

**WAGENINGEN UNIVERSITY**

**The role of the business sector in nutrition sensitive agriculture in developing countries:**

**An explorative systematic review**



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## **Abstract**

Inclusive business (IB) is an approach that is widely used by private (business) sector to explore new markets and involve low-income consumers within their market systems. The approach has been adopted in a wide range of sectors that center low-income consumers such as nutrition-sensitive agriculture. However, there is little documentation in literature on the extent to which the approach is being applied. The main objective of the review is to assess how inclusive business has been discussed in literature in relation to nutrition sensitive agriculture. The specific focus is on how literature has viewed the role of business sector in nutrition sensitive agriculture interventions and the presence or absence of inclusive business elements in nutrition sensitive agriculture. A systematic search was conducted and captured a total of forty-six papers that were selected based on set inclusion/exclusion criteria. The findings reported that, the business sector plays a significant role in nutrition sensitive agriculture interventions. However, the contribution is more apparent in the supply side (input supply, production, processing, distribution and marketing), than the demand side of the value chain (consumer interventions were conspicuously missing in literature). Among the elements found in literature were value addition (nutrient quality), enabling environment, inclusion of low-income consumers and market orientation. However, the themes depicted in the enabling environment were vague and incoherent. Some themes were more prominent (political commitment and coordination) while others received little attention (capacity and resources, knowledge and evidence). This shows that there is a knowledge gap in exploring enabling environment in literature. Amid the gaps identified in the review, it was evident that literature has not fully contemplated the role of private sector in informal markets, in addition to undefined inclusive business elements in the context of nutrition sensitive agriculture. Nonetheless literature needs to take into consideration the role of business sector in the demand side of the value chain, investigate further on the themes that define an enabling environment and integrate interdisciplinary approach both in research and practice.

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## **List of Acronyms**

ADB	Asian Development Bank
BOP	Base of the pyramid
CGIAR	Consultative Group for International Agricultural Research
DCED	Donor committee for enterprise development
FAO	Food Agriculture Organization
IB	Inclusive business
IBM	Inclusive business model
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
LIC	Low-income consumers
NSA	Nutrition sensitive agriculture
PPP	Public private partnership
UNDP	United nations development programme
LANSA	Leveraging agriculture for nutrition in South Asia
SDG	Sustainable development goals
WBCSD	World Business Council for Sustainable Development
WHO	World Health Organization



# **1 Introduction**

## **1.1 Background for the review**

The business sector has gradually become a key player in development with significant contributions in the shift from subsistence agriculture to well-functioning commercial systems (FAO, 2015; Hebebrand, 2011). The shift has seen a great transformation in the entire food value chain (FAO, 2017) and has become a principle element in poverty reduction strategies across the globe. The interest emanated from increased awareness by policy makers, donor agencies and developmental practitioners as evidenced during the second international conference on nutrition in Rome (FAO and WHO, 2014). Participants from different genre of development came to a consensus that the alleviation of poverty and the achievement of food and nutrition security cannot occur in the absence of a diversified and productive private sector (FAO and WHO, 2014). Additionally, the growing interest in the agri-food sector has opened up low-income markets which have a large margin and untapped potential which attracts the private sector (Prahalad and Hammond, 2002; Sanchez and Ricart, 2010; Pels and Sheth, 2017).

The idea of business linkages in the agri-food sector is not new. The increase of publications (Maestre et al 2017; Allen and de Brauw, 2017) illustrates the significance of business sector in supporting initiatives for low-income consumers. Danse et al, (n.d) focused on linking the business sector to food security, while others have placed the business sector at the center of food systems with focus on market-based approaches (Humphrey and Robinson, 2015; Thorpe and Reed, 2016). Literature on business sector in relation to the agri-food sector has evolved rapidly and more studies have made relevant contributions to the food security debate. However, up to date there is little in-depth analysis on the extent to which business sector has been explicitly integrated in nutrition sensitive interventions that target low-income consumers. There is need to provide evidence-based information on the role of business sector and show what elements of inclusive business (IB) are present or missing in nutrition sensitive interventions. The review intends to contribute towards filling this literature gap and identify implications for future research and practical application. Furthermore, this review intends to identify avenues for investments in

developing countries and make contribution to the 2030 agenda sustainable development goals (SDG) in line with poverty reduction, eliminating malnutrition and sustainable economic growth.

The review is structured as follows: The first chapter explores the concepts used in this review (inclusive business, nutrition sensitive agriculture and low-income consumers) the research questions of this review. The second chapter looks at operationalization of the concepts used which builds up the theoretical framework. Chapter three describes the methodology with the inclusion/exclusion criteria of the systematic search and limitations of the review. Chapter four presents the results in detail following the value chain approach. Chapter five presents the discussion and gaps identified. Finally, chapter six gives the conclusion and recommendations in a broader context and implications for future nutrition sensitive agriculture interventions.

## **1.2 Insight on inclusive business (IB)**

Inclusive business is a private sector approach that has become one of the major focus in development agenda (Santos, 2014). The business (private) sector investments are targeted towards improving the low-income market, by making profit, create jobs and better income opportunities for low-income consumers (ADB, 2016). The idea of IB emerged in the 1990s, parallel with trajectories like trade regimes and privatization (Likoko and Kini, 2017). The idea was later revolutionized by World Business Council for Sustainable Development (WBCSD) in 2005 as a business model (Likoko and Kini, 2017). The concept sparked interest and activities within both the public and private sectors (Corporate Citizenship 2012; ADB 2016; FAO, 2015). As stated previously, IB takes place at the intersection of business and development work, where private sector and development organizations collaborate as partners to effectively tackle poverty and malnutrition (UNDP, 2010). This follows the 2030 development agenda which advocates for the alignment of private sector operations with SDGs and contribute towards eradicating hunger and improving food and nutrition security (WBCSD, 2016).

Today, the business sector is quite dominant in the global scene and is estimated to invest heavily in the agri-food sector (UNDP, 2012). In 2010 global private sector investment in research and development to improve agricultural inputs was estimated at approximately eleven billion dollars (Fuglie et al, 2011). This means that the private sector has become a major player in developing

technologies to raise productivity in agriculture (Fuglie et al, 2011). The private sector massive investment in food and agriculture has resulted to a transformation that has gone beyond direct support to fight against poverty at the macro-level to expanding their operations to low-income markets (Chevrollier et al, 2012). Low-income markets provide an attractive opportunity for the growth of business sector. This follows the presence of untapped purchasing power which can be utilized by the private sector to make significant profits and contribute towards eradicating poverty (Karnani, 2007). The review is important because, as evidenced in the previous section policy makers are interested in working together with the private sector towards achieving the SDGs. The will provide evidence on IB as a unique approach to work with low-income consumers in nutrition sensitive agriculture. This will help to identify knowledge gaps for further research and opportunities for interventions.

### **1.3 Inclusive business (IB) and low-income consumers**

In many developing countries, low-income consumers experience market failures, exclusion from formal economic value chains, lower income and other challenges that hinder them from achieving their full potential in business (Mitchell and Coles, 2011). These challenges are further exacerbated by the high level of poverty as evidenced in less developed countries. The increased private sector initiatives in addressing poverty, reflects a general trend to make a positive contribution to low income consumers as well as business entities that have adopted IB approach. This resonates with Verwaart et al, (2016) that, fostering IB is considered a promising approach to alleviate poverty in low-income communities. It is about businesses that deliberately shape their business processes, so that they can address the needs of low-income disempowered people (Rappoldt, Sopov and Guijt, 2015). The notion of IB is based on the premise that the business sector and LIC mutually benefit from each other. The LIC become part of the business sector operations, as suppliers, distributors, retailers or customers in the value chain (Chevrollier et al, 2012; ADB and IDB, 2013; Corporate Citizenship, 2012). At the same time, businesses benefit through profits, building markets and strengthening supply chains (Golja and Pozega, 2012; Likoko and Kini 2017; Baldo, 2014; van Tulder and Da Rosa, 2011). However, DCED (2017) offers a contradictory opinion that, low-income population offer sizable commercial opportunities, but businesses cannot strive by

exclusively relying on LIC and still maximize on profitability. They also need to engage other markets segments besides LIC in order to operate high margins and cover costs, thus, contradicting the concept of inclusivity in inclusive business (DCED, 2017).

Studies have shown that IB tends to be more active in sectors where low-income consumers are engaged such as agriculture (G20 development working group, 2015; FAO, 2015). An example of a successful inclusive approach that has worked well in low-income communities is contract farming. The rationale behind this approach is that contractor companies provide seeds, fertilizer and other inputs on credit and offers a guaranteed price to smallholders (contractee) in exchange for agricultural products that meet specified quality and quantity (Devaux et al, 2016). The idea is to ensure that the smallholders are integrated in the commercial value chain which in turn provide easy access to markets, and ultimately regular profits for their produce, while the private company gets consistent and adequate supply of high value produce (Devaux et al, 2016). This approach support both the low-income consumers and private enterprises to achieve mutual benefits in the business community (FAO, 2015).

In the context of the review, 'low-income consumers' (LIC) and 'Base (bottom) of the pyramid' (BoP) will be used interchangeably. Base of the pyramid (BoP) refers to the majority (over four billion) of people who earn per capita income of less than one dollar per day (London, 2008; Prahalad and Hammond, 2002) definition). The stated amount is the minimum considered necessary to maintain a decent life, these are socio-economic groups of people who form the underclass of society and are prone to marginalization (London and Hart 2010; Prahalad and Hammond 2002). The BoP is defined on the basis of purchasing power parity and wealth distribution pyramid. Davies et al. (2016) provided estimates of the global distribution of wealth as illustrated in figure 1 below.

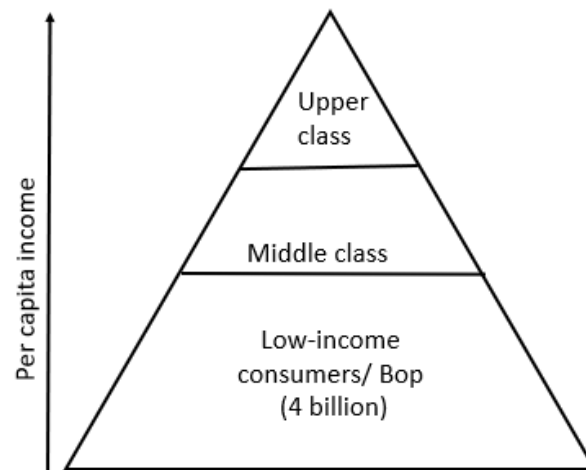


Figure 1: Global pyramid of the wealth. Source: James Davies, Rodrigo Lluberas and Anthony Shorrocks, Credit Suisse Global Wealth Data book 2016

#### **1.4 Inclusive business (IB) and nutrition-sensitive agriculture (NSA)**

The IB approach has been anchored in many areas of development and corporate arena. Recently the approach has gained recognition in the agriculture sector (Rappoldt et al, 2017; Chamberlain and Anseeuw, 2017). The motivation for adopting IB approach in agriculture is driven by a large share of LIC in developing countries highly dependent on agriculture for their livelihood (Chevrollier 2012; Walpole et al, 2013; Lokosang 2017; Kanu, Salami, and Numasawa, 2014). Majority of the LIC are poor and food insecure, they account for about three quarters of the world's population (Wiggins and Keates, 2013). Food insecurity is attributed to production constrains and lack of investors in agricultural sectors (Dioula et al, 2013). While interventions have been focused on agriculture production, it has become evident that food security without improved nutrition may not deliver the desired outcomes (Lokosang, 2017).

One approach that has been used by the public sector and development organizations to maximize agriculture's contribution to nutrition is nutrition-sensitive agriculture (NSA<sup>1</sup>). This approach stresses that multiple benefits derived from recognizing the nutrition value of food and the social significance of the agri-food sector in supporting livelihoods (FAO, 2014). Traditionally, donors and development finance institutions supported nutrition interventions via aid assistance, but today there is a new kind of development assistance that has emerged that involves engaging in businesses in food security (Danse et al, n.d). This is evidenced by the current market trends which have become dynamic and open to reinforce their strategies in investing in low-income consumers (CGIAR consortium, 2016). IB approach can be considered as an important strategy to offer LIC affordable nutritious foods and still maintain the supply chain inclusiveness (CGIAR consortium, 2016).

### **1.5 Problem statement**

The high prevalence of malnutrition among the LIC, has been a wicked problem in developing countries (Global nutrition report, 2016). Given that agricultural projects still largely focus on boosting productivity and improving income, research has shown that high food production does not automatically lead to improved food security for low-income consumers nor does increased farmers' incomes translate into better diets (van Dorp et al, 2011). In light of this, the public-sector and development partners have increased support towards making agricultural activities to become more nutrition-sensitive for LIC (Pinstrup-Andersen and Watson 2011; Pelletier et al. 2011). Despite the numerous efforts displayed by public sector and donor interventions, research has shown that there is a paradigm shift towards business sector investment using the IB approach (Santos, 2014; ADB, 2016). Several studies have been reported linking IB to LIC as evidenced in other sectors like tourism, energy, finance, (Tewes-Gradl et al, 2014; Likoko and Kini 2017:

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<sup>1</sup> Nutrition-sensitive agriculture is an approach that seeks to ensure the production of a variety of affordable, nutritious, culturally appropriate and safe foods in adequate quantity and quality to meet the dietary requirements of populations in a sustainable manner (FAO, 2014)

Sanchez and Ricart 2010; Pels and Sheth 2017). But the IB approach has not fully been reported in nutrition-sensitive interventions. Furthermore, it is not certain whether the relationship between business sector and nutrition sensitive agriculture has been fully captured in the academic perspective. In view of this, the review aims to contribute to filling the gap through assessing peer reviewed scientific literature and grey literature to find out how inclusive business has been discussed in relation to nutrition sensitive agriculture. The gaps identified in the review will provide opportunities for interventions and point out areas for further research.

## **1.6 Objective of the study**

The aim of this systematic review is to assess how inclusive business has been discussed in relation to nutrition sensitive agriculture in (business and agriculture) literature.

## **1.7 Research questions**

How has literature (business and agriculture) described the role and elements of inclusive business in relation to nutrition sensitive agriculture?

### **1.7.1 Sub questions**

1. How does literature view the role of business sector in nutrition sensitive agriculture?
2. What elements of inclusive business are present or absent in nutrition-sensitive agriculture as described by literature?

## **2 Conceptual Framework**

### **2.1 Conceptual model**

The subsequent conceptual model was constructed based on theoretical underpinning in literature. Drawing to the current flux of theories, concepts and frameworks used in inclusive business literature, the theoretical insights on inclusive business that have emerged are diverse but are still remain incoherent. As mentioned by Lundy et al, (2014), despite the increasing popularity of IB there is a lack of practical and concrete approaches on how to operationalize and monitor the concept, which is further complicated by the diversity of conceptual frameworks. The lack of evidence-based models to develop knowledge, limits the capacity to look and reflect at IB in different lens (GCP consortia, 2016). This implies that there is a knowledge gap in conceptualizing IB. Authors have applied different theories to explain inclusive business, but it is evident that majority are explored by using theoretical lenses common in business and management literature (Nakata, 2012). For instance, Linna, (2017) used creation theory to explain inclusive business development in rural Africa. Chamberlain and Anseeuw (2017) applied resource dependence theory, transaction cost economics and Agency theory to understand the variances of IB in contract farming in Limpopo. Ansari et al, (2012) drew attention to inclusive capitalism whereby multinational companies pursue profit by creating markets for the poor. These examples illustrate that a large body of literature has been useful in understanding IB more deeply. However, most frameworks and theories took a mainstream business approach as evidenced by the number of business and management publications in scientific journals.

