. S. E. A., & Hussien, A. I. M. (2012). The Finance Of Wheat In Gezira   Scheme, Sudan. International Working Paper Series, Paper N.12/03.

Mohammed, S., Ibrahim, U. S., & Abubakar, N. (2014). Effect of hike in food prices on household food expenditure in kano State, Nigeria: a case of 2008 global food crisis. *Agriculture and Biology Journal Of North America*, 5(4): 155-159.

Mohsin, M. I. A. (2005). The practice of Islamic banking system in Sudan. Journal of Economic Cooperation, 26 (4), 27-50.

Monke, J. (2015). Farm Credit System - The National Agricultural Law Centre Specialist in Agricultural Policy. April 6, 2015. Congressional Research Service. 7-5700 www.crs.gov. RS21278. http://nationalaglawcentre.org/wp-content/uploads/assets/crs/RS21278.pdf.

Motamed, M. K., & Devisti, H. (2012). Environmental and Socio-Economic impacts of Drought from the viewpoint of Guilan Paddy farmers, North of Iran. *Caspian Journal of Environmental Sciences*, 10(2), 227-235.

Mudiwa, B. (2017). Theories of Smallholder Agribusiness Entrepreneurship in the African Context: A Critical Review. AFRREV IJAH: *An International Journal of Arts and Humanities,* 6(1), 221-236.

Mufti N. A. Q. (2009), Heeliyatul Ulama fimu'arifatu muzahibul fuqaha, The Islamic economic approach darul- ishaat karachi-pakistan p.210-224.

Muhammada, M. Z., & Chonga, R. (2007). The Contract of Bay'Al-Salam and Istisna'in Islamic Commercial Law: A comparative analysis. Labuan e-*Journal of Muamalat and Society*, 1, 21-28.

Multiple vs single lending relationships in the agricultural sector. Agricultural Finance Review, 74(1), 55-68.

Mundial, B. (2006). World Development Report 2007: Development and the next generation.World Bank.

Mundial, B. (2010). Rising global interest in farmland: Can it Yield Sustainable and EquiTable Benefits?. Washington, DC, Banco Mundial, 35.

Muneeza, A., Nurul Atiqah Nik Yusuf, N., & Hassan, R. (2011). The possibility of application of Salam in Malaysian Islamic banking system. Humanomics, 27(2), 138-147.

Murphy, A. J. (2011). Farmers' markets as retail spaces. *International Journal of Retail & Distribution Management,* 39(8), 582-597.

Mustapha I., F., (May, 2012). The Servant: A Kano State Civil Service Newsmagazine Vol.5 No. 12.

Muyanga and Jayne (2014). This research measures how Kenyan farmers and farming systems have responded to changes in population density and associated land. http://www.sciencedirect.com/science/article/pii.

Muyanga, M., & Jayne, T. S. (2014). Effects of rising rural population density on smallholder agriculture in Kenya. Food Policy, 48, 98-113.

National Population Commision (NPC) (2015): *htt://countrymeters.info/en/*

Neuman, W., & Robson, K. (2008). Basics of social research- Qualitative and Quantitative approaches. Pearson Canada, Toronto.

Neuman, W.L.(2000). Social Research Methods: Qualitative and Quantitative Approaches, 4th edn, Allyn & Bacon, Needham Heights, MA.

Ngaruko, D. D. (2014). Determinants of Demand for and Repayment of Farm Credit in Economies with Market Coordination Failures: *A Tanzanian context. African Journal of Economic Review,* 2(2), 95-124.

Nigerian GDP, 2014 (*http://www.tradingeconomics.com/nigeria/gdp*).

Nigerian GDP, 2015 (*http://www.tradingeconomics.com/nigeria/gdp*).

Nijbroek, R. P., & Andelman, S. J. (2016). Regional suitability for agricultural intensification: a spatial analysis of the Southern Agricultural Growth Corridor of Tanzania. *International Journal of Agricultural Sustainability*, 14(2), 231-247.

Nikrooz Bagheri (2013). Factor analysis of agricultural mechanization challenges in Iran. *http://www.cigrjournal.org*.

Nkonde, C., Jayne, T. S., Richardson, R., & Place, F. (2015, March). Testing The Farm Size-Productivity Relationship Over A Wide Range Of Farm Sizes: Should The Relationship Be A Decisive Factor In Guiding Agricultural Development And Land Policies In Zambia?. In World Bank Land and Poverty Conference.

Norton Rose Fulbright manual (June, 2013): Islamic finance library. A reference manual for anyone involved in Islamic finance.

Nwosu, F. O., Oguoma, N. N. O., Ben-Chendo, N. G., & Henri-Ukoha, A. (2010). The agricultural credit guarantee scheme: its roles, problems and prospects in Nigeria's quest for agricultural development. Researcher, 2, 87-90.

Obaidullah, M. (2015). Enhancing food security with Islamic microfinance: insights from some recent experiments. Agricultural Finance Review, 75(2), 142-168.

Obaidullah, M., & Mohamed-Saleem, A. (2008). Innovations in Islamic microfinance: lessons from Muslim Aid's Sri Lankan experiment. Islamic Development Bank, Jeddah, KSA.

Obayelu, A. E., Olarewaju, T. O., & Oyelami, N. L. (2014). Effect of rural infrastructure on profitability and productivity of cassava-based farms in Odogbolu local government area, Ogun State, Nigeria. *Journal of Agricultural Sciences, Belgrade,* 59(2), 187-200.

Odufote, B. O. (2012). Enhancing Credit Flow to the Agricultural Sector: The Case of Central Bank of Nigeria's Commercial Agriculture Credit Scheme (CACS) (No. 160460). African Farm Management Association (AFMA).

Ogbonna, I. C., Uwajumogu, N. R., Chijioke, G., & Nwokoye, E. S. (2013). Oil Exploitation and Agricultural Commodity Export in Nigeria: An Empirical Evaluation of the Extent and Impact of the Dutch.

