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EXPLORING THE EMPIRICAL EVIDENCE OF THE RELATIONSHIP BETWEEN FARMER ENTREPRENEURSHIP AND SOCIAL NETWORKS.

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Abstract

Drawing on social network theory and entrepreneurship theory, this research explore empirical evidence of farmer's entrepreneurship as a result of the intervention of AgriProFocus, a network intermediary for partnership and business brokerage. A model is built using loglinear analysis and is analysed using multivariate logistic regression to examine the relationship of social networks and farmer entrepreneurial activity. Findings from 503 farmer respondents of 5 different African countries after their visit to AgriProfocus' fairs support the notion that the intensity of the farmer's social network predicts its engagement in entrepreneurial activity, as well as its preparation prior visit, the number of participant exhibitors and the implementation of workshops during the fair.

Keywords: entrepreneurship, social network, entrepreneurial environment, opportunity perception, network effectiveness.

Preface

This research is the culmination of my master studies in the program of Management, Economics and Consumer Studies. I have a bachelor in Economics and have experience in financial analysis, consultancy and elaboration of economic studies. This thesis is proof of my proficiency to obtain the Master of Science degree. This research has been developed under the supervision of the department of social science of Wageningen University and was executed in The Netherlands.

This research was indeed, a challenging and intellectually stimulating journey with gains on both academic and personal fronts. Here I would like to express my gratitude to several individuals that have had an important contribution to the content and process of the thesis. First, I would like to thank my supervisors Domenico Dentoni and Annemarie Groot Kormelinck for providing me with relevant feedback to improve the quality of my ideas and written product. I would like to thank as well the support of AgriProFocus team, especially Peter van Bussel. They have furthermore provided me with documents and information to explore the topic of this study.

In Mexico, I would like to show my appreciation to my family, especially my father for his advice and complete support through this journey. I thank my mother for her love and prayers. As well, I want to thank my brothers, cousins and uncles for their thoughts. Finally, I want to thank all my friends from Mexico, my AID friends and my girlfriend.

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Executive Summary

This study explores the role of a social network intermediary in entrepreneurship and more precisely, in opportunity identification and exploitation under farmer's context. Contextualizing entrepreneurship under the influence of social networks takes into account recursive links between contexts and entrepreneurship (Welter, 2011). The notion of a system of entities referred by Edquist (2001) can be comparable to a social network in that it displays the incentives that provides the support needed for new venture creation, i.e. social networks can adapt or modify the entrepreneurial environment. Indeed, in this sense, social networks are the linkages within a particular group of actors, institutions that participate in the entrepreneurial process. This research attempts to find empirical evidence on what are the conditions under which entrepreneurial opportunities are identified and exploited under the influence of a social network intermediary (Bruton, Ketchen, & Ireland, 2013; Erikson, 2001; Kew, Namatovu, Aderinto, & Chigunta, 2015). The premise is that social networks set the entrepreneurial framework through the network intermediary, in this case AgriProFocus.

To explore the relationship of entrepreneurship and social networks, data was computed from the AgriProFocus "Agribusiness-Finance Fair Visitors Survey Form 2015". The information was collected from the monitor survey administered to 503 fair visitors in 5 locations of 5 country network hubs of AgriProFocus in Africa. After harmonizing the information, the instruments (questions) were used to measure the concepts of interest. The responses were coded into numerical terms to proceed with the quantitative analysis. All analyses were conducted using IBM SPSS Statistics 22.0. Loglinear analysis was applied to explore the interaction between variables to construct a model. Multivariate logistic regression was then used to assess the effects of (i) entrepreneurial behaviour on entrepreneurship opportunity perception, (ii) entrepreneurial behaviour on entrepreneurial activity, (iii) entrepreneurial behaviour and opportunity perception effect on entrepreneurship activity, (iv) entrepreneurial environment on entrepreneurial activity, and finally (v) the formulation of a comprehensive regression model to explore the effect of all these concepts on entrepreneurial network effectiveness.

The fairs provide access to resources such as business financing, marketing advice, and distribution channels (Bradley et al., 2012). However, the likelihood tests for the network effectiveness has no effect on farmer's opportunity perception i.e. the percentage of exhibitors reached by the farmer in the fair does not contribute to predict farmer's opportunity perception.

The evidence suggests that network intensiveness is the key factor that makes the difference in the outcome of the farmer's visit to the fair. The size of this effect for this predictor is larger than for any entrepreneurial behaviour or entrepreneurial environment predictor. The environmental factor that was most significant is the implementation of a workshop. In addition, the number of exhibitors contributes to predict when a farmer closes a deal. The farmers that best connect and exploit the network of exhibitors that take part in the fair are the farmers that are more probable to close a deal. This result supports Gemünden, et. al., (1996) and Braunerhjelm et al. (2010) proposition that intensiveness of the relationships is what secures new venture creation. Therefore, the hypothesis that network intensiveness has a significant effect on entrepreneurial activity as large as entrepreneurial behaviour, entrepreneurial environment and opportunity perception is confirmed.

This research backings the idea that social networks conform a support structure for entrepreneurship, the intervention of intermediaries as AgriPorFocus truly boost entrepreneurial activity. More precisely, in the case of the fair, the implementation of workshops in the fairs improves the access to information and possibly knowledge diffusion; however, this may reduce the networking capacity of the farmers due to time constraints of visit. The number of exhibitors and the network intensiveness are critical factors for the brokerage of deals within the network. This research enables understanding the farmer's characteristics and actions undertaken during their visit to the fair that draw lessons for performance improvement. Those lessons could be included in annual reports and be reflected in new annual plans for the future of AgriProFocus.

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1. Introduction

Entrepreneurship is a field of study that has received constant and incremental attention from the social scientists since Joseph Schumpeter started theorizing about entrepreneurship and economic progress in 1934. From then onwards, the phenomena of entrepreneurship has been studied in many ways e.g. as a process, as outcome or as a mean. In the same manner, the concept of entrepreneurship has been defined in many different ways and from diverse perspectives (Jensen, 2014). Nevertheless, there seems to be consensus regarding the definition of the Schumpeter, that refers to entrepreneurship as the process of carrying new combinations that lead to new outcomes (Jensen, 2014; Sharma & Chrisman, 1999).

Entrepreneurship requires the identification of opportunities and the ability to recombine resources to exploit those opportunities (Alvarez & Busenitz, 2007). There is no certainty on why, when and how some individuals are able to discover and exploit opportunities while others fail (Erikson, 2001; Venkataraman, 1997). Even more the debate regarding whether entrepreneurial opportunities are created or discovered is open. Leyden, Link, & Siegel, (2014) highlight the relevance of social networks in the creation and exploitation of entrepreneurial opportunities. This social network approach refers to the application of social context in entrepreneurship.

The context is integrated by the elements that are outside the control of the entrepreneur. These elements can be the economic environment, support systems, links and societal values (Welter, 2011). Indeed, the social network approach is important for understanding the dimensions of when, how and why entrepreneurship occurs since the networks provide the resources. The “where” and “when” dimensions have been studied by Welter (2011). The “who” dimension of context reflects on the impact of context on entrepreneurship i.e. who gets involved in entrepreneurship and which ventures are created. This dimension needs further attention and empirical evidence is still required to support the current theories on the subject (Welter, 2011).

The social network approach is very enriching when considering entrepreneurship as a process because context becomes crucial. In the same way, opportunity recognition plays an important role. The situation of African farmers is a good example of the importance of context in entrepreneurship. African farmers confront the lack of resources, support system and, skills which leads to an absence of entrepreneurship and miss identification of opportunities in agriculture (Becx, Mol, Eenhoorn, van der Kamp, & van Vliet, 2012). This situation is persistent despite the fact that entrepreneurship offers the means to improve the farmers’ socioeconomic condition and enhance economic growth (Bruton et al., 2013; Galindo & Méndez, 2014; Naudé, 2009). Still, there have been efforts from organisations that focus on the context of African farmer’s entrepreneurship to introduce new agricultural practices.

These organisations cover the gaps in the context of entrepreneurship and act like a social network facilitator for entrepreneurship. These kind of organisations connect various stakeholders through the value chain. Also, promote an interactive multi-stakeholder processes, provide space to interaction to facilitate opportunity identification (Dethier & Effenberger, 2012). An appropriate example of a network facilitator for entrepreneurship is AgriProFocus. This is an organisation conformed of an international web of agencies, professionals, agri-businesses and farmers that can meet, do business, share resources and knowledge that contribute to farmer's entrepreneurship, mainly, in African countries.

AgriProFocus has succeeded in developing a network platform with involvement of organized farmers, agri-business, NGO's, financial service providers, public agencies and academic institutions. AgriProFocus has implemented the organisation of events, called fairs, where the members of its network can interact to share information and interact directly with farmers. The fairs are design to enable the connections of the farmers with suppliers and finance institutions so the farmers get access to vital information and resources to close deals[1] or get resources. In other words, the fairs have the objective of promoting the uptake of adequate financial services and agri-business innovation among farmers, as well as to broker real deals between various stakeholders. Through its annual survey among stakeholders and participants, AgriProFocus has been monitoring its network development progress on fairs participants' satisfaction. The results have been satisfactory, the appreciation for its services has increased over the years and the stakeholders have benefited as well.

Despite the efforts and success of AgriProFocus developing a network there is still limited understanding on the effect of the events (fairs) on farmer's entrepreneurial activity, and the magnitude of that effect. Thus, the case of AgriProFocus is an opportunity to explore the influence of social networks in the identification of entrepreneurial opportunities in a local context. The study of this case focuses on the profile of the entrepreneurs and the ventures they get involved in the fairs. It is important to mention that it is not my intention to show how social networks influence the mental models of the entrepreneur or the connections made within those mental models. For the purposes of this study, it is assumed that entrepreneurship arises from social networks and that these offer the setup from which opportunities are continually re-identified and re-organized (Peredo & Chrisman, 2006).

[1] "Deals" refers to agreements or commercial transactions between a farmer (producer) and one of the next; finance institution, input supplier, Buyer, Trader, Processor, or service. "Deals" do not refer to the agreements of a farmer with a non-governmental organisation, public agencies or knowledge institutions.

The outcome of this research will contribute to both, theory and practice. In first place, it will attempt to establish a theoretical connection of social networks and opportunity identification for entrepreneurship by analysing the nature of both concepts and the theory that link them. Secondly, it will attempt to provide evidence of the impact a social network intermediary like AgriProFocus can have on entrepreneurship by quantifying the outcome in terms of deals and partnerships brokered through or as a cause of the agribusiness and finance fairs.

1.1. Problem

Even though the contribution of social network approach in entrepreneurship studies has offered the basis for theory formulation, there is still an opportunity to improve the empirical evidence of social networks on individual entrepreneurship and furthermore on farmer's entrepreneurship. There is the need to explore the role that social networks have in entrepreneurship and more precisely, in opportunity identification and exploitation[2] under farmer's context. Most research has been limited to study how context factors affect the nature and extent of entrepreneurship. Contextualizing entrepreneurship under the influence of social networks takes into account recursive links between contexts and entrepreneurship (Welter, 2011).

Social networks become a support structure for entrepreneurship. They provide non-financial services such as mentorship, training and networking that are drivers of business performance. There has being less attention in the case of individual entrepreneurship. In the same sense, there is still a lack of evidence to confirm the magnitude of the support system provided by a social network. This requires the assessment of individual entrepreneurial performance and network effectiveness from an intervention of a social network. It is crucial to find empirical evidence of what are the conditions under which entrepreneurial opportunities are identified and exploited under the influence of a social network (Bruton et al., 2013; Erikson, 2001; Kew et al., 2015).

Ali (2014) found evidence that the agribusiness and finance fairs organised by AgriProFocus yield a positive but limited benefit for the farmers[3]. The fairs provide the set up for farmers to gain awareness on bank procedures and important information provided by other exhibitors in the events. The agribusiness and finance fairs are spaces where the farmers can pool financial and obtain technical resources enabling them to take opportunities in the local or international markets (Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009). Nevertheless, there is no concrete data or evidence to evaluate

[2] Hereafter opportunity exploitation is considered equivalent as new venture creation.
[3] His research was held only in Uganda, one country where AgriProFocus operates, and the qualitative sample was small.

and follow up the impact of the fairs on participants (farmers and farmer organisations) in terms of opportunities perceived or entrepreneurial activity.

2. Research overview

2.1. Research objective

The general purpose of this research is to contribute to explain why some entrepreneurs might recognize opportunities and others do not and why the outcomes of entrepreneurial behaviour might vary across different contexts (Welter, 2011).

The objective is to (i) find empirical evidence of the effect of access to contacts (of the network) on entrepreneurship in terms of the outcome or "deals", (ii) explore the relationship of opportunity identification and farmer's behaviour e.g. proactivity, seeking behaviour, alertness and cognitive capacity.

The research aims to link the result of the agribusiness and finance fairs with the theory about social networks and entrepreneurship, and measure the outcome of the fairs by computing variables with the information records provided by AgriProfocus. In order to do so, a literature review on entrepreneurship and social networks will be the base to construct a conceptual framework that describe the theoretical relation among concepts, that serves as a guide for hypothesis formulation and apply a methodology to construct a model and perform statistical analysis to test the hypotheses. This involves the analysis of what endorses the identification of entrepreneurial opportunities that lead to the closure of business deals between farmers and suppliers or farmers and micro finance institutions, whatever is the case.

2.2. Research framework

The research framework is described in figure 1, consists of four phases; (1) theoretical framework, (2) empirical study, (3) analysis and (4) conclusion.

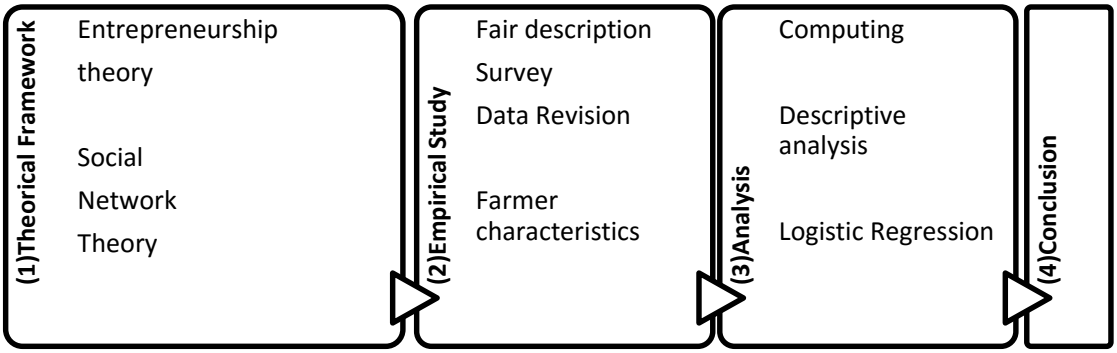
(1) Based on scientific literature about entrepreneurship, social networks, opportunity identification, and entrepreneurial behaviour. The review and assessment of the theory will result in the construction of the conceptual framework.