The Venn diagram below (figure 2) represents the conceptual model with three intersected dimensions. The conceptual model was designed using an inductive approach (bottom-up), building on the concepts supported by literature. This is because the connection between private companies, low-income consumers, nutrition sensitive agriculture is complex. The first loop represents low-income consumers as mentioned earlier in the introduction the low-income consumers represent the approximately four billion of people living below the poverty line (Prahalad and Hammond, 2002). Most LIC are willing to engage in business but are excluded from the formal markets (Mitchell and Coles, 2011). The second loop signifies the private sector, with



resources and finances, access to markets but in need of profits and constant suppliers, distributors and retailers (Chevrollier et al, 2012). The third loop is the nutrition sensitive agriculture, the interventions target low-income consumers to improve income and nutrition, however there is need for investments in terms of resources and expertise (Van den Bold et al, 2015), literature has shown that nutrition sensitive interventions are mostly facilitated by donor agencies and development organizations (Ruel et al, 2018). The point of intersect among the three loops represents inclusive business. The combination of the three dimensions provide a unique opportunity for all the stakeholders to benefit from IB, though it appears such a complex structure will have challenges and opportunities alike.

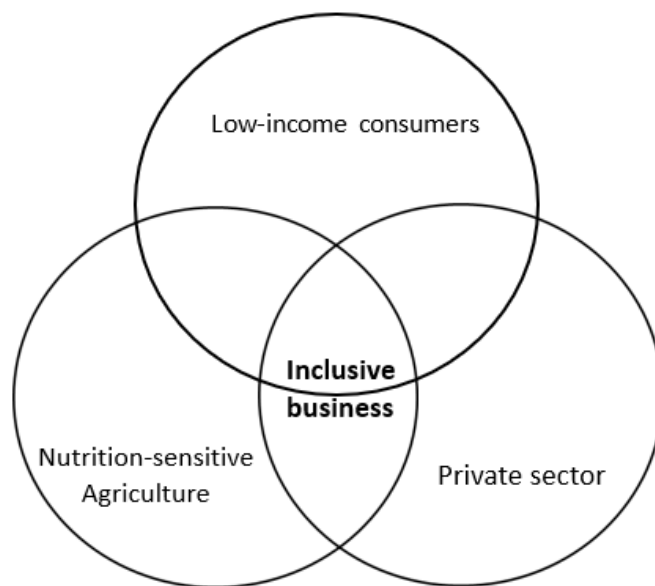


Figure 2: Venn diagram representing the different concepts used in the review

## 2.2 Operationalization of inclusive business

The rationale behind the inclusive business approach is anchored in four concepts as derived from various literature namely: value addition, inclusion of low-income consumers, enabling environment and market orientation (GPIB, 2016; FAO, 2015; TechnoServe and Concordia, 2017). The business sector operates in the context of markets for profit generation (Likoko and Kini, 2017). The markets are facilitated by the existence of an enabling environment that is necessary for transparent market activities (Heinrich-Fernandes, 2016). Integrating low-income

segments of the population, explores opportunities to link different stakeholders in the value chain (Golja and Pozega, 2012). The final element identified is value addition, which in this case is adding value to the supply chain (Trienekens, 2011). These elements are useful to facilitate the analysis of literature as shown in the operationalization (figure 3). As previously mentioned, IB approach has many elements as applied in different sectors; business, engineering, tourism, health and energy (Tewes-Grادل et al, 2014; Sanchez and Ricart 2010; Pels and Sheth 2017). But the elements pertaining nutrition sensitive agriculture are of interest for the review. Van Tulder and Da Rosa (2011) argue that many companies have started to adopt IB approach but not at any level of sophistication, this could be due to the weak operationalization of the concept IB. This means that knowledge gaps exist and there is need for further research on the concept. As stated earlier in the review, four elements that were operationalized and molded to fit the context of this review. However, there are other diverse elements out there that can be discovered and applied in different research and context.

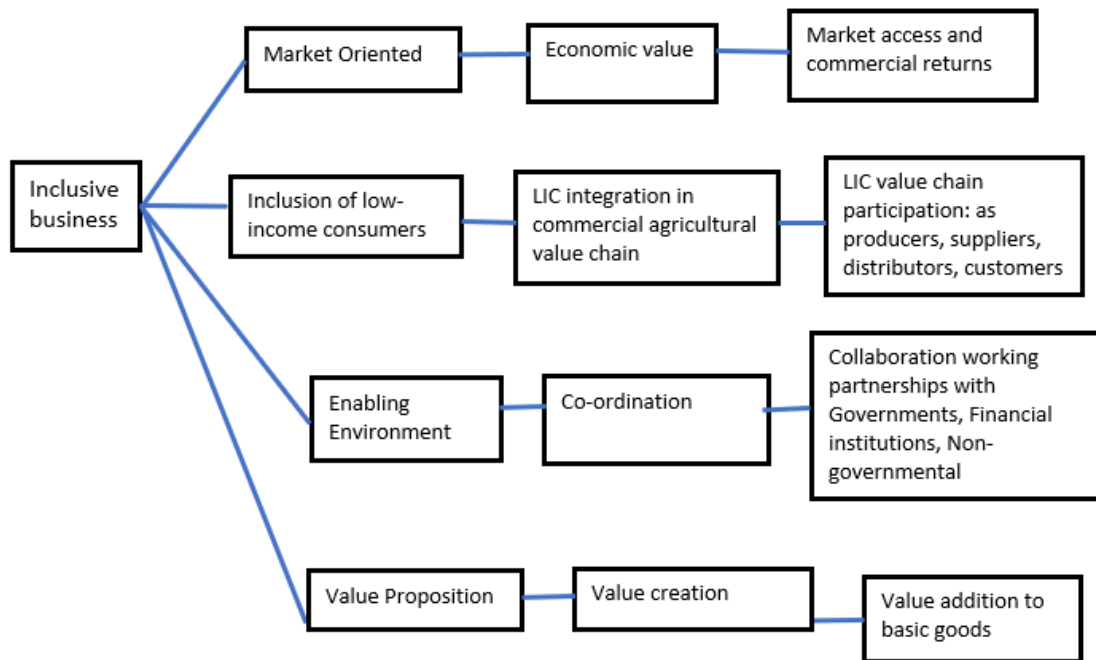


Figure 3: Operationalization of inclusive business elements

### **3 Methodology**

#### **3.1 Outline of the methodology**

Systematic literature reviews have gradually become a more established practice in many fields of inquiry, most noticeably in the field of nutrition and health (Cochrane library 2017). Systematic reviews attempt to gather published research with a clear aim of comprehensive coverage as well as ensure transparency in the process of identifying relevant evidence (Gouch, Oliver and Thomas 2012). The review followed the search and screening criteria known as PICO, the abbreviations stand for: Population, Interest, and Context (The Joanna Briggs Institute, 2011). The PICO format supports systematic reviews by providing information about the focus and scope of the study. For this study there is a clear indication of the population (low-income consumers), the phenomenon of interest (the role and elements of inclusive business in nutrition sensitive agriculture) and the context (developing countries). The types of research designs included in this review vary considerably across the studies (case studies, descriptive studies and reviews). The systematic review consists of three steps: First step is information retrieval through database search, which is supplemented by snowballing technique, to capture relevant articles. The second step is data extraction and finally data analysis (Delaney and Tamás, 2017). The results of studies collected were presented using narrative synthesis (Popay et al, 2006). Narrative synthesis refers to an approach to the systematic review and synthesis of findings from multiple studies that relies on use of words and text to summarize and explain the findings of the synthesis (Popay et al, 2006).

#### **3.2 Selection of search terms and databases**

The search strategy included electronic data-bases; Scopus, CAB abstract and web of science were used to search academic literature. The three databases cover a wide range of subjects with are multidisciplinary, moreover a combination of the database made sure the results were comprehensive. The review followed several procedures to identify relevant studies for data extraction. To begin with the search was split into two based on the research sub questions:

*Research sub question 1: How does literature view the role of business sector in nutrition sensitive agriculture?*

Using the sub-question as a guide, keywords identified are: business sector and nutrition sensitive agriculture. The keywords were further sorted into groups using the PICO format, this made it possible to devise additional terms. To broaden the scope of the research, synonyms were derived from the keywords which were used as search terms as shown in table 1. Search terms were combined using boolean operators (OR, AND) and wildcard characters (\*,?), which narrowed the focus of the search as well as have productive and precise results. Within each group, the devised synonyms were connected using OR to broaden the search by connecting similar words in the database. While in between the group search terms AND was used as conjunctions to combine keywords. These search terms were adjusted accordingly to the search options for each database.

### **3.3 Defining relevant studies: inclusion and exclusion criteria**

After identifying studies in the electronic search, there were two screening phases. To start, the title-abstract screening and full screening.

#### **3.3.1 Title abstract screening**

The following criteria were used to limit the scope of the search. In the title and abstract screening, studies are excluded if they do not comply with one or more of the following exclusion criteria:

- The articles included were between 2005 and 2017, the year was selected as a starting point. The twelve-year span clearly defines the boundaries of the review as well as it covers recent articles that have up-to-date with information.
- Secondly the subject area included in the study was business and agriculture with particular focus on the interventions in the agricultural sector based in developing countries.
- Finally, the articles chosen were peer reviewed journals written in English.

#### **3.3.2 Full screening**

The full texts were retrieved for those that remained after the title-abstract screening and these were assessed by applying the following extended list of inclusion\exclusion criteria:

- Exclude if no information on the role\ and elements of business sector
- Exclude if no information on nutrition sensitive agriculture

### 3.4 Searching other resources including grey literature

In addition to the electronic search, snowballing of references in review articles as well as hand-searched articles were included to add more studies to the review. Non-academic literature, from institutional websites such as Institute of development studies (IDS), FAO, The Practitioner Hub and World Bank were also included as additional grey literature. The focus on grey literature helps to increase the breadth and relevance of the review. The articles were scrutinized accordingly and further verified using the inclusion and exclusion criteria and then finally saved on endnote.

### 3.5 Search terms

The following are search terms that were used to identify synonyms within which studies related to the topic were found.

Group	Search terms
Group of search terms 1: target population of the intervention	"Base-of-the-pyramid*" OR "Bottom-of-the-pyramid*" OR "Vulnerable group*" OR "Vulnerable people*" OR "Poor*" OR "Low-income consumer*"
Group of search terms 2: phenomenon of interest	"private business*" OR "private sector*" OR "private market*" OR "private compan*" OR "Corporat*" OR "business*" OR "Business sector*" OR "Social enterprise*" OR "Private firm*" OR "Agribusiness*" OR "Private organization*" OR "multinational compan*"
Group of search terms 3 a: phenomenon of interest	"Inclusive business*" OR "Inclusive business model*" OR "Inclusive agricultural business model*"
Group of search terms 3 b: scope of interest	"Nutrition-sensitiv*" OR "Nutrition-sensitive agricultur*" OR "Nutrition sensitive food system*" OR "Nutrition sensitive value chain*" OR "Nutrition-sensitive program*" OR "Nutrition sensitive intervention*"
Group of search terms 4: context of interest	"Agricultur*", OR "Value chain*", OR "Food production*", OR "Farm*", OR "food system*" OR "Agri-food*"
Group of search terms 5: location	“Developing countr*”, “Low-income countr*”, “Least-developed countr*”, “Emerging market*”, “Emerging econom*”

### 3.6 Combination of search terms

How does literature view the role of business sector in nutrition sensitive agriculture?

Results	Search terms
<ul style="list-style-type: none"> <li>• Scopus (Number of articles found = 19)</li> <li>• Cab Abstract (Number of articles found =10)</li> <li>• Web of Science (Number of articles found =6)</li> </ul>	<p>"private business*" OR "private sector*" OR "private market*" OR "private compan*" OR "Corporat*" OR "business*" OR "Business sector*" OR "Social enterprise*" OR "Private firm*" OR "Agribusiness*" OR "Private organization*" OR "multinational compan*" AND "Agricultur*", OR "Value chain*", OR "Food production*", OR "Farm*", OR "food system*" OR "Agri-food*" AND "Nutrition-sensitiv*" OR "Nutrition-sensitive agricultur*" OR "Nutrition sensitive food system*" OR "Nutrition sensitive value chain*" OR "Nutrition-sensitive program*" OR "Nutrition sensitive intervention*"</p>

#### 3.6.1 Inclusion and exclusion criteria for research question one

<b>Title-abstract</b>	<ul style="list-style-type: none"> <li>• Exclude on sector (agriculture and business)</li> <li>• Exclude based on language</li> </ul>
<b>Full-text</b>	<ul style="list-style-type: none"> <li>• Exclude based on relevance: if no information on the role of business sector in agriculture</li> </ul>

Flow chart showing selection work flow for relevant literature (n represents the number of articles)

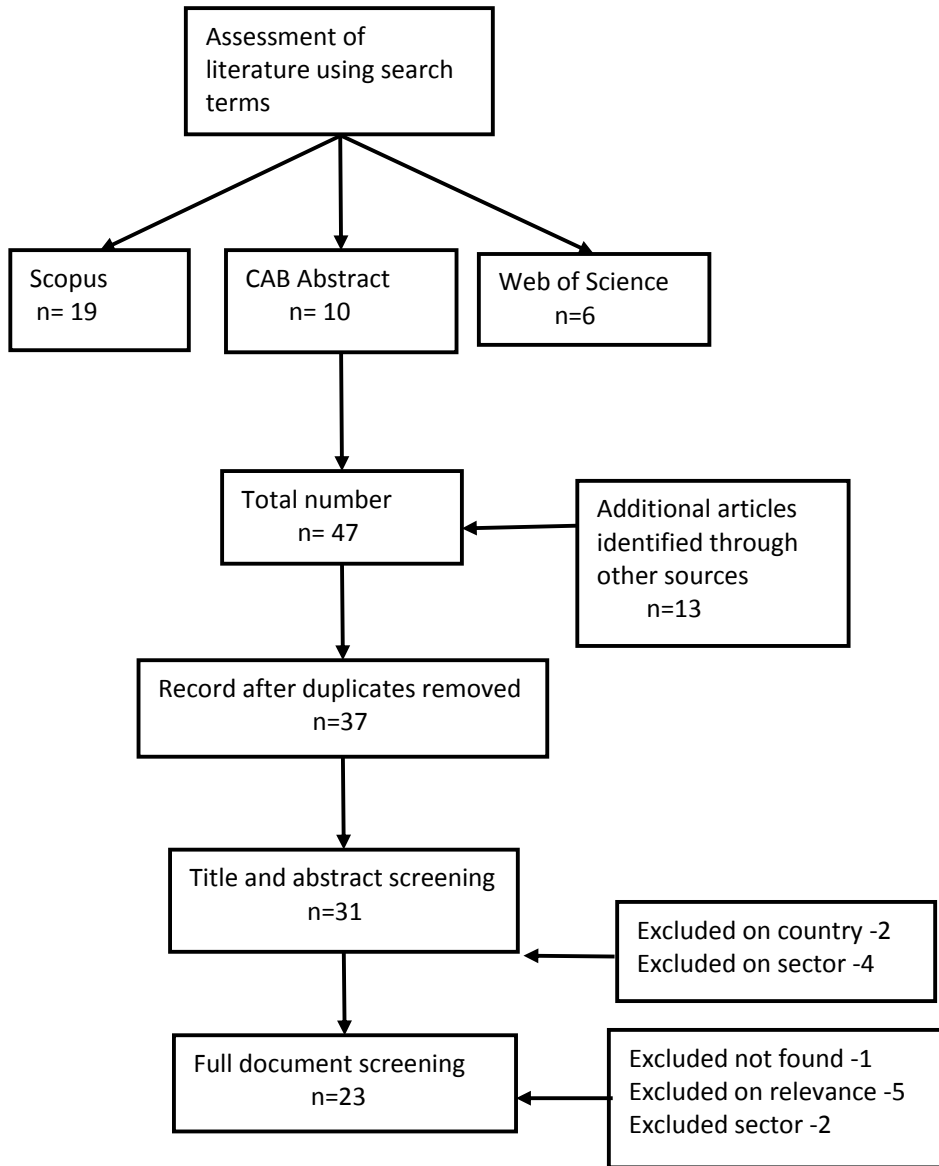


Figure 4: Flow chart for selected studies for research question 1

### 3.6.2 Included studies for research question one

The following are the included studies for research question 1, more details are included in the appendices.