Ogege, S., & Ezike, J. E. (2012). The Nigerian capital market and economic development: A critical appraisal. International Business Research, 5(8), p228.

Ogunbado A.F & Ahmed U. (2015). Bay' Salam as an Islamic Financial Alternative for Agricultural Sustainability in Nigeria. *Journal of Islamic Economics, Banking and Finance (JIEBF).*Vol. 11, No 4.

Ogunbado, A. F. (2011). Mechanisms of poverty eradication: An Islamic perspective. The Islamic quarterly, 55(4), 295-315.

Ogunlela, Y. I., & Mukhtar, A. A. (2009). Gender issues in agriculture and rural development in Nigeria: The role of women. *Humanity & social sciences Journal, 4(1), 19-30.*

Ogwumike, F. O. (2002). An appraisal of poverty reduction strategies in Nigeria. CBN Economic and Financial Review, 39(4), 1-17.

Okpara, G. C. (2010). Research of the critical sources of investment finance in Nigeria: A factor analytical approach. *American Journal of Scientific and Industrial Research,* 1(2), 309-313.

Olaitan, M. A. (2006). Finance for small and medium enterprises: Nigeria's agricultural credit guarantee scheme fund. *Journal of International Farm Management*, *3*(2), 30-38.

Olujenyo, F. O. (2008). The determinants of agricultural production and profitability in Akoko Land, Ondo-State, Nigeria. *Journal of Social Sciences*, 4(1), 37-41.

OlumuyiwaAkinrole, O. (2014). Impacts of Agricultural Development Programme (ADP) on Rural Dwellers in Nigeria: A Study of Isan-Ekiti. *International Research Journal of Finance and Economics,* (128).

Ommani, A. R. (2011). Influence Youth Interest To Become Agricultural Entrepreneur. *http://ijbssnet.com/journals/Vol_4_No_3_March_2013/31.pdf.*

Onyekuru, A. N. (2010). Review of Private Agricultural Advocacy Groups in Nigeria. International food policy institute. Policy Note No.27.

Onyenucheya, F., & Ukoha, O. O. (2007). Loan Repayment and Credit Worthiness of Farmers under the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB). *Agricultural Journal, 2*(2), 265-270.

Organ, D. W., & Ryan, K. (1995). A meta-analytic review of attitudinal and dispositional predictors of organizational citizenship behaviour. Personnel Psychology, 48, 775-802.

Otsuka, K., Liu, Y., & Yamauchi, F. (2014). The Future of Small Farms in Asia. paper submitted to the Overseas Development Institute and International Fund for Agricultural Development.

Otsuka, K., Liu, Y., & Yamauchi, F. (2015). The Future of Small Farms in Asia (No. 212721). International Association of Agricultural Economists.

Pallant, J. (2010). SPSS survival manual: A step by step guide to data analysis using SPSS (4th ed.). New York, NY: Open University Press.

Pearce, D., Davis, J., Onumah, G., & Butterworth, R. (2004). Making rural finance count for the poor. Agriculture and Natural Resources Team of the UK Department for International Development (DFID) in collaboration with the Natural Resources Institute, UK.

Pearson, L. J., Pearson, L., & Pearson, C. J. (2010). Sustainable urban agriculture: stocktake and opportunities. *International journal of agricultural sustainability*, 8(1-2), 7-19.

Peng, D. X., & Lai, F. (2012). Using partial least squares in operations management research: A practical guideline and summary of past research. *Journal of Operations Management,* 30, 467-480.

Peterson, R. A., & Kim, Y. (2013). On the relationship between coefficient alpha and composite reliability. *Journal of Applied Psychology*, 98, 194-198.

Phillip, D., Nkonya, E., Pender, J., & Oni, O. A. (2009). Constraints to increasing agricultural productivity in Nigeria: A review (No. 6). International Food Policy Research Institute (IFPRI).

Piprek, G. (2007). Linking with Savings and Credit Cooperatives (SACCOs) to expand financial access in rural areas: a case research of CRDB Bank in Tanzania. Rural Finance Group of the Food and Agriculture Organization (FAO) of the United Nations.

Plusquellec, H. (1990). The Gezira irrigation scheme in Sudan. *World Bank technical paper*, (120).

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management,* 12, 531-544.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. Annual review of psychology, 63, 539-569.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879-903.

Porter, S. R. (2004). Raising response rates: what works? In S. R. Porter (Ed.), Overcoming survey research problems. New Directions for Institutional Research (pp. 5-22). San Francisco: Jossey-Bass.

Preacher, K. J., & Hayes, A. F. (2004). SPSS And SAS Procedures For Estimating Indirect Effects In Simple Mediation Models. Behavior Research Methods, Instruments, & Computers, 36(4), 717-731.

Putri, M. A., & Dewi, (2011). M. K. Developing Salam-Based Financing Product: Indonesian Islamic Rural Bank. Business & Management Quarterly Review, 2(4), 103-112.

Qureshi, I., Yasmin, R., Ilyas, K., Whitty, M., & Khan, J. (2013). Information communication technologies (ict) and its impact on the livelihood of communities involved in the agriculture: A case study of Pakistan. Middle-East *Journal of Scientific Research*, 18(5), 627-634.

Rahman, A. A., & Yousif, O. (2016). Role of Private Agricultural Extension Sector in Gezira State, Sudan. American Scientific *Research Journal for Engineering, Technology, and Sciences* (ASRJETS), 25(1), 281-288.

Rammal, H and Zurbruegg R (2007). Awareness of Islamic banking products among Muslims: The case of Australia. *Journal of Financial Services Marketing*. 12(1), 65-74.

Randall, D. M., & Fernandes, M. F. (1991). The Social Desirability Response Bias in ethics research. *Journal of Business Ethics,* 10(11), 805-817.

