Prospects, determinants and challenges of implementing food banking: evidence from Ashanti Region of Ghana

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Abstract

Purpose – This paper seeks to examine the prospects and constraints of implementing food banking in the in Kumasi Metropolis in Ghana.

Design/methodology/approach – Multistage sampling technique was used to select 385 respondents for the study. Descriptive statistics were used to present prospects of food banking. The probit regression model was used to analyse factors influencing food banking implementation whereas Kendall's coefficient of concordance was used to analyse constraints in implementing food banking.

Findings – Addressing food poverty, helping to provide food aid to respondents in times of pandemics (such as Covid 19) and also helping in reducing food wastage were the most notable prospects of food banking. Age, household size, food bank awareness and food poverty had a significant positive influence on food banking implementation, whereas residential status and employment status had a significant negative influence on food banking implementation. The most pressing constraint in implementing food banking is funding and support with the mean rank of 3.03 whiles the least pressing constraint is improper documentation of potential beneficiaries with the mean rank of 6.72.

Social implications – This study provides empirical contributions and practical implications for implementing food banks in Ghana. Thus, the government of Ghana through the Ministry of Food and Agriculture (MOFA) can enact policies that can help prevent food losses and wastage. In this vain, food which could have been wasted would be redirected to food banks. This can serve as a tool for social intervention, poverty alleviation and prevention of hunger among the vulnerable in Ghana.

Originality/value – Despite several studies on food banking in affluent countries, food banking research in developing countries such as Ghana remains scanty. Thus, this paper makes significant contributions to the literature on prospects and constraints in implementing food banking and the factors influencing food banking implementation.

Keywords Food, Bank, Prospects, Challenges, Probit regression

Paper type Research paper

Introduction

Food insecurity has become an unending problem in Africa, which is expected to worsen with climate change and increasing population growth (Khan *et al.*, 2014). Despite the rapid increase in human population, average growth in food production on the continent has slowed, with reports suggesting a decline in crop yields in many areas over the last few years (Khan *et al.*, 2014), which has led to food poverty and hunger. As a result, efforts have been made by the African Union through the "Malabo Declaration" to increase food production and eventually end hunger (African Union, 2014). National governments are now committed to a more proactive role in ensuring human right to adequate food and

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nutrition (Weingärtner, 2004). Nonetheless, continuous increase in population has resulted in worsening poverty and Food insecurity (Cobbinah *et al.*, 2015). In response, there has been global efforts by developed countries (Pollard and Booth, 2019; Loopstra and Tarasuk, 2012; Kim, 2015; Dowler and O'Connor, 2012) and developing countries (Burchi *et al.*, 2018; Ibrahim *et al.*, 2009; Chakona and Shackleton, 2019; Kiyingi *et al.*, 2016; Béné *et al.*, 2007; Owusu *et al.*, 2011) to address food insecurity. It is worth noting that developed countries use food banks as an emergency response to food insecurity (Lambie-Mumford, 2013). However, the concept of food banking is relatively underutilized in developing countries such as Ghana. Thus, applying the concept of food banking will be instrumental in addressing food security among the people living in poverty. Global food banking network (2018) defines a food bank as an organization that purchases surplus and safe food that might go waste from commercial food systems that is redirected for distribution to hungry people via community service organizations. Generally, food banking provides a means by which food is distributed to people who need it most. In other studies food banks are known to be non-profit organizations that collects, store and distributes to hunger relief charities (Michelini *et al.*, 2018). Bucknum and Bentzel (2019) reveal that food banks collaborate with pantries and soup kitchens to connect food insecure individuals to free emergency food. In addition food banks also play other significant roles such as purchasing high volumes of food and coordinating a broader range of programs and activities that serve their target population. Approximately 60 million people in need receive benefits from food assistance through food banks globally (Centre for Social Protection and Institute of Development Studies, 2013). A vast majority of these beneficiaries are in affluent countries. It is evident that food banking can help address food insecurity and hunger problems in developing countries, especially Ghana; however, the concept is relatively new. As a result, academics, non-governmental organizations, Government of Ghana and stakeholders need a deeper understanding of the food banking concept. These insights will give stakeholders adequate knowledge on the prospects and challenges of food banking and how it can be used to curb food insecurity. Besides a plethora of studies on food banking have also been conducted in developed countries (Riches, 2002; Warshawsky, 2011; Dey and Humphries, 2015; Booth and Whelan, 2014; Caraher and Cavicchi, 2014; Elmes *et al.*, 2016; Koc, 2014) Meanwhile food banking related studies in developing countries, especially Africa is inadequate. In Africa, a few countries such South Africa (Warshawsky, 2011), Nigeria (Gloria and Norris, 2016) and Egypt (El-Shohdi, 2020) have emerged as front runners in food banking and its research related issues across the Continent. Nonetheless, it appears that there is limited or no research targeting food banking in Ghana, although Ghana remains one of the rapid urbanizing countries, which has growing food security challenges (Seto and Ramankutty, 2016). This study adds to literature by accessing the prospects and challenges of implementing food banking, which to the best of the author's knowledge has not been conducted in Africa and Ghana. Also the study adopts a quantitative approach by using binary probit regression model to understand determinants of implementing food banking. The study provides significant information for policy direction and social intervention among the vulnerable Ghanaian populace as well as making empirical contributions to food banking literature. Hence, it is important to conduct a research about the prospects and challenges of food banking to ascertain the critical issues and provide information, which will aid policy makers to create a policy instrument that will help alleviate food insecurity in Ghana. The objectives of the study are as follows; first to examine the prospects food banking. Second, to ascertain a respondent's perception of prospects of food banking in the study area. Third, to examine the determinants of food banking set up in Kumasi Metropolis and finally to determine the perceived constrains in implementing food banking.