- Allen, S. and de Brauw, A., 2017. Nutrition sensitive value chains: Theory, progress, and open questions. *Global Food Security*.
- Bogard, J. R., et al. (2017). "Measuring nutritional quality of agricultural production systems: Application to fish production." *Global Food Security*.
- Christinck, A. and E. Weltzien (2013). "Plant breeding for nutrition-sensitive agriculture: An appraisal of developments in plant breeding." *Food security* 5(5): 693-707.
- Gerster-Bentaya, M. (2013). "Nutrition-sensitive urban agriculture." *Food security* 5(5): 723-737.
- Gillespie, S., Haddad, L., Mannar, V., Menon, P., Nisbett, N. and Maternal and Child Nutrition Study Group, 2013. The politics of reducing malnutrition: building commitment and accelerating progress. *The Lancet*, 382(9891), pp.552-569.
- Hodge, J., et al. (2015). "Is There an Enabling Environment for Nutrition-Sensitive Agriculture in East Africa?: Stakeholder Perspectives From Ethiopia, Kenya, and Uganda." *Food and Nutrition Bulletin* 36(4): 503-519.
- Humphrey, J. and Robinson, E., 2015. Markets for Nutrition: What Role for Business?. *IDS Bulletin*, 46(3), pp.59-69.
- International agri-food network., 2017. Private Sector Mechanism position paper on nutrition sensitive agriculture. <https://agrifood.net/position-papers/204-nutrition-psm-position-paper-3/file>
- Jaenicke, H. and D. Virchow (2013). "Entry points into a nutrition-sensitive agriculture." *Food security* 5(5): 679-692.
- Keding, G. B., et al. (2013). "Production and processing of foods as core aspects of nutrition-sensitive agriculture and sustainable diets." *Food security* 5(6): 825-846.
- MacDonald, C., et al. (2017). "Integrating biofortified crops into community development programs." *African Journal of Food, Agriculture, Nutrition and Development* 17(2): 12063-12077.
- Maestre, M. and Poole, N., 2018. Introduction: Value Chains for Nutrition in South Asia: Who Delivers, How, and to Whom?. Vol. 49 No. 1 January 2018. Institute of Development Studies, Library Road, Brighton BN1 9RE, UK



- Maestre, M., Robinson, E., Humphrey, J. and Henson, S., 2014. The Role of Business in Providing Nutrient-Rich Foods for the Poor: A Case Study in Tanzania. IDS.
- Maestre, M., Poole, N. and Henson, S., 2017. Assessing food value chain pathways, linkages and impacts for better nutrition of vulnerable groups. *Food Policy*, 68, pp.31-39.
- McDermott, J., et al. (2015). "Agricultural research for nutrition outcomes – rethinking the agenda." *Food security* 7(3): 593-607.
- McLachlan, M. and A. P. Landman (2013). "Nutrition-sensitive agriculture - a South African perspective." *Food security* 5(6): 857-871.
- Nwuneli, N., Robinson, E., Humphrey, J. and Henson, S., 2014. The Role of Businesses in Providing Nutrient-Rich Foods for the Poor: Two Case Studies in Nigeria (No. IDS Evidence Report; 64). IDS.
- Ruel, M.T., Alderman, H. and Maternal and Child Nutrition Study Group, 2013. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?. *The Lancet*, 382(9891), pp.536-551.
- Strengthening Partnerships, R., and Innovations in Nutrition Globally (SPRING) project (2017). Opportunities for integrating nutrition into agricultural information systems in northern Ghana. Opportunities for integrating nutrition into agricultural information systems in Northern Ghana; 2017. vi + 49 pp. many ref. Arlington, Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project.
- The united nations development programme., 2012. The roles and opportunities for the private sector in Africa's agro-food industry. <http://www.undp.org/content/dam/undp/library/corporate/Partnerships/Private%20Sector/Market%20Study.pdf>.
- Thorpe, J. and Reed, P., 2016. Addressing Market Constraints to Providing Nutrient-Rich Foods: An Exploration of Market Systems Approaches (No. IDS Evidence Report; 172). IDS.
- Van Den Bold, M., et al. (2015). "Is there an enabling environment for nutrition-sensitive agriculture in South Asia? Stakeholder perspectives from India, Bangladesh, and Pakistan." *Food and Nutrition Bulletin* 36(2): 231-247.
- Zamora, O. B., et al. (2013). "Leveraging agriculture to improve nutrition in the Philippines." *Food Security* 5(6): 873-886

### 3.7 Defining relevant studies

#### 3.7.1 Inclusion and Exclusion criteria for research question two

<b>Title-abstract</b>	<ul style="list-style-type: none"><li>• Exclude on sector (agriculture and business. Not: tourism, forestry, nursing, computer science, agro-forestry)</li></ul>
<b>Full-text</b>	<ul style="list-style-type: none"><li>• Exclude if not focused on the low-income consumers, bottom of the pyramid, vulnerable groups</li><li>• Exclude if outcome not included- reduce poverty and eradicate malnutrition, improve food security</li><li>• Exclude on relevance -If no information on at least one element of inclusive business (value proposition, enabling environment [collaboration], Inclusion of low-income consumers, market oriented)</li><li>• Exclude if not in the context of developing countries.</li></ul>

Flow chart showing selection work flow for relevant literature (n represents the number of articles)

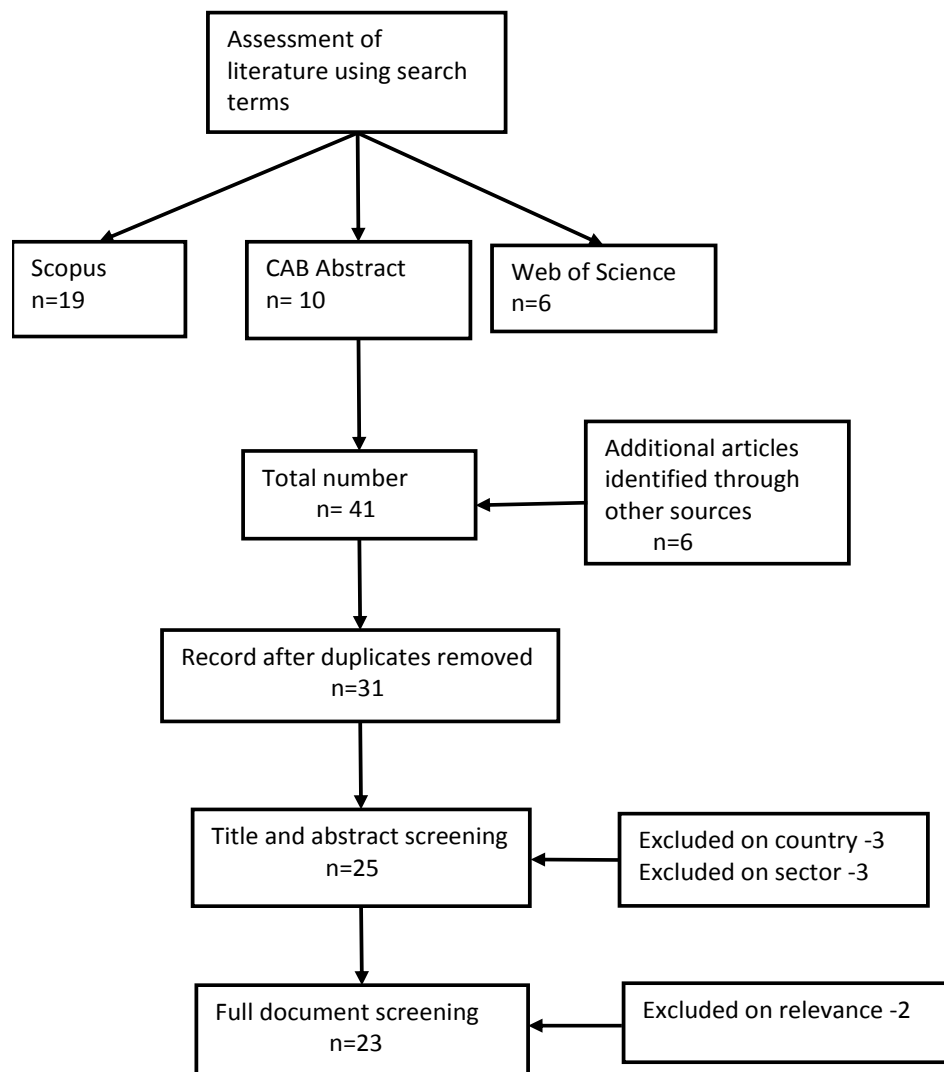


Figure 5: Flow chart for selected studies for research question 2

### 3.7.2 Included studies for research question two

The following is a list of included studies as earlier mentioned in the methodology section;

- Bogard, J.R., Marks, G.C., Wood, S. and Thilsted, S.H., 2017. Measuring nutritional quality of agricultural production systems: Application to fish production. *Global Food Security*.
- Buchsbaum, A., Harris, J., Shoham J., McGrath M., Angood, C., Handy, D., Mickshick, N., (2016). "Nutrition incentives in dairy contract farming in northern Senegal. (Special focus on nutrition-sensitive programming)." *Field Exchange Emergency Nutrition Network ENN 51*: 26-28.
- Christinck, A. and E. Weltzien (2013). "Plant breeding for nutrition-sensitive agriculture: An appraisal of developments in plant breeding." *Food Security* 5(5): 693-707.
- Gillespie, S., Haddad, L., Mannar, V., Menon, P., Nisbett, N. and Maternal and Child Nutrition Study Group, 2013. The politics of reducing malnutrition: building commitment and accelerating progress. *The Lancet*, 382(9891), pp.552-569.
- Hodge, J., Herforth, A., Gillespie, S., Beyero, M., Wagah, M. and Semakula, R., 2015. Is there an enabling environment for nutrition-sensitive agriculture in East Africa? Stakeholder perspectives from Ethiopia, Kenya, and Uganda. *Food and nutrition bulletin*, 36(4), pp.503-519.
- Humphrey, J. and Robinson, E., 2015. Markets for Nutrition: What Role for Business?. *IDS Bulletin*, 46(3), pp.59-69.
- Jaenicke, H. and D. Virchow (2013). "Entry points into a nutrition-sensitive agriculture." *Food Security* 5(5): 679-692.
- Keding, G.B., Schneider, K. and Jordan, I., 2013. Production and processing of foods as core aspects of nutrition-sensitive agriculture and sustainable diets. *Food Security*, 5(6), pp.825-846.
- Lokosang L., 2017. Investing in Nutrition-Sensitive Agriculture for Achieving the Goal of Ending Hunger in Africa by 2025: An Overview for Practical Policy and Planning Directions. *Agri Res & Tech: Open Access J.* 2017; 7(1): 555703
- MacDonald, C., Hilton, B. and Dove, R., 2017. Integrating biofortified crops into community development programs. *African Journal of Food, Agriculture, Nutrition and Development*, 17(2), pp.12063-12077.
- Maestre, M., Poole, N. and Henson, S., 2017. Assessing food value chain pathways, linkages and impacts for better nutrition of vulnerable groups. *Food policy*, 68, pp.31-39.
- Maestre, M. and Poole, N., 2018. Introduction: Value Chains for Nutrition in South Asia: Who Delivers, How, and to Whom?. Vol. 49 No. 1 January 2018. Institute of Development Studies, Library Road, Brighton BN1 9RE, UK

- McDermott, J., et al. (2015). "Agricultural research for nutrition outcomes – rethinking the agenda." *Food Security* 7(3): 593-607.
- McLachlan, M. and A. P. Landman (2013). "Nutrition-sensitive agriculture - a South African perspective." *Food Security* 5(6): 857-871.
- Pittore, K. (2016). How can we use markets to reach the poor with nutritious foods? *IDS Policy Briefing*; 2016. (116):2 pp. Brighton, Institute of Development Studies, University of Sussex.
- Rahman, K. M. M. and M. A. Islam (2014). "Nutrition-sensitive agriculture in Bangladesh: a review." *Food Security* 6(5): 671-683.
- Ruel, M.T., Alderman, H. and Maternal and Child Nutrition Study Group, 2013. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?. *The Lancet*, 382(9891), pp.536-551.
- Strengthening Partnerships, R., and Innovations in Nutrition Globally (SPRING) project (2017). Opportunities for integrating nutrition into agricultural information systems in northern Ghana. Opportunities for integrating nutrition into agricultural information systems in Northern Ghana; 2017. vi + 49 pp. many ref. Arlington, Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project
- Thorpe, J. and Reed, P., 2016. Addressing Market Constraints to Providing Nutrient-Rich Foods: An Exploration of Market Systems Approaches (No. IDS Evidence Report; 172). IDS.
- van den Bold, M., Kohli, N., Gillespie, S., Zuberi, S., Rajesh, S. and Chakraborty, B., 2015. Is there an enabling environment for nutrition-sensitive agriculture in South Asia? Stakeholder perspectives from India, Bangladesh, and Pakistan. *Food and nutrition bulletin*, 36(2), pp.231-247.
- Webb, P. and Kennedy, E., 2014. Impacts of agriculture on nutrition: nature of the evidence and research gaps. *Food and nutrition bulletin*, 35(1), pp.126-132.
- Weinberger, K. (2013). "Home and community gardens in Southeast Asia: Potential and opportunities for contributing to nutrition-sensitive food systems." *Food Security* 5(6): 847-856
- Zamora, O.B., de Guzman, L.E.P., Saguiguit, S.L.C., Talavera, M.T.M. and Gordoncillo, N.P., 2013. Leveraging agriculture to improve nutrition in the Philippines. *Food security*, 5(6), pp.873-886

### **3.8 Limitations**

Analyst bias: The study has limitations in terms of methodology since the focus will be on Scopus, CAB Abstract, web of science and grey literature. These databases are multidisciplinary but there is a possibility to exclude reports that could provide empirical evidence on the topic, that are available in other databases. Furthermore, although the search was carried out thoroughly there might be a possibility publication bias to some extent. The study included all the relevant keywords and search strings, but a number of papers might have been omitted because they used different keywords and synonyms. Moreover, language bias was recognized since the exclusion criteria based on the English language might limit the chances of getting relevant articles since some countries have published articles in their national language. In addition, the inclusion and exclusion criteria were described in detail and sufficiently in the protocol in order to avoid inconsistent application in study selection thus limited chances to selection bias. Finally, the review also acknowledged a risk of research bias, this is because the review used snowballing to retrieve relevant publications which did not necessarily use predetermined search strings; chances are high for subjectivity in the process.

## 4 Results

### 4.1 Description of the selected literature

In this section, the results of the systematic review are presented with the aim of answering the research question. The results were developed inductively and presented using narrative synthesis (Popay et al, 2006) as earlier indicated in chapter three. First section 4.2 will look at the geographical distribution of the review. Second, present the role of private sector in nutrition sensitive agriculture, followed by reflection on the results with regards to the first question. Third, the results for the second question will be presented (section 4.3). Finally, reflection on the results of the second question. It was evident that, the business sector plays a significant role in nutrition-sensitive agriculture, using the value chain approach as a tool to produce nutrient-rich foods. However, there is limited attention to how the business sector can efficiently distribute the food product to low-income consumers and how the private sector can invest in the demand side of the value chain. The themes are depicted from value chain activities which were most apparent, they include: Inputs supply, production, processing, distribution, marketing and support function. A summary of the results is presented in Table 1.