Rankin, M., Kelly, S., Galvez-Nogales, E., Dankers, C., Ono, T., Pera, M., & Vandecandelaere, E. (2016). FAO Conference on: Rural Transformation, Agricultural and Food System Transition.

Rasmin, N. H., & Markom, R. (2014). An Overview on Implementation of Ar-Rahnu in Malaysia. *Persidangan Kebangsaan Ekonomi Malaysia ke-9 (PERKEM ke-9), Urus tadbir Ekonomi yang Adil: Ke Arah Ekonomi Berpendapatan Tinggi*, 17-19.

Rasouliazar, S., Hosseini, S. M., & Mirdamadi, S. M. (2012). Factors influencing the design of agricultural advisory service network in the West Azerbaijan Province. *International Journal of Agricultural Science and Research*, 1(1), 59-66.

Reardon, T., & Timmer, C. P. (2014). Five inter-linked transformations in the Asian agrifood economy: Food security implications. Global Food Security, 3(2), 108-117.

Reinartz, W. J., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing,* 26, 332-344.

Rigdon, E. E., Ringle, C. M., Sarstedt, M., & Gudergan, S. P. (2011). Assessing heterogeneity in customer satisfaction studies: across industry similarities and within industry differences. Advances in International Marketing, 22, 169-194.

Rigdon, E. E., Schumacker, R. E., & Wothke, W. (1998). A comparative review of interaction and nonlinear modeling. In R. E. Schumacker & G. A. Marcoulides (Eds.), Interaction and nonlinear effects in structural equation modeling (pp. 1- 16). Mahwah, NJ: Lawrence Erlbaum.

Ringle, C. M., Sarstedt, M., & Straub, D. W. (2012a). A Critical Look at the Use of PLS-SEM in MIS Quarterly. MIS Quarterly, 36(1), iii-xiv.

Ringle, C. M., Sarstedt, M., & Straub, D. W. (2012b). Editor's comments: a critical look at the use of PLS-SEM in MIS quarterly. MIS Quarterly, 36(1), iii-xiv.

Ringle, C. M., Wende, S., & Becker, J. M. (2014). SmartPLS 3. Hamburg: SmartPLS. *Academy of Management Review*, *9*, 419-445.

Ringle, C. M., Wende, S., & Will, A. I. H. W. S. D. (2005). SmartPLS release: 2.0 (beta). *SmartPLS, Hamburg, Germany. URL http://www. smartpls. de*.

Rivera, W. M., & Qamar, M. K. (2003). Agricultural Extension, Rural Development and the Food Security Challenge. Rome: Food and Agriculture Organization of the United Nations.

Rizvi, S. A. R., Arshad, S., & Lahsasna, A. (2014). Derivatives in Islamic finance: the need and mechanisms available. *International Journal of Financial Services Management,* 7(3-4), 177-195.

Rosenzweig, M. R., & Wolpin, K. I. (1993). Credit Market Constraints, Consumption smoothing, and the accumulation of durable production assets in low-income countries: Investments in bullocks in India. *Journal of political economy*, 223-244.

Rosly, S. A., Ibrahim, M. H., & Abdullah, N. (2003). The X-Efficiency of the Sudanese Islamic Banks. *International Journal Of Economics, Management And Accounting,* 11(2).

Ross L., (1993c) "Finance and Growth: Schumpeter Might Be Right," World Bank Working Paper No. 1083.

Sadegh, E. M., Khalil, K., & Ali, A. (2012). Factor Analysis of Paddy-Field Consolidation: Case Study of Iran. Sustainable Agriculture Research, 1(2), 108.

Saeed, R., Ashraf, R. U., Zaidi, S. A. H., Lodhi, R. N., Ahmad, W., Awan, U., & Malik, Q. U. Z. (2013). Islamic and Conventional Agri-Financing in Pakistan. Scientific Papers Series-Management, Economic Engineering in Agriculture and Rural Development, 13(2), 357-361.

Saibu, M. O. (2010). Output Fluctuations And Macroeconomic Policy In Nigeria: Trends Analysis And Policy Implication for Attainment Of Needs And Mdgs In Nigeria. *Oida International Journal of Sustainable Development* Vol 2 (2) Pp11, 26.

Salami, A., Kamara, A. B., & Brixiova, Z. (2010). Smallholder agriculture in East Africa: trends, constraints and opportunities. Tunis, Tunisia: African Development Bank.

Saleem, S. (2007). Role of Islamic banks in economic development. MPRA Paper, (6449). *http://mpra.ub.uni-muenchen.de/7332/*

Saqib, L., Nazeer, N., Khan, K., & Zafar, M. A. (2013). Application of Islamic banking instrument (Murābaha) for sugarcane industry in developing countries. *Journal of Islamic Economics, Banking and Finance*, 9(1), 89-106.

Sardar, A., Azeem, M. M., Hassan, S., & Bakhsh, K. (2013). Comparison of efficiency between pure Islamic banks and Islamic bank windows and role of Islamic banking in agriculture sector. Pak. J. Agri. Sci, 50(1), 155-161.

Sarker, M. A. A. (1999). Islamic business contracts, agency problem and the theory of the Islamic firm. International *Journal of Islamic Financial Services*, 1(2), 12-28.

Sattler, H., Völckner, F., Riediger, C., & Ringle, C. M. (2010). The Impact of Brand Extension Success Factors on Brand Extension Price Premium. *International Journal of Research in Marketing,* 27(4), 319-328.

Sayım, F. (2015). The Participation Banking As a Distinctive Method and the Its Growing in the Turkish Finance Market-Period: 2007-2013. *EMAJ: Emerging Markets Journal,* 5(1), 93-111.

Schlaegel, C., & Dalanoe, S. (2011). The Role of Social Influence, Culture and Gender on Entrepreneurial Intent. *Journal of Small Business and Entrepreneurship*, 24(4), 471-492.