Literature review
Prospects of food banking
According to Food and Agriculture Organization (FAO) (2018), about 821 million people worldwide go to bed hungry; out of these, about 270 million of these people can be found in Africa whiles 237 million are in sub-Saharan Africa. Although hunger has been on the rise over the past years, limited progress has been made in addressing multiple forms of malnutrition; this sends a vivid warning that, something must be done immediately if the Sustainable goal of zero hunger can be achieved by 2030 (Food, 2010). Moreover in Ghana about 5% of the populations are food insecure, whereas about 2 million people are vulnerable to become food insecure, meaning that they are all at risk of going hungry. A review of literature reveals that the increasing rate of food insecurity and hunger might be due to food waste or losses. Consequently, nearly 30% of cereal crops, 40 to 50% of root crops, fruits and vegetables, 35% of fish, 20% of oilseeds, meat and dairy are wasted or lost globally (Losses and Waste, 2011). However, food loss estimates in Ghana per year are roughly 20–30% for cereals and legumes, 20–50% for roots, tubers, fruits and vegetables (Zorya et al., 2011). As a result FAO (2016) posits that if one-fourth of the global food waste is redirected approximately 870 million hungry people could be fed around the world. Hence, the recovery and redeployment of food through food banking will help reduce the amount of food waste and help feed the hungry (GFN, 2018). GFN (2018) further maintains that redistributing food through food banks will help avoid the need for additional food production and supply to consumers. Middleton et al. (2018) assert that in high-income countries such as United Kingdom, USA, Canada and Australia, food banking has become a superior responds to food insecurity. Besides food banking exists to provide food for people who face financial difficulties and cannot afford to feed themselves and their families (Downing et al., 2014). Similarly, Stroebele-Benschop et al. (2019) also reveals that food bank serves as a means of food provision for mental and physical disabled people, people who have lost their jobs or working poor, people living in large households who have relatively higher housing cost. In United States, the number of families using food pantries and food banks have increased because food banks serve as a way to cope with the lack of access to sufficient and adequate food. Similarly, Bazerghi et al. (2016) opined that food banks provide a medium through which donated food is distributed directly to food insecure families; thus, its role in the food aid sector is significant. Other studies found that food banks provide non-perishable food and sometimes offer nutritional classes for people in need at no cost. Booth and Whelan (2014) revealed that food banks serve as a major source of food for hungry people in many countries. Thus, food banks have become an intersection of food security, health and nutrition. In high-income countries, there are sometimes malfunctions in public assistance, which can lead to unmet community needs. Hence, adequate food aid in the form of food banks, community kitchens and community markets has been established to bridge the food security gap (Bazerghi et al., 2016). There is substantial evidence that food banks have several prospects. Hence, it is important ascertain these prospects in the study.

Challenges towards implementation of food bank
Food banking over the years has served a major means of social intervention. However, there have been a lot of constraints associated with its execution. Mejía et al. (2015) agree to this assertion and claim that there are struggles in getting support from private and government institutions for purchasing the needed equipment and infrastructure essential for improving donations, handling and management process. Besides, Dey and Humphries (2015) reported that many food bank operators reveal that they are struggling to meet the growing need for emergency food assistance. Their report further indicates that there have been consistent reports from newspaper articles revealing the struggles in meeting the increasing need for food in all areas of the land. Unsurprisingly, all food banks across the globe face similar