Table 1: Overview of results for research sub-question one

<b>Themes</b>	<b>Agricultural activities</b>	<b>Gaps identified</b>	<b>Sources</b>
Input supply n-9	Seed production Pesticides Fertilizers Tools and machinery	<ul style="list-style-type: none"><li>• Main focus on seed supply while other inputs (pesticides, fertilizers, tools) are barely mentioned</li><li>• Overlooked Informal or traditional seed systems.</li><li>• Competition between biofortified and traditional varieties in the market</li><li>• Missing link between supplying and distributing inputs to low income populations</li></ul>	Maestre and Poole (2018) Zamora et al (2013) Jaenicke and Virchow, (2013) Van den bold et al, (2015) Christinck and Weltzien, (2013) Macdonald et al, (2017) Humphrey and Robinson (2015) UNDP (2012)

Production n-4	Biofortification	<ul style="list-style-type: none"> <li>• Informal/ traditional seed systems.</li> <li>• Overlooked local or orphan crops</li> <li>• Cost effectiveness versus adoption of biofortified varieties.</li> <li>• Access and profitability of the biofortified varies</li> </ul>	Jaenicke and Virchow (2013) Ruel et al (2013) Keding et al, (2013) Christinck and Weltzien (2013)
Processing Fortification n-9	Fortification	<ul style="list-style-type: none"> <li>• Low capacity and fraud on nutrient content</li> <li>• Processing companies may not have the capabilities for consistent fortification (cost versus nutrient)</li> <li>• Unclear level of nutrients for fortification.</li> <li>• Concerns food safety standards</li> </ul>	Jaenicke and Virchow (2013) Gillespie et al, (2013) Christinck and Weltzien, (2013) International agri-food network (2017) UNDP (2012) Maestre et al. (2014). Keding et al., (2013) Gerster-bentaya, (2013) Humphrey and Robinson, (2015)
Transport and distribution n-7	Accessibility of nutrient- dense foods	<ul style="list-style-type: none"> <li>• Cost effectiveness in terms of distribution (not economical for small packages)</li> <li>• Overlooked the role of small-scale distributors who can reach the low-income consumers</li> <li>• Establish effective, sustainable delivery systems for biofortified crops in countries with a high burden of micronutrient malnutrition.</li> </ul>	Christinck and Weltzien (2013) Humphrey and Robinson (2015) (Maestre and Poole 2018) Thorpe and Philip 2016) Hodge et al (2015) Gerster-Bentaya, 2013) Keding et al (2013)
Marketing n-9	Facilitate access to markets	<ul style="list-style-type: none"> <li>• Low-income consumers rely on informal markets to sell and buy foods.</li> </ul>	Bogard et al, (2017) Jaenicke and Virchow, (2013)



	(formal markets)	However private sector rarely invests on informal markets as a channel to supply nutrient rich foods	International agri-food network, (2017) Hodge et al (2015) Maestre and Poole (2018) UNDP 2012 Allen and de Brauw (2017) McLachlan and Landman (2013) Humphrey and Robinson (2015) Thorpe and Reed (2016)
Support function n-7	Foster nutrition innovations Funding nutrition investments	<ul style="list-style-type: none"> <li>• Laggards and slow adoption of innovations responding to market preferences</li> <li>• Inability to access bank loan due to lack of understanding about the agricultural sector and the opportunities therein amongst the financial institutions.</li> <li>• Information gap on markets</li> </ul>	Maestre and Poole (2018) SPRING (2017) Gillespie et al (2012) Hodge et al, (2015) McDermott et al (2015) UNDP (2012) International agri-food network (2017)

**4.1.1 Geographical distribution of the studies**

The twenty-three publications that were included in the review were positioned in developing countries as earlier illustrated in chapter three of the methodology section. The geographical patterns were mostly in the global south, most specifically in Southeast Asia (Bangladesh, India, Pakistan) and Africa precisely in East and West Africa; Tanzania, Kenya, Uganda, Mali, Nigeria. The studies were linked to development interventions that were geared towards curbing malnutrition and poverty eradication. The diversity of the geographical coverage addresses location bias in this review. Research has shown that studies published in certain countries may be more likely than others to produce research showing significant effects of interventions (Higgins and Green, 2011).

### 4.1.2 Inputs supply

Limited access to input: The inability to access inputs (seeds, pesticides, fertilizers) or physical and financial impediments to access inputs faced by smallholders can weaken the value chain upstream (Maestre and Poole, 2018). Inputs are critical towards productivity of small-holder producers; however, most smallholder farmers do not have easy access to input due to inadequate distribution systems and the high cost of inputs (UNDP 2012). With these challenges, the private sector act as a bridge by engaging intermediaries ranging from multinationals to local, in supplying and distribution of food products across the entire food system (Maestre and Poole, 2018). The increased adoption of inputs has been largely driven by private seed companies, fertilizer importers and distributors who have learnt to view poor people as potential customers (UNDP, 2012). For instance; commercial companies in Africa (Amiran, Hygrotech, YARA) provide farmers with extension and technology support in addition to selling and distributing seeds and fertilizers, to boost farmers yields. In addition to recognizing the pivotal role of private sector in input supply, literature acknowledged public–private partnerships (PPPs). It is evident that the private sector can't work in a vacuum but in collaboration with other stakeholders. PPP have formed initiatives that have enhanced better access to inputs and thus contribute towards food security (Zamora et al. 2013; Jaenicke and Virchow, 2013). For example; In the Philippines, the department of agriculture implemented the School Nutrition Program aimed to address malnutrition affecting school children, as the implementing partner the East West Seed (EWS), a private seed company, provided technical expertise in modern vegetable farming and supplied vegetable seeds to public elementary and high schools covered by the project (Zamora et al. 2013).

The private sector paid more attention to seeds supply unlike other inputs (machinery and fertilizers) even though they are equally important. Private sector plays a significant role in introducing seed and crop varieties that are more nutritious, disease- and pest-resistant (Christinck and Weltzien, 2013). To demonstrate, stakeholders from South Asia proposed privatization of the seed market would work towards better productivity which ultimately allows farmers to import better seed varieties for profitable vegetables (Van den bold et al, 2015). However, the formal seed sector is largely driven by private sector, while little attention is given to the informal seed

system which is still in existence in developing countries (Christinck and Weltzien, 2013). The informal seed sector occupies a unique position in agricultural production which the private sector did not to recognize (Christinck and Weltzien, 2013). For example, in Mozambique and Mali, majority of seed transactions is passed from one farmer to the another as a gift (Christinck and Weltzien, 2013). This traditional practice underscores the importance of informal seed systems for food security.

Nine articles discussed the role of business sector in relation to supplying input to farmers in developing countries. However, majority of the articles paid little attention on how the private sector is involved in supplying and distributing these inputs to low income populations as a contribution toward nutrition-sensitive agriculture. Instead some articles focused on challenges that adversely affect markets for inputs, these challenges include; poor infrastructure, high cost transportation, political interference in subsidy programs, all these challenges may cause destabilize markets causing input prices to rise, consequently affecting farmers (Humphrey and Robinson 2015; UNDP, 2012). Despite the numerous identified challenges, the private sector remains a critical driver with the highest level of investment in agriculture (Humphrey and Robinson, 2015). For instance, the current trend identified by the business sector is engaging in backward integration. It means that companies provide inputs for farmers, train them on proper application and ultimately offer markets for their produce. This collaborative system offers farmers an incentive to re-use inputs for better productivity (UNDP 2012).

#### **4.1.3 Production**

Several studies (n=4) focused on the role private sector in agricultural production in an effort to increase increasing nutrient levels in crops. Private sector participation in the production process is considered important especially in the adoption of agricultural techniques such as

biofortification<sup>2</sup> (Christinck and Weltzien, 2013). The review showed that private sector is an active partner in facilitating research and development to support biofortification process (Christinck and Weltzien 2013). In collaboration with breeders, the business sector has influenced food production through the introduction of new varieties of crops that may be industrially processed (Keding et al, 2013). Given the evidence from the review, more attention has shifted towards scaling biofortification to improve production. However, there have been sharp criticisms on the way agricultural production has overlooked local or orphan crops in favor of breeding modern varieties in terms of yields and quality. Jaenicke and Virchow (2013) argue that local varieties have unique traits that can be used as medicines and health boosters. Often, they have a specific knowledge linked to the production and use of local crops that are in danger of extinction.

#### **4.1.4 Processing**

Food processing companies drive the agro-food industry in Africa (UNDP, 2012). They act as a partner linking the entire food system (Jaenicke and Virchow 2013) and sit at the center of food value chain serving as the pivot upon which producers and marketing evolve (UNDP, 2012). On the one hand they supply raw materials and inputs to producers on the other, they provide processed food and sustain markets. These private companies not only link actors in the value chain, they also offer direct employment to low income consumers and at the same time, attract foreign investment hence contribute positively to the economy (UNDP, 2012).

As part of a new marketing strategy and business model pertinent to nutrition, private sectors have explored biotechnology as a way to bridge the gap between agriculture and nutrition, an example

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<sup>2</sup> Biofortification as the process of increasing the density of vitamins and minerals in a crop through plant breeding. Thus, directly placing nutrition at the center of biofortification process. Example of successful biofortified crops are; orange-fleshed sweet potatoes, iron-rich cereals and beans.

is food fortification<sup>3</sup>. The application of biotechnology in food processing such as fortification, demonstrates capability of food companies to combat nutrient deficiencies (Keding et al 2013). Biotechnology has additionally introduced fortification which not only generates sales for producers but also nutritionally benefits for low income consumers (Gillespie et al, 2013). According to Keding et al, (2013) biotechnology has designed mechanisms that has enabled food safety and food preservation through techniques like canning which prolongs products shelf-life as well as reduce food waste (Christinck and Weltzien, 2013; international agri-food network 2017). Drawing lessons from a study carried out to examine the role of business sector in fortified food products, it was concluded that commercial markets play a central role in product manufacture and delivery of fortified products which help to reduce undernutrition and improve nutrition (Humphrey and Robinson, 2015).

As shown in table 1, low capacity and fraud is a major challenge in achieving success in process of fortification. Literature has shown that food processing companies may not have the capabilities needed for consistent fortification and they can cut cost by adding less than required quantities of fortification (Humphrey and Robinson 2015). This can be due to lack of clarity with regard to the level of fortification, in terms of bioavailability of nutrients added, nutrient interactions, or stability level of the nutrients. Either way, more research is needed due to the aforementioned uncertainty (Keding et al 2013). Humphrey and Robinson (2015) gives an example in Nigeria, where a private company manufacturing fortified products did not meet fortification standards. Cost effectiveness is another challenge faced by processing companies and consumers. Many low-income consumers may not be willing to buy fortified products due to cost and market channel. For instance, in Tanzania, fortified maize was introduced to curb micronutrient deficiencies but due to the high cost of the fortified maize flour, most low-income people preferred to buy maize flour from the

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<sup>3</sup> Food fortification means enriching basic foods with vitamins and minerals through industrial processing of food and functioning food distribution systems (Humphrey and Robinson 2015; Christinck and Weltzien 2013). Example include iodized salt, vitamin A enriched vegetable oils, iron enriched breakfast cereals (Jaenicke and Virchow, 2013).

informal channels, which was a blow to large flour millers who had invested in the product (Humphrey and Robinson 2015). Power foods Tanzania is another example, the midsize food processor producing micronutrient-fortified products was not able to develop a business model around the sale of fortified foods as well as maintain commitment to nutrition (Maestre et al. 2014). Following Gerster-bentaya, (2013) as displayed in table 1, food safety and hygiene emerged as a major concern to processing companies. Literature marked food safety as a priority in the processing sector (Gerster-bentaya, 2013). Without proper safety regulations, poor food handling and processing could result to adverse health hazards such as food poisoning (Keding et al., 2013; Gerster-bentaya, 2013). According to Keding et al (2013) safe processing especially at commercial processing plants can be a challenge, if processing is poor high food losses can cause nutrient loss or increase the risk of producing unsafe and unhealthy food. However, Humphrey and Robinson, (2015) pointed out that it is a challenge for companies to maintain a balance between safety and nutrient content while achieving the price points and level of consumer confidence needed to generate consumer willingness to buy.

#### **4.1.5 Transport, storage and distribution**

Food distribution systems presuppose that target group has access to food (Christinck and Weltzien 2013). According to Humphrey and Robinson (2015) distribution is a critical issue for market-based approaches to delivering food to undernourished. The supply and demand pathways heavily rely on well-functioning markets and distribution systems (Maestre and Poole 2018). In other words, it is about the geographical proximity to the food product. A large geographical gap between producer and consumer means significant efforts in distribution which has an effect on food availability (Thorpe and Philip 2016). Hodge et al (2015) relates the role of private sector to value chain participation, placing marketing and distribution at the periphery of the value chain activities. The interface between supply and demand of food products often involves private sector in distribution and transportation for retailers and food establishments (Gerster-Bentaya, 2013). Nonetheless, according to Thorpe and Reed (2016) inadequate distribution is one of the largest causes of failure for business at the bottom of the pyramid, especially when exacerbated by weak transportation linkages and infrastructure. Further into the discussion, Keding et al (2013) raised

food handling as an issue during transportation and distribution. The authors argued that a great percentage of food waste and post-harvest loss may exist in distribution system in emerging economies due to poor infrastructure. These distribution barriers hinder supply to low-income consumers.

Product distribution to remote rural regions in a cost-effective manner remains a challenge (Gerster-Bentaya 2013). Several studies pointed to the high costs of distribution incurred in trying to reach the low-income consumers. Humphrey and Robinson (2015) argues that supplying to low income consumers can be problematic because many distributors do not find it profitable to sell to low income consumers. This is can be due to the fact that low income consumers require smaller pack sizes and typically purchase smaller volumes which they find not economical to private businesses. Maestre and Poole (2018) argue that markets for nutrition are particularly complex due to the overlap of the challenges like high cost of distribution to reach vulnerable populations. For instance, farmers with limited transport options, will depend on distribution network to reduce transaction costs for them to acquire inputs (Thorpe and Reed 2016). Humphrey and Robinson (2015) explain that distribution costs are particularly high for processed products because they are often produced in one place and require distribution to widely dispersed locations. This combination of centralized production and decentralized consumption is particularly problematic when consumption volumes are low, which is frequently the case for fortified, non-staple products. For these reasons, it is important to consider decentralized models for producing food located closer to the target populations. Which means considering the potential for greater contributions from informal sector providers. The distribution system raised an interesting debate about the effectiveness of formal and informal markets which will be discussed later in the next session.

#### **4.1.6 Trading and Marketing**

Substantial debate on the role of the private sector in improving markets for nutrition-rich foods targeted for low income consumers was eminent (Thorpe and Reed, 2016). Most articles questioned the validity and efforts for private sector to support informal and formal markets in delivering nutritious foods. Among the articles analyzed, nine mentioned that private sector plays an important part in fostering support services in agricultural extension and facilitating access to

markets for producers (Bogard et al, 2017; Thorpe and Reed, 2016; UNDP 2012). For example; companies like BIDCO Kenya provides market for over 10,000 farmers, East Africa Breweries provide market for over 10,000 sorghum producers (UNDP 2012). This shows that the business sector connects rural smallholders to local, regional and global value chains through marketing (Jaenicke and Virchow, 2013; International agri-food network, 2017). Hodge et al (2015) argue that access to markets and stronger market infrastructure promotes linkages between agriculture production and utilization. These linkages are particularly important to low-income consumers who rely on markets for food supply, making markets an integral pathway for private sector to deliver nutritious foods to vulnerable population (Maestre and Poole 2018; International agri-food network, 2017).

For the past decade, there has been strong arguments for multinational corporations and large domestic companies to invest in nutrition (UNDP 2012), this formal market structure has the capacity and potential to reach a wider population compared to informal markets (McLachlan and Landman 2013). Yet most of the low-income consumers rely on informal markets to attain their foods (Allen and de Brauw 2017; McLachlan and Landman 2013; Maestre and Poole 2018). These informal markets produce and distribute foods at low cost convenient for low-income population (McLachlan and Landman 2013; Allen and de Brauw 2017). This shows that a gap exists with regards to market connectivity between private sector and informal market.