Seibel, H. D, A. Rachmadi, and D. Kusumayakti (2010): "Reform, Growth and Resilience of Savings-Led Commercial Microfinance Institutions: The Case of the Microbanking Units of Bank Rakyat Indonesia." Savings and Development (2010): 277-303.

Seibel, H. D. (1985). Saving for Development: A Linkage Model for Informal and Formal Financial Markets (No. 1985, 1). Working paper/University of Cologne, Development Research Centre.

Seibel, H. D. (2000). Poverty reduction and rural finance: From unsustainable programs to sustainable institutions with growing outreach to the poor (No. 2000,8). Working paper/University of Cologne, Development Research Centre.

Sekaran, U. (2003). Research methods for business: A skill building approach (4thedition). New Jersey: John Wiley and Sons.

Sekaran, U. (2006). Research methods for business: A skill building approach. John Wiley & Sons.

Sekaran, U., & Bougie, R. (2010). Research Methods for Business: A skill building approaches (5th ed.). New Jersey: John Wiley and Sons: UK.

Sekumade, A. B. (2009). The Effects of Petroleum Dependency on Agricultural Trade in Nigeria: An error correlation modeling (ECM) approach. Sci. Res. Essay, 4, 1385-1391.

Selya, A. S., Rose, J. S., Dierker, L. C., Hedeker, D., & Mermelstein, R. J. (2012). A practical guide to calculating Cohen's f2, a measure of local effect size, from Proc Mixed. Frontiers in psychology, 3, 111-116.

Shafiai, M. H. M., & Moi, M. R. (2015). Financial Problems among Farmers in Malaysia: Islamic Agricultural Finance as a Possible Solution. Asian Social Science, 11(4).

Shehu, A.M., & Mahmood, R. (2014). Determining the effects of organizational culture on small and medium enterprises performance: A SEM Approach. *Journal of Economics and Sustainable Development*, 5(17), 1-9.

Shui, W., Bai, J., Zhang, S., & Chen, Y. (2014). Analysis of the Influencing Factors on Resettled Farmer's Satisfaction under the Policy of the Balance between Urban Construction Land Increasing and Rural Construction Land Decreasing: A Case Study of China's Xinjin County in Chengdu City. Sustainability, 6(12), 8522-8535.

Shushtar(2014). Organizing them in Shushtar Township. This Research was aimed at Identifying Appropriate Solutions of Fragmented Lands Organizing in Shushtar. http://www.cibtech.org/sp.ed/jls/2014/03/jls-247-s3-247-tahmasb evaluation.pdf.

Siddiqi, M. N. (2006). Islamic banking and finance in theory and practice: A Survey of State of the Art. Islamic Economic Studies, 13(2), 1-48.

Simtowe, F., Zeller, M., & Diagne, A. (2009). The Impact of Credit Constraints on the Adoption of Hybrid Maize in Malawi. Review of Agricultural and Environmental studies, 90(1), 5-22.

Sippel, S. R., Larder, N., & Lawrence, G. (2016). Grounding the financialization of farmland: perspectives on financial actors as new land owners in rural Australia. Agriculture and Human Values, 1-15.

Sitko, N. J., & Jayne, T. S. (2014). Structural Transformation or Elite Land Capture? The Growth of "emergent" Farmers in Zambia. *Food Policy*, *48*, 194-202.

Sour, A., Arzan, H., Feizizadeh, B., Tavilli, A., & Alizadeh, E. (2013). GIS multi – criteria evolution for determination of Rangerland suitability for goat grazing in the middle Teleghan rangerlands. *International Journal of Agronomy and Plant Production,* 4(7), 1499-1510.

Spector, P. E. (2006). Method variance in organizational research: Truth or urban legend? Organizational Research Methods, 9, 221-232.

Sridhar Thapa (2007).Contributed Paper Prepared for Presentation at the 106th Seminar of the EAAE Pro-Poor Development in Low Income Countries: Food, Agriculture, Trade & Environment 25-27 October, 2007–Montpellier, France.

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society*. Series B (Methodological), 36, 111-147.

Suharsono, J., & Candra, S. D. (2013). Murabaha in Sharia Added Value, an Effort to Increase Probolinggo Shallot Farmers' Economic Scale and Spirituality. *http://ssrn.com/abstract=2596062*

Sun, W., Chou, C.-P., Stacy, A., Ma, H., Unger, J., & Gallaher, P. (2007). SAS and SPSS macros to calculate standardized Cronbach's alpha using the upper bound of the phi coefficient for dichotomous items. Behavior Research Methods, 39(1), 71-81.

Swinnen, J. F., & Maertens, M. (2014). Finance through Food and Commodity Value Chains an a Globalized Economy. In Finance for Food (Pp. 45-65). Springer Berlin Heidelberg.

Tabachnick, B. G., & Fidell, L. S. (2007). Using Multivariate Statistics (5th ed.). Boston, MA: Allyn & Bacon/Pearson Education.

Tambo, J. A., & Abdoulaye, T. (2013). Smallholder Farmers' Perceptions of and Adaptations to Climate Change in the Nigerian Savanna. *Regional Environmental Change*, *13*(2), 375-388.

Tanur, J. M. (1982). Advances in methods for large-scale surveys and experiments. R. McC. Adams, N. Smelser, and D. Treiman, editors, Behavioral and Social Science Research: A National Resource, National Academy Press, Washington, DC.

Tariqullah K., (1996). Chapter 2: Islamic Finance in Theory: Evolution and Economics of Profit Sharing, Federal Shariat Court of Pakistan, Judgment on Interest (Riba), Jeddah: IRTI.

Temme, D., Kreis, H., & Hildebrandt, L. (2006). *PLS path modeling: A software review* (No. 2006, 084). SFB 649 discussion paper.

Temme, D., Kreis, H., & Hildebrandt, L. (2010). A Comparison of Current PLS path Modeling Software: Features, Ease-of-use, and Performance. *Handbook of partial least squares*, 737-756.