challenges to convince prospective donors, such as manufacturers, retailers and farmers into food donation (Hurtado, 2013). Furthermore, malnutrition poses as a major constraint associated with food banking, as results of not getting the right amount of all kinds of foods to be able to ensure instilling of good eating habits (Mejía et al., 2015). Additionally, inadequate equipment infrastructure reduces efficiency, effectiveness and the ability to respond to donation demands promptly, thus reducing the number of people who can benefit from food banks (Mejía et al., 2015). According to Smith et al. (2017), transporting possesses a big challenge when food banks are situated in remote locations. Bucknum and Bentzel (2019) also found that food banks face constraints in coordination around perishable foods. Sorting and storing of perishable foods requires adequate infrastructure investment such storage facilities and refrigerators; hence, problems arise in food banking when these infrastructure is not in place. Food banks mostly purchase food at wholesale prices, as a result price competition from hospitals and schools can hinder them from buying more products, which will be donated to the needy. The success of food banks depends on finding suppliers who are willing and capable to sell food to them. As a result, difficulties in finding capable and willing suppliers will cause serious inventory problems for food bank. Schneider (2013) maintains that food distribution is a major constraint associated with the running of a food bank. A study by Zhu et al. (2014) reported that poor facilities in storage, preparation and delivery are among the challenges food pantries face. According to Verpy et al. (2003), food banks are always faced with a daunting task to distribute enough food to beneficiaries; this is because food donations do not meet the demand for food. In contrast Scherhaufer and Schneider (2011) points out that, the supply of certain foods exceeds the demand, which leads to the disposal of the excess food causing food wastage. The collection of food by food banks is such a hectic task and demands a lot of cost, and the cost of food donation is costlier than the cost involved in distributing it among some countries; this also brings about a major challenge in the food banking sector. For instance, donors in Colombia are required to pay 16% Value-added tax (VAT) (Hurtado, 2013). Schneider (2013) also reveals that donors in the United States may face possible legal actions if unfortunately their donated food causes some harm in any form. This kind of harm is nearly or impossible to control by the donor, and this has sadly made donors reluctant to donate food to food banks.
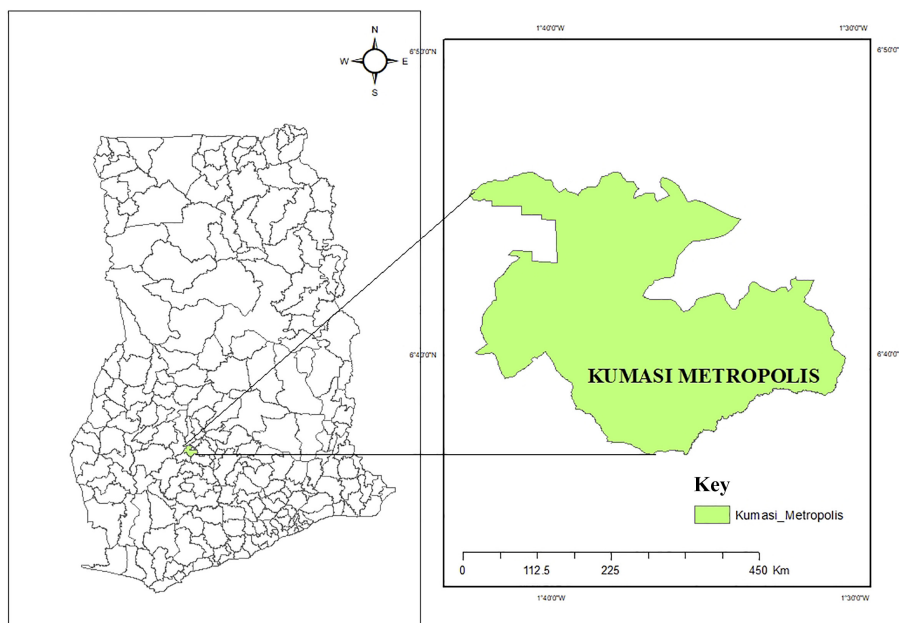
Methodology

Study area
The study was conducted in Kumasi Metropolis. Kumasi Metropolis is located in the Ashanti region of Ghana. It lies between Latitude 6.3N and 6.40S and longitude 1.30W and 1.35E and elevated 250–300 m above sea level. Moreover, the metropolis's population is approximately 3,500,000, which represents the Metropolis with the highest population in Ashanti Region There are approximately 1,156,647 people aged fifteen (15) years and older, who make the working age group, in Kumasi. The metropolis is largely urban with large population characterized with many industries and large markets (GSS, 2010) (see Figure 1).

Sampling and data collection method
The study employed mixed designs. Descriptive and exploratory research designs were employed to find answers to the questions in the study. A semi-structured questionnaire was used to gather responses from respondents. Prior to data collection, pretesting of questionnaire and reconnaissance survey was made in the study area to introduce the concept of food banking and solicit their views which added significant contributions to the study. In the first stage, the Ashanti Region was purposively chosen for its ability to reflect all economic activities and characteristics of the Ghanaian people (Agyei- Baffour et al., 2013).