(2) The agribusiness and finance fairs organised by AgriProFocus will be assessed to describe the design of the events from internal documentation. As well, the information recorded from the farmers (visitors) and stakeholders present in the fairs (exhibitors) during 2015 in African country networks will be reviewed. The information is collected from surveys applied from AgriProFocus.

(3) The information from the surveys will be computed to variables. Then, on those variables, the statistical techniques will be performed to make the analysis.

(4) From the outcome of the analysis and hypotheses testing, the study will reach points of interest and remarks on the subjects approached in this research.

Figure 1. Research framework diagram



2.3. Research questions

2.3.1. General research question

To what extent do farmers exploit social networks to engage in entrepreneurial activities?

2.3.2. Specific research questions

What entrepreneurial behaviour affects opportunity identification and entrepreneurial activity?

What is the relation between social networks and entrepreneurial environment?

How do social networks promote entrepreneurial activity?

2.4. Subjects of research

2.4.1. AgriProFocus

Entrepreneurship and the process of innovation adoption represent two important challenges for farmers to make the transition from traditional farming to entrepreneurial farming. Furthermore, the deficient network dynamics between the farmers and different stakeholders within the agricultural production chain depletes the agri-food sector productivity making the shift to entrepreneurial farming more difficult.

The mission of AgriProFocus is to promote sustainable farmer entrepreneurship among (organised) farmers. Its strategic plan (2013-2017) has formulated four delivery areas: i) coordination and network development, ii) business and partnership brokering, iii) innovation communities and, iv) platform for debate and learning. These four action lines are part of AgriProFocus strategy, which has three main

components: knowledge sharing & co-creation, effective support system and stronger farmer entrepreneurs. AgriProFocus aims to improve the support system for farmer entrepreneurs through, what they call 'market triggers' based on knowledge diffusion (see section 3.5.4.1) and cooperation. AgriProFocus tracks its level of influence by keeping a record of the outcome of its business brokering activities that contribute to the enhancement of the farmer entrepreneur's performance.

2.4.2. The fairs

AgriProFocus as a network has a sphere of influence that is based in the implementation of events, called fairs. The fairs are events where the farmers and stakeholders use and take up the network outputs. The fairs are organised in the hope of the emergence of a more effective support system for farmer entrepreneurship. Business and partnership brokering is the mean which enable the connection of farmers with agribusiness/finance institution i.e. promote deals among various stakeholders. The fairs are held in rural areas to attract as many farmers as possible.

The fairs consist of a space for the display of the network resources e.g. contacts, information, financial resources, knowledge, etc. to promote the interaction and connection of farmers with different stakeholders.

The fair is a place where banks and other service providers such as buyers (including farmer groups buying and selling) and input suppliers can interact with all visiting farmers. The fairs resemble a business club environment for well-prepared producer organisations who come with a business plan. As well, the fairs provide a debating/learning area to discuss current issues on access to finance or a specific sector as well as promote new solutions/investment funds.

2.4.3. The farmers (respondents)

The survey is applied to the participants without distinction[4] of the type of respondent e.g. farmers, students, merchants, etc. Given the objectives of this research, only the responses from the farmers where considered for the study. As seen in Table 1, the number of farmers analysed is 503.

[4] The type of respondent is identified with question 9,"What is your job / profession?"(see annex 4).

3. Theoretical framework

This research applies the theoretical lenses of entrepreneurship and social networks to explore how agribusiness and finance fairs of AgriProFocus contribute to the entrepreneurial activity of farmers. In order to develop a proper methodology, two components will be used: i) The entrepreneurial behaviour that leads to opportunity identification and eventual close of deals during and/or after the fairs among farmers and business and/or micro financing institutions and, ii) The entrepreneurial environment variables that will help describe the entrepreneurial activity generated by the fairs.

3.1. Entrepreneurship

Entrepreneurship can be defined as the process of realizing a set of (ingenious and creative) features that lead to combinations that contribute to the production and wealth associated to uncertainty and risk (Sharma & Chrisman, 1999; Stam, 2009; Vesala & Vesala, 2010). This definition introduces aspects that fall out of this research scope like creativity, production, wealth and risk. However, this definition provides two main components, (i) the process perspective and, (ii) the notion of the necessity of a set of features that lead to an outcome.

The importance of the first component relies on the dynamic nature of entrepreneurship. This idea implies that entrepreneurship involves a number of activities or steps that are linked. The entrepreneur alone does not performs all the activities required to start a new venture whatever it is. This is obvious from the sociological definition of entrepreneurship, where it is considered a complex set of social processes in which different actors perform different tasks and deliver different resources that contribute to new ventures[5] or combinations (Jennings, Greenwood, Lounsbury, & Suddaby, 2013). The second component refers to the set of features or context. This notion is relevant and convenient from the social network approach where the environment determines the presence or level of entrepreneurship. Under this current of study, 'context' are the structural conditions that regulate the allocation of effort into entrepreneurship (Levie & Autio, 2008), within this conditions is that all the parts of a network interact, manage innovation and respond strategically to each other (Jennings et al., 2013).

3.2. Entrepreneurship opportunity identification

The creation of new ventures is a process that starts with the motivation from the entrepreneur that leads to the search and possible identification of an opportunity. The identification of an entrepreneurship opportunity is an activity that requires the investment of resources in hopes of a future return. Entrepreneurship, constantly, requires the scan of the environment for the search of

[5] Is important to mark that because entrepreneurship is seen as a process, then this study can focus on the activities oriented to the discovery, evaluation, and exploitation of opportunities (like the AgriProFocus fairs).

new ideas. The search of ideas can be a joint task, that affects motivations, economic interests and personal networks (Austin, Stevenson, & Wei-skillern, 2006). The intensity of the search is influenced by the degree of change potential in the entrepreneur's social, economic, technological or personal environment. The search effort is likely to be oriented to area(s) perceived most volatile[6] by the entrepreneur i.e. this(ese) area(s) receive more attention from the entrepreneur. Information is a very important resource for entrepreneurship opportunity; if the information is available then the search of opportunities is more likely to occur. Theoretically, opportunity can be discussed in terms of new goods and services. However, for empirical work it is more convenient to approach opportunity in terms of "new venture"[7] creation because the entrepreneur happens to be easier to locate when constructing a sample (Bird, Schjoedt, & Baum, 2012; Carsrud & Brännback, 2009). Thus, the creation of new ventures is preceded by the identification of an opportunity. Consequently, the following hypothesis is proposed:

H1: The opportunity perception is positively correlated to the entrepreneurial activity of an entrepreneur.

3.3. Entrepreneurial behaviour

Opportunity identification depends on the characteristics of the individual entrepreneur. The individual entrepreneur engage with a variety of activities during the process of entrepreneurship that involve creative talents and abilities. The entrepreneurial behaviour is the set of actions undertaken by the entrepreneur (Hmieleski & Corbett, 2008). Entrepreneurial behaviour tends to have three components: innovative behaviour, risk taking behaviour, and proactivity (Chandra & Coviello, 2010). Thus, entrepreneurial behaviour is the capacity to take action and modify the way things are done, assume the uncertainty associated with change, and take the initiative. The actions of the entrepreneur depend on the personal characteristics that can be related to psychological factors e.g. extroversion, risk aversion, cognitive characteristics, intuition and non-psychological factors like education, experience and social relationships (Cuervo, 2005; Mcgee, Peterson, Mueller, & Sequeira, 2009). At the end, entrepreneurial behaviour is expressed in actions and can be characterized therefrom. Therefore, if the perception of opportunities were necessary for entrepreneurship then the absence of opportunities perceived would translate into no entrepreneurial action undertaken by the entrepreneur. The interest is to find evidence of the on the correlation between opportunity perception and entrepreneurial activity in the case of AgriProFocus fairs. Consequently, the following hypothesis is proposed:

[6] That change with more frequency.
[7] "New venture" for the purposes of this research is the same as making a deal or negotiating a deal.

H2: Entrepreneurial behaviour has a positive effect on opportunity perception.

In the entrepreneurship process, the entrepreneurs must be self-confident in their ability to recognize critical resources. However, uncertainty is inherent to entrepreneurship and unexpected situation may rise some of them favourable and other not so much. This means that entrepreneurial behaviour is a combination of planned and spontaneous action. Spontaneous actions origin from the improvisation ability of the entrepreneur. In the case some opportunity arises, it becomes handy to be able to improvise. Still, improvisation comes out of a necessity to react to the circumstances and should not be considered a strategy for entrepreneurship (Hmieleski & Corbett, 2008).

3.4. Entrepreneurial environment

Context refers to circumstances, conditions, situations, or environments that are external to the entrepreneurial phenomena. Entrepreneurship opportunity perception is subjected to the circumstances around the entrepreneur i.e. the entrepreneurial environment. Certainly, the entrepreneur has to be aware of the environment, infrastructure and markets as much as possible. However, entrepreneurial environment falls out of the control of the entrepreneur.

The entrepreneurial environment frames the opportunities and risks that enable or constraint new ventures i.e. provides individuals with (entrepreneurial) alertness and sets boundaries for their actions (Austin et al., 2006; Welter, 2011). Therefore, the entrepreneur has to be well informed or alert about the resources available, never mind the nature, physical, monetary or human. With more and better information the entrepreneur is capable to sum efforts from other stakeholders to cope with structural factors; these stakeholders may configure a dense structure, a network. This entities and its interplay conform a system (Edquist, 2001), in this case they form part of the entrepreneurial environment. Thus, the entrepreneurial environment also involves the network of entities interacting in a specific context under a particular framework or set of infrastructures involved in the generation of new ventures (Carlsson & Stankiewicz, 1991).

3.5. Social Networks

The social network approach is very enriching when considering entrepreneurship as a process because context is crucial and regularly, entrepreneurship requires the collaboration of different entities. Those entities can be classify in three categories: government, businesses and knowledge organizations. This is similar to the 'Triple Helix' concept (Etzkowitz, 2000).

The notion of a system of entities referred by Edquist (2001) can be comparable to a social network in that it displays the incentives that provides the support needed for new venture creation, i.e. social networks can adapt or modify the entrepreneurial environment. Indeed, in this sense, social networks

are the linkages within a particular group of actors, institutions that participate in the entrepreneurial process. Social network requires and arises from a self-recognition process; common customs, languages, identity, and traditions. In this study, the main common denominator for the network is entrepreneurship. The characteristics of a social network and its intervention helps individuals to discover, evaluate, and exploit eventual opportunities that may emerge (Austin et al., 2006; Leyden et al., 2014).

Social networks contribute to the range of information available to entrepreneurs and thus their ability to recognize and act on entrepreneurial opportunities (Parrish, 2010; Watson, 2007). In the same way, networks (or in this case, the fairs) provide access to resources such as business financing, marketing advice, and distribution channels (Bradley, Mcmullen, Artz, & Simiyu, 2012). When analysing the network, the relationships have to be studied from a holistic perspective.

The principal function of networks is to facilitate the exchange of information and knowledge between all the heterogeneous entities with different resources and functions in it. Information diffusion activities involve partnerships among actors, but also meetings like workshops and conferences (Suurs, 2009). The characteristics of a social network and its intervention helps individuals to discover, evaluate, and exploit eventual opportunities that may emerge (Austin et al., 2006; Leyden et al., 2014).

The interplay between the entities that conform the social network similar to a system (Johnson and Jacobsson, 2001). This system is a place that promotes the creation of “new” knowledge, guide the search process for ideas, supplies resources, facilitates the creation of positive external economies and the formation of markets.

All the mentioned functions occur within the entrepreneurial environment. When looking closely to the functions it becomes clear that, they are performed among different type of stakeholders of the network, the government, the businesses and knowledge organizations; triple helix).

3.5.1. The knowledge organizations

Knowledge organizations are the entities were ideas are generated, structured ideas with economic potential. Knowledge organizations may be universities, research centers or any other type or organization that has knowledge as a main output. Knowledge organizations focus in the creation and dispersion of new knowledge. As stated before, knowledge is a resource that contributes to build new types of dynamics between entrepreneurs and different entities in the network e.g. contact access, information access, resource access an allocation that may lead to new venture creation (Sengupta, 2014).

3.5.2. The businesses

Business are dealing with market forces all the time and in a constant search for business opportunities. In this research business are established firms, entrepreneurs and any other private organization. The businesses main functions in the entrepreneurial environment are the supply of resources; capital, human resources and technology (Acs, Zoltan J., Pontus Brodde Braunerhjelm, David Audretsch, & Bo Carlsson, 2009).

In the case of supply resources, it is done in a direct way as investment allocation in new ventures. Investments through innovation are intended to reduce costs and frequently these investments take the form of developing new products that reduce price and hence expand demand or give access to new markets (Sengupta, 2014). In addition, some of the economic benefits can be expressed in the way of reduce of the production costs and economic efficiency because of a collaboration in joint new ventures[8].

The essence of the entrepreneurial function comprises economic activities such as the production of new products or services, new qualities of goods, and new technologies. In the same way, businesses entrepreneurship can be reflected in the creation of new forms of industrial organisation, the opening of new markets or through widening the supply chain (Sengupta, 2014).

3.5.3. The government

The government influences in the entrepreneurship process through the laws, rules and policy. Edquist (2001) explains that the government intervenes in the entrepreneurship process when the market fails, the market mechanism are inefficient or perverse, and to solve or mitigate a problem related to the entrepreneurship process.

The government can provide founding for entrepreneurship procurement with support agencies[9]. The provision of subsidies and financial support also can have the objective of restoring market incentives, increasing competition and improving efficiency (Sengupta, 2014).

Whether the government has a role in the entrepreneurship process or not, the innovation process cannot be isolated from its influence. The public agencies and the legal character of the government will always make it a relevant entity in how new ventures are achieved. Again, the government will influence entrepreneurial environment by means of rules or laws that regulate the relations among organisations or by establishing objectives through policies or public programs.

[8] This can be seen in industries were companies cooperate to create a new technology that benefits all the parties involved by reducing the costs of the industry or production chain.