Temu, A. E., Nyange, D., Mattee, A. Z., & Kashasha, L. K. (2013). Assessing Rural Services, Infrastructure and their Impact on Agricultural Producfion, Markefing and Food Security in Tanzania

Tenaw, S., Islam, K. Z., & Parviainen, T. (2009). Effects of Land Tenure and Property Rights on Agricultural Productivity in Ethiopia, Namibia and Bangladesh. Helsinki, Department of Economics and Management, University of Helsinki, 33.

Tendai, M. (2014). Bindura Univesity of Science Education Faculty of Commerce Department of Accountancy (Doctoral Dissertation, Bindura University of Science Education).

Thomas S. Jayne, Antony Chapoto, Nicholas Sitko, Chewe Nkonde, Milu Muyanga, and Jordan Chamberlin. Smallholder, E. A., & Strategy, A. E. (2014). *Journal of International Affairs*, 67(2).

Tibi, K., & Edebiri, F. (2015). Access to Microcredit- A Sure Way of Breaking the Vicious Circle of Poverty Among Farmers in Ethiope East Local Government Area, Delta State, Nigeria. Vol-2, Issue-8 PP. 1275-1184.

Traina, S. B., MacLean, C. H., Park, G. S., & Kahn, K. L. (2005). Telephone reminder calls increased response rates to mailed study consent forms. *Journal of Clinical Epidemiology*, 58, 743-746.

Trukhachev, V., Ivolga, A., & Lescheva, M. (2014). Enhancement of Land Tenure Relations as a Factor of Sustainable Agricultural Development: Case of Stavropol Krai, Russia. Sustainability, 7(1), 164-179.

Ugwu, D. S., & Kanu, I. O. (2012). Effects of agricultural reforms on the agricultural sector in Nigeria. *Journal of African Studies and Development,* 4(2), 51-59.

Usmani M. T., (2008). An Introduction to Islamic Financial System, 1st Edition, Maktaba Maariful Quran Karachi Pakistan.

Valbuena, D., Erenstein, O., Tui, S. H. K., Abdoulaye, T., Claessens, L., Duncan, A. J., & Van Wijk, M. T. (2012). Conservation Agriculture in Mixed Crop–Livestock Systems: Scoping Crop Residue Trade-Offs In Sub-Saharan Africa and South Asia. Field Crops Research, 132, 175-184.

Van De Fliert, E., Simpson Reeves, L., Walker, G., Sepulveda, C., Sam, S., & Ngussie, H. (2014). Mainstreaming Communication for Development in Policies and Programmes. Enabling social inclusion to support food and nutrition security, resilient rural livelihoods and family farming.

Van Thanh, N., & Yapwattanaphun, C. (2015). Banana Farmers' Adoption of Sustainable Agricultural Practices in the Vietnam Uplands: The Case of Quang Tri Province. Agriculture and Agricultural Science Procedia, 5, 67-74.

Venkatesan, M. (2016). The Global Agriculture and Food Security Program: An Evaluation of the Public Private Partnership in Malawi. African Journal of Agriculture and Food Security. *African Journal of Agriculture and Food Security* 4(2), 153-156.

Venkatraman, N., & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. Academy of management review, 11(4), 801-814.

Verardi, V., & Croux, C. (2008). Robust Regression in Stata. Available at SSRN 1369144.

Visser, O. (2017). Running out of farmland? Investment Discourses, Unstable Land Values and the Sluggishness of Asset Making. *Agriculture and Human Values*, *34*(1), 185-198.

Viswanathan, M., & Kayande, U. (2012). Commentary on "Common method bias in marketing: Causes, mechanisms, and procedural remedies". *Journal of Retailing,* 88, 556-562.

Watkins, N. (2011). The Global Agricultural and Food Security Program (GAFSP): An Innovative Fund to Fight Hunger. Modernize Aid.

Wetzels, M., Odekerken-Schroder, G., & Van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: guidelines and empirical illustration. MIS Quarterly, 33, 177-195.

Wilden, R., Gudergan, S. P., Nielsen, B. B., & Lings, I. (2013). Dynamic capabilities and performance: Strategy, Structure and Environment. Long Range Planning, 46(1–2), 72-96.

Wilson, B., Callaghan, W., Ringle, C., & Henseler, J. (2007). Exploring Causal Path Directionality for a Marketing Model using Cohen's Path Method. Paper Presented at the PLS'07 International Symposium on PLS and Related Methods– Causalities Explored by Indirect Observation, Oslo.

Wilson, J. (2010). Esssentials of business research- A guide to doing your research project. New Delhi: Sage Publication.

Wold, H. (1982). Soft modeling: the basic design and some extensions. Systems under indirect observation, Part II, 36-37.

Wold, H. (1985). Partial Least Squares. In S. Kotz & N. L. Johnson (Eds.).

Women Farmers Advancement Network (WOFAN) (2016). *hptt;www.wofan ng.org/index.php?option=com_content&view=article&id=306.*

Wong, K. K. K. Partial Least Squares Structural Equation Modeling (PLS-SEM) Techniques Using SmartPLS. Marketing Bulletin. 2013; 24: 1-32.

Yamusa, A. I. (2014). Farmers 'Cooperatives and Agricultural Development In Kwali Area Council, Federal Capital Territory, Abuja, Nigeria (Doctoral Dissertation, Ahmadu Bello University, Zaria).

Zaher, T. S., & Kabir Hassan, M. (2001). A comparative literature survey of Islamic finance and banking. Financial Markets, Institutions & Instruments, 10(4), 155-199.

Zakeri, R., Jafari, M., Tavili, A., Sangooni, H., & Soltoni, N. (2013). The Effects of Alfalfa Planting in Abandoned Rain–feed on Soil and Vegetation Characteristics, Mane and Semelgha, Iran. *International Journal of Agronomy and Plant Production*, 4(1), 57-63.