Source(s): Produced by authors with ArcMap

In the second stage given that Kumasi Metropolis is divided into ten sub metros, five sub metros were selected that is Kwadaso sub metro, Nhysiaeso submetro, Asokwa submetro, Oforikrom submetro, Subin submetro (Mensah, 2016) . In the third stage, simple random sampling was used to select 77 respondents from each of the sub metros making 385 respondents in total. Moreover, 77 respondents from each sub metro satisfy the central limit theorem, which indicates that a sample size equals to or greater 30 is appropriate for a standard normal deviation (Mensah *et al.*, 2020). According to Ababio and Adi (2012), the population in Kumasi Metropolis is approximately 3.5 million. Thus, following Yamane (1967) sample size calculation formula

$n = \frac{N}{1+N(e)^2}$ where n = represents size of sample, N represents the population of respondents in Kumasi metropolis and e denotes margin of error. Given the margin of error of 5%, the appropriate sample size derived is approximately 399. In light of this, 400 respondents were chosen for the research in the five sub metros selected in the study area. Besides, 400 questionnaires were sent to the field for interviews, out of which 392 questionnaires were answered, and it represents a 92% response rate. Nonetheless, seven questionnaires were inappropriately filled, leaving 385 questionnaires for, data entry, cleaning, coding and analysis.

Method of data analysis
Socioeconomic characteristics, prospects of food banking and stakeholder perception of food banking were analysed with descriptive statistics, namely percentages, frequencies and bar chart. Kendall's coefficient of concordance was used to analyse the perceived constrains in implementing food bank. Mensah (2017) indicated that several techniques such as garret ranking, Pearson's correlation coefficient, spearman rank correlation and Freidman's two way analysis of variance can be used to analyse constraints via ranking variables. However,

there are some noted shortfalls of these other techniques (Friedman's test and Garret ranking) and are unable to account for the level of agreement amongst the respondents and Spearman rank correlation (is complex to interpret in comparison with Kendall's coefficient of concordance) (Mensah *et al.*, 2020). Against this backdrop, the Kendall's coefficient of concordance is more appropriate in analyzing constraints due to its ability to establish the level of agreement between respondents; thus, it was chosen. In addition, the probit model was used to analyse factors influencing food banking set up in the study area. The expected utility obtained from the respondent's willingness for food bank to be set up in the study area is influenced by factors such as age, marital status, gender, residential status, educational level, income level, household size, food bank awareness, employment status, high cost of living and food poverty (see Table 1). Following Bannor *et al.* (2020), in Equations (1) and (2) a respondent is faced with two choices wanting food bank set up or otherwise, and he/she will then select the alternative, which provides the highest utility (Bannor *et al.*, 2020). Hence, the utility function of a respondent encountered two choices wanting food bank set up or not e and f, with utilities Z_e and Z_f is specified as follows:

$$Z_e = X_{e1} W_{e1} + X_{e2} W_{e2} + \varepsilon_e, \tag{1}$$

$$Z_f = X_{f1} W_{f1} + X_{f2} W_{f2} + \varepsilon_f, \tag{2}$$

where W_{ef} is a vector of respondents' personal features. Whereby ε_e and ε_f denote the respondents' unobserved feature of random terms. Hence, assuming $Y = 1$ represents the respondent's choice of option e, then $Z_e > Z_f$, which is as follows:

$$\text{Prob}[Y = 1: W_{e1}, W_{e2}, W_{f1} W_{f2}] = \text{Prob}[Z_e > Z_f] \tag{3}$$

$$\text{Prob}[x^{'}\beta + \varepsilon > 0: X] \tag{4}$$

where $x^{'}\beta$ represents the measured elements of the difference of the two utility functions with ε as the difference between the two random elements.

The empirical specification of the probit model is written as,

$$\begin{aligned} \text{DWFBSP}_i = b_0 &+ \beta_1 \text{Age} + \beta_2 \text{MartStats} + \beta_3 \text{Gender} + \beta_4 \text{ResidentStats} + \beta_5 \text{EDU} \\ &+ \beta_6 \text{IncomL} + \beta_7 \text{HHsize} + \beta_8 \text{FbAware} + \beta_9 \text{EmployStats} + \beta_{10} \text{HCL} \\ &+ \beta_{11} \text{Food poverty} \end{aligned} \tag{5}$$

Kendall's coefficient of concordance is specified as,

$$W = \frac{12 \left[\sum_{T^2} - \frac{\sum_{T^2}}{n} \right]}{nm^2(n^2 - 1)} \tag{6}$$

where T = Total weight score W = Kendall's coefficient of concordance

n = Number of constraints being ranked m = Number of respondents

HO. There is no agreement between the ranked constraints

Ha. There is agreement between the ranked constraints.

Where H0: Null hypothesis and Ha: Alternate hypothesis
The *F*-distribution was utilized to test the significance of the coefficient of concordance.