Besides market structure constrains (Allen and de Brauw, 2017) businesses invested in nutrition need profits to stay afloat and at the same time substantially active in reducing nutritional deficiencies (Humphrey and Robinson 2015). That means that businesses need to build markets for nutrient rich foods while at the same time ensuring the foods are affordable and available to the disadvantaged population (Humphrey and Robinson 2015). These nutrient foods should also be available to undernourished people in the form that they are willing to buy while still providing adequate incentives to businesses, meeting these requirements in tandem is quite challenging (Humphrey and Robinson 2015). While the private sector can be engaged to include nutrition goals in their interventions, such interventions are more likely to be taken to scale if profit incentives can be aligned with nutritional outcomes (Allen and de Brauw, 2017).



Even though many authors argue that informal markets should be recognized in nutrition interventions targeted (Jaenicke and Virchow, 2013; Allen and de Brauw 2017; McLachlan and Landman 2013; Maestre and Poole 2018; International agri-food network, 2017). Hodge et al (2015) argue, there is need for serious debates about what kind of food system can deliver nutritious foods to the low-income people who currently do not have access. On the one hand informal chains are considered a channel to supply nutrient rich foods for undernourished population, on the other hand, there is tension that private sector is a major contributor to over-nutrition especially on processed foods (Maestre and Poole 2018). The articles show that there is need to research more on markets, by exploring structures and incentives embedded in markets that can address the needs of businesses as well as low-income consumers.

#### **4.1.7 Support function**

From the selected papers it was evident that the private sector has not only actively engaged in value chain processes, but also perform supportive role to the value chain activities.

##### *4.1.7.1 Agricultural market information system (ICT)*

The business sector relies heavily on information and communication technologies (ICTs) to collate and disseminate information, through the Internet and mobile phone networks. The communication systems have extended their reach, beyond providing market prices to offering advice on crops, pests and inputs (SPRING, 2017). Private sector has played an active role in supporting Information, technology and communication as a way to improve nutrition. ICT system collects and disseminates information on market dynamics which has a strong influence on tackling information gap in nutrition interventions. According to Maestre and Poole (2018) poor transportation, infrastructure and (tele-) communications can make it too costly for smallholders to sell their produce downstream to urban consumers and can contribute to greater food losses. This problem has encouraged private sector to facilitate business relationships through promoting agricultural information and often form an alliance with governmental organizations to reach target farmers and other value chain actors to avoid food waste (SPRING, 2017). According to SPRING (2017) computer technology businesses have emerged and harness innovation like m-health (health services using mobile technologies) initiatives. Through varied communication

mechanisms the public and private sector have created a platform for information sharing among farmers. The provision of information systems has extended their reach beyond providing market prices to offering advisory services on crops, pests and inputs. The dissemination of information encourages farmers to adopt improved agricultural practices as well as share knowledge through demonstrations and market their produce.

Maestre and Poole (2018) pointed out that poor information systems exclude many smallholders from perceiving market opportunities and responding to market preferences. Nevertheless, according to (SPRING 2017) private sector information providers play a significant role in linking farmers to technology access for easy and effective communication. On the same note, Gillespie et al (2013) gave insight on how private sector provides mobile technology and promotes the application of mobile technology and technical knowledge to contribute to nutrition scale-up. Workshop attendees in Uganda recommended prioritizing the involvement of the agricultural private sector in improving nutrition, suggesting the use of a social marketing perspective and create demand for nutritious foods (Hodge et al, 2015).

#### *4.1.7.2 Fostering nutrition innovations*

Private sector has greatly supported innovations associated with nutrition, according to McDermott et al. (2015) joint participation between public, private and civil society promoted innovations that brought together opportunities for supporting small- and medium-size enterprises, these opportunities provided better insight into policy and market information. Examples of nutrition innovations that support translation of new knowledge and ideas that fit in the field nutrition sensitive agriculture includes; Amsterdam Initiative for Malnutrition (AIM), Partners in Food Solutions and Pulse Innovation Partnership (PIP) in India. PIP is an alliance of public and private sector that supports pulse-based food innovation to increase the consumption of pulses in developing countries by creating novel pulse processed foods, the aim is to eradicate malnutrition (Hodge et al. 2015).

#### *4.1.7.3 Finance investments*

In addition to fostering innovations, private sector has been the main source of funding in nutrition sensitive interventions (UNDP, 2012). Private operators often seek to capitalize on the business

aspect as well as support smallholders to become entrepreneurs by facilitating access to sustainable production techniques through extension, market information, and offering financial services (international agri-food network 2017). According to UNDP (2012) private sector has a critical role in financial investments, it enhances productivity in the face of growing opportunities for the agricultural sector (UNDP, 2012). However, financial lending is still a challenge for low-income consumers, they struggle to secure loans in formal financial institutions. This is because, private sector and financial institutions have different impressions with regards to credit worthiness and lending money. Banks and financial institutions base their lending decisions on profitability of the venture, whilst private sector considers business plans and collaterals as prerequisites to access loans. This variation alters the value of collateral that farmers can offer as security for loans. Furthermore, there appears to be lack of understanding about the agricultural sector and the financial institutions which hinder effective functioning of the sector. Again, the inability of smallholders to provide accurate and detailed information on their operations, past performance and markets served has severely limited their credit worthiness and ability to access finance (UNDP, 2012)

#### **4.1.8 Reflection**

From the articles, there is abundant literature on the role of business as a strategy to leverage agriculture and improve nutrition. Seemingly, business sector has remained largely present in value chains activities, even though it was more prominent in the supply side than the demand side (consumer) of the value chain. Numerous roles highlighted in literature bear witness to the extent to which the business sector is imbedded in the nutrition interventions. This is observed from the aforementioned roles; the business sector is involved in supplying inputs to farmers, facilitate adoption of agricultural technologies like biofortification during production, introduction of fortification during processing, distribution of nutrient-dense products, facilitate market access to vulnerable groups and other supportive functions which include funding, foster innovation and improve information system. Studies have shown there is an increasing trend for adoption of agricultural technologies. Food companies have heavily invested in biofortification and fortification as the new way of advancing nutrients in foods. Biofortification improves the bioavailability of nutrients and at the same time advances characteristics of the said product. These

properties revitalize new way of innovations in NSA. Given the strength of the evidence, attention has shifted to scaling biofortification to improve nutrition globally.

However, there exist gaps and challenges that hinder effective functioning of business sector. As demonstrated, literature overlooked the informal seed systems which is a traditional mode of farming and is still in existence in developing countries. In addition, the recent adoption of biofortified crops has been at the expense of orphan (local) crops. These local crops possess unique characteristics that have been discovered to possess both medicinal and anti-oxidant properties. Further into the articles, cases of low capacity and fraud have been reported with regards to fortified foods. Studies have shown that it is unclear about the level of micronutrients incorporated in food during processing, excess intake can cause toxicity in human health system whilst inadequate will cause deficiency. This can be exacerbated by low food safety standard during processing. Finally, the inability for smallholders to access bank loan due to lack of collateral. It clear that more evidence is needed on the how private sector can be engaged in the nutrition sensitive agriculture using other avenues in conjunction with value chain approach. In addition, the private sector should not only concentrate on the supply but also the demand side of the value chain, by actively involving the people to work with business sector initiatives to fill nutrition gaps that could have impact on both the amount of production to be aware of the benefits.

The private sector cannot function in isolation, it requires other stakeholders, in order to increase productive investments in agriculture and enhance efficiency in the supply chain. Hence, creating partnerships and collaboration with different stakeholders is essential. These partnerships can only work effectively if there is transparency and accountability among the stakeholders. According to the studies reviewed, it is imperative for the value chain activities to function effectively across all sectors and at the same time acknowledge the interests of all stakeholders. Equally important are the public-private partnerships in nutrition interventions. As displayed in the results governments provide an enabling environment for private sector initiatives to thrive. The proliferation of public-private partnership (PPP) has been a growing trend in agricultural interventions. Although PPPs in nutrition are still being perfected, especially with conflict of interest and lack of trust among the parties involved. Nevertheless, PPPs play a critical role in tackling undernutrition, they develop

sustainable and cost-effective, nutritious food solutions for the hungry poor. Most importantly, the partnerships leverage commercial companies to apply technical expertise to improve the quality of food supplies through tailor-made and innovative food fortification interventions.

## **4.2 Elements of inclusive business in nutrition sensitive agriculture**

In this section, results were presented using an inductive approach, where findings are described based on the operationalized elements presented in chapter two. The results were set to answer the second research question framed as ‘What elements of inclusive business are present or absent in nutrition-sensitive agriculture as described by literature. As displaced in table 2, the results pointed out that market orientation is very apparent, among the articles it was clear that there is a strong preference for markets both from the business sector and nutrition sensitive interventions. The results illustrated that although efforts are being made to strengthen inclusion and nutrition sensitivity within the agricultural sector, opportunities to integrate inclusive business elements still exist, and need to be re-enacted to build on existing nutrition frameworks. The results also pointed out that nutrition sensitive agriculture (NSA) interventions are context specific and need to be developed to the boundaries that are applicable to farmers and other value chain actors. Drawing to the aforementioned domains in chapter 2, this subsection is categorized into four elements of Inclusive business; market-orientation, inclusion of low-income consumers, value proposition, and enabling environment.

### **4.2.1 Value proposition (Value addition)**

Value proposition is a business terminology that articulates the unique characteristic of business products as perceived by consumers. In an attempt to penetrate the low-income market, the business sector has introduced agricultural technologies like biofortification and fortification as a unique characteristics of food product. It has been recognized as an approach to address the market gaps in the low-income population (Humphrey and Robinson 2015). Majority (n-19) of the twenty-three documents identified, mentioned value addition as prerequisite for improving nutrition outcomes. Evidently, adding nutrient value to food through production (biofortification) or processing (fortification) translates to better nutrition (Christinck, and Weltzien 2013). Distinctly, as shown in table 2, majority of the articles linked value chain interventions with nutrition

outcomes. For instance; Webb and Kennedy (2014) noted the role of value chain interventions in improving production and accessibility of nutrient-rich foods. The value chain in essence, has been the medium for production and processing food products, targeted for reach low-income consumers Buchsbaum, A., et al. (2016); Zamora et al (2013); Weinberger, (2013); Jaenicke and Virchow (2013); Keding et al (2013). Jaenicke and Virchow (2013) argued that nutrition sensitive interventions need to operate along the entire food value chain so as to incorporate nutritional and health values. Furthermore, assessing the value chain as a system will allow stakeholders to identify key areas for intervention, from better coordination, to improved targeting of certain products (Maestre et al, 2017).

The use of new agricultural technologies- biofortification, and fortification have been proven to be successful in areas with micronutrient deficiencies (Webb and Kennedy 2013; Humphrey and Robinson, 2015; Van den Bold et al 2015; MacDonald et al 2017). MacDonald et al. (2017), demonstrated that there is a favorable environment to sustainably scale up production and promote biofortified crops such as rice, iron- rich beans, orange fleshed sweet potatoes and high protein maize in low income population affected by micronutrient deficiencies (Hodge et al 2015; Rahman and Islam 2014). Keding et al. (2013) broadened the scope of agricultural technologies, focusing on fortification during processing. The addition of micronutrients (vitamins and minerals) to improve the quality of food provides health benefits especially for malnourished children (Humphrey and Robinson, 2015). Notwithstanding the contributions described, some studies pointed out concerns about biofortification. For instance, MacDonald et al (2015) described the process of biofortification as expensive and hardly accessible by poor farmers, majority of farmers cannot afford such investments unless supported by government, private sector or donors.

#### **4.2.2 Enabling environment for nutrition sensitive agriculture**

Gillespie et al, (2013) defined an enabling environment as political and policy processes that build and sustain momentum for effective implementation of actions that reduce undernutrition. From this definition it is evident that Gillespie et al, (2013) placed a particular emphasis on the importance of “enabling environment” for nutrition (van den Bold, et al. (2015). Gillespie et al (2013) emphasizes, the following three linked factors are crucial for building and sustaining of

momentum into results; Knowledge and evidence, politics and governance (collaboration between actors), capacity and resources. To understand the enabling environment necessary to impact nutrition through food and agriculture, the aforementioned three domains were studied by Hodge et al. (2015) and Van den Bold et al. (2015) in the context on East Africa and South Asia respectively. The studies found that without the necessary political will, informed by knowledge about nutrition and sufficient financial resources, it will be difficult for sustained reductions of undernutrition to take place in any context.

#### *4.2.2.1 Knowledge and evidence*

The availability of credible data presented in an accessible way can help different stakeholders to be responsive to changing circumstances and be accountable for the effectiveness of their intervention (Gillespie et al, 2013). Data from reliable sources influence formulation and implementation of nutrition policies (Hodge et al 2015). Even though, the multisectoral nature of nutrition-sensitive agenda has pointed out gaps in nutrition data necessary for program evaluation (McDermott et al 2015). Without the data it would be difficult to trace progress on nutritional problems. Notably, majority of the nutrition data is available from a variety of sources such as demographic and health survey, agricultural systems, food security early warning systems (Van den Bold et al, 2015; Hodge et al 2015). But these sources are barely complete or integrated enough to understand nature of the linkages or gaps between agriculture and nutrition (Van den Bold et al, 2015; Hodge et al 2015). According to UNDP (2012), availability of agro-economic data in most countries in Sub-Sahara Africa countries, are not easily accessible since, the available information is old and scattered and sometimes conflicting amongst various government agencies (UNDP, 2012). This severely constrains private sector investment particularly in agriculture where the challenge is the most pronounced (UNDP, 2012). To attract increased private sector investment, governments need to invest in consistent data gathering and reporting systems to evaluate the effectiveness of all interventions aimed at improving agriculture, health and nutrition (UNDP, 2012; MacDonald et al. 2017).

#### *4.2.2.2 Capacity and resources to improve nutrition sensitive agriculture*

Human and organizational capacity need to encompass not only nutrition know-how but also a set of soft-power skills to operate effectively across boundaries and disciplines (Gillespie et al. 2013). In this context, capacity can be interpreted as leadership for alliances building and networking. Evidently leaders need systematic and organizational capacity to create and sustain nutrition policy and institutional change (Gillespie et al, 2013). For example, two different presidents in Mozambique, have supported nutrition initiatives and provided an enabling environment for the integration of biofortified crops into their development programs. The move has contributed to improving micronutrient intakes in vulnerable populations.

Gillespie et al, (2013) argued that capacity and resources are needed to scale and expand coverage of nutrition-sensitive programs while retaining cost-effectiveness. Additionally, sustainable funding must be made available by governments and other funding agencies to ensure successful efforts in nutrition-sensitive agriculture both at the farm and community levels have increased (Zamora, et al.(2013). This resonates with Lokosang (2017), investing in agriculture with the aim of ending hunger and malnutrition should attract adequate funding, technical resources and close monitoring of progress. Doing this at the leadership and high-level governance institutions provides an enabling environment for the integration. However, in developing countries funding has been a contentious issue especially among the state, donors and business sector (Gillespie et al, 2013). A study carried out in South Asia, revealed that financial resources were not sufficient, particularly at the state level and within agricultural research and development. This was connected to political motivations attached to spending decisions, some stakeholders felt that funds were invested in certain ministries at the expenses of other ministries due to political interference (van den Bold et al 2015). The distribution of the said funding among the concerned ministries was problematic (Hodge et al 2015).

#### *4.2.2.3 Conducive institutional environment*

According to Maestre et al (2017) viable agricultural markets that are inclusive, optimize sustainable production and distribution of food need an efficient enabling environment. A favorable environment is characterized by well-designed laws and regulations which are supported



by strong institutions and efficient administrative procedures necessary for agriculture to thrive. It is clear that businesses do not operate in a vacuum, production and distribution of nutritious foods to low income consumers is heavily influenced by formal and informal institutions that shape and define the market environment (Maestre et al 2017). Studies have shown that businesses will not be able to address nutrition problems without a positive institutional environment (Humphrey and Robinson 2015; Zamora et al 2013; Hodge et al 2015). By assessing the extent to which a business can operate in a given market context, policy makers and relevant stakeholders can be able to create an appropriate institutional environment that shapes how value chains operate for the benefit of vulnerable target groups (Maestre, et al 2017). Therefore, there is need for designing and implementing effective policies and strategies that are in line with market base intervention as well as the target groups.