Zikmund, G. W., Babin, B.J., Carr, J.C., & Griffin, M. (2010). Business Research Methods (8thed.). USA: South Western college Publishing.

Zikmund, W. G. (2000). Business Research Methods (6th edition). USA: Harcourt.

Zikmund, W. G. (2003). Business Research Methods 7th ed. Thomson/South-Western.

RESEARCH QUESTIONNAIRE

SURVEY QUESTIONNAIRE

Research Title: Relationship between farm credit, farmland, farm infrastructure and agricultural output in Kano State, Nigeria: The moderating effect of *Murabahah* finance.

Objective: To investigate the moderating effect on the relationship between farm credit, farmland, farm infrastructure and agricultural output in Kano State, Nigeria.

Target: Individual farmers

Dear Respondent

I am a PhD (Islamic Economics) research student in the above university, currently conducting a survey on the above titled research. The following are the self-explanatory questions that will not take much of your time to answer. Your kind and objective response would be appreciated as it will significantly contribute towards the achieving of the above mentioned objective of the study. Please note that your response will be treated strictly confidential, therefore do not put down your name or your company's name on the questionnaire.

Please do not hesitate to contact the researcher for any enquiry about this research.

Thank you.

Ahmed Ibrahim Mohammed (96190)

E-mail: ahmad.ibrahimmuhammad@yahoo.com

Phone: +601116625014, +2348030473617

Supervisors

(1)   Dr. Bashir Ahmad Aziz   (2)   Dr. Ahmad Fousiy Ogunbado

Mobile: +60194417091   Mobile: +60172497394

Part A

Instruction:

The following questions will help us understand your behaviour at work. You are not being subjected to tests. There is no right or wrong answers to any question. We believe that the success of this survey is highly dependent on your answers to all questions. Please indicate as honestly and as objectively the extent to which you have engaged in the following behaviour in your university. Use the scales provided below to indicate your level of agreement or disagreement with each Statement. Please **TICK ONE BOX ONLY** for each question. [√]

Strongly disagree	1	Disagree	2	Undecided	3	Agree	4	Strongly agree	5

Section 1

The following statements describe your agricultural output. Please, indicate the extent to which you agree or disagree with the statement on agricultural output.

Strongly Disagree, 1	Disagree, 2	Undecided, 3	Agree, 4	Strongly Agree 5				
AOP1	I produce my agricultural output in less than 2 hectares of land	1	2	3	4	5
AOP2	I produce my agricultural output in 3-8 hectares of land	1	2	3	4	5
AOP3	I produce my agricultural output in 9-11 hectares of land	1	2	3	4	5
AOP4	I produce my agricultural output in 12 and above hectares	1	2	3	4	5
AOP5	I used to spend less than 2 hours per hectare in a day	1	2	3	4	5
AOP6	I used to spend 3 and above hours per hectare in a day	1	2	3	4	5
AOP7	I produced less than 50,000 gross of agricultural output in the last season.	1	2	3	4	5
AOP8	I produced 50,001-70,000 gross of agricultural output in the last season.	1	2	3	4	5

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AOP9	I produced 70,001-80,000 gross of agricultural output in the last season.	1	2	3	4	5
AOP10	I produced 80,001 and above gross of agricultural output in the last season.	1	2	3	4	5

Section 2

The following statements describe your farm credit. Please indicate the extent to which you agree or disagree with the statement on farm credit.

Strongly Disagree,	Disagree,		Neutral,	Agree,	Strongly Agree	
1	2		3	4	5	
FC1	The bank gives loans to finance farming activities.	1	2	3	4	5
FC2	The interest rate charged on loans restricts farmers from borrowing.	1	2	3	4	5
FC3	The interest rate charged by the banks is always favourable to farmers.	1	2	3	4	5
FC4	Farmers are able to take loans at any rate.	1	2	3	4	5
FC5	The banks always offer farmers better interest.	1	2	3	4	5
FC6	The interest rate discourages farmers from. applying for loans	1	2	3	4	5
FC7	The loan repayment period that the bank gives enables farmers to accumulate assets.	1	2	3	4	5
FC8	The loan repayment period enables borrowers to pay all their pending loans in time.	1	2	3	4	5
FC9	The loan repayment period given by the bank always favours farming activities.	1	2	3	4	5
FC10	Farmers have a reliable source of income that enables them to pay back their loans in time.	1	2	3	4	5

Section 3

The following statements describe your farmland. Please indicate the extent to which you agree or disagree with the statement on farmland.

Strongly Disagree,	Disagree,	Neutral,	Agree,	Strongly Agree				
1	2	3	4	5				

FL1	Due to the gradual building of farmland to non agricultural activities of family members this leads to the shortage of farmland.	1	2	3	4	5
FL2	Lack of support for small scale farmers causes low motive to work in to the agricultural sector that leads to the sales of farmland.	1	2	3	4	5
FL3	Population increases shift town physical space to farmland.	1	2	3	4	5
FL4	Poor fertility of farmland caused by pollution leads to the inability to support agricultural land.	1	2	3	4	5
FL5	Infrastructure development such as the construction of air port, stadium also disrupted the farmland.	1	2	3	4	5
FL6	Inappropriate allocation of farmland by the government officials to non agricultural projects such as hotel, factory etc affected the farmland.	1	2	3	4	5

Section 4

The following statements describe your infrastructure. Please indicate the extent to which you agree or disagree with the statement on farm infrastructure.

Strongly Disagree,	Disagree,	Neutral,	Agree,	strongly Agree				
1	2	3	4	5				

F/INF1	Using inappropriate transportation method of infrastructure.	1	2	3	4	5
F/INF2	Distance between harvesting and storage facilities is a constraint.	1	2	3	4	5
F/INF3	The inappropriateness of storage house and fridge facilities.	1	2	3	4	5

F/INF4	Low information about production and marketing of farm credit.	1	2	3	4	5
F/INF5	Insufficient skills and healthy labours is a constraint.	1	2	3	4	5
F/INF6	Insufficient extension workers limit the output.	1	2	3	4	5
F/INF7	Inadequate technology declines the output	1	2	3	4	5
F/INF8	Poor road and distance from farm to market limit the output.	1	2	3	4	5

Section 5

The following statements describe your infrastructure. Please indicate the extent to which you agree or disagree with the statement on *Murabahah* finance.