Variables	Description	Measurement	Min	Max	SD	Expected sign
Dependent variable						
Do you want food bank set up		1 if yes, 0 otherwise				Nil
Independent variables						
Age	Respondents age in years		20	65	9.5952	
Gender	Sex of respondent	1 = Male, 0 = Female	0	1	0.5006	+
Residential status	Respondents residential status	Dummy: 1 if respondent is a native, 0 if otherwise	0	1	0.5956	+/−
Education	Number of years of formal education	Number	3	16	8.3452	−
Marital status	Marital status of respondent	1 if respondent is married, 0 if otherwise	0	1	0.4852	+
Household size	Number of people in household	Number	1	16	2.7916	−
Income level	Income level of respondent	Categorical Where 1 = (1–200) 2 = (201–400) 3 = (401–600)	1	3	0.7728	+
Employment status	Employment status of respondent	1 = Fully employed 2 = Partially employed 3 = Unemployment	1	3	0.6285	+/−
High cost of living	If respondent cost of living is high	Interval scale Where 1 = Strongly agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly disagree	1	5	1.0909	+
Food poverty	If respondent do not have regular access to food	Interval scale Where 1 = Strongly agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly disagree	2	5	0.7743	+
Food bank awareness	Respondents awareness	1 = Yes , 0 = otherwise	0	1	0.8261	+/−

Source(s): Authors construct, 2020

Thus, the *F*-ratio is specified as,

$$F - r\text{atio} = \frac{[(m-1)\text{WC}]}{(1 - \text{WC})}$$

where WC = calculated Kendall's coefficient of concordance.

Results and discussion
Table 2 shows the socio-economic characteristic of respondents interviewed in the study area. The results revealed that 256 respondents representing 66.5% were males, and 129

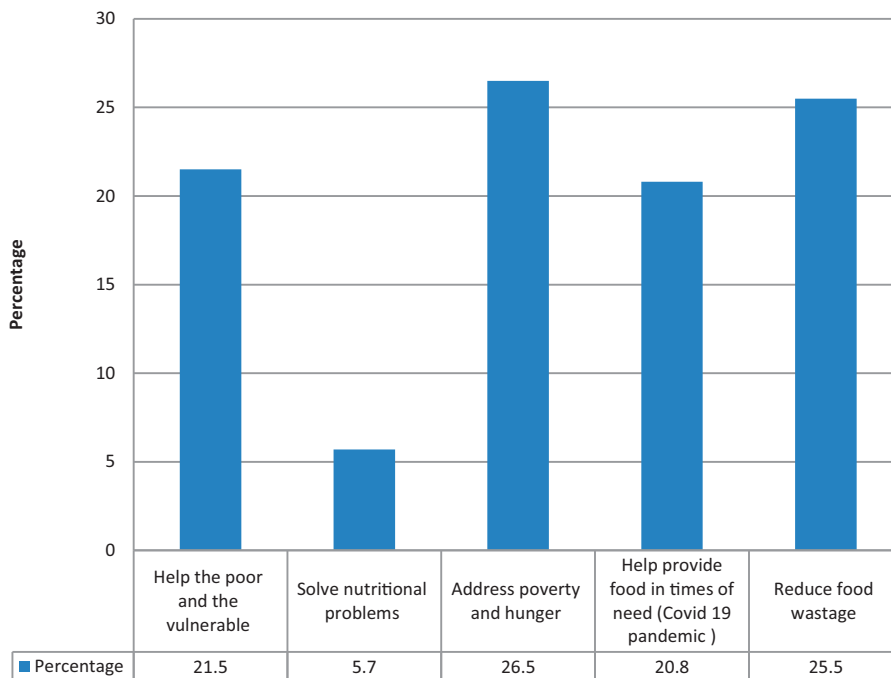| Variable	Frequency (N = 385)	Percentage (% = 100)
Gender		
Male	256	66.5
Female	129	33.5
Age of respondents		
20–30	61	15.8
31–40	163	42.3
41–50	112	29.1
Above 50	49	12.8
Marital status		
Married	117	30.4
Single	268	69.6
Educational level		
None	53	13.8
Basic	104	27.1
Secondary	177	45.9
Tertiary	51	13.2
Household head		
1–3	166	43.1
4–6	89	23.1
7–10	78	20.2
Above 10	52	13.6
Food bank awareness		
Yes	51	13.2
No	334	86.8
Income level		
Ghc 100–1,500	175	45.5
Ghc 1,600–3,000	136	35.3
Ghc Above 3,000	74	19.2
Do you want food bank set up		
Yes	349	90.6
No	36	9.4

NB; = *1 US$ = 5.86 GHC, during period of data collection*
Source(s): Authors' construct based on field data; 2020

Table 2.
Socio economic
characteristics of
respondents

respondents representing 33.5 were females. This corresponds to the work of Osei-Adu and Nkrumah (2017) who established there is male dominance among respondents in the study area. Majority of the respondents had the age range of 31–40 representing 42.3% whiles respondents above 50 represented 12.7%. This indicates that majority of respondents in the study area are in their economically active ages; hence, they can work actively and contribute to setting up food banks in the study area. This is consistent with the observation made by Amoako (2013), who also found the dominance of the 31–40 age groups in Kumasi Metropolis. Also 268 respondents were single representing 66.5% whiles 117 were married representing 30.4%. Further, only 13.8% of the respondents had no formal education whereas 27.1, 13.2 and 45.97% had basic, secondary and tertiary education, respectively. This shows that majority of the respondents has formal education; therefore, sensitization programs on food banking and donation should be given to the respondents in the study area. The results shows that, among respondents interviewed, 43.1% had a family size ranging from 1 to 3;