#### *4.2.2.4 Political and policy environment at the macro-level*

Enabling environment can be political or policies that govern a country or state (Zamora et al 2013). Political climate within a country is paramount to the focus and success of development projects (Jaenicke and Virchow 2013). Evidently, where conducive policies and supportive government processes exist, there is a relatively high likelihood of success in implementing initiatives that improve nutrient-rich and balanced diets for better health status (Jaenicke and Virchow 2013). An example was shown in the context of the Philippines, where the presidential executive orders to support food production programs in urban areas contributed to the success of nutrition-sensitive agriculture projects, the success of the policy is attributed to the legitimacy and financial support. This shows that a strong political will and enabling policy environment at the macro-level can positively influence nutrition sensitive initiatives. However, the sustainability of such an initiative is context specific and relies heavily on sustained political will. For instance; in Uganda, policies are seen to be driven by vote-winning issues. Nutrition is rarely viewed as a vote-winner in politics, decisions are politically driven and influenced by the level of political support that can be gained (Hodge et al 2015).

The prospects for integration, adoption and scalability of nutrition sensitive agriculture heavily depend on the national and organizational enabling environment (MacDonald et al. 2017). For

example, in Bangladesh the agricultural policies and interventions of the government have speed up the process of nutrition sensitive agriculture, where farmers are recognized for their important roles in food security (Rahman and Islam, 2014). As with country policies and strategies, private sector and non-governmental organizations also have prioritized nutrition at the highest level. Through a multi-sectorial approach, the actors have provided an enabling environment for nutrient-rich foods to thrive, an example is the production and distribution of biofortified crops (MacDonald et al. 2017). From the articles it was clear that, there are a number of studies exploring enabling environment for policy and practice (MacDonald et al 2017; Hodge et al 2015; Maestre and Poole, 2018; Van den Bold et al. 2015; Gillespie et al. 2013). However, literature was not explicit on how an enabling environment can positively contribute towards the private sector investment in nutrition sensitive interventions.

#### *4.2.2.5 Collaboration and governance along the value chain*

Overall, the studies perceived widespread attention to the multisectoral nature of nutrition sensitive agriculture, majority focused on policy coherence (across and within sectors) and co-ordination. This goes hand in hand with the previous session on political and policy environment.

In addressing the multisectoral nutrition challenge, the roles of enabling policy, investment and political process are critical. Partnerships between different stakeholders and policy makers presents a conducive environment in achieving nutrition goals (Lokosang 2017; McDermott et al 2015). This is in line with a case study in South Asia, where an amalgamation of 56 stakeholders representing international organizations, research institute, government, civil society donors and private sector; all came to a consensus that vertical and horizontal coherence within and among sectors and stakeholders is salient (Van den Bold et al. 2015). The very study also concluded that coordination combined with positive contributions from the private sector and civil society, together with accountability from all the stakeholders involved, are important traits for the creation of an enabling environment for nutrition sensitive agriculture to flourish (Van den Bold et al. 2015). These finding resonate with Mcdermott et al. (2015); SPRING (2017); Zamora et al (2013); Weinberger (2013); Jaenicke and Virchow (2013); Rahman and Islam (2014) that success of implemented NSA program is highly dependent on collaborative efforts of different stakeholder.

Examples of successful collaborations displayed in the review include; the Biointensive Garden (BIG) approach initiated in the Philippines to increase food availability, was as a result of collaboration between the International Institute for Rural Reconstruction (IIRR), local government units, and local NGOs (Zamora et al. 2013). Another successful case was the increased food supply and dietary diversity attributed to effective inter-agency collaborative mechanism of varied stakeholders in the introduction of home and community gardens among the poor people in South Asia (Weinberger, 2013).

As it has become apparent in the previous paragraph, inter-sectorial and inter-organizational collaborations have also contributed to a paradigm shift within the food and agriculture sector in favor of NSA (Jaenicke and Virchow 2013). An example deduced in the context of biofortification is the postulation by Humphrey and Robinson (2015) that most sectors do not have the capacity to reach target groups for integration of development programs, therefore, the idea of forging partnerships with other actors creates a platform to reach target groups and direct their efforts towards achieving nutrition outcomes at scale (MacDonald et al, 2017). A separate study on plant breeding highlighted that collaboration among stakeholders requires an integrated approach to undertake a joint initiative for a common goal (Christinck, and Weltzien, 2013). However, for effective multi-sectoral collaboration some important traits should be in place. These include; an effective communication system amid sectors (Keding et al 2013; SPRING 2017), and mutual understanding and trust among the various partners on board (Buchsbaum, A., et al. 2016). Under these circumstances, successful partnerships emerge (Zamora et al., 2013) and consequently open-up new possibilities that are bound to increase and effectively contribute towards NSA.

Although the aforementioned articles highlighted the significance of collaboration, there still exists fragmentation in approaches towards more NSA initiatives (Jaenicke and Virchow 2013; SPRING, 2017). Literature pointed out that many projects performed in partnership face challenges that can hinder potential success of interventions. For instance, Van der Bold et al (2015) argues that imbalanced power dynamics between national and subnational levels of government could imply problems for nutrition interventions. The relationship between governmental departments is perceived as competitive rather than coherent particularly in competing for funds. Other challenges

that impede coordination include; weak accountability structures and processes in most developing countries this relates to weak systems of monitoring and evaluation (Hodge et al 2015; Gillespie et al 2013). Lack of engagement of implementation partners in policy formulation especially in decentralized systems of governance. For instance, in Kenya the creation of a decentralized system of country governments hampered vertical coordination among different sectors in the government (Hodge et al. 2015). In light of this, literature allude that collaboration and convergence continue to be more of a challenge than an enabler especially along the value chain (Hodge, J., et al. 2015; Gillespie et al 2013). There remains a lack of clarity over how best to work together given the very different mandates, training and technical languages used by different sectors (Buchsbaum, A., et al. 2016). Therefore, contextualized research into policy processes and the political economy of agriculture and nutrition is needed to better characterize enabling environments for agriculture to benefit nutrition and how these environments can be shaped and sustained.

In brief, literature has a strong preference for collaboration as an enabling environment. Compared to other domains most authors paid more attention on the importance of collaborations and partnership, with little attention on other domains (knowledge and evidence, capacity and resources and political commitment). Needless to say, enabling environment is a broad concept that is open to different interpretation, it is important to note that a favorable enabling environment for business and agricultural investment will depend on a number of context-specific factors as indicated before in the results.

#### **4.2.3 Inclusion of low-income consumers**

An inclusive value chain goes hand in hand with collaboration and partnerships, both elements include multiple stakeholder with different roles but all work together to achieve the same goal (Christinck, and Weltzien, 2013; Humphrey and Robinson 2015). Literature shows that, NSA initiatives target the low-income consumers as illustrated in table 2, despite the different terminologies used. For instance; nutrition-vulnerable (Buchsbaum et al. 2016; MacDonald et al, 2017); poor (Rahman and Islam 2014); Pittore, (2016); vulnerable groups (Christinck and Welrzien, 2013; Humphrey and Robinson, 2015); disadvantaged groups (Jaenicke and Virchow 2013); ethnic minorities (Rahman and Islam, 2014). Often vulnerable groups of people are within

local, national and regional communities who suffer most from insufficient availability of nutrient-rich food as well as access to nutritious food (e.g. tribal groups, women, children, sick or elderly people). Nutrition-sensitive agriculture adopts approaches that recognize the specific vulnerability of these groups (Jaenicke and Virchow, 2013) and comes up with approaches that can support particular groups within society, such as households that are at risk of malnutrition, without making them dependent on hand-outs (Jaenicke and Virchow, 2013). Within the literature reviewed, majority of the articles were directly focused on the integration of small-scale farmers in the value chain. Literature has shown that small-scale farmers are resource restricted, yet they make a significant contribution towards local production. (Keding et al. 2013; MacDonald et al. 2017; Christinck and Welrzien, 2013; Rahman and Islam, 2014; McLachlan and Landman, 2013).

#### *4.2.3.1 Gender dynamics*

Within the literature, several authors paid attention to gender perspective with an interest in women and children as the target group to NSA initiatives. Women and children are considered as the most vulnerable group of people with special needs and therefore require more attention (Rahman and Islam 2014; Buchsbaum, et al. 2016; Zamora, et al. 2013); Humphrey and Robinson, 2015); Gillespie et al 2013). According to SPRING (2017) women do not have equal access to or control resources irrespective of their role in agriculture and nutrition (SPRING, 2017). As a result, government officials facilitating nutrition programs have diverted attention towards eradicating micronutrient deficiencies and improving nutritional status especially for pregnant, lactating women and children under 5 years (Gillespie et al, 2013; Weinberger 2013). The growing interest on gender perspective with close attention to women empowerment as a contribution towards improved nutrition was identified as an important discussion in the results (Van den Bold et al. 2015; SPRING 2017; Weinberger, 2013). A study by Jaenicke and Virchow (2013) concluded that because household nutrition is still mostly the domain of women in rural communities, it is essential to take stock of how well women are integrated in decision-making capacities with regards to nutrition.

#### **4.2.4 Market orientation (business driven)**

Articles illustrated a profound interest in exploring markets as an important driver to better diets. As shown in table 2, most of the studies explicitly focused the role of markets in making nutrient-rich foods accessible to low-income consumers (Humphrey and Robinson, 2015; Pittore, 2016). In the process of exploring markets, literature also unveiled a debate on, nutrient diversity versus profit margins. On one hand, the private sector investments are profit oriented (Bogard et al., 2017). On the other hand, the private sector should produce nutrient-dense foods that is affordable to the low-income consumers (McLachlan and Landman, 2013). The slight debate presented in literature recognizes that profit-oriented businesses can equally make a contribution towards development efforts (Humphrey and Robinson, 2015).

As previously illustrated markets took a dominant role in literature, majority of the authors focused on providing market access to farmers (McLachlan and Landman, 2013; Pittore, 2016; Hodge et al. 2015; Weinberger, 2013); SPRING 2017). Markets are viewed as entry points to building up market links to improve NSA (Keding et al. 2013), in the same way they contribute to income security to low-income consumers, which ultimately translates to healthy diets (Weinberger, 2013). However, this might not be the case as illustrated in literature, ideally, farmers are assumed to access and consume nutritious products in their households and sell the surplus on the market (McDermott, et al. 2015). But studies have shown that household nutrition is frequently neglected, and household food consumption mostly benefits from what is left after selling in the informal market (Hodge et al. 2015). The discussion over formal and informal markets attracted attention from several articles. Formal markets have long been recognized and governed along the food chain system. However, private sector has overlooked the informal markets despite that majority of low-income consumers use informal markets to access food (McLachlan and Landman, 2013; Pittore 2016). The prevalence of informal food markets, particularly in developing countries, is due to their numerous advantages in serving the requirements of the poorest consumers. Close proximity means that distribution costs are reduced while cheaper inputs mean lower prices than equivalent products in the formal sector (Thorpe and Reed 2016). These alternative market channels should therefore be strengthened though it might appear that supermarkets have replaced

informal markets, but these markets are still the most important buyers of fresh produce from small-scale farmers (McLachlan and Landman 2013). Humphrey and Robinson (2015) argue that the priority for market-oriented interventions should be to work in and through markets that are used by the poor to source food, including informal markets, and that these interventions should primarily address market constraints and market incentives, rather than focus on individual products and businesses. From the articles, it was apparent that there is a gap and more research is needed to understand the incentives and capacities that the informal sector can have in order to strengthen the market economy. In addition, more research is needed to understand the drivers of informal markets as well as how to effectively engage the poor people with the informal market to improve food safety and nutritional value of food sold via informal channels (Pittore, 2016). In brief, private sector initiatives focusing on the low-income consumers should concentrate on the informal markets and it would be incorrect to assume that informal sector food provision will be replaced by modernized value chain (Humphrey and Robinson, 2015).

#### **4.2.5 Reflection**

Evidence from the results shows that, extensive research has been done on the elements of inclusive business. It was clear that the value chain approach has been used by numerous authors as an entry point for nutrition sensitive intervention. Evidence from the literature pointed out that elements of inclusive business have been explicitly discussed even though some elements are more prominent than others in nutrition-sensitive literature. The study also highlighted unexpected results which are important to this explorative review. Gender has been given key priority in nutrition-sensitive interventions. Evidently women are key actors within the food system, they are in the center of food production from the farm to fork. However, literature shows that women in developing countries are chronically disempowered; they lack access to resources and decision-making power in households, this gender gap and intrahousehold dynamics clearly weakens the links between agriculture and nutrition. It is imperative that interventions both from state and business sector to consider women as key stakeholders in the value chain and provide opportunities for women empowerment through participating in value addition activities in agricultural food chains.

Market orientation came out more strongly compared to other elements, it is evident that the private sector focused more on the formal markets than the informal markets. LIC heavily depend on informal markets to access and sell food, but the business sector has not yet come up with interventions to include this short chain in their mandates. It is likely that business initiatives will struggle to reach those that are poorest, and it is for such households that public-private partnerships are most critical. Private sector cannot operate in a vacuum, in order to address bottlenecks hindering distribution and access of nutrient-dense foods; private-public partnerships (PPP) need to come on board and focus attention on leveraging agricultural investments. This means that the public sector need to play a proactive role in providing an enabling institutional environment that encourages private business to have a nutrition focus. For a nutrition sensitive value chain to succeed it relies heavily on collaboration among the stakeholders, well-functioning markets and distribution systems.