Strongly disagree, 1	Disagree, 2	Neutral, 3	Agree, 4	Strongly Agree 5		
MF1	Engaging in *Murabahah* finance is fair	1	2	3	4	5
MF2	Engaging in *Murabahah* finance will benefit both farmers and bankers.	1	2	3	4	5
MF3	Engaging in *Murabahah* finance will provide me with alternatives to the available financial instrument.	1	2	3	4	5
MF4	Engaging in *Murabahah* finance will provide me with lower service charges.	1	2	3	4	5
MF5	*Murabahah* finance is developed according to the S*hariah* principle.	1	2	3	4	5

Part B

Instruction: Please read and tick as appropriate in the provided boxes your exact assessment of the following demographic information:

1. Gender

Male (1) ☐

Female (2) ☐

Poultry (3)

Fisheries (4)

Forestation (5)

2. Age

18 -29 (1) ☐

30- 39 (2) ☐

40-59 (3) ☐

60 and above (4) ☐

3. Level of Education

Primary   (1) ☐

SSCE   (2) ☐

ND/NCE (3) ☐

Degree/HND (4) ☐

PGD/Masters (5) ☐

PhD (6) ☐

4. Type of Farming

Farmer (1) ☐

Postural (2) ☐

☐

☐

☐

5. Size of Farming

Large scale farmer (1) ☐

Medium scale farmer (2) ☐
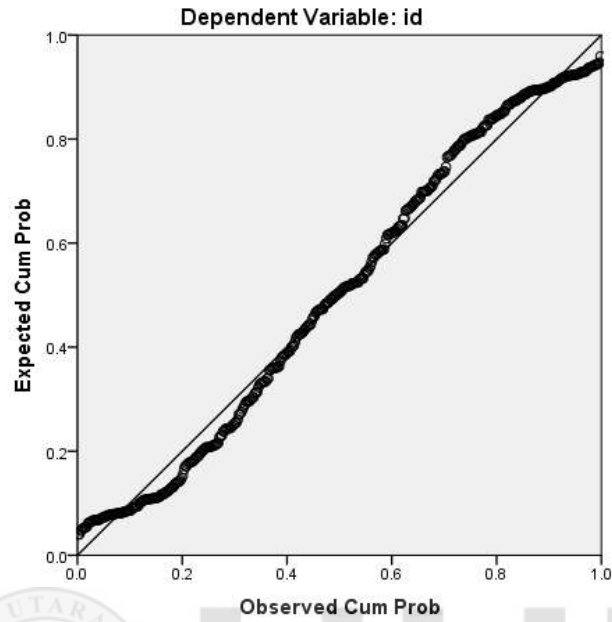
Small scale farmer (3) ☐

6. Number of Employee
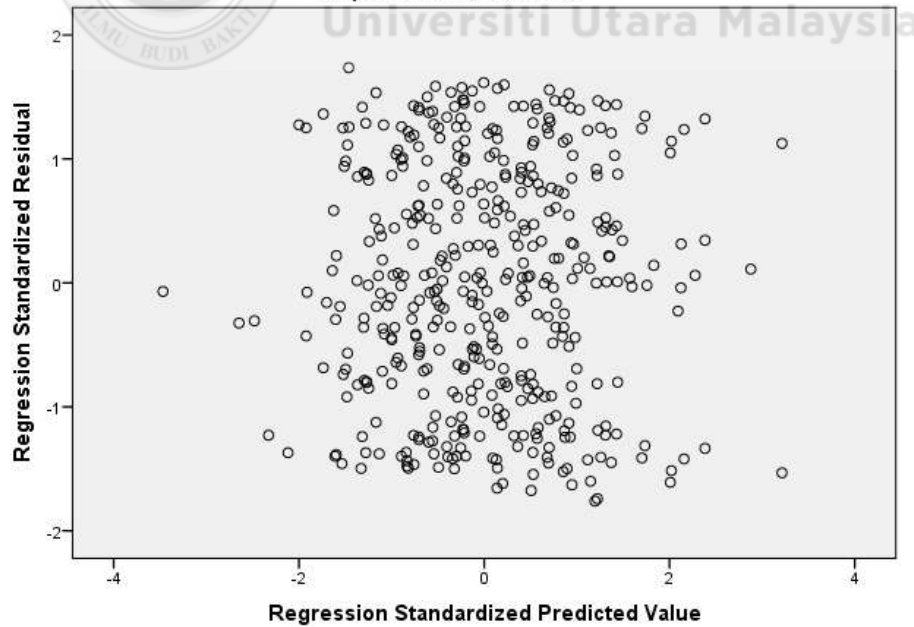
1-9 (1) ☐

10-49 (2) ☐

50-249 (3) ☐

250 and above (4) ☐

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: id

Scatterplot

Dependent Variable: id

Descriptive Statistics of Nomality Test

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
AOP1_1	430	-.469	.118	-1.040	.235
AOP2_1	430	-.551	.118	-.901	.235
AOP3_1	430	-.560	.118	-1.013	.235
AOP4_1	430	-.285	.118	-1.369	.235
AOP5_1	430	-.452	.118	-1.063	.235
AOP6_1	430	-.544	.118	-.993	.235
AOP7_1	430	-.588	.118	-.807	.235
AOP8_1	430	-.468	.118	-1.111	.235
AOP9_1	430	-.575	.118	-.954	.235
AOP10_1	430	-.539	.118	-.990	.235
FL1_1	430	-.391	.118	-1.191	.235
FL2_1	430	-.538	.118	-.908	.235
FL3_1	430	-.312	.118	-1.276	.235
FL4_1	430	-.381	.118	-1.238	.235
FL5_1	430	-.392	.118	-1.252	.235
FL6_1	430	-.590	.118	-.943	.235
INF1_1	430	.504	.118	-.586	.235
INF2_1	430	.963	.118	2.286	.235
INF3_1	430	.710	.118	.861	.235
INF4_1	430	.435	.118	-.969	.235
INF5_1	430	-.053	.118	-1.217	.235
INF6_1	430	.804	.118	.544	.235
INF7_1	430	.823	.118	.763	.235
INF8_1	430	.054	.118	-1.358	.235
MF1_1	430	.517	.118	.206	.235
MF2_1	430	.500	.118	.353	.235
MF3_1	430	.463	.118	.303	.235