meanwhile, 20.2% had a family size ranging from 7 to 10. This is indicative that families with smaller sizes tend to spend less on food and utility bills; as a result, families in the metropolis would prefer to keep a small family size due to high cost of living in the study area. This resonates well with a study conducted by Afriyie *et al.* (2014), which reveals that residents in Kumasi Metropolis are saddled with high cost of living. Generally, majority (89.7%) of the respondents were not aware of food banking whereas only (13.2%) were aware of food banking. This implies that food banking is a new concept among respondents, and there is no food bank in the area; this has made them unaware of food banks. However, it is worth noting that there are only three food banks in Ghana, of which the Juaben food bank was created for business purposes while Elembele and Eastern food bank were created for charity purposes and are all located in different parts of the country, outside the study area. Though Juaben and the study area happen to be in the same region, Juaben food bank is barely a year old. As a result when sensitization is done using Juaben food bank as an example, though both have different motives, it will greatly improve food banking awareness and understanding among respondents in Kumasi Metropolis. With respect to monthly income levels, 45% of the respondents had an income range of (Ghs100–1,500, US$ 17.06–255.97) whiles 19.2% had an income range of above (GHs 3,000, US$ 511.95). An overwhelming majority of 90.6% wanted a food bank set up whiles only 9.4% did not want a food bank set up.

Figure 2 shows that majority (26.5%) of the respondents agreed that the highest prospect of food banking in the study area is to address poverty and hunger. The results correspond with Booth and Whelan (2014) who revealed that food banks serve as a major source of food for hungry people. Moreover, the 25.5% of the respondents agreed that food banking can help reduce food waste. Accordingly, Zorya *et al.* (2011) asserts that food waste and losses in

	Help the poor and the vulnerable	Solve nutritional problems	Address poverty and hunger	Help provide food in times of need (Covid 19 pandemic)	Reduce food wastage
■ Percentage	21.5	5.7	26.5	20.8	25.5

Source(s): Arthurs construct based on field data, 2020

Figure 2.
Prospects of food
banking

Ghana is very high; thus, if all these waste foods are saved and redirected to food banks and donated to the hungry, poverty and hunger will significantly reduce in Kumasi Metropolis. Further (GFN, 2018) maintains that, the recovery and redeployment of food through food banking will help reduce the amount of food waste and feed the hungry. In addition, the results suggest that 21.5% of the respondents indicated that food banking can help the disabled and vulnerable in the society. The results agree with Bazerghi *et al.* (2016) who reported that food banking is used to help the poor and the vulnerable in high-income countries. Moreover, analysis of the results indicated that food banking can help the elderly and disabled in the society. Food banks can help resolve nutritional problems among respondents who do have enough food that contain all the nutrient requirements. This contradicts with the observation made by Smith-Carrier *et al.* (2017) in Ontario Canada, who revealed that food bank users complain that most of the food products they receive have either expired or has low nutritional value. From the results, 20.8% of the respondents indicated that food banks can help provide food in times of need and in times of food crises, particularly in this COVID-19 era when the food boarders are closed and there is a disruption of agricultural supply chains. Thus, it is important to note that in times of pandemic food banking can help provide food for the poor. Therefore, "*respondents believed that if food banks have proper documentation, enough funding and logistics, food banks can provide a more orderly and equitable sharing of food to beneficiaries. They further revealed that during the lock down in Accra and Kumasi, the government of Ghana provided support to citizens in the form of food supplies, which was helpful to the poor and the vulnerable. Nonetheless, it was not enough for all needy citizens, and there were series of complains of partiality and food shortage*". The respondents proposed that a food bank set up in communities would have been advantageous and strategic to supply food systematically to citizens devoid of partiality.

Results in Table 3 indicates that 64.9% of the respondents strongly agreed to the need of food banking set up in the study area with only 3.2% of the respondents being uncertain. This is indicative that the respondents appreciate the concept of food banking and attest that, it can provide the needy with adequate food. Similarly Lambie-Mumford (2013) found that, there is a growing demand of food banks in the UK; hence, food banks are essential and every town should have one. As a result, the establishment of food banks in Ghana, especially the study area, can contribute significantly to alleviating food poverty and food insecurity. Also majority (51.7%) of the respondents agreed that food banks can help prevent hunger, whereas minority (2.3%) of the respondents strongly disagreed. Subsequently, respondents in the study area maintained that "*there are many people who cannot afford three square meals a day and others go to bed hungry, due to this a food bank set up will be very instrumental in preventing hunger*". This result is in agreement with Garthwaite *et al.* (2015) who found that