[9] For example, the case of the European Commission that provides support for innovation through a series of initiatives and actions and financial support to innovators

3.5.4. The intermediary

The relations between organizations and institutions are very complex and often characterized by reciprocity (Edquist, 2001). Some interactions between different entities are important some of them trigger new venture creation and even more feedback the entrepreneurship process constantly. There are companies, entrepreneurs and experts trying to reach the ideas of the specialists and researchers and skilled tinkers who are capable of making products out of ideas. Entrepreneurship needs both, bright ideas and business with the resources to achieve it (Weiers, 2013). However, the output resulting from the research activities of the knowledge organizations does not result in an immediate commodity with a market price. In other words, it is hard to measure the value and real economic potential of a "new" knowledge. This means that the entrepreneurs and businesses confront inefficient investment allocation of their resources when deciding with whom make a partnership (Aghion and Howitt, 1998).

The question thus becomes how to bring all the stakeholders together to truly foster entrepreneurship i.e. to make entrepreneurial activity possible among entrepreneurs and business. The response to this question is the intermediary. The intermediary helps to enhance the interactions and make them intensive. Intensiveness of the relationships is what secures new venture creation in the absence of formal mechanisms in the entrepreneurship process (Gemünden, H. G., Ritter, T., & Heydebreck, P. R., 1996; Braunerhjelm, P., Z. Acs and B. Carlsson, 2010). This means that intermediary helps the parts of the network to connect better, thus the network intensiveness is a critical factor that contributes to the entrepreneurial activity undertaken by the entrepreneur. Considering this idea the next hypothesis are formulated;

H3: The entrepreneurial environment characteristics (completely) predict network intensiveness.

H4: Network intensiveness has a positive effect on farmer's opportunity perception.

H5: Network intensiveness has a significant and positive effect on entrepreneurial activity as large as entrepreneurial behaviour, entrepreneurial environment and opportunity perception.

3.5.4.1.Functions of the intermediary

The main task of the intermediary is to facilitate cooperation in the entrepreneurship process that leads to entrepreneurial activity i.e. make things easier in the network to create new ventures. Suurs (2009), mention guidance as a key factor that translates into convergence of positive signals – expectations, liabilities and outcomes– in a particular direction of the entrepreneurship process. The guidance that Suurs mentions could be extrapolated with Johnson and Jacobsson (2001) second function of the innovation system.

The guidance should aim for understanding, as Weiers (2013) proposes, “complexity matters – but it must be accessible”. In this matter, the level of complexity has to be kept in a reasonable level. This means the intermediary intervenes in order to avoid any entrepreneur or stakeholder of the network to become overwhelmed, thus ensuring participation of all parts. The guidance aims for efficient networking. Weiers (2013) explains guidance in function of participation, matching, idea development, approaching a potential partner, cooperation and providing feedback.

Participation refers to the role of the intermediary that helps stakeholders and entrepreneurs to know each other and understanding who participates in the network. The entrepreneur requires guide in order to select partners, organizations and business. In this point, some specific activities also involve advice activities on behalf of entrepreneurs.

In order to facilitate idea development, the intermediary provides some clear structures what to do, where to look, and what to look for. The intermediary adapt the “new” knowledge specifically and makes the more accessible. For instance, it may signalize an opportunity in some technology and proposes a business model adapting that technology in a “new” production process. In addition, the intermediary can work as a filter of ideas with business. By providing Feedback, the intermediary guides on what information is important and what is counterproductive this reduces slander. Suurs (2009) mentions that positive feedback implies a reinforcement of causes and points out that it is not necessary a build-up process.

The intermediary can guide the approach to a potential partner, on when to initiate cooperation, under which terms, what procedure and what process. In terms of cooperation, the intermediary addresses potential issue, propose solutions, points out areas of conflict and identifies certain warning signs of impending problems. This reduces uncertainty in the process of entrepreneurship. In this sense, the intermediary facilitates the exchange of knowledge between the members of the network, this has been referred as “knowledge diffusion” (Suurs, 2009). The intermediary matches entrepreneurs and stakeholders i.e. provides assistance in finding potential cooperation partners. This leads to a better-informed decision in selection partners to cooperate within the network.

Without the intervention and guidance of an intermediary, the success of entrepreneurial processes may be jeopardized and the risks may be (too) high for individuals to engage in entrepreneurial activities. Thus, the intermediary should be recognized and priced for its contribution in the entrepreneurship process but without making it, the central axis of the entrepreneurial activity since that would mean that new venture creation would be absence without the intervention of an intermediary, which is not necessary true. However, the intermediary can be play a major role for the configuration of entrepreneurial environment that surround the entrepreneurship process.

3.5.5. Network effectiveness

The functions of the intermediary require the management of synergies and co-ordination of all relationships in an efficient way. Nakwa, et al. (2012) conclude that the intermediary operates to secure engagement among stakeholders that lead to new venture creation. Furthermore, the network effectiveness translates to the level of achievement of entrepreneurs and stakeholders to engage with each other. In other words, effective and efficient collaboration within the social network that translate into entrepreneurial activity.

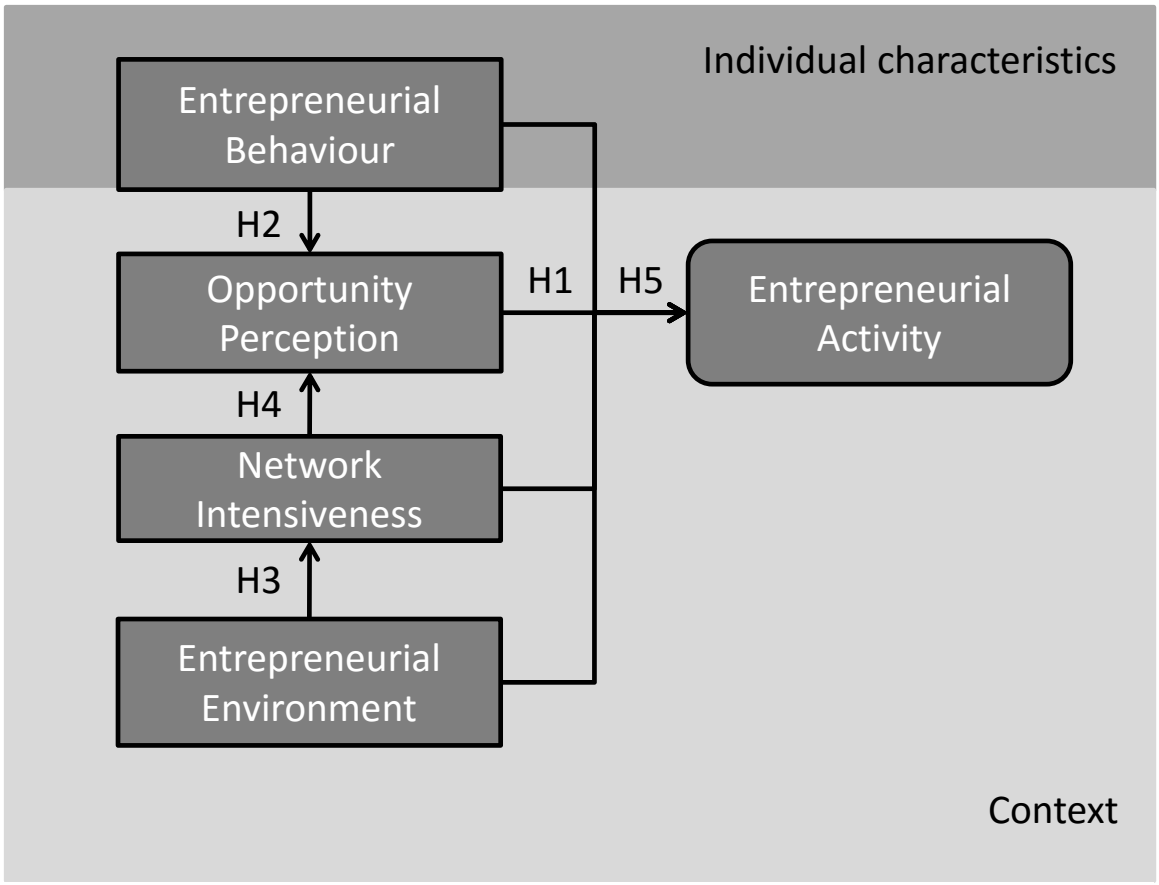
Networks are important since they have an implication for economic externalities, and in some cases, the networks are regional, i.e. they are localized networks (DeBresson & Amesse, 1991). These externalities generate an environment where the entrepreneur is more likely to engage in new ventures with access to abundant and necessary resources, including information[10]. Subsequently, the amount of resources impact on the scale of opportunities. Certainly, the scale of the opportunity matters as well, because it affects the entrepreneurial behaviour required for the identification of the opportunity. Indeed, small-scale opportunities require a lower level of cognitive process in opposition with large-scale opportunities i.e. ventures that require large amounts of resources and have a large economic impact (Carsrud & Brännback, 2009). All of these considerations affect the effectivity of social networks to promote entrepreneurial activity.

3.6. Conceptual model

Based on the literature review presented above, the following model (see figure 2) is developed to test the hypotheses of the study. The premise is the social network sets the entrepreneurial framework through the network intermediary (in this case of AgriProFocus). The fairs display the different stakeholders and the products, services and information they can provide to the farmers and farmers' organisations. The exposure of the fairs participants to these products and services rises alertness about the resources available and the conditions require to access to them. The interaction among parts in the social network will promote the identification of opportunities and the realization of deals that lead to an increase in entrepreneurship activity.

[10] This is the case off the fairs held in the country networks of AgriProFocus network.

Figure 2. Conceptual Model



H1: The opportunity perception is positively correlated to the entrepreneurial activity of an entrepreneur.

H2: Entrepreneurial behaviour has a positive effect on opportunity perception.

H3: The entrepreneurial environment characteristics (completely) predict network intensiveness.

H4: Network intensiveness has a positive effect on farmer's opportunity perception.

H5: Network intensiveness has a significant effect on entrepreneurial activity as large as entrepreneurial behaviour, entrepreneurial environment and opportunity perception.

4. Methodology

4.1. Instruments and data

4.1.1. Questionnaires

The data comes from the AgriProFocus "Agribusiness-Finance Fair Visitors Survey Form 2015". The survey among fairs suffered slight changes according to the specific characteristics of the fairs[11]. Despite the differences among fairs, all the questionnaires share the same core questions since the surveys are based in the same general template (see Annex 3). For the purposes of this study, the responses from other visitors e.g. students, business agents, government employees, were not

[11] For example, in the fair of Chipata, the questions related to Agri-Services business where omitted since there were no exhibitors from that kind.

considered for analysis. In order to construct instrumental variables the information from the surveys was treated to measure the different concepts presented in the previous section. Table 3 resumes and the information computed from the survey template[12].

4.1.2. Sample

The sample was draw for people that visited the fairs in 5 different locations. Respondents were surveyed using a semi-structured questionnaire. The information was collected from the monitor survey administer to 503 fair visitors[13] in 5 locations of 5 country networks of AgriProFocus social network (see *Table 1)*.The sample of respondents are randomly selected in each event. However, there is no standard methodology for the sampling process. This is due to two main circumstances, (i) there is no strict record of the fair's assistance, which limits the consistency in the sample size among the events, and (ii) the surveys have slight changes depending on the type and number of exhibitors (see *Table 2*) in each event and language barriers[14]. These qualities of the information may lead to reliability problems.

Table 1. Fairs list and description

Event	Country	Location	Fair Description	Date	Respondent Number	Exhibitors Number
1	Tanzania	Manyara	Agribusiness-Finance*	09-May-15	167	19
2	Zambia	Chipata	Agribusiness-Finance	19-Jun-15	141	17
3	Uganda	Kasesse	Finance	21-Jun-15	95	6
4	Burundi	Ngoma	Agribusiness-Finance	25-Aug-15	64	24
5	D.R.Congo	Bukabu	Agribusiness-Finance	31-Jul-15	36	44
			TOTAL respondents		**521**	**110**

*This fair does not implemented a work shop

Table 2. Farmer's characteristics descriptive statistics

Farmers Characteristics		Frequency (N=503)	Percent
Sex	Male	361	71.8%
	Female	142	28.2%
Age	Under 25 yrs	20	4.0%
	25 to 50 yrs	371	73.8%
	Over 50 yrs	112	22.3%
Farmer Type	Independent	250	49.7%
	Member	253	50.3%

[12] The questions will be identified with the assigned number from the original template of AgriProFocus.
[13] The number of visitors that were willing to answer the survey determines the size of the sample, thus the sample size is not calculated using statistical methods. The total number of fair visitors for event is unknown.
[14] Some of the respondent do not speak English and the responses are recorded in their dialect, so some information may be lost in translation.

4.2. Measures used in the analysis

This section outlines the variables that measure Entrepreneurial Behaviour, Improvisation, Opportunity perception, Entrepreneurial Activity and Entrepreneurial Environment.

Entrepreneurial Behaviour

Entrepreneurial behaviour is the capacity to take action and modify the way things are done, assume the uncertainty associated with change, and take the initiative. Entrepreneurial behaviour is an aggregation of different aspects related to behaviour. For the purposes of this study the components considered are; cognitive capacity, seeking behaviour and alertness.(Alvarez & Busenitz, 2007; Bird et al., 2012; Carsrud & Brännback, 2009). The analysis relays in whether or not the individuals have engaged in the behaviours that describe these components. This is convenient since the measurement discriminates the behaviours from the outcomes (Austin et al., 2006).

Improvisation

Entrepreneurial behaviour is a combination of planned and spontaneous action. Spontaneous actions origin from the improvisation ability of the entrepreneur as a response to unexpected favourable or unfavourable circumstances. Improvisation is a variable constructed from the notion that spontaneous outcome comes from spontaneous actions i.e. unexpected outcomes that come out of non-planned actions (Hmieleski & Corbett, 2008). In the data it is reflected with a value of 1, when the farmer did not have a specific goal but still managed to engaged in a new venture with one of the exhibitors. This means "Engaging in a deal (or appointment, or obtaining information) with a type of exhibitors that is different from the targeted exhibitor if the farmer had an specific goal e.g. the farmer visits the fair to get a credit with a financial institution (failing at this) but manage to close a commercial contract with a new supplier. [15]

Opportunity perception

The concept of opportunity identification is fundamental for entrepreneurship. For the purposes of this study, the definition of perception of the level of entrepreneurial opportunities is measured from the response that captures their perception of the benefits from the visit to the fair in order to engage in new ventures. The possible responses resemble the three stages of entrepreneurship, (1) opportunity awareness, (2) opportunity identification, (3) opportunity exploitation (Nicolaou, Shane, Cherkas, & Spector, 2008; Venkataraman, 1997).