MF4_1	430	-.051	.118	-.341	.235
MF5_1	430	.157	.118	-.535	.235
FC1_1	430	-.572	.118	-.613	.235
FC2_1	430	-.750	.118	.560	.235
FC3_1	430	-.232	.118	-.862	.235
FC4_1	430	-.590	.118	-.308	.235
FC5_1	430	-.901	.118	.028	.235
FC6_1	430	-.095	.118	-.231	.235
FC7_1	430	-.139	.118	-.753	.235
FC8_1	430	-.426	.118	-.530	.235
FC9_1	430	-.186	.118	-.641	.235
FC10_1	430	-.301	.118	-.604	.235

Results of Common Method Variance

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.709	19.766	19.766	7.709	19.766	19.766
2	7.160	18.360	38.126			
3	2.474	6.344	44.470			
..	..	..	..			
..	..	..	..			
..	..	..	..			
37	.155	.396	99.341			
38	.143	.367	99.709			
39	.114	.291	100.000			

Extraction Method: Principal Component Analysis.

Number of Detected and Replaced Missing Values

Result Variable	Number of Replaced Missing Values
AOP1_1	2
AOP2_1	3
AOP3_1	1
AOP4_1	1
AOP5_1	2
AOP6_1	2
AOP7_1	2
AOP8_1	1
AOP9_1	2
AOP10_1	1
FL1_1	1
FL2_1	1
FL3_1	1
FL4_1	1
FL5_1	1
FL6_1	1
INF1_1	1
INF2_1	1
INF3_1	3
INF4_1	4
INF5_1	2
INF6_1	2
INF7_1	1
INF8_1	2
MF1_1	1
MF2_1	1
MF3_1	1
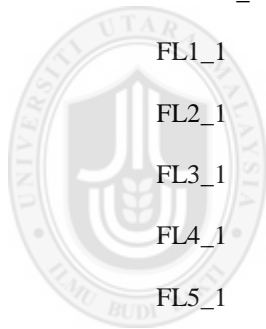
MF4_1	1
MF5_1	2
FC1_1	2
FC2_1	1
FC3_1	2
FC4_1	1
FC5_1	2
FC6_1	1
FC7_1	2
FC8_1	2
FC9_1	1
FC10_1	2
Gender_1	1
Age_1	3
Education_1	3
FarmType_1	1
Employees_1	2
Grand total	**71 out of 20,115 data points**
Percentage of missing values	**0.35%**

Note: Percentage of missing values is obtained by dividing the total

numberofrandomly missing values for the entire data set by total numberof data

points multiplied by 100.

Cross Loading

	AO	FC	FL	INF	MF
AOP10_1	0.815				
AOP1_1	0.671				
AOP2_1	0.754				
AOP3_1	0.623				
AOP4_1	0.711				
AOP5_1	0.654				
AOP6_1	0.803				
AOP7_1	0.700				
AOP8_1	0.768				
AOP9_1	0.792				
FC10_1		0.795			
FC2_1		0.561			
FC3_1		0.520			
FC4_1		0.681			
FC5_1		0.589			
FC6_1		0.822			
FC7_1		0.826			
FC8_1		0.795			
FC9_1		0.842			
FL2_1			0.621		
FL3_1			0.656		
FL4_1			0.777		
FL5_1			0.763		
FL6_1			0.758		
INF2_1				0.870	
INF3_1				0.854	
INF6_1				0.736	

				0.774	
INF7_1				0.774	
MF1_1					0.907
MF2_1					0.879
MF3_1					0.920

Path Coefficient

	AO	FC	FL	INF	MF
AO					
FC	0.137				
FL	0.468				
INF	0.188				
MF	0.128				

Inner VIF Values

	AO	FC	FL	INF	MF
AO					
FC	1.104				
FL	1.080				
INF	1.233				
MF	1.292				

APPENDIX C

FEDERAL MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

OFFICE OF THE STATE DIRECTOR
FEDERAL SECRETARIAT, 5TH FLOOR, KANO.

P.M.B. 3171

Telegrams.............................

Telephone............+2348037755433

Email: ahmedyamel@yahoo.com

Ref No ....

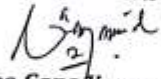Date............July 14, 2016............

OTHMAN YEOPABULLAH
GRADUATE SCHOOL OF BUSINESS
Universiti Utara Malaysia
06010 UUM SINTOK
KEDAH DARULAMAN
MALAYSIA

POPULATION SAMPLE OF KANO STATE FARMERS

- I hereby present the attached list of population sample of registered Kano State farmers for the purpose of PhD. Research work in respect of AHMED IBRAHIM MOHAMMED (Matrix No. 96190), who is undergoing a field survey entitled Relationship between farm credit, farmland, farm infrastructure and agricultural output in Kano State Nigeria; The moderating effect of Murabahah finance.

The selected 760 farmers were from the 511870 registered with Federal Ministry of Agriculture and Rural Development's Growth Enhancement Support (Scheme) Program.

Your consideration is much appreciated.

Abba Gana Yamani

Assistant Director (GES)
Federal Ministry of Agriculture and Rural Development
Kano State

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