Table 2: Overview of the results for research sub-question two

			Elements of Inclusive business			
			Market orientation	Inclusion low-income consumers	Enabling environment	Value proposition (addition)
Author and year of study	Title	Study design				
Bogard et al. 2017	Measuring nutritional quality of agricultural production systems.	Case study	Market-oriented approach	Focus on the extreme poor	Missing	Present- nutritional quality
Buchsbaum et al. 2016	Nutrition incentives in dairy contract farming in northern Senegal	Case study	Missing	Target vulnerable groups	Multisectoral engagement/ partnership in the dairy sector	Not clear
Christinck and Waltzien 2013	Plant breeding for nutrition-sensitive agriculture: An appraisal of developments in plant breeding.	review	Recommend improving market possibilities	Target the needs of vulnerable groups	Collaboration with breeders and farmers	Fortification-addition to nutrients to food during processing

Gillespie et al. 2013	The politics of reducing malnutrition; building commitment and accelerating progress	Review	Missing	Target poor people with malnutrition	Divides enabling environment into 3 domains: knowledge and evidence, political commitment, capacity and resources	Missing
Hodge et al. 2015	Is there an enabling environment for nutrition sensitive agriculture in East Africa?	Case study	Recommend for improving farmer access to markets and stronger market infrastructure	Farmers Women empowerment	Enabling environment has 3 themes: knowledge and evidence, political commitment, capacity and resources	Recommendation: Scaling up production and promotion of biofortified crops
Humphrey and Robinson 2015	Markets for Nutrition: What Role for Business?	Case study	Market for nutrient- dense foods	Target vulnerable population	Regulatory environment or characteristics of market institutions	Intervention using fortified foods (RUFT)
Maestre et al. 2017	Assessing food value chain pathways linkages and impacts for better nutrition of vulnerable groups	Review	Market institution in developing countries are complex	Target poor people with malnutrition	-Food distribution environment -Product demand environment -Industry environment -Agri-food firm environment	Access and consumption of nutritious food-fortification

Van den bold et al. 2015	Is there an enabling environment for NSA in south Asia? Stakeholder perspectives from India, Bangladesh and Pakistan	Case study	Missing	Target stunted children and poor people	Policy sensitivity toward nutrition. -Political commitment to nutrition, improving nutrition literacy	-Invest in biofortification and kitchen gardens
Keding, G. B., et al. (2013)	Production and processing of foods as core aspects of nutrition-sensitive agriculture and sustainable diets	Review	Build stronger market links for nutritious foods-vegetables, fruits	Focus on small-scale farmers and improving production	-Supportive government policies to nutrition sensitive approaches	Micronutrients added during production and processing (Biofortification and fortification)
Lokosang L. (2017)	Investing in Nutrition-Sensitive Agriculture for Achieving the Goal of Ending Hunger in Africa by 2025: An Overview for Practical Policy and Planning Directions	Review	Recommends-smallholders to get linked to a readily available local market	Target poor people and school children	Enabling environment at the global level- Policy Developments by the African Union for Boosting Nutrition-Sensitive Agriculture	nutritive value addition- biofortification, fortification, food quality and safety assurance

MacDonald, C., Hilton, B. and Dove, R., 2017.	Integrating biofortified crops into community development programs.	Case study	-Limitations in marketing options.	Targets the nutritionally vulnerable	country-level partnerships between national governments, non-governmental organizations (NGOs), the private sector and research institutions.	Biofortified products
Maestre, M. and Poole, N., 2018.	Introduction: Value Chains for Nutrition in South Asia: Who Delivers, How, and to Whom?	Case study	Market-oriented	Vulnerable populations	-Context and enabling environment linking agri-food systems to nutritional status. -Policies and programmes that enhance the nutritional outcomes of agri-food value chains	Nutrient-dense products- fortified.
McDermott, J., et al. (2015).	"Agricultural research for nutrition outcomes – rethinking the agenda."	Review	-Focus on informal and formal market-to play a role both in reaching target consumers and in making biofortified	Target rural consumers and beneficiaries micronutrient-deficient women and children	-Multisectoral collaboration -Supportive and enabling multisectoral environment for policy and action to maximize the	Biofortified varieties -Diet quality

			varieties commercially sustainable		nutrition-sensitivity of agriculture.	
McLachlan, M. and A. P. Landman (2013).	"Nutrition-sensitive agriculture - a South African perspective."	Case study	Formal and informal markets in South Africa -Farmers to be linked to market	Vulnerable segment of the population	National policies for food security in South Africa	Breeding sweet potatoes to address malnutrition (vitamin A deficiencies)
Pittore, K. (2016)	How can we use markets to reach the poor with nutritious foods?	Case study	Market oriented	Poorest and most vulnerable	missing	Nutrient quality
Rahman, K. M. M. and M. A. Islam (2014).	"Nutrition-sensitive agriculture in Bangladesh: a review."	Review	Missing	Farmer, women, children under five	-Supportive government policies for food and nutrition security	Biotechnology in incorporating nutrients into rice
Ruel, M.T., Alderman, H. and Maternal and Child Nutrition Study Group, 2013.	Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition?	Review	Missing	Focus on maternal and children	Missing	Biofortification
Strengthening Partnerships, and Innovations in Nutrition	Opportunities for integrating nutrition into agricultural	Review	Market information services	Focus on small-scale farmers and women empowerment	-Strengthen stakeholder coordination mechanisms	Crop production for biofortified crops

Globally (SPRING) project (2017).	information systems in northern Ghana.					
Thorpe, J. and Reed, P., (2016).	Addressing Market Constraints to Providing Nutrient-Rich Foods: An Exploration of Market Systems Approaches	Review	Market system approach	Poor households	Institutional environment in which markets operate	Nutrient dense foods
Webb, P. and Kennedy, E., 2014.	Impacts of agriculture on nutrition: nature of the evidence and research gaps	Review	Missing	-Poor households, women, children under 5 years of age	Multisectoral approaches to improving nutrition	Missing
Weinberger, K. (2013).	"Home and community gardens in Southeast Asia: Potential and opportunities for contributing to nutrition-sensitive food systems."	Case study	Access to markets for farmers	Urban poor population	Collaboration with stakeholders; planning and development of gardens -Political will at global, country level -Conducive policy framework	Gardens contribute to more diversified diets and to higher consumption of nutritionally-rich food.

Zamora, O.B., de Guzman, L.E.P., Saguiguit, S.L.C., Talavera, M.T.M. and Gordoncillo, N.P., 2013	Leveraging agriculture to improve nutrition in the Philippines	Case studies	Missing	Target nutritionally vulnerable groups	Presence of strong political will and enabling policy environment -Partnerships and strategic collaboration -Enabling national policy	Crop breeding initiatives in nutrition-sensitive agriculture
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## **5 Discussion**

This section discusses the findings of the systematic literature review and subsequently contribute towards filling in gaps by suggesting possible recommendations in areas where literature does not provide sufficient evidence. The discussion aims to answer the following research question; How literature has described the role of (inclusive) business and what elements of inclusive business are (not) in nutrition sensitive agriculture. First is a discussion on the role of private sector in nutrition sensitive agriculture (section 5.1). Followed by elements of inclusive business (section 5.2), later in the section 5.2.5.1 will look at gaps identified in the review, position in disciplinary and 5.2.5.1 applicability of inclusive business approach Finally points for further research and recommendations.

### **5.1 The role of business sector in nutrition sensitive agriculture**

The business sector in facilitating nutrition sensitive interventions has received a lot of attention both in research and action. The topic has been looked up in different angles based on the publications identified from different journals; nutrition, economics, business and agriculture. This review adopted the value chain approach to explore the role of private sector and discovered numerous entry points for nutrition sensitive interventions which will be discussed further in the section. From the review, it was evident that both supply and demand side of the value chain have played an important role in attracting private sector investment. As suggested by Tench (2014), in developing countries, the food value chains are predominantly private sector supplying goods and services to low-income consumers. Hawkes and Ruel, (2012) argue that value chain interventions have the potential of promoting consumption of nutritious food. However, in the review, the application of value chain approach to identify entry points for nutrition sensitive intervention may have overlooked other possible mediums for private sector to invest or contribute to NSA, literature has further underestimated the demand side of the value chain. Notably, private sector investment has skewed its attention towards the production stage of the value chain. For instance, the interventions depicted in the review were tilted towards stimulating new innovations or improve existing production systems (home gardens and adoption of biofortified crops). Not only does literature have a strong focus towards production, majority of the publications primarily



focused on the supply phase of nutrition sensitive agriculture (input supply, production, processing, distribution and marketing) with little emphasis on demand side (consumption). Evidence has stressed that there is need to shift to consumer needs and ultimately focus on the nutritional benefits in respective context (Henson and Humphrey, 2015; Gelli et al, 2015). A valid example of unsuccessful project was reported in Afghanistan, the agricultural interventions took the form of value chain intervention through making upstream investments in primary production without considering consumption dimension of vulnerable groups (Poole et al 2016). In light of this example, studies have revealed that, new and direct nutrition approaches have been initiated towards behavior change (GAIN, 2014). Recently, significant key players in nutrition field such as FAO, WHO have focused on behavior change communication (BCC) approach which has not been reflected in the review. With the development partners placing BCC on top of the nutrition agenda (SPRING, 2014). It comes apparent that the literature has not caught up with the trend. Currently, the private sector including multinational companies have lunged to the opportunity to invest on BCC (Hornik et al, 2015). This shows that, the demand side of the value chain is equally significant to both agriculture and business literature since they focus on understanding consumer needs and market interactions respectively.

Amidst the numerous roles of business sector, a large proportion of the publications focused on *distribution and markets*. Even though the two appeared to be more prominent, the findings were more focused on the challenges faced in distributing and marketing food products for target population. The results share similar findings with Lachat et al., (2015) stated that food distribution is problematic. The problems are exacerbated by the lack of access to markets, poor infrastructure (transportation to markets) and the inability to afford the costs of production and consumption. While literature has garnered a lot of interest in distribution and markets, there is little said about how the private sector intends to make nutritious foods physically available in markets frequented by the low-income consumers. Instead, attention is given to public private partnerships to facilitate distribution systems. For example, various forms of public distribution systems are seen to be successful in Bangladesh, India and Pakistan that make (fortified and unfortified) staples available to the poor at subsidized prices (Henson and Humphrey, 2015). From literature, this implies that private sector cannot work in isolation, therefore there is need for a multisector approach.

Moreover, Pingali and Sunder (2017) adds on that food distribution goes beyond the physical access in markets to equitable distribution of food at the household level. Unlike Pingali and Sunder (2017) this review did not explicitly discuss distribution gap at the microlevel (household), thus limiting literature to macro and meso-level. Nonetheless, Setboonsarng, (2006) admits that investing in infrastructure lowers costs of inputs, opens up access to markets with offer opportunities for low-income consumers especially in rural areas. This in turn will improve household consumption pattern and dietary diversity for low-income consumers (Labrique, 2013). However, despite the increased attention on distribution systems, possible intervention mechanisms and technological innovations to close the distribution gap are absent. This implies that literature has weakly represented the distribution-consumption link. While several authors stress the need for collaboration through public-private partnerships [PPP] (Bouman et al 2013: Hoddinott et al 2015) or alternative distribution channels for instance Micro franchising (IFPRI, 2015). Nevertheless, the review confirms the need for more research to address distribution gaps that are cost effective and sustainable particularly for private sector in delivery of nutrient dense foods to low-income consumers.

The private sector has the capacity to perform different roles in the context of NSA, targeting the low-income consumers and still maintain their directive for profits and inclusiveness. However recently there have been reports of failed interventions, but they are not reflected in scientific literature, instead these reports are highlighted in the media. For example; A multinational company in South Africa (SABmiller) has invested in Africa using inclusive business approach in beer manufacture, however the company was recently sued for tax evasion, depriving poor countries millions in revenue. Another case was reported to the Guardian newspaper where a global brand (Unilever) planned inclusive business project to link onion farmers to external market, farmers abandoned it, when it was realized that the local fresh market (Informal market) paid far more than the global commodity price (Vorley, 2016). This shows that, nutrition interventions are not always successful, literature should also highlight failures of private sector as a learning experience to better design and implement nutrition sensitive interventions.

## **5.2 Elements of inclusive business in relation to nutrition sensitive agriculture**

With respect to the second question this review sets out to answer; what elements of inclusive business are present or absent in nutrition sensitive agriculture. The elements were previously operationalized based on array of articles identified previously in the study (Chapter 2). Based on this review, four themes related to inclusive business were identified; value addition, enabling environment, inclusion of low-income consumers and market orientation. The review offered useful evidence on the extent to which elements of inclusive business exist in nutrition sensitive interventions. It is important to also note that, the operationalization of inclusive business elements might not have been exhaustive, the interpretation of the findings should not be viewed as conclusive. The elements represented in this review are tentative but can be used to form a basis for understanding the role of business sector and the extent to which inclusive business elements can be applicable to NSA. Given this there are still knowledge gaps that exist given the paucity of literature that is available.

### **5.2.1 Value addition**

The review was explicit on value addition, which can be explained by the methodology used earlier to identify articles (inclusion and exclusion criteria). In the context of nutrition sensitive agriculture, value addition was viewed as incorporating nutritive value to foods. This resonates with Gelli et al (2015) and Allen et al (2006) argued that addition of value for instance micronutrients to foods is part of a food-based approach to provide adequate levels of nutrients in the diet. The review discussed value addition in the production and processing stage of the value chain (biofortified seeds and fortification respectively). According to business literature, value addition (proposition) is quantifiable and equated to economic viability, it is viewed as a precondition to business investment (Osterwalder and Pigneur 2010). This is in line with Ronteltap, et al. (2013) value addition (proposition) is a unique strategy that provides a competitive advantage. Gradl and Knobloch (2010) affirm that competitive advantage for companies exist in sectors where they increase efficiency through technology and expertise, that are able to offer added value. Similar findings have also been presented by Trienekens (2011) that value is defined not only in terms of economic impact (e.g., income earned) but also in terms of social impact as

expressed by improved nutritional status and better health. It implies that value proposition is ultimately about creating and capturing value and eventually the target market decide what to pay for the product. In the same way, business literature views value addition as a strategy designed to diversify and explore niche markets to create value for stakeholders as financial viability increases (IFPRI, 2015). Nonetheless, exploring through business and nutrition centered publications, it is evident that there is abundant literature on value addition, though the context might be different, but the notion remains the same. This demonstrates that literature has contemplated on value addition not only at the nutrition field but also (inclusive) business. Which implies that this review validates the importance of value addition both in research and action as an element of inclusive business.

### **5.2.2 Inclusion low income consumers**

Turning to inclusion of low-income consumers, in the context of nutrition sensitive agriculture, the review showed that there are different terminologies used to describe low-income consumers. Nutrition literature often refer to; vulnerable groups, poor, undernourished, malnourished people and disadvantaged population. Potential reason for this could be explained by Petrou and Kupek (2010), their study conclude that most nutrition deficiencies are associated with poverty in developing countries which is directly connected to cases of malnutrition. Whilst (inclusive) business literature refer low-income consumers as bottom (base) of the pyramid, smallholders, low-income people, poor. Both viewpoints concentrate on the poor and are used interchangeably in literature to refer to people who live with less than one dollars a day (London, 2008; Prahalad and Hammond, 2002). The differences can be noted in how literature portrays the low-income consumers. For instance; (inclusive) business literature, private sector integrates the LIC into their business strategy *as part of the value chain* not only as consumers but as suppliers, distributors, processors (Lundy et al. 2014). Unlike nutrition literature, interventions *target* low-income consumers citing them as *beneficiaries* (Gradl and Knobloch 2010). In light of the differences, it indicates that literature has not fully contemplated on the terminologies that define low-income consumers and needs to pay attention to avoid misinterpretation. For instance, the term poor is relative, this might also unintentionally exclude some categories of people like the urban poor. The focus on LIC triggered criticism on the practicability of inclusion, it is estimated that LIC offer

sizable commercial opportunities and business cannot rely exclusively on the poorest people to attain economic viability (DCED, 2017) argues that low-income populations. For instance: even though fortified foods address nutrition deficiencies among the poor, studies have shown that poor people might not have access or purchasing power to buy the fortified foods (Fernandes et al. 2018). This means that private sector also relies on other segments (middle and high class) of the population to receive adequate returns on their investments.

Although the current review did not look at gender per se, it was evident that is one of the cross-cutting themes for both inclusive business and nutrition sensitive interventions. This fits well with ADB (2016), the study confirms that inclusive business supports the concept of gender inclusivity which empowers women in poor communities. According to literature women are at the center of nutrition interventions since they undertake both productive and reproductive responsibilities (SIDA, 2015). This confirms earlier findings that women are key to enhancing the potential impacts of agriculture and contribute to positive nutrition outcome. However, despite the increased attention for gender it was evident that literature did not entirely reflect on gender roles. More so, account for intra-household dynamics in relation to economic empowerment. In light of that, it is important to gain more insight on gender dynamics especially when private investments aim to improve local communities.

### **5.2.3 Market orientation**

The review also showed a strong preference for markets, both as a role and an important theme for business. Studies have shown that by linking smallholders to dynamic markets provides an opportunity to reduce poverty (Karnani, 2007; Wiggins and Keats, 2013). Evidence points out that private sector has been influential in making formal markets accessible and competitive for low-income consumers. This is consistence with Robinson and Yoshida (2016) food markets have clear potential to improve diets in low income population. However, the findings did not explicitly focus on the *role of business sector and informal markets*, having that the informal sector is a valued distributor and accounts for a large number of low-income consumers (Skinner and Haysom 2016). This may be attributed to the fact that informal markets are associated with unsafe food, poor sanitation and hygiene (Grace et al. 2014). The informal markets continue to flourish even

when they are termed illegal and state-suppressed (Skinner and Haysom 2016), they still contribute to food security among the poor population (Tacoli, 2016). Despite the negative reports, Robinson and Yoshida (2016) have shown that there are substantial nutrition benefits of adopting a facilitative approach towards informal markets. The dearth of information in the review shows that informal markets are understudied, and literature has not fully contemplated the role of informal markets, in the context of nutrition agriculture. In light of this assertion, more research should be carried out to gain more knowledge about what works and how private sector can shape and at the same time take into account the implementation of informal markets instead of competing with formal markets.