[15] Another example, the farmer did not have a specific goal (reason to attend to the fair) but booked an appointment with a bank. These situations describe unexpected outcomes, that are possible through spontaneous actions perform by the farmer i.e. improvisation.

Entrepreneurial Activity

Entrepreneurial activity refers to the new venture creation process. (Mcgee et al., 2009). The entrepreneurial activity is the outcome that comes from the interaction of the individuals with the members of the social network. In other words, it measures the network effectiveness from the undertaken new ventures. The measurement of the entrepreneurial activity identifies four categories of ventures; (1) nothing, meaning the farmer was unable to engage in any new venture with the exhibitors (2) information, when the farmer obtained important information by connecting directly with an exhibitor (3) appointment, refers to the situation when the farmer and the exhibitor established a formal connection (4) deal, that refers to agreements or commercial transactions between a farmer and one of the exhibitors.

Entrepreneurial Environment

The environment is the reflection of the characteristics and circumstances that surround the entrepreneurial process. In this research, the environment can be measure from context-specific[16] variables. Context includes many factors, economical, socio-cultural, political, technological, etc. however this study only refers to the contextual factors that frame the opportunities and outcome in the specific intervention of the social network meaning the fair (Austin et al., 2006). Is important to mark that even when the fairs have similar guidelines and organisational format, there are differences in their characteristics that vary according to the availability of the resources and the size of the social network in the different locations (see table 1). The inclusion of critical elements of context is important for validity and reliability matters. This discussion identifies three environment-related conditions of the fairs (1) resource access, like access to information through workshops or access to contacts, number of exhibitors (2) fair characteristics, like location and fair description and (2) network intensiveness, i.e. (Welter, 2011).

4.3. Data

As an initial step, the information recorded from the surveys was scrutinized to verify the harmony of the responses. The aspects verified are related to measurement, comparability, standardization. Harmonisation encompass consistency, similarity and the standardization (Verma, 2002). Some issues in the information may be structural due to diverse organisational and operational problems e.g. lack of coordination and management, synchronisation of the timing of the survey application, customs, conditions and languages. In the first review, the information had to be corrected in order to reach an acceptable level of comparability among the five fairs.

[16] For the purposes of this research, entrepreneurial environment is measure as a fair-specific

After harmonizing the information, then the instruments were used to measure the concepts of interest. Table 3, shows the correspondences of the concepts, variables and table 4 shows the instruments, items and values.

Table 3. Concept operationalisation

Concept	***Measure***	***Variable(s)***
Entrepreneurial behaviour	Cognitive capacity	New Knowledge, Knowledege type
	Seeking Behaviour	Goal, Goal type
	Alertness	Preparation
	Spontaneous action	Improvisation
Opportunity perception	Perceived opportunities	Opportunity perception
Entrepreneurial activity	Network effectiveness	Type of venture
Entrepreneurial environment	Information Access	Workshop
	Contact access	Number of exhibitors
Network intensiveness	Proportion of contacts	Network intensiveness
Other aspects	Control Variables	Type of farmer
		Sex, Age group

4.3.1. Type of venture

Entrepreneurial activity is measured by the variable "type of venture", which is a multi-categorical variable. This variable is the dependent variable in Model 3 (see section 5.2.3.) and as explained before, this is the reason why the chosen method is multinomial logistic regression. It is important to mark that the response of the questions for the compute of the variable have four items. In order to simplify the analysis and interpretation a binary transformation of the variable was computed (where 0, represented nothing and 1 otherwise), thus the regression model would be a binary logit. However, the logistic regression almost collapses due to quasi-complete separation[17].

Furthermore, it was possible to build a binomial variable for each type of venture e.g. "DEAL" (1 if the farmer achieved to close a deal, 0 otherwise). Nonetheless, the logit regression presents the problem of over dispersion, presumably due to the variability in success probability. This creates low standard errors that leads to falsely deemed significant estimators, and unreliable confidence intervals. So, the conclusions of the models could be biased. Even more, given the limitations of the survey and type of questions, this was not possible to compute an index or continuous variable without manipulating excessively the information and there was not a reliable reference in literature to support this kind of treatment to the information.

[17] The dependent variable is almost perfectly predicted by one variable, in this case network intensiveness (Field, 2013).

Table 4. Variables, instruments and values

Variable	***Instrument***	***Items***	***Value***
New Knowledge	Q45. Did you learn something today at the workshop / conference?	Yes No	1 0
Type of Knowledge	Q51. What did you learn at the fair/event today?	Classification of response (open question)	*See table 5*
Goal Type	Q4. What is your reason for attending?	To meet with financial service providers To get in touch with agro-input suppliers To link to buyers / traders / processors To look for agricultural / business support service providers To attend the workshop / conference	1 2 3 4 5
Goal	Note: If the respondent reply with "no specific reason" then the code for the "Goal" is 0 otherwise is 1, i.e. if the code for "Goal type" is 0 then the code for Goal is 0 too.	No specific reason but did meet with financial service provider No specific reason but did meet with agro-input supplier No specific reason but did meet with buyers / traders / processors No specific reason but did meet with agricultural / business support service providers No specific reason but did meet with agricultural / business support service providers No specific reason but did attend the workshop / conference General interest & none of the above	0 0 0 0 0 0 0
Preparation	Q7. How did you prepare for the event?	Studied the programme Read up on some documents Prepared with colleagues / fellow farmers Got help from a support agency / NGO Brought a copy of my business plan Brought information / samples of my business / products Did not prepare myself- I just came	1 1 1 1 1 1 0
Improvisation	The respondent has to meet two conditions, Respond to any of the questions Q19, Q26, Q34, Q41, and the type of exhibitor had to differ from the one mentioned in Q4.	Non-improviser Improviser	0 1
Opportunity perception	Q52. Choose one of the following statements	The event has provided me with more business opportunities and knowledge than I hoped for The event provided me with some useful information and contacts The event while interesting did not give me a lot of new information The event was a waste of my time	3 2 1 0
Type of venture	Q19, Q26, Q34, Q41. Have you succeeded in doing business with (specific type of) exhibitors?[a]	Closed a deal to get the service Made an appointment to follow-up with them after today Got useful information to make up my mind in the future Not been successful at all	3 2 1 0

Information access	Workshop implementation	No workshop Workshop *(see note of table 1)*	0 1
Contact access	Number of exhibitors	*See table 1*	
Network Intensiveness	Q18, Q25, Q33, Q40. With how many (exhibitors) have, you made contact. [b]	1 2 3 3-5 More than 5	[c]
Type of farmer	Q11. Do you belong to a farmer group?	Yes No	1 0
Gender	Q57. Gender	Male Female	0 1
Age group	Q58. What age group are you in?	< 25 years 25 – 50 > 50 years	0 1 2

a. The value for this variable is assigned by taking the maximum value for questions 19, 26, 34 and 41.
b. This variable is computed using the sum of the responses of the listed questions 18, 25, 33 and 40.
c. Total contacted exhibitors by the farmer divided by the total number of exhibitors of the fair

The information then was computed to code the responses into numerical terms to proceed with the quantitative analysis. Table 5, presents the description of the variables and their code used for the statistical analysis.

Table 5. Variables description and codes

Variable (Label)	***Description***	***Values and code***
New knowledge (KNOWLEDEGE)	Records whether the farmer expressed to have obtained new knowledge.	0 = No-Knowledge 1 = New Knowledge
Type of knowledge (KNW_TYPE)	Records the type of new knowledge the farmer claims to have obtained.	0 = Nothing 1 = Financial 2 = Agriculture & farming 3 = Tech & machinery 4 = Management & other 5 = Networking & entrepreneurship
Goal (GOAL)	Records whether the farmer stated to have a general interest in the fair or had a targeted goal.	0 = No specific goal 1 = Has a specific goal
Goal type (GOAL)	Records the type of goal targeted by the farmer.	0 = No specific goal 1 = Contact Financial exhibitors 2 = Contact Agri-Input exhibitors 3 = Contact Traber-Buyer-Processor exhibitors 4 = Contact Agri-Service Business exhibitors 5 = Get knowledge
Preparation (PREPARATION)	Records whether the farmer had prepared any kind of information, business plan or document of some sort that could influence the outcome of his/her visit to the fair.	0 = No preparation 1 = Preparation

Improvisation (IMPROVISATION)	Records the character of the farmer able to realize spontaneous action. Two conditions should be met; the farmer ability to accomplish any type of outcome, and the outcome should be different from the targeted goal type.	0 = Non-improviser 1 = Improviser
Opportunity perception (OPPORTUNITY)	This variable records the response of the farmer regarding the opportunity perception from visiting the fair.	0 = Limited Access 1 = Information Access 2 = Awareness 3 = Identification
Type of venture (VENTURE)	Records the maximum level of outcome from the interaction with all the different types of exhibitors.	0 = Nothing 1 = Information 2 = Appointment 3 = Deal
Information access (WORKSHOP)	Records whether the fair included the impartation of workshops.	0 = No workshops 1 =Fair with workshops
Contact access (EXHIBITORS)	Number of exhibitors in the fair.	Natural number
Network intensiveness (NETWORKING)	Percentage of exhibitors reached by the farmer in the fair.	Number of contacts made divided by the total number of exhibitors in the event.
Type of farmer (FARMERTYPE)	Records whether the farmer is a member of a farmer organisation or if the farmer is independent.	0 = Independent farmer 1 = Member of organisation
Sex (SEX)	Records the sex of the respondent.	0 = Male 1 = Female
Age group (AGE)	Records the membership to one of the three group ages defined.	0 = Under 25 years old 1 = From 25 to 50 years old 2 = Over 50 years old

4.3.2. Initial findings

In terms of number of exhibitors (see table 1), the agribusiness fair of Bukabu was the biggest fair with 44 exhibitors and the finance fair of Kasesse was the smallest with six exhibitors (from those three are financial exhibitors). According to the model, it would be expected that Bukabu had a higer proportion of farmers that close a deal than Kasesse. As it can be corroborated in table 9, 17% of farmers closed a deal in Bukabu versus a 6% in Kasesse. However, the event of Kasesse had the highest proportion of farmers that engaged in an entrepreneurial activity, 73%. An educated guess is that it can be to its larger proportion of farmers that were members of an organisation 84%.

In the finance fair of Kasesse the farmers were able to connect better i.e. network intensiveness[18] was greater and in terms of appointments had the best level, presumably due to the few number of exhibitors that allows the farmers to connect better with exhibitors, and benefits from the specialization of the fair.

[18] Network intensiveness is an auxiliary variable computed to see the proportion of farmers that were able to connect at least with one exhibitor of the fair.

In general, almost 64% of the total farmer sample were unable to engage with at least one of the three entrepreneurial activities e.g. obtain information, schedule an appointment with an exhibitor contact or close a (business) deal. This could be due to the lack of preparation and low capacity of networking with exhibitors of the farmers.

Table 6. Variable category count and marginal percentages for the total sample (N=503)

Variable	Category	N	Marginal Percentage
VENTURE	Nothing	320	63.6%
	Information	59	11.7%
	Appointment	98	19.5%
	Deal	26	5.2%
WORKSHOP	No Workshop	167	33.2%
	With Workshop	336	66.8%
FARMERTYPE	Independent	250	49.7%
	Member	253	50.3%
GOAL	No-Goal	135	26.8%
	Goal	368	73.2%
PREPARATION	Prepared for the fair	112	22.3%
	Did not Prepared for the fair	391	77.7%
IMPROVISATION	Non-improviser	447	88.9%
	Improviser	56	11.1%
Total		503	

Table 7. Marginal percentages per category per event

Variable	Category	Event					
		Manyara	Chipata	Kasesse	Ngoma	Bukabu	Total
Number of Exhibitors	Financial	5.3%	29.4%	50.0%	4.2%	11.4%	13.6%
	Agro-Input	0.0%	17.6%	0.0%	4.2%	9.1%	7.3%
	Trader-Buyer- Processor	15.8%	11.8%	0.0%	33.3%	4.5%	13.6%
	Agri-Services	21.1%	0.0%	0.0%	0.0%	6.8%	6.4%
	Other*	57.9%	41.2%	50.0%	58.3%	68.2%	59.1%
Farmer type	Independent	77.8%	51.1%	15.8%	29.7%	38.9%	49.7%
	Member	22.2%	48.9%	84.2%	70.3%	61.1%	50.3%
Opportunity perception	Limited access to resources	3.0%	7.1%	0.0%	3.1%	22.2%	5.0%
	Information access	71.9%	52.5%	11.6%	62.5%	30.6%	50.9%
	Opportunity awareness	25.1%	0.0%	0.0%	0.0%	47.2%	11.7%
	Opportunity Identification	0.0%	40.4%	88.4%	34.4%	0.0%	32.4%
Type of venture	Nothing	88.6%	56.0%	27.4%	68.8%	63.9%	63.6%
	Information	3.0%	9.2%	33.7%	12.5%	2.8%	11.7%
	Appointment	3.0%	32.6%	32.6%	15.6%	16.7%	19.5%
	Deal	5.4%	2.1%	6.3%	3.1%	16.7%	5.2%
Satisfaction	Poor	0.0%	1.4%	0.0%	0.0%	0.0%	.4%
	Average	19.8%	10.6%	3.2%	0.0%	5.6%	10.5%
	Satisfactory	37.1%	44.7%	48.4%	18.8%	50.0%	40.0%
	Good	43.1%	43.3%	48.4%	81.3%	44.4%	49.1%
Network intensiveness	No-networking	88.6%	58.2%	27.4%	68.8%	75.0%	65.0%
	Networking	11.4%	41.8%	72.6%	31.3%	25.0%	35.0%

* Refers to non-governmental organisations, public agencies and/or knowledge institutions.

4.4. Methods of Analysis

As noted before, this research explores the factors of entrepreneurship and social networks that encourage opportunity perception in order to achieve a higher level of entrepreneurial activity, i.e. the objective is to know whether entrepreneurial behaviour, opportunity perception, network intensiveness and entrepreneurial environment are associated to the level of entrepreneurial activity (network effectiveness). Five hypotheses have been stated (see section 3.6) to assess the analysis of the relationship between the concepts and variables described in the conceptual framework (see figure 2). Table 8, presents the hypotheses, variables and methods used to test them. For hypotheses 3, 4 and 5, it was necessary to construct a regression model for each, Model 1, Model 2 and Model 3, respectively.

The specification of Models 2 and 3 were obtained following the process shown in figure 3. As it can be observed, the process is circular and includes loglinear analysis[19] the final specified models are selected according to the robustness of the model fit[20].