Variables	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
There is need for food bank in this area	250 (64.9)	109 (28.3)	12 (3.2)	9 (2.3)	5 (1.3)
Food banks can help prevent hunger	199 (51.7)	150 (38.9)	6 (1.6)	21 (5.5)	9 (2.3)
Food banks can provide poor people food throughout the year	31 (8.05)	40 (10.38)	130 (33.76)	95 (24.7)	89 (23.11)
The whole community can benefit from food banks when there is famine	150 (38.96)	100 (25.97)	78 (20.25)	30 (7.75)	27 (7.01)
Food banks can help alleviate food insecurity	115 (29.8)	72 (18.70)	97 (25.19)	66 (17.14)	35 (9.17)
Source(s): Authors' construct based on field data, 2020					

Table 3.
Stakeholders perception of food banking prospects

food assistance from food banks serve as a lifeline for some users, which ultimately prevents them from going hungry. The results showed that majority (33.76%) of the respondents were uncertain if food bank can provide food throughout the year whiles minority (8.05%) strongly agreed. This implies that respondents were not sure if food banks can provide them food throughout the year. Respondents were of the view that "*providing food for us throughout the year will be very expensive, and we do not think it is feasible*". Furthermore, 38.96% of the respondents strongly agreed that, the whole community can benefit from food banks when there is famine whereas 7.01% strongly disagreed. Results from Table 3 reveals that 29.8% of respondents answered "agree" to the statement "food banking can help alleviate food insecurity". On the other hand, a considerable number representing 25.9% of respondents were uncertain that food banking can help alleviate food insecurity whiles an encouraging number of respondents 17.14% disagreed. Minority of the respondent's representing 9.17% strongly disagreed. The results imply that, a considerable number of respondents are in the state of uncertainty and disagreement of the perception that "food banking can help alleviate food insecurity", this is because in order for food security to be met, all the dimensions (availability of food, access to food, utilization of food and stability of all the dimensions over time) should be achieved for all people at all times (Bannor *et al.*, 2021). This left majority of the respondents in the state of uncertainty.

The determinants of food banking set up are presented in Table 4. The analysis revealed age had a statistically significant influence on food banking set up. The increase in age is likely to increase a respondent's needs for food bank set up by 4.77%. This is indicative because as the ages of people increase, their level of production decrease, and they cannot make high income; thus, food banking will provide them food which will support them. Residential status had a significant negative influence on food bank implementation. The probability that, a native wants a food bank set up compared to a non-native, settler and migrant decreased by 11.2%. Natives are less likely to want food bank implementation as they generally earn higher income, can afford food and cater for their families. However, the majority of migrants lives in less deprived areas (Zongos) and do not have access to economic opportunities (Acheampong, 2013). Thus, they want food banks to be implemented so that they can benefit from it. Further, the results suggest that household size had a positive

Variable	Coefficient	Standard error	P-value	Marginal effect
			Probit regression estimates	
Age	0.1948	0.9742	**0.046	0.0477
Marital status	−0.0583	0.5519	0.291	−0.0143
Gender	−0.9034	0.1652	0.584	−0.0221
Residential status	−0.4602	0.1310	***0.001	−0.1128
Education	0.0080	0.1002	0.936	0.0019
Income level	−0.1417	0.1090	0.194	−0.0347
Household size	0.2051	0.0649	***0.002	0.5032
Food bank awareness	0.6587	0.1081	***0.000	0.1616
Employment status	−2.9144	0.1126	***0.010	−0.0715
High cost of living	0.1727	0.2038	0.397	0.0477
Food poverty	0.4712	0.0935	***0.000	0.1156
Constant	−2.5113	0.9282	***0.007	
Prob > Chi^2	0.0000			
Pseudo R^2	0.2029			
Wald Chi^2 (11)	86.39			
Log likelihood	−169.65951			
Source(s): Authors' construct based on field data, 2020				
NB: Significance level = 1%***, 5%**				

influence on food banking set up. A plausible reason might be that increase in household size has a direct relationship with expenses on food other household expenses; thus, food banking set up can help families reduce the amount of money they spend on food. In addition, food bank awareness was found to have a direct relationship with setting up food banks. A possible reason is that, if people are aware of food banks, they will donate to it, and also people who are in need and are aware of food banks will access food banks. This validates the positive influence that food bank awareness has on food bank implementation. The coefficient of employment status was negative and significantly different from zero ($p < 0.010$). That is, there was an inverse relationship between employment status and food bank set up. An increase in employment status is likely to decrease the set up of food bank by 7.15%. A possible reason could be that, the increase in employment status does not significantly increase an individual's income to tremendously contribute to food bank. Hence, resulting in the negative relationship between employment status and food bank set up. The estimate for food poverty revealed that, food poverty has a positive influence on the food banking set up. The increase in food poverty among respondents will increase the food banking set up by 11.56%. Generally, people who cannot afford food will look for a source where they can get food. As a result, if there is an existence of food banks, people who are food insecure and experiences poverty will prefer to access it. This is in line with a study by Thompson *et al.* (2018) which show that, food banks serve as the primary response to food poverty. As a consequence, an increase in food poverty necessitates food bank implementation (see Table 4).