#### **5.2.4 Enabling environment**

The reviewed papers highlighted that enabling environment has a diverse definition that fits the context of the study. This is in line with Heinrich- Fernandes (2016) argues that enabling environment for inclusive business is a complex topic that cannot easily be addressed based on generic recommendations and a checklist. This implies that enabling environment is a concept that is open for interpretation in different realms (agriculture, business, nutrition) and designed to facilitate a supportive environment for interventions. Similarly, Woodhill (2017), argues that a disabling environment limits the impact of performance. This means that interventions will scale up with the right conditions and support. This is in line with McCarthy (2010) argues that small-scale farmers who were incorporated into oil palm under unfavorable conditions will not only remain poor but may even face deeper poverty. Nonetheless, the review showed a high level of segmentation with regards to the outlined themes. The main areas that emerged are; coordination, political commitment, policy context, capacity and resources, institutional environment, knowledge and evidence. However, these themes need to be treated with caution, there was no precise explanation to substantiate why some themes were considered significant than others.

Though some of the aforementioned themes were inductively identified earlier in the review (chapter 2), more themes emerged that equally described an enabling environment (political commitment, policy context, capacity and resources, institutional environment and knowledge and evidence.). The existence of additional themes pertaining enabling environment as presented in

literature, shows that there is a *knowledge gap in exploring enabling environment in literature*. This could be due to the evident that point out that few of the concepts relating to enabling environment were clearly defined and used consistently in the literature. Therefore, future research to follow Woodhill (2017) example in categorizing enabling policies to make a clear distinction between different concept of enabling environment and make it more explicit in explaining the phenomenon in context that fits. Woodhill (2017) categorized the levels as; enabling environment for business, enabling environment for agriculture and food sector, and finally inclusive growth in the agriculture and food sector. This depicts the different approaches that enabling environment can adopt.

Attention for enabling environment in the literature seem to incline towards; political commitment, and collaboration (public private partnership). Arguably, all the four themes are important, but the review showed more attention to increasing political commitment and building collaborative structures that will facilitate private sector to thrive. This was echoed by Global panel (2017) the study concluded that government and private sector should work together to create a favorable environment that will improve nutrition quality of the food available on the market. A good example is a case in Senegal where a success story in addressing undernutrition, was credited to a supportive enabling environment. The key elements that emerged from the study is an increased political commitment maintained by a high level of national and sectorial commitment of actors and coherence between and within sectors within and outside the government (Kampman et al. 2017). However, despite the emphasis on enabling environment it appears that literature does not explicitly define enabling environment in the context of this topic. Due to the aforementioned discrepancies, there is need for further research to obtain an accurate view of the themes that define enabling environment and better understand how enabling environment can contribute to the current private sector investment towards nutrition sensitive agriculture.

## **5.2.5 Reflection**

### *5.2.5.1 Gaps identified*

In a nutshell, the review demonstrated that inclusive business has increased interest both in research (theoretical knowledge) and action. But despite the recognition there is more to be done with regards to explicitly defining the elements of inclusive business. As discussed earlier in the conceptual framework, the operationalization process has the following elements: value addition, inclusion of income, enabling environment and market orientation. The results show that other elements should be integrated in the framework, for instance recent studies by van Tulder and Da Rosa (2011) show the following four requirements for inclusive business model: stakeholder involvement, mission, impact and inclusive business case. The first stakeholder involvement refers to inclusion of both primary and secondary stakeholders (government, civil society, NGO), the second is mission, which is an active approach towards poverty and income inequality. The third is impact which means accountability beyond the direct effects of the business model. Finally, inclusive business case, which states that there should be a link between core activities and competencies of the corporation (production and sales). Others add-on environmental sustainability to the list of elements (Likoko and Kini, 2017; Krämer and Herrndorf, 2012). Similar studies by Bright and Seville, 2010 identified the following elements; product value proposition, purchasing and supply chain relationships, Partnerships, community investment plan, stakeholder inclusion and participation and finally upgrading performance. Some of these elements have been discussed in the review but others were overlooked. This draws attention to our findings that inclusive business elements are diverse and should be adopted on the context that it is applied. The above-mentioned studies suggest that inclusive business elements that have not been properly identified or even researched, which could be due to weak operationalization of the concept of inclusive business (van Tulder and Da Rosa, 2011). Therefore, inclusive business need more attention both in academic literature and practice.



Table 3: Summary of gaps identified and implications for further research

<b>Gaps identified</b>	<b>Further research</b>
Literature has not fully contemplated on the terminologies that define low-income consumers.	Research on terminologies used for low income consumers to avoid misinterpretation and exclusion.
Knowledge gap in exploring enabling environment in literature.	The ambiguity in enabling environment should be defined in the context of the review. Thus, more study on the definition and operationalization process.
Inconclusive evidence on the role of business sector and informal markets	The role of private sector informal markets, are understudied, thus, more research should be carried out to gain more knowledge about what works and how private sector can shape and at the same time take into account the implementation of informal markets
Undefined inclusive business elements in the context of nutrition sensitive agriculture	Research on definition and categorization of inclusive business elements in different context both in research and action.
No reports on failed interventions	Highlight failures of private sector as a learning experience to better design and implement nutrition sensitive interventions
Documented interventions focused on the supply chain, overlooked demand side of the value chain	Research more on interventions to strengthen the demand side of the value chain (consumer oriented)

#### 5.2.5.2 *Position in disciplinary fields*

Within the review, literature was derived from development, agriculture and food security journals. The development journals linked inclusive business to poverty eradication strategies that are in line with sustainable development goals. Nutrition journals were on the spectrum of applied life sciences (nutrient interactions), the agricultural journals focused on the linkages between

agriculture, food systems, and nutrition. Some of the publication on nutrition sensitive agriculture were on the field of clinical and medical journals. Few of the articles were derived from the social science journals. Thus, more attention should be directed towards social sciences, since the topic is equally important as in the case of other academic fields. Therefore, intensive research should be integrated in the fields of social science as opposed to be an add-on which is the case now. From the review, NSA literature had taken a technical approach, using the value chain as an entry point to interventions, it was evident that the value chain perspective does not pay sufficient attention to inclusive business elements instead it took a mainstream approach to development. Looking at recent literature, a lot has been done on value chain approaches in business and NSA literature, but few social studies have explicitly applied the value chain perspective in the literature. It shows that there is lack of interdisciplinary work especially in the social science field. Therefore, literature needs to integrate a multi-disciplinary approach towards researching nutrition sensitive agriculture both in research and action.

Given the information extracted from the review, inclusive business has been explored using various theoretical lenses common in business literature. Business frameworks highlighted in the review (business canvas model and value chain map) have been used in scholarly publications to study elements of inclusive business. However, literature has shown that inclusive business has gone beyond the business sector and other sectors are using the approach in their operations. This implies that elements of inclusive business should not be perceived as ambiguous as they are now but tailored to fit the context and sector that is applied.

#### *5.2.5.3 Applicability of inclusive business approach*

Private companies engaging in business with low-income people has gained considerable attention in literature. However, the IB approach has been criticized on the its applicability in practice, literature has shown that inclusive business gives better opportunities to low-income consumers to forge towards poverty eradication and improve their livelihood (Jenkins and Ishikawa 2010). At the same time, private companies are exposed to new growth markets that increase their value and offer the capacity for new innovations (Roesler, 2013). But then, there is an opposing branch of literature with concerns that despite the interesting potential of inclusive business, some

publications refute the applicability inclusive business approach in low-income populations. Gradl and Jenkins (2011) argue that companies may not be able to engage with low-income consumers without high operating margins. Arguably, this is supported by literature which shows that it is highly unlikely that companies can be able to attend the emergent market profitably. In fact, the cost of serving the low-income segment is estimated to can be very high compared to the profit margin supposedly acquired through selling to low-income markets (Simanis, 2012). This can be explained by the fact that low-income consumers are relatively price sensitive (Pitta et al. 2008), thus targeting LIC might affect the profitability margin. A recent example follows after a private company (Solae) manufacturing soy protein ran into problems, after opening a new market for soy protein to eradicate malnutrition in rural areas and urban slum in India. Unfortunately, the sales from the target market proved to be inconsistent and had lower margins, unable to make profits the pilot was abandoned. This example shows that cost structures in low-income markets are daunting, operational expenses such as distribution, are exorbitant and may require higher sales volumes for companies to break-even (Simanis, 2012).

Literature has also questioned the ‘inclusiveness’ of the private sector approach. Various publications focusing in developing countries have reported cases of women exclusion (ADB, 2016; Pouw and Vossenber, 2016). On the same note Simanis (2012) argues that intentional exclusion may increase the gap between well-resourced and poor-resourced farmers in developing countries. Private companies have been accused of targeting the top segments of the base of the pyramid. More so in the case of contract farming Vermeulen and Cotula (2010) argue that better resourced farmers tend to secure the contracts since they have access to capital while poorer farmers work as labor on the contracted farms. This is in line with Ton et al, (2015) companies often offer contracts to farmers with some requirements for instance land ownership, irrigated lands which may preclude smaller farms from benefiting directly. Against these debates, up to date there is still no agreement in literature whether inclusive business approach can effectively reach the low-income markets and impartially support both private companies’ vis-a-vis low-income consumers.

## **6 Conclusion**

As stated in the introduction, this review aimed to assess how literature has described the role of private sector in nutrition sensitive agriculture and also find out which elements of inclusive business are present (or missing) in relation to nutrition sensitive agriculture. The review has demonstrated that the private sector plays a significant role in nutrition sensitive agriculture, using the value chain approach to find entry points for private sector to intervene. It was clear that more attention was given to the supply chain, than the demand side of the value chain and the consumer perspective was overlooked. Nonetheless, studies have shown that there is need to investigate private sector investment in distribution and providing access to markets (formal and informal) to low-income consumers.

With regards to the second question, literature demonstrated that some elements of inclusive business are present (value addition, market orientation, inclusion of low-income consumers and enabling environment) while others are missing in the review (stakeholder involvement, mission, impact, inclusive business case, environmental sustainability), this could be due to the fact that elements of inclusive business are not well defined as earlier illustrated. Similarly, literature on enabling environment was found to be inconsistent and fragmented. The review showed different themes for enabling environment are complementary but also revealed inconsistency in how they are contextualized. Other themes were more apparent (political commitment and coordination) than others (knowledge and evidence, institutional environment, capacity and resources). This raises the questions on the definition of enabling environment in the context of NSA, this is tied to the operationalization process which requires further research. Drawing on the selected articles, gaps were also identified (see also table 3) that include: Knowledge gap in exploring enabling environment, undefined inclusive business elements, terminologies that define low-income consumers and evidence on the role of business sector and informal markets.

Given these gaps more studies need to be carried out to understand the extent to which business elements are reflected in NSA literature. Following the analysis, the main focus appears to be on these areas:

1. Private sector plays a significant role in nutrition sensitive agriculture, this is demonstrated how they are engaged in the value chain activities; input supply, production, processing, distribution and offer access to markets. Besides the value chain approach, they also facilitate external roles to support the value chain. For instance; information and communication technologies ICTs, foster nutrition innovations and financial investments to promote nutrition sensitive interventions. However, literature has shown that business sector is more invested in the supply chain than the demand side of the value chain. Consumer oriented interventions were evidently absent on the demand side of the value chain. For example: recent key actors in development arena have introduced behavior change communication (BCC) as a strategy to positive change for people to consume nutritious foods. However, literature has not paid attention to discussing how private sector can contribute towards behavior change communication (BCC) in the context of nutrition sensitive agriculture.
2. The review also highlighted inadequate food distribution systems as one of the key challenges facing the private sector. This could be attributed to poor infrastructure, that have an adverse effect on the transportation system and disrupts access to markets. Given the severity of the problem, new forms of partnerships between the private sector and the state (PPP) need to be created in order to reach low-income communities.
3. The private sector investment in formal markets, has proved to be fundamental in distribution of nutrient dense foods. Literature has shown a considerable effort and attention has been devoted to formal market specifically linking low-income consumers to access markets. However, the existence of short value chain (informal market) has been overlooked, which are very important given that majority of the low-income consumers depend on this type of market for their livelihood.

4. Literature has shown that some elements of inclusive business are not well defined. Based on the theoretical framework earlier in the thesis (chapter 2), the review has confirmed that some of the elements are somewhat vague. The ambiguity shown in the elements particularly in the enabling environment raises numerous questions on the applicability of the aforementioned elements in practice. Even so, literature has left room for broader interpretation, but it should be approached with caution as these elements are dubbed to be context specific. Furthermore, the review showed that there are other elements of inclusive business that might have been overlooked. For instance, none of the publications considered environmental concerns as an element of inclusive business. According to literature inclusive business should be socially and environmentally sound which is in line with sustainable development goals. The absence of other elements demonstrates that there is need thoroughly analyze additional elements that are applicable to the context of nutrition sensitive agriculture.

## **7 Recommendations**

Based on the above conclusion and aforementioned gaps, the following are recommendations for research and action.

### **7.1 Implication for further research**

#### **7.1.1 Academic research**

The review has shown that there is a misbalance of attention with regards to elements of inclusive business, this could be explained by the fact that little research has done on the elements of inclusive business in relation to nutrition sensitive agriculture. The elements identified were; value chain, market orientation and inclusion of markets. However, as demonstrated earlier enabling environment themes were vague and incoherent. Thus, further research is needed in order to have clearer and better tailored elements that explicitly define elements in the context of NSA. This will improve our knowledge and better understand the topic in depth, as well as give informed choice in action particularly in the implementation of nutrition interventions.

The publications found in the review took a technical approach on nutrition sensitive agriculture, some focused on the development approach, while few were directed towards the social science field, this is to show that research needs to become stronger in interdisciplinary focus.

#### **7.1.2 Private sector**

Based on the review it was evident that the business sector has overlooked consumer needs. More emphasis was channeled to the supply chain at the expense of the demand side of the value chain. To achieve positive nutritional outcomes, more attention should be paid to increasing demand of nutritious foods. This can be done by, creating awareness and advocating for behavior change communication approach (BCC) to enable low-income consumers make better decisions about their choices of foods.

The private sector should also recognize informal markets and leverage them to become nutrition-sensitive. These informal markets can be used to facilitate distribution of nutritious foods to reach the target group. That means working together with the public sector to identify market opportunities that make nutritious foods more accessible and affordable to low-income consumers.

Given the constraints of distribution in the informal markets, private sector should invest more funds to facilitate better infrastructure and storage facilities, to minimize food waste. This can be done in collaboration with governments through public-private partnerships.

Literature showed that markets are extremely important to both private sector (to expand their profit margin) and low-income consumers to access a diverse diet as well as increase income levels. Therefore, both formal and informal markets provide a unique opportunity to promote nutrient-dense foods and create awareness on healthy diets. Current studies have shown that to achieve this, all stakeholders should support dissemination of nutrition knowledge. This can be acquired through campaigns on behavior change (BCC), which requires a collaborative approach with health practitioners, donors and the public sector.

### **7.1.3 Public sector**

Evidence from the review has shown that an enabling environment, provides the private sector with incentives to better engage in business activities. The public sector has an important role in creating and implementing policies that reduce hurdles for private sector investment. This can be attained through political commitment at the national level of the government. A conducive environment could also trigger a shift towards nutrition sensitive food systems, which takes a holistic approach, integrating the environment and ecosystem. This means to integrate multiple interventions from different sectors as well as forming multisector collaboration with different stakeholders.



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