In the case of Model 1, the dependent variable is network intensiveness that is a continuous variable therefore the method used is multiple linear regression. Models 2a, 2b and 3, the dependent variables are categorical with more than two categories; therefore, multinomial logistic regression[21] is the preferred method to perform the analysis of the models derived from the loglinear analysis.

In the specific case of Model 3, the dependent variable was transformed to make it binomial thus; the regression model would be a binary logit. However, the logistic regression almost collapses due to quasi-complete separation (see section 4.3.1.). In order to solve this, more data needs to be collected or the model has to be simplified. To gather more data was unfeasible due to human and time constraints. Therefore, the alternative is to simplify the model, which would not cover the concepts described in the conceptual framework nor helpful in testing the hypothesis 1 and 5. In other words, it was necessary to include the variables of entrepreneurial behaviour, entrepreneurial environment, opportunity perception and network intensiveness as part of the model formulation.

The multinomial regression model is the method that allows obtaining valid statistical results and the interpretation of the results are similar to a binary model, since the multinomial results of the estimates are calculated in contrast with a reference category. In this kind of regressions, the outcome variable (opportunity perception or type of venture) allows a series of comparisons among the categories of each variable. For instance, type of venture has four categories (see table 5, in previous section) thus it can be further explored for which level of entrepreneurial activity; the type of farmer is significant. In addition, odds ratio were calculated to facilitate the interpretation of the effect size of the coefficients for the logistic regressions.

The analysis for the specification of the logistic regression models, started with the inclusion of all the variables listed in the concept operationalisation (see table 3) as the initial model and concluded until a parsimonious[22] model was found. The regressions (logistic and linear) were performed with the

[19] All variables were modelled individually without adjusting for any variable.
[20] R^2 calculated following Nagekkerke's amendment on Cox and Snell's R^2.
[21] Multinomial logistic regression (or logit regression) is used when the dependent variable is nominal with more than two categories. Multinomial logit regression allows the predicting categorical outcomes from categorical and continuous predictors assuming a linear relation. Logistic regression models predict the probability of an event of occurring for a given case (Field, 2013).
[22] Parsimony refers to the idea that simpler explanations of a phenomenon are preferable to complex ones (Field, 2013).

robust method of bootstrap[23] for the main effects[24]. Cramer's V[25] was used to measure the strength of association between variables when considered convenient for research hypotheses testing.

For method bias, diagnostic statistics were conducted to check the assumptions for multivariate and multinomial logistic regression. No evidence of complete separation was found, neither multicollinearity problems, and there was no case (respondent) that might be influencing the logistic regressions model since no value for Cook's distance was above 1. There is no evidence of overdispersion[26]. Since Bootstrapping is a robust method, no tests were performed to check residuals independence and heteroscedasticity. All analyses were conducted using IBM SPSS Statistics 22.0.Figure 3. Statistical analysis process for Models 2a, 2b, and 3.

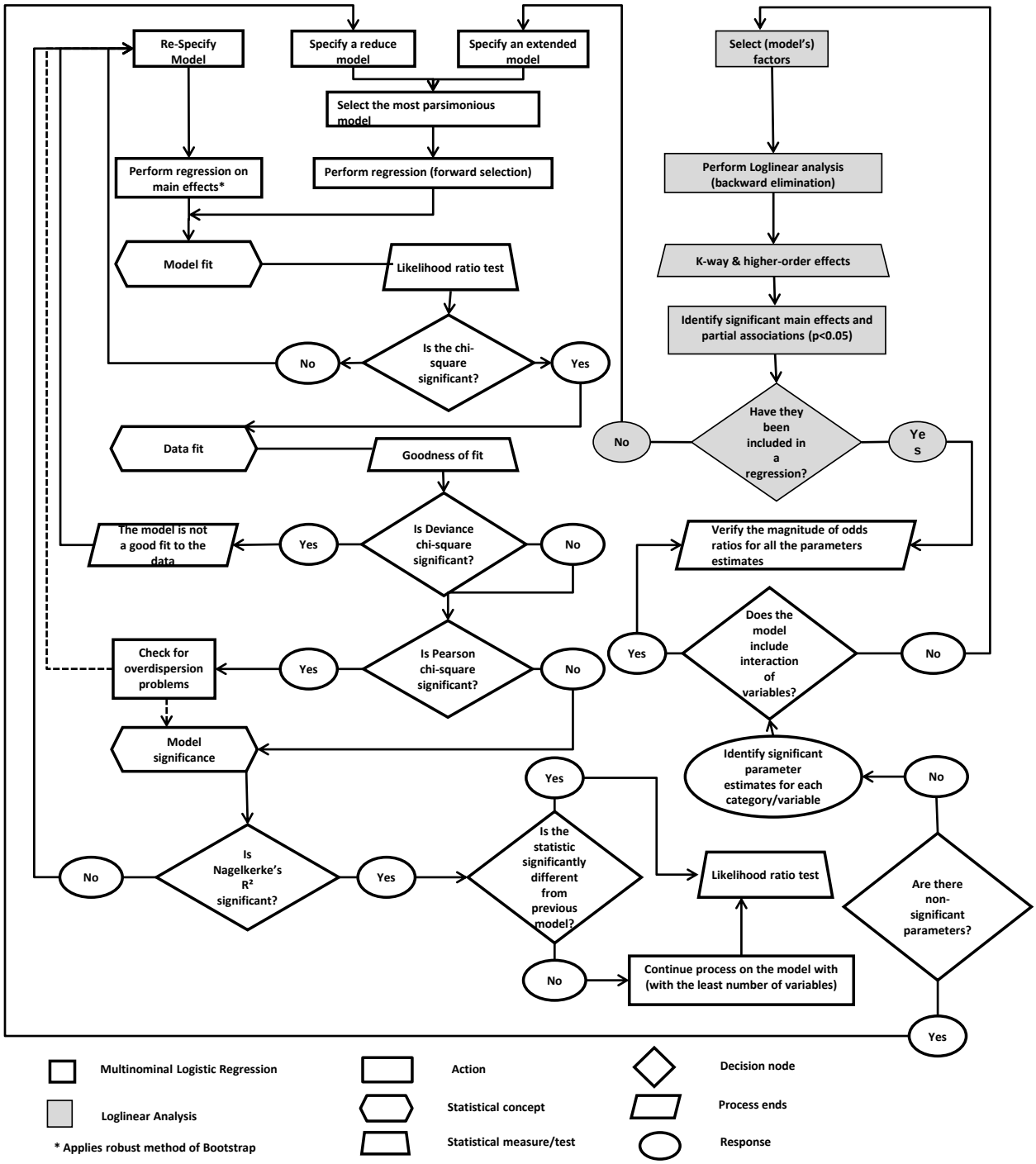
Table 8. Hypotheses and methods of analysis

Hypothesis	Dependent variable	Independent variable(s)	Method
H1	Type of venture	Opportunity perception	Pearson chi-square test (odds ratio)
H3	Network intensiveness	Number of exhibitors, workshop	Linear regression (Model 1)
H2	Opportunity perception	Farmer type, goal type, knowledge type, preparation, improvisation.	Logistic regression (Model 2a)
H4	Opportunity perception	Farmer type, goal type, knowledge type, preparation, improvisation and network intensiveness	Logistic regression (Model 2b)
H5	Type of venture	Opportunity perception, farmer type, goal type, knowledge type, preparation, improvisation and network intensiveness.	Logistic regression (Model 3

H1: The opportunity perception is positively correlated to the entrepreneurial activity of an entrepreneur.
H2: Entrepreneurial behaviour has a positive effect on opportunity perception.
H3: The entrepreneurial environment characteristics (completely) predict network intensiveness.
H4: Network intensiveness has a positive effect on farmer's opportunity perception.
H5: Network intensiveness has a significant effect on entrepreneurial activity as large as entrepreneurial behaviour, entrepreneurial environment and opportunity perception.

[23] Simple sampling method, 1000 number of samples, confidence interval level 95%, Bias-corrected and accelerated (Bca). The parameter estimates using bootstrapping may be slightly different every time the method is applied due to the variation of the taken random samples by the method (Field, 2013).
[24] Even when the loglinear analysis indicates that the interaction of variables is significant (see Annex 3), the interpretation of the parameters estimators for those interactions is complex thus the results may be confusing and misleading.
[25] For the analysis of the relationship between two variables with two categories the association measure used are Pearson's chi square test. However, this method is not useful in the case when one of the categorical variables have more than two categories (Field, 2013).
[26] Overdispersion reduces the standard errors that are used to test the significance and construct the confidence intervals of the parameter estimates for individual predictors in the model.

Figure 4. Statistical Analysis Process



4.5. Limitations and alternative methods.

The concept of context is very important for this research. The database gather all respondent from different fairs and logit does not account for the differences that may arise due to the context in each location. Therefore, a proper method to analyse the data is through multilevel modelling[27]. Were the location of the event is the contextual variable. This method allows comparing the difference among fairs and the variables that explain the fairs differences in terms of entrepreneurial activity. Nevertheless, IBM SPSS cannot compute this kind of models when the dependent variable is categorical. Consequently, multinomial logistic regression was the best alternative. Still, despite that, the database clusters the farmers from the five events; this does not affect the validity of the results in the model. The likelihood for the variable that captures the location of the fair (event) is not significant when included in the model, which means that the location of the fair does not contribute to predict the dependent variable.

[27] The analysis with multilevel models enables to obtain statistically efficient estimates of regression coefficients, correct and 'conservative' standard errors, confidence intervals and significance tests than those obtain through traditional regressions that ignore the presence of clustering.

5. Results

5.1. Correlations

In other to test the (Hypothesis 1) correlation of opportunity perception and entrepreneurial activity level, I used Pearson chi-square test. The result shows that there was a significant association between the opportunity perception and the entrepreneurial activity level $X_2(9) = 85.22$, $p < .001$, however 4 cells (25%) have expected count less than 5. The minimum expected count is 1.29. Cramer's V value is 0.238, $p < .001$. The association is significant but the degree of association is not large[28]. Table 9 is the contingency table that presents the counts per category; the counts are used to calculate odds. Based on the odds ratio, the odds of a farmer engaging in some entrepreneurial activity (Information, appointment or deal) were 1.2 times higher if they identified an opportunity during the fair.

Is important to mark that the correlation indicates the presence of a predictive relationship opportunity perception and the probabilistic independence between the variables. Theoretically, the perception of opportunities is necessary for entrepreneurship. Thus, if the farmer does not perceive opportunities then him/her will take no entrepreneurial action. To further explore a causal relationship, opportunity perception is included in Model 3, where as expected, opportunity perception is not the only predictor for entrepreneurial activity in the fairs.

Table 9. Contingency table for the correlation between type of venture and opportunity perception

			Opportunity Perception				
			Limited access	Information Access	Awareness	Identification	Total
Type of venture	Nothing	Count	18	191	43	68	320
		Expected Count	15.9	162.9	37.5	103.7	320.0
		% of Total	3.6%	38.0%	8.5%	13.5%	63.6%
	Information	Count	3	15	1	40	59
		Expected Count	2.9	30.0	6.9	19.1	59.0
		% of Total	.6%	3.0%	.2%	8.0%	11.7%
	Appointment	Count	4	42	5	47	98
		Expected Count	4.9	49.9	11.5	31.8	98.0
		% of Total	.8%	8.3%	1.0%	9.3%	19.5%
	Deal	Count	0	8	10	8	26
		Expected Count	1.3	13.2	3.0	8.4	26.0
		% of Total	0.0%	1.6%	2.0%	1.6%	5.2%
	Total	Count	25	256	59	163	503
		Expected Count	25.0	256.0	59.0	163.0	503.0
		% of Total	5.0%	50.9%	11.7%	32.4%	100.0%

Odds of identification 0.479, Odds of engaging in entrepreneurial activity 0.572, Odds ratio 1.192.

[28] Cramer's V is an adequate effect size in the sense that it is constrained to have values between 0 (no association) and 1 (complete association) (Field, 2013).

5.2. Regressions

5.2.1. Model 1

Model 1 is a multiple linear regression for that explores the relationship of the factors of the entrepreneurial environment with network intensiveness. The regression equation is as follows:

$$\text{Network intensiveness} = b_0 + b_1 \text{Number of exhibitors} + b_2 \text{workshop} + \text{error}$$

Where workshop is a dichotomous variable that captures if the fair had a workshop and the number of exhibitors is the continuous variable labelled as EXHIBITORS. Both variables are significant (their p-values are lower than the critic limit 0.001). However, the explanatory power of the model is low since the R-squared value 0.289 is below the acceptable value of 0.3-0.4 for social sciences. To check for linearity problem that could cause the low value of the R-squared, I used the plot of standardized residuals against predicted values (see figure 4). The graph shows heteroscedasticity but there was no evidence of non-linearity. The problem of heteroscedasticity is avoided by the use of bootstrapping for the estimation of the coefficients and confidence intervals.

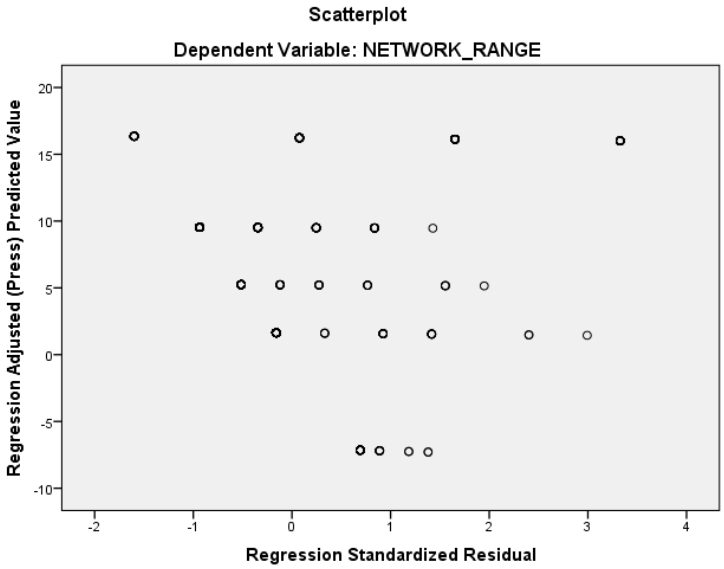
The results show (see table 10) that the entrepreneurial environment influences network intensiveness, however network intensiveness does not captures all the effect of entrepreneurial environment. This proves that network intensiveness does not accounts for the hole effect of entrepreneurial environment, which holds conceptually and empirically.

Table 10. Regression outcome for Model 1.