From Table 5, with regards to the challenges in implementing food banking in the study area, funding and support was the first ranked constraint, indicating that inadequate funding and support will hinder the implementation of food banks. This result corroborates with Mejía *et al.* (2015) who found that in certain countries food banks struggle to get funding and support for the acquisition of logistics, which will aid in their work. Accordingly, food banks around the world operate from support and funding; hence, to implement food banking in Ghana, stakeholders should advance massive support, in terms of funding to ensure implementation and sustainability. The second ranked constraint was unfair distribution, which had a mean rank of 3.05. Moreover, location was the third ranked constraint with a mean rank of 3.73. This implies location of food banks is very vital. As noted from the face to face interviews, respondents were of the view that "*it is very essential for banks to have a good location close to beneficiaries, if they do not get close access they can complain of long distance travel before they get access to food banks whiles other communities will feel marginalized if food*

Challenge	Mean rank	Rank
Funding and support	3.03	1st
Unfair distribution	3.05	2nd
Location	3.73	3rd
Coordination around perishable foods	4.12	4th
Local interest and time	4.34	5th
Finding suppliers	4.75	6th
Pricing	6.27	7th
Improper documentation	6.72	8th
N	385	
Kendall's W	0.316	
Chi-square (X^2)	265.70	
Degree of freedom (df)	7	
Asymptotic significance	0.000	
Source(s): Authors' construct based on field data, 2020		

bank is not situated in their communities". For instance, here in Ghana the Elemebele food bank is located in the Western region whiles the Eastern food bank is at Koforidua in the Eastern region; however, there are 16 regions in Ghana, and since these food banks are located in only two regions, people in need of assistance from other parts of the country will be unmotivated by transport and long distance travel, hence will not get access to food banks. This is similar to the findings of Smith *et al.* (2017) who asserts that transporting possesses a big challenge when food banks are situated in remote locations. Coordination around perishable foods was the 4th ranked constraint, which had a mean rank of (4.12). This is similar to Bucknum and Bentzel (2019) who found that food banks face constraints in coordination around perishable foods. Sorting and storing of perishable foods requires adequate infrastructure investment such as storage facilities and refrigerators; hence, problems arise in food banking when these infrastructure is not in place. In addition, local time and interest which was the 5th ranked constraint, can hinder implementation food bank. In light of this perceived constraint, respondents were of the view that "*Ghanaian culture embraces hospitality and giving; as a result, if the concept is well explained through sensitization programs and education, people will understand and appreciate the concept, they will also realize the need to invest their time and volunteer to implementing food banking, and this constraint can be curtailed*". The results revealed that finding suppliers, pricing and improper documentation were ranked 6th, 7th, and 8th with the mean ranks of 4.75, 6.27 and 6.72, respectively. Kendall's W of 0.316 implies that 32% of the respondents were in agreement with the ranked constraints. Therefore, the null hypothesis states that, there is no agreement in the ranked constraints is rejected in favour of the alternate that there is an agreement between the ranked constraints.

Conclusion

This paper examined the prospects and constraints of implementing food banking in the Kumasi Metropolis of Ghana. The study also analysed the factors influencing food banking set up in the study area. The study showed that there are a lot of prospects in food banking. Notable among them were addressing food poverty and hunger, helping the poor and vulnerable in the society, helping to provide food aid to respondents in times of pandemics and also helping in reducing food waste. The empirical results revealed that age, household size, food bank awareness and food poverty had a significant positive influence on food banking set up, whereas residential status and employment status had a significant negative influence on food banking implementation. Finally, the results established that the most pressing constraint in implementing food banking is funding and support with the mean rank of 3.03 whiles the least pressing constraint is improper documentation of potential beneficiaries with the mean rank of 6.72.

Recommendation for policy implementation

The study found that majority of the respondents have attained at least basic education, thus the government, corporate institutions and non-governmental organization who seek to establish food bank should advance adequate education to stakeholders. Moreover, understanding of the food banking concept will also encourage stakeholder to donate and help fund food bank set ups across the country. Food banking was seen to have many prospects (see Figure 2) notable amongst them is reduction of food waste; thus, the government of Ghana through the Ministry of Food and Agriculture (MOFA) should enact policies that can help prevent food losses and wastage through setting up of food banks. In this vain, food which could have been lost would be redirected to food banks. This can serve as a tool for social intervention, poverty alleviation and prevention of hunger among the

vulnerable in Ghana. Proper documentation of beneficiaries should be a key component in food banking implementation in the country. This will give adequate data on the vulnerable, aged, disabled and the poor, so that they can benefit from food bank set ups. Moreover, if accurate data on vulnerable people are gathered, they will enable food banks know the vulnerable people who should truly benefit from food banking, and they will help alleviate unfair distribution of food among the vulnerable and also reduce poverty.

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