NETWORK[a]	**b**	**Se B**	**β**	***P***
Constant	13.252 (10.722, 15.842)	1.279		0.001
WORKSHOP	6.655 (5.187, 8.011)	0.717	0.261	0.001
EXHIBITORS	-.612 (-0.733, -0.487)	0.063	-0.458	0.001

Note: $R^2 = 0.289$, Sum of squares Regression 20,917.487, F-statistic (2) 101.568, p = 0.000.
a. Bootstrap results are based on 1000 bootstrap samples.

Figure 5. Scatter plot graph of regression standardized residuals and regression adjusted predicted values



5.2.2. Model 2

Models 2a explores the entrepreneurial behaviour variables that boost opportunity perception. In addition to the entrepreneurial behaviour variables, Model 2b includes network intensiveness as an independent explanatory variable of opportunity perception. With this model, hypotheses 2 and 4 are tested. As noted earlier, the models are the outcome of the process described in figure 3. Equation 2 and 3, describe the linear predictor function to predict opportunity perception for Model 2a and 2b, respectively.

Model 2a

$$Opportunity\ perception = b_0 + b_1 Farmer\ type + b_2 Goal\ type + + b_3 Improvisation + b_4 Preparation + b_5 Knowledge\ type + error$$

Model2b

$$Opportunity\ perception = b_0 + b_1 Farmer\ type + b_2 Goal\ type + + b_3 Improvisation + b_4 Preparation + b_5 Knowledge\ type + b_6 Network\ intensiveness + error$$

Table 11, shows the results of the likelihood ratio tests and these can be used to ascertain the significance of predictors to the model. Is important to note that for both models the entrepreneurial

behaviour predictors are significant at a confidence level of 99%, except for improvisation, that is only significant at a confidence level of 95%.

Table 11. Likelihood ratio tests for models 2a and 2b

Model	**Model 2a**				**Model 2b**			
OPPORTUNITY =	-LL2	chi-square	df	sig.	-LL2	chi-square	df	sig.
Intercept	403,014[a]	0.000	0		480,861[a]	0.000	0	
FARMERTYPE	421.622	18.608	3	.000	498.123	17.262	3	.001
GOALTYPE	459.157	56.143	15	.000	525.895	45.035	15	.000
IMPROVISATION	410.964	7.950	3	.047	490.311	9.450	3	.024
PREPARATION	472.840	69.825	3	.000	549.724	68.863	3	.000
KNW_TYPE	483.334	80.319	15	.000	546.297	65.436	15	.000
NETWORKING					487.534	6.673	3	.083
Model -2 Log Likelihood	403.014	347.628	39	.000	480.861	354.300	42	.000
Pearson chi-square[b]		322.164	315	.378		440.578	483	.917
Pseudo R-square Cox and Snell		.499				.506		
Pseudo R-square Nagelkerke		.560				.567		

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.
b. The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduce model. The reduce model is formed by omitting an effect from the final model. The null hypothesis is that all the parameters of that effect are 0.

The difference between the models allows accessing the significance of network intensiveness relationship with opportunity perception. As seen in Model 2b, networking is not significant at a confidence level of 95% ($p = .08 > 0.05$). The statistics test for goodness of fit of the models are not significant, which means that both models are a good fit to the data. Both models are acceptable models to predict opportunity perception. Even when NETOWORKING is not significant, it is important to calculate the likelihood-ratio test to prove the hypothesis null that there is no statistical difference between the models[29]. The difference between the model -2 Log Likelihood values is 77.84 and the difference in the degrees of freedom is 3. The critical value in the chi-square distribution with 3 degrees of freedom at an alpha level of 0.05 is 7.81. The value 77.84 is greater than the critical value; therefore, there is no statistically significant difference between the models. This result confirms that the inclusion of network intensiveness is not significant to predict opportunity perception.

Since, Model 2a does not include the predictor NETWORKING, it is appropriate analyse the coefficient estimators of the logit regression presented in table 12. As explained before, the variable OPPORTUNITY has four different categories, being “limited access” the reference category for the

[29] To be able to compare the parameter estimates of the logit regressions requires the test of the hypothesis that the differences are the result of variance differences before testing whether the observed differences are attributable to actual parameter differences (Louviere, 1993).

regression. The variable that best predicts the category of opportunity perception is FARMERTYPE, this means that whether the farmer is a member of a farmers' organisation significantly predicted that the opportunity perception is different from those from the category in "limited access" i.e. no change in the opportunity perception from visiting the fair. The odds of a farmer member of an organisation of perceiving information access are 1/.376 = 2.7, awareness 1/.151= 6.6 and identification 1/.170 = 5.88, times more than for an independent farmer.

GOALTYPE was a significant predictor for opportunity perception in the case where the goal of the farmer was to connect with Trader-Buyer, Processor type of exhibitors. Nevertheless, the odds ratio values are close to zero, which means the odds do not differ among categories. Therefore, this result is inconclusive.

IMPROVISATION, is a significant predictor only for the "information access" category of opportunity perception b=1.066, *p*= .039. The odds tells that the IMPROVISATION changes from non-improviser (0) to improviser (1) the change in the odds of perceiving information access compared to "limited access" is 2.9 times.

The individual parameters of PREPARATION are significant for the categories of "awareness", *p* = .006 and "identification", p = .002. As preparation changes from "prepared for the fair" to "no preparation" the change in the odds of a farmer of stating "awareness" compared to "limited access" is 5.3 times. In other words, the odds of a prepared farmer getting awareness of opportunities during the fair compared to perceiving limited access to resources are 5.3 times more than for the unprepared farmer. However, the odds of a farmer that identified an opportunity differ greatly from those that stated "limited access", if the farmer attended unprepared to the fair the odds of stating to have identified an opportunity were 1/3.681E-09 = 2.717E+08 times more than those that attended prepared to the fair.

The significance of the bootstrap for the predictor of knowledge type (KNW_TYPE) was not significant for the "information access" and "awareness" categories of OPPORTUNITY.

When the farmer did not gain new knowledge (Knowledge type "financial") the significance was *p*=.052 at a significance level of 95%. Despite this, when checking the odds rations the farmers that learned new knowledge about financial topics were almost 8.5 times more likely to identify opportunities than those that learned about "networking and entrepreneurship".

Table 12. Coefficient estimates and ratio odds for Regression Model 2a.

OPPORTUNITY (Model 2a)				95% CI for Odds Ratio		
VARIABLE (Reference category)		b[b]	s.e.[b]	Lower bound	Odds ratio	Upper bound
Information Access						
Intercept		1.836	9.271			
FARMERTYPE (organised farmer)	Independent	-.979**	1.009	.139	.376	1.018
GOALTYPE (Knowledge)	No goal	-1.186	8.400	.041	.305	2.252
	Financial	-.035	8.757	.113	.966	8.280
	Agri-input	-1.622	8.598	.025	.197	1.532
	Trader-Buyer-Process	18.421*	8.872	9.151E+06	1.000E+08	1.093E+09
	Agri-service	-1.264	8.844	.030	.282	2.666
IMPROVISATION (improviser)	Non-improviser	1.066*	1.469	.901	2.903	9.351
PREPARATION (No preparation)	Prepared for the fair	-.152	.774	.307	.859	2.406
KNW_TYPE (Networking & entrepreneurship)	Nothing	.813	4.218	.496	2.254	10.245
	Financial	1.415	6.932	.661	4.116	25.627
	Agriculture & Farming	1.9543	4.31	1.582	7.058	31.496
	Tech & Machinery	2.278	9.119	1.017	9.755	93.562
	Management & Other	.219	4.112	.281	1.245	5.512
Awareness						
Intercept		1.375	10.591			
FARMERTYPE (organised farmer)	Independent	-1.887***	1.075	.048	.151	.482
GOALTYPE (Knowledge)	No goal	-.069	9.591	.096	.933	9.074
	Financial	-.111	9.921	.071	.895	11.353
	Agri-input	-.442	9.809	.059	.643	7.021
	Trader-Buyer-Process	18.232**	12.786	3.257E+06	8.278E+07	2.104E+09
	Agri-service	-.133	9.988	.067	.875	11.391
IMPROVISATION (improviser)	Non-improviser	-.137	1.546	.239	.872	3.182
PREPARATION (No preparation)	Prepared for the fair	1.663**	.866	1.639	5.275	16.982
KNW_TYPE (Networking & entrepreneurship)	Nothing	-.808	5.860	.063	.446	3.143
	Financial	.266	7.090	.168	1.304	10.151
	Agriculture & Farming	.930	4.575	.486	2.536	13.224
	Tech & Machinery	1.337	9.191	.338	3.806	42.831
	Management & Other	-.1051	4.456	.060	.350	2.052
Identification						
Intercept		.931	10.627			
FARMERTYPE (organised farmer)	Independent	-1.772***	1.031	.059	.170	.490
GOALTYPE (Knowledge)	No goal	.381	9.880	.122	1.464	17.508
	Financial	2.251	10.226	.734	9.500	122.991
	Agri-input	-.364	10.064	.054	.695	8.899
	Trader-Buyer-Process	17.204	12.751	2.961E+07	2.961E+07	2.961E+07
	Agri-service	.284	10.252	.090	1.328	19.6185
IMPROVISATION (improviser)	Non-improviser	.727	1.509	.589	2.069	7.267
PREPARATION (No preparation)	Prepared for the fair	-19.420**	1.169	0.000	3.681E-09	.c
KNW_TYPE (Networking & entrepreneurship)	Nothing	-2.268	6.816	.014	.103	.784
	Financial	2.133	6.912	1.285	8.443	55.460
	Agriculture & Farming	.787	4.290	.440	2.196	10.954
	Tech & Machinery	2.183	9.124	.848	8.877	92.970
	Management & Other	-.472	4.063	.129	.624	3.013

Note: R^2 = 0.499 (Cox & Snell), 0.56 (Nagelkerke). Model X^2 (39) = 347.628, p<0.001. *p<0.05, **p<0.01, ***p<0.001 based on (2-tailed) significances from Bootstrap. a. The reference category is: Limited access. b. Parameter estimates and standard error calculated from Bootstrap results are based on 1000 bootstrap samples. c. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

5.2.3. Model 3

The conceptual framework indicates that entrepreneurial activity depends on entrepreneurial behaviour, entrepreneurial environment, network intensiveness and opportunity perception. Considering the result from the analysis of the correlation of entrepreneurial activity level and opportunity perception, it is clear that the entrepreneurial activity is not explained only by the opportunities that the farmer is able to detect during the fair. Then, it is necessary to construct a robust and parsimonious model to assess the hypothesis that test the relevance and critical weight of networks in entrepreneurial activity or as stated before "Network intensiveness has a significant effect on entrepreneurial activity as large as entrepreneurial behaviour, entrepreneurial environment and opportunity perception". Equation 4 describes the linear predictor function for opportunity perception of Model 3. The regression model was specified after assessing the loglinear analysis (Annex 1).

Model 3

$$Type\ of\ venture = b_0 + b_9 Network\ intensiveness + b_7 Number\ of\ exhibitors + b_8 workshop + b_2 Farmer\ type + b_3 Goal\ type + b_5 Preparation + b_6 Knowledge\ type + b_4 Improvisation + b_1 Opportunity\ perception + error$$

In this logistic regression model the dependent variable is "entrepreneurial activity level" (TYPE OF VENTURE, see table 3), the first predictor is NETWORKING, then the block of entrepreneurial environment variables is conform by EXHIBITORS and WORKSHOP, followed by the block of entrepreneurial behaviour predictors, FARMERTYPE, GOALTYPE, PREPARATION, KNOWLEDGE, and IMPROVISATION, finally the model includes OPPORTUNITY.

Table 13, shows the results of the likelihood ratio tests for the predictors that shows the significance of predictors to the model. All the predictors are significant at a confidence level of 95% except for EXHIBITORS, PREPARATION, IMPROVISATION, and OPPORTUNITY. From the contents of Table 14 , the bootstrap parameter estimates and odds ratios, it is possible to review the predictors for each category of the entrepreneurial activity.

Table 13. Likelihood ratio tests for model 3.

Model		Model 3		
TYPE OF VENTURE =	-LL2	chi-square	df	sig.
Intercept	241,571[a]	0.000	0	
NETWORKING	553.587	312.016	3	.000
EXHIBITORS	249.147	7.576	3	.056
WORK_SHOP	257.881	16.310	3	.001
FARMERTYPE	252.124	10.553	3	.014
GOAL_TYPE	270.773	29.202	15	.015
PREPARATION	243.613	2.042	3	.564
KNW_TYPE	273.981	32.410	15	.006
IMPROVISATION	245.067	3.496	3	.321
OPPORTUNITY	253.080	11.509	9	.242
Model -2 Log Likelihood	241.571	683.008	57	.000
Pearson chi-square[b]		268.686	759	1.000
Pseudo R-square Cox and Snell		.743		
Pseudo R-square Nagelkerke		.856		

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.
b. The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduce model. The reduce model is formed by omitting an effect from the final model. The null hypothesis is that all the parameters of that effect are 0.

5.2.3.1. Outcome category: Information

The intercept is significant, this means that the logit is different from zero for "information" category, this means that at least the probability of a farmer engaging in entrepreneurial activity where he/she obtains information is higher than 5%.

The implementation of a workshop during the fair significantly predicted whether the farmer gathered information from the interaction with the exhibitors of the fair, b = -4.5, *p*=.019. This is the effect of fairs with a workshop compared to fairs without a workshop. The odds ration shows that as WORKSHOP changes from "No workshop" (0) to "fair with workshop"(1) the change in the odds of the outcome being information compare to nothing is 0.011. In other words, the odds of a farmer obtaining information from exhibitors compared to nothing are 1/0.011=90.9 times more than for a farmer that visited a fair with a workshop.

Whether the farmer is a member of a farmer organisation significantly predicted whether the farmer got information from the interaction with the exhibitors during the fair, b = -2.65 *p* = .004. The odds ratio indicates that the as the farmer type changes from "independent famer" to "member of an organisation" the change in the odds of getting information compare to nothing is 0.07. This means

the outcome “information” is more likely than “nothing” 1/0.07= 14.3 times more for farmers that are members of an organisation.

The type of goal targeted by the farmer significantly predicted whether the farmer achieved to engage in entrepreneurial activities to get information. The estimators for farmers that had aimed to connect with financial, agri-input and trader-buyer-processor type of exhibitors are significant compare to those that had the objective to learn and obtain knowledge. The coefficient estimator for agri-service is not significant but it does have the effect size from the other type of goals. It seems the non-significance stems from a relatively higher standard error. The farmer that attended without a specific goal (“nothing” category), the b = 16.67, p =.001, which is significant. As the table indicates, the reference category is the “knowledge”. Thus, the odds ratios indicates how as the goal type changes from “to attend the workshop / conference” to the others categories so do the odds of the entrepreneurial activity being “information”. The reciprocal of the odds ratios values, indicates the odds of a farmer achieving to get information from the interaction with the exhibitors compared to “nothing”. The result of calculating the reciprocals of the odds ratios are proximally zero, this means that while the odds do not vary much, goal type is a good predictor. Another important remark is that these results may indicate that what is relevant is whether the farmer had a specific reason to attend to the fair or not.

OPPORTUNITY, records the response of the farmer regarding the opportunity perception from visiting the fair. The estimator was significant in the case when the farmer got useful information. The odds of a farmer that stated “the event was a waste of my time” to get “information” compared to “nothing” are 26 times more than when the farmer responded that the event provided more business opportunities than expected.

5.2.3.2. Outcome category: Appointment

Whether the fair included the impartation of workshops significantly predicted whether the level of outcome from the interaction with all the different types of exhibitors was an appointment or nothing. The odds ration shows that as WORKSHOP changes from “No workshop” (0) to “fair with workshop” (1) the change in the odds of the outcome being information compare to nothing is 0.002. In other words, the odds of a farmer booking an appointment from exhibitors compared to nothing are 1/0.002=500 times more than for a farmer that visited a fair with a workshop. These odds are 5.5 times larger than for farmers that only got information to make up my mind in the future.

Whether the farmer is a member of a farmer organisation significantly predicted whether the farmer got an appointment from the interaction with the exhibitors during the fair, b = -2.78 p = .004. The odds ratio indicates that the as the farmer type changes from “independent famer” to “member of an

organisation" the change in the odds of getting an appointment compare to nothing is .021. This means the outcome "information" is more likely than "nothing" 1/0.021= 48 times more for farmers that are members of an organisation.

The predictor that records the response of the farmer regarding the opportunity perception from visiting the fair (OPPORTUNITY), significantly predicted whether the farmer was able to make an appointment with an exhibitor compared to the farmers that achieved nothing[30] with respect to the farmers that were able to identify business opportunities b = 2.98, *p* = .014. The odds ratio shows that farmers that did not identified any business opportunities compared to the farmers that got nothing, get an appointment 3 times more than the farmers that claim to have identified business opportunities during the fair.

5.2.3.3. Outcome category: Deal

The percentage of exhibitors reached by the farmer in the fair significantly predicted whether the farmer got a deal or nothing, b = 2.72, *p* = .002. The odds ration shows that as this variable increases so as NETWORKING show one more unit, the change in the odds of getting a deal (rather than nothing) is 16 times. In short, the farmer is more likely to get a deal, than "nothing" if he/she make contact with as many exhibitors possible present in the fair.

EXHIBITORS, is the predictor that captures the number or exhibitors present in the event. This variable significantly predicts whether the farmer could make a deal or nothing, b =0.135, *p* = 0.15. The odds specifies that as the number of exhibitors increases one unit, the change in the odds of closing a deal with an exhibitor rather than nothing is 1.14. This means, that the farmer is more likely to close deals when the fair has a higher number of exhibitors, i.e. the bigger the size of the event, greater number of deals.

Whether the fair included the impartation of workshops significantly predicted the outcome from the interaction with all the different types of exhibitors was a deal or nothing. The parameter estimator is b = -3.45, *p* = 0.016. The odds ration shows that as WORKSHOP changes from "No workshop" (0) to "fair with workshop" (1), the change in the odds of the outcome being deal compare to nothing is 0.032. In other words, the odds of a farmer closing a deal with exhibitors compared to nothing are 1/0.032=31 times more than for a farmer that visited a fair with a workshop. These odds are smaller than for the case when the farmer got an appointment, which mean that the size effect of this predictor is lower for the deal category of entrepreneurial activity.

[30] The farmer stated "the event was a waste of my time".

Whether the farmer is a member of a farmer organisation significantly predicted whether the farmer closed a deal from the interaction with the exhibitors during the fair, b = -3.32 *p* = .005. The odds ratio indicates that the as the farmer type changes from "independent famer" to "member of an organisation" the change in the odds of closing a deal compare to nothing is .036. This means the outcome "deal" is more likely than "nothing" 1/0.036= 27.6 times more for farmers that are members of an organisation than for independent farmers.

The type of knowledge obtained by the farmer significantly predicted whether the farmer engaged in new ventures, i.e. closing a deal with an exhibitor. The coefficient estimator for financial topics and the farmers that did not obtain new knowledge are not significant. The estimators for farmers that learned from "Agriculture & Farming", "Tech & Machinery", "Management & Other" topics are significant compare to those that got new knowledge on "Networking & entrepreneurship". Furthermore, the odds ratios indicates how as type of knowledge changes from "Networking & entrepreneurship" to the others categories, so does the likelihood of the entrepreneurial activity being "deal". The reciprocal of the odds ratios values, indicates the odds of a farmer achieving to get a deal from the interaction with the exhibitors compared to "nothing". The result of calculating the reciprocals of the odds ratios are proximally zero, this means that while the odds do not vary much, knowledge type is a good predictor. Another important remark is that these results may indicate that what is relevant is whether the farmer obtained new knowledge in order to improve its probabilities to close a deal during the fair.

Table 14. Coefficient estimates and ratio odds for Regression Model 3.

Entrepreneurial Activity level (Model 3)				95% CI for Odds Ratio		
VARIABLE (Reference category)		b[b]	s.e.[b]	Lower bound	Odds ratio	Upper bound
Information						
Intercept		-26.983***	106.202			
NETWORKING		2.751	32.170	8.040	15.666	30.525
EXHIBITORS		.036	1.174	.978	1.036	1.099
WORKSHOP(workshop implementation)	No workshop	-4.516*	75.618	.001	.011	.108
FARMERTYPE (Independent farmer)	Independent	-2.657**	43.061	.022	.070	.219
GOALTYPE (Knowledge)	No goal	16.666***	34.488	1.503E+06	1.729E+07	1.989E+08
	Financial	10.626**	81.258	3.570E+03	4.120E+04	4.756E+05
	Agri-input	14.631***	30.697	2.290E+05	2.261E+06	2.232E+07
	Trader-Buyer-Process	13.449*	79.082	1.082E+03	6.929E+05	4.436E+08
	Agri-service	11.981	111.598	1.598E+05	1.598E+05	1.598E+05
PREPARATION (No preparation)	Prepared for the fair	1.830	40.852	1.104	6.233	35.193
KNW_TYPE(Networking & entrepreneurship)	Nothing	3.840	70.912	4.179	46.535	518.227
	Financial	-.276	103.424	.077	.759	7.513
	Agriculture & Farming	3.669	68.348	4.798	39.216	320.556
	Tech & Machinery	4.633	74.119	10.527	102.781	1003.533
	Management & Other	5.048	70.532	19.016	155.658	1274.166
IMPROVISATION (improviser)	Non-improviser	2.255	72.429	1.730	9.532	52.522
OPPORTUNITY (identification)	limited access	3.255*	49.607	3.443	25.927	195.250

	Information access	.636	32.713	.510	1.890	6.998
	Awareness	-.434	47.174	.064	.648	6.550

VARIABLE (Reference category)		b[b]	s.e.[b]	Lower bound	Odds ratio	Upper bound
Appointment						
Intercept		-24.655	2341.935			
NETWORKING		2.727	.340	7.848	15.289	29.788
EXHIBITORS		.000	.025	.951	1.000	1.051
WORKSHOP(workshop implementation)	No workshop	-6.225*	76.261	.000	.002	.017
FARMERTYPE (Independent farmer)	Independent	-2.785**	43.052	.021	.062	.183
GOALTYPE(Knowledge)	No goal	18.072	31.261	0.000	7.059E+07	.c
	Financial	11.233	82.169	0.000	7.556E+04	.c
	Agri-input	15.333	33.160	0.000	4.562E+06	.c
	Trader-Buyer-Process	13.327	77.668	0.000	6.133E+05	.c
	Agri-service	12.871	113.572	0.000	3.888E+05	.c
PREPARATION (No preparation)	Prepared for the fair	1.609	37.681	1.136	4.998	21.997
KNW_TYPE(Networking & entrepreneurship)	Nothing	1.510	69.466	.601	4.526	34.114
	Financial	-2.723	102.792	.009	.066	.488
	Agriculture & Farming	2.165	67.796	1.576	8.711	48.157
	Tech & Machinery	3.231	73.186	3.897	25.316	164.446
	Management & Other	3.313	70.009	4.868	27.467	154.974
IMPROVISATION (improviser)	Non-improviser	2.571	72.498	2.546	13.073	67.141
OPPORTUNITY (identification)	limited access	2.988*	47.594	3.008	19.841	130.862
	Information access	1.574	32.670	1.394	4.826	16.704
	Awareness	1.826	44.967	.917	6.210	42.059
Deal						
Intercept		-29.612	117.842			
NETWORKING		2.776**	32.173	8.240	16.054	31.279
EXHIBITORS		.135*	1.376	1.071	1.145	1.224
WORKSHOP(workshop implementation)	No workshop	-3.454*	70.492	.003	.032	.307
FARMERTYPE (Independent farmer)	Independent	-3.317**	46.903	.010	.036	.131
GOALTYPE (Knowledge)	No goal	15.720	32.794	0.000	6.714E+06	.c
	Financial	9.140	82.363	0.000	9.317E+03	.c
	Agri-input	11.620	39.861	0.000	1.113E+05	.c
	Trader-Buyer-Process	-7.561	77.524	.001	5.204E-04	.001
	Agri-service	10.603	118.964	0.000	4.026E+04	.c
PREPARATION (No preparation)	Prepared for the fair	.694	40.657	.359	2.002	11.169
KNW_TYPE(Networking & entrepreneurship)	Nothing	-12.628	73.358	0.000	3.279E-06	.c
	Financial	1.371	101.900	.375	3.938	41.355
	Agriculture & Farming	5.307**	73.157	22.471	201.813	1812.495
	Tech & Machinery	6.886**	80.115	91.940	978.669	10417.543
	Management & Other	3.822*	71.811	4.132	45.708	505.665
IMPROVISATION (improviser)	Non-improviser	1.623	72.710	.954	5.067	26.913
OPPORTUNITY (identification)	limited access	-13.039	48.662	0.000	2.175E-06	.c
	Information access	1.311	33.302	.850	3.709	16.192
	Awareness	2.701	51.425	1.582	14.894	140.269

Note: R^2 = 0.743 (Cox & Snell), 0.856 (Nagelkerke). Model X^2 (57) = 683.008, p<0.001. *p<0.05, **p<0.01, ***p<0.001 based on (2-tailed) significances from Bootstrap. a. The reference category is: Limited access. b. Parameter estimates and standard error calculated from Bootstrap results are based on 1000 bootstrap samples. c. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

6. Discussion

Theory in entrepreneurship posit that opportunity identification is an activity that requires the investment of resources and a constant scanning of the environment. The chances of finding opportunities relies in the ability of the entrepreneur to recognize critical resources available in his/her context and then the entrepreneur performs actions to gain access to the resources to engage in new ventures.

This study's exploration uses opportunity perception of the farmers as an indicator of opportunity identification. This perception is the result of the farmer's visit to the fair where the entrepreneurial environment is visible for him/her. The engagement in new ventures is preceded by the identification of an opportunity thus, from an empirical perspective, the opportunity should be reflected in terms of deals closed (Bird et al., 2012; Carsrud & Brännback, 2009). Indeed, the opportunity perception of the farmer from the visit to the fair is associated to the venture type in which him/her engages with the exhibitors. Despite the farmers' ability to perceive opportunities in the fairs, no evidence of causal relationship between venture type and opportunity perception was found, neither predictive relationship. Nonetheless, this finding does not throw out the theoretical relation about opportunity perception and entrepreneurial activity, because entrepreneurship is a process, and opportunity identification may not be static phenomena, thus the effect of opportunity identification can lead to entrepreneurial activity out of the fair duration or even more, it may occur after the time the fair takes place.

Additionally, opportunity identification depends on the characteristics of the individual entrepreneur and the entrepreneurial behaviour (Hmieleski & Corbett, 2008), in this case the ones undertaken by the farmer during the visit to the fair. The empirical evidence shows that the characteristic that best predicts opportunity perception is farmers' membership to an organisation. It is not clear which is the underlying reason for this phenomenon; however, an educated guess is that farmer organisations provide support to the farmer via information, knowledge or capacitation. As well, it may happen that farmers of the same organisation attend in groups, which makes the visit more efficient in terms of effort. The other aspect that contributes to predict the identification of opportunities is the preparation of the farmers prior the visit to the fair. Preparation contributes in the sense that it improves the alertness of the farmer. These two factors contribute to boost the farmer's awareness on entrepreneurial opportunities.

The intensity of the search is crucial in the process for the identification of opportunities (Carsrud & Brännback, 2009; Ucbasaran, Westhead, & Wright, 2009). Unexpectedly, the seeking behaviour i.e. setting a goal for the visit, does not contribute to predict the situation where the farmer claims to have

identified business opportunities in fair. Indeed, the targeting of a goal only predicts the situation where the farmer only obtains access to some information. Similarly, improvisation is significate this specific situation. Even though, the evidence contradicts the relevance of the search intensity for entrepreneurship, the lack of effect of the goal may be due to the effectivity of the fairs in terms of the guidance they provide, as Weiers (2013) suggests. Consequently, opportunities are more accessible in the fair, which may reduce the level of complexity in the search process carried by the farmer. Hence, other aspects of the entrepreneurial behaviour become more relevant in finding potential partners during the fair, e.g. alertness (preparation) or individual characteristics like membership to a farmers' organisation.

The fairs provide access to resources such as business financing, marketing advice, and distribution channels (Bradley et al., 2012). However, the likelihood tests for the network effectiveness that measures the range of the access to exhibitors of the farmer has no effect on farmer's opportunity perception i.e. the percentage of exhibitors reached by the farmer in the fair does not contribute to predict farmer's opportunity perception. A possible explanation is that the fair is perceived as an opportunity de facto; this may lead to a disregard of the effect of the fair in their opportunity perception. Given this, the entrepreneurial behaviour predictors are more relevant to recognize and act on entrepreneurial opportunities and even more the underlying key factor is the range of information available as pointed out by Parrish (2010) and Watson (2007), which is evident when reviewing the items of the question used to the construction of the variable opportunity perception. This is an important remark, since the (degree of) access of information is conditioned to the implementation of workshops in the fair. Even more, it is intuitive that the cognitive capacity of the entrepreneur is relevant as well but no statistical analysis shows that. Bottom line, according to the instruments and measures used, network intensiveness does not have a positive effect on farmer's opportunity perception but given the quality of the instruments the rejection of this hypothesis, at least empirically would be short sighted. Therefore, precaution is recommended with the results that test this specific hypothesis for theory purposes.

According to Austin & Wei-skillern (2206) and Welter (2207), the entrepreneurial environment frames the opportunities and sets boundaries for the actions of the entrepreneur. Moreover, the entrepreneurial environment can consist of a system or network of entities interacting in a specific context (Edquist, 2001). The fair fits into this conceptualisation, and is within the fair that the different stakeholders interact with the farmers and the degree of interaction undertaken among them is the network intensiveness, which should be influenced by the characteristics of the fairs. The evidence shows that the number of exhibitors and the implementation of a workshop are the fair characteristics that are significant. The loglinear analysis indicates that the type of fair (Agribusiness fair or finance

fair) and the location do not have significant relationship with the network intensiveness. Therefore, the intensity with which the farmers interact with the exhibitors does not captures the total effect of the entrepreneurial environment. More precisely, the specific context of the fairs is determined by both, the network intensiveness and the fair's characteristics. This confirms the network of entities interacting in a under a particular framework or set of infrastructures involved in the generation of new ventures is part of the entrepreneurial environment (Carlsson & Stankiewicz, 1991).

Regarding the exploration of the effect of network intensiveness on the type of outcome, the evidence indicates that the size of utilisation of the farmer's social network has a significant effect on entrepreneurial activity, and that this effect is as important as entrepreneurial behaviour, entrepreneurial environment and opportunity perception. Certainly, the results of the comprehensive regression Model 3, suggest that the magnitude of the proportion of exhibitors contacted by the farmer is the principal predictor for deals. This is an important finding, since the deal is the maximum outcome possible from the interaction among farmers and exhibitors.

The results of the model show evidence that network intensiveness is the key factor that makes the difference in the outcome of the farmer's visit to the fair. The size of this effect for this predictor is larger than for any entrepreneurial behaviour or entrepreneurial environment predictor.

Regarding entrepreneurial behaviour predictors, the results show that the cognitive capacity or ability to acquire new knowledge is significant to close a deal, which confirms what Suurs (2009) affirms; knowledge is an important resource to reduce uncertainty in the process of entrepreneurship and signalize an opportunity. Another important remark is that the membership of the farmer to a farmers' organisation is a significant characteristic. This means that there is an important difference between independent farmers and organised farmers but the underlying cause can not be identified with the model. It is important to point out that the ability to improvise is not significant and that targeting a goal only predicts the type of venture of information and appointment. The opportunity perception is not significant.

To predict the type of venture, the environmental factor that was most significant is the implementation of a workshop. In addition the number of exhibitors contributes to predict when a farmer closes a deal, which is an intuitive result, the greater the number of exhibitors the greater the number of interactions among farmers and exhibitors.

All the above, corroborate that the farmers that best connect and exploit their networks in the fair are the farmers that are more probable to close a deal. This result supports Gemünden, et. al., (1996) and Braunerhjelm et al. (2010) proposition that intensiveness of the relationships, is what secures new

venture creation. With the evidence from the regression coefficients, the hypothesis that network intensiveness has a significant effect on entrepreneurial activity as large as entrepreneurial behaviour, entrepreneurial environment and opportunity perception is confirmed.

The fair is the way that AgriProFocus intervenes to modify the configuration of entrepreneurial environment, which makes entrepreneurial activity possible among farmers, businesses and financial institutions. The organisation of the events definitely have an impact on farmers' entrepreneurship and confirms the relationship between social networks and the farmer's ability to identify and exploit opportunities for entrepreneurship. The fairs are an adequate mechanism to provide guidance and efficient networking, and a great opportunity for farmers to take advantage of the support provided by AgriProFocus in order to approach potential partners. Actually, the fairs are the scenario where AgriProFocus as a network intermediary can perform its guidance functions as Weiers (2013) explains, thus securing the success of entrepreneurial process e.g.. when the farmer closes a deal.

Finally, the results do not show strong association between networking and opportunity perception. This may due to the deficiencies of the questions and shortcomings of the variables. For further research, it would be convenient to design a survey that allows component analysis to explore these concepts dimensions with more detail.

Table 15. Hypothesis rejection summary

	Hypothesis description	**Dependent variable**	**Model/test**	**Rejection**
H1	The opportunity perception is positively correlated to the entrepreneurial activity of an entrepreneur.	Type of venture	Pearson chi-square	Not rejected
H3	The entrepreneurial environment characteristics (completely) predict network intensiveness.	Network intensiveness	Model 1	Rejected
H2	Entrepreneurial behaviour has a positive effect on opportunity perception.	Opportunity perception	Logit Model 2a	Not rejected
H4	Network intensiveness has a positive effect on farmer's opportunity perception.	Opportunity perception	Logit Model 2b	Rejected
H5	Network intensiveness has a significant effect on entrepreneurial activity as large as entrepreneurial behaviour, entrepreneurial environment and opportunity perception.	Type of venture	Logit Model 3	Not rejected

7. Conclusion

This research provides empirical evidence of the influence of social networks on individual entrepreneurship by assessing the influence of the intervention of a social network intermediary, AgriProFocus. Its fairs promote entrepreneurship at the individual level. The focus of the research is on the circumstances under the entrepreneur take action and reflects on the impact of context on entrepreneurship. Furthermore, from the social network perspective this study involves the individual characteristics of the entrepreneur, the entrepreneurial environment and the network intensiveness to increase opportunity identification and exploitation.

Through the analysis of recorded information and formulation of statistical models corroborated the association of opportunity perception and entrepreneurial activity. The relationship between the variables was significant; nevertheless, this relationship is not strong. This is congruent with the results of the third model, which shows that opportunity perception did not significantly predict the level of entrepreneurial activity.

Furthermore, opportunity perception depends directly on the factors of individual characteristics, predominantly on the membership of the farmer to an organisation and the preparation of the farmer prior visit to the fair, and in less part to the targeting of a specific goal during the fair and the farmer's ability to improvise. Moreover, opportunity perception is not affected by network intensiveness.

The number of exhibitors and the implementation of workshops affect network intensiveness during the fair; therefore, the two main characteristics of the fairs are relevant for the outcome of the network. Nevertheless, the effect of these variables do not explain completely the level of network intensiveness, which means that this variable does not capture the total effect of the context nor the entrepreneurial environment.

Network intensiveness has a significant effect in entrepreneurial activity. The deal is the ultimate outcome of entrepreneurial activity possible in the fair, which means that the farmer and the exhibitors engage in a *new* venture. Indeed, network intensiveness increases the probability of the farmer of closing a deal by 16 times compared to the farmers that do not engage in any entrepreneurial activity. The effect size for this predictor is higher than for the predictors of entrepreneurial environment (the number of exhibitors also increases the probability of deal making) and entrepreneurial behaviour. However, network intensiveness is not a significant predictor for when the farmer got useful information or made an appointment.

Other remarks about the predictors of entrepreneurial activity include; the implantation of workshops reduces the capacity of the farmers (members of an organisation) of obtaining information from the

exhibitors. Similarly, the “member” farmers are more successful in obtain an appointment when in the nonexistence of workshops in the fair. In the case of the independent farmers, they are less likely to engage with exhibitors when there are workshops in the fair. Preparation prior the fair is more significant than having a specific goal or type of exhibitor to target. Prepared farmers with no specific goals are notably more likely to close deals and (not so notably) more likely to make appointments with exhibitors.

This research confirms the idea that social networks are a support structure for entrepreneurship, the intervention of intermediaries as AgriPorFocus truly boost entrepreneurial activity. More precisely, in the case of the fair, the implementation of workshops in the fairs improves the access to information and possibly knowledge diffusion; however, this may reduce the networking capacity of the farmers due to time constraints of visit. The number of exhibitors and the network intensiveness are critical factors for the brokerage of deals within the network. This finding confirms that from that network intensiveness ensures the success of the process of entrepreneurship, thus contribute importantly to the network effectiveness.

The findings in this research are relevant despite the data deficiencies and the shortcomings of the methodology. The intervention of intermediaries is important to enhance the ability of farmers to exploit social networks and their engagement in new ventures. Entrepreneurship is a complex process that challenges the farmer’s capacities, but with the intervention of social network intermediaries, a structural support system can contribute to the transition from traditional farming to entrepreneurial farming.

Finally, this research permits AgriProFocus the monitoring of the information collected and the assessment of the extent of the realisation of the particular objectives of the fairs. This research can be used to the steering on the progress of fair results in order to facilitate decision making for instance on the design of the fair characteristics, implementation of new approaches or monitoring the effects of the fairs within time. In the same way, this research enables understanding the farmer’s characteristics and actions undertaken during their visit to the fair that draw lessons for performance improvement. Those lessons could be included in annual reports and be reflected in new annual plans for the future of AgriProFocus.

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Annex 1. Loglinear Analysis

Dependent variable	*Models 2a and 2b*				*Model3*			
Effect	df	Partial Chi-Square	Sig.	Number of Iterations	df	Partial Chi-Square	Sig.	Number of Iterations
SEX*FARMERTYPE*GOAL_TYPE	5	13.099	.022	13				
FARMERTYPE*GOAL_TYPE*PREPARATION					5	15.466	.009	12
GOAL*GOAL_TYPE	5	300.310	.000	9	5	290.372	.000	9
FARMERTYPE*PREPARATION	1	26.552	.000	8	1	25.528	.000	7
GOAL_TYPE*KNW_TYPE	25	67.504	.000	9	25	80.206	.000	7
KNOWLEDGE*KNW_TYPE	5	200.791	.000	9	5	220.509	.000	7
FARMERTYPE*OPPORTUNITY	3	11.277	.010	7				
GOAL_TYPE*OPPORTUNITY	15	49.758	.000	8				
PREPARATION*OPPORTUNITY	3	54.360	.000	8				
KNW_TYPE*OPPORTUNITY	15	53.016	.000	8				
FARMERTYPE*EA					3	9.399	.024	7
GOAL_TYPE*EA					15	32.579	.005	7
PREPARATION*EA					3	7.354	.061	8
KNW_TYPE*EA					15	25.779	.040	8
SEX	1	71.859	.000	2	1	71.859	.000	2
AGE	1	384.163	.000	2	1	384.163	.000	2
GOAL	1	125.045	.000	2	1	125.045	.000	2
GOAL_TYPE	5	225.505	.000	2	5	225.505	.000	2
PREPARATION	1	115.386	.000	2	1	115.386	.000	2
KNOWLEDGE	1	271.108	.000	2	1	271.108	.000	2
KNW_TYPE	5	138.942	.000	2	5	138.942	.000	2
OPPORTUNITY	3	225.404	.000	2				
EA					3	269.021	.000	2

Entrepreneurial Activity Model selection

Effect	df	Partial Chi-Square	Sig.	Number of Iterations
EA*GOAL*PREPARATION	3	8.182	.042	9
GOAL*PREPARATION*IMPROVISATION	1	6.173	.013	10
EA*WORK_SHOP	3	39.873	.000	8
EA*FARMERTYPE	3	11.899	.008	12
WORK_SHOP*FARMERTYPE	1	13.242	.000	13
EA*GOAL	3	18.660	.000	12
FARMERTYPE*GOAL	1	3.980	.046	13
WORK_SHOP*PREPARATION	1	110.244	.000	10
FARMERTYPE*PREPARATION	1	8.401	.004	11
GOAL*PREPARATION	1	25.422	.000	11
EA*IMPROVISATION	3	123.310	.000	8
WORK_SHOP*IMPROVISATION	1	7.448	.006	9
EA	3	377.648	.000	2
WORK_SHOP	1	57.901	.000	2
GOAL	1	112.166	.000	2
PREPARATION	1	163.865	.000	2
IMPROVISATION	1	345.919	.000	2

Annex 2. Model fitness – Likelihood ratio tests

Model	Opportunity perception Models											
	1				2				3			
OPORTUNITY=	-LL2	chi-square	df	sig.	-LL2	chi-square	df	sig.	-LL2	chi-square	df	sig.
Intercept	499,769 [a]	0.000	0	-	511,734 [a]	0.000	0	-	519,984 [a]	0.000	0	-
GOAL	499,769	0.000	0									
FARMERTYPE	516.189	16.420	3	0.001	529.772	18.038	3	0.000	539.973	19.989	3	0.000
PREPARATION	571.790	72.021	3	0.000	582.170	70.436	3	0.000	589.350	69.366	3	0.000
SEX	508.647	8.879	3	0.031	519.984	8.250	3	0.041				
GOAL_TYPE	558.526	58.757	12	0.000	573.032	61.299	15	0.000	579.546	59.562	15	0.000
AGE	511.734	11.965	6	0.063								
KNW_TYPE	546.685	46.916	12	0.000	594.584	82.850	15	0.000	601.543	81.559	15	0.000
KNOWLEDGE	499,769	0.000	0									
Model Goodness of fit												
Pearson chi-square*	518.069				568.904				565.739			
df	564				570				573			
sig.	0.917				0.505				0.578			
Pseudo R-square	0.573				0.560				0.551			

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduce model. The reduce model is formed by omitting an effect from the final model. The null hypothesis is that all the parameters of that effect are 0.
a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Model	Entrepreneurial activity level Models											
	4				5				6			
EA=	-LL2	chi-square	df	sig.	-LL2	chi-square	df	sig.	-LL2	chi-square	df	sig.
Intercept	464,748 [a]	0.000	0	-	328,126 [a]	0.000	0	-	298,719 [a]	0.000	0	-
SEX	466.524	1.775	3	0.620								
AGE	473.899	9.151	6	0.165								
FARMERTYPE	478.185	13.436	3	0.004	342.384	14.258	3	0.003	306.485	7.766	3	0.051
GOAL	464,748 [a]	0.000	0	-					298,719 [a]	0.000	0	-
GOAL_TYPE	502.930	38.181	12	0.000	365.744	37.618	12	0.000	339.422	40.703	12	0.000
PREPARATION	472.803	8.054	3	0.045	335.209	7.084	3	0.069	306.901	8.183	3	0.042
KNOWLEDGE	464,748 [a]	0.000	0	-								
KNW_TYPE	486.701	21.952	12	0.038	371.270	43.144	15	0.000	353.886	55.167	15	0.000
IMPROVISATION									430.836	132.117	3	0.000
Model Goodness of fit												
Pearson chi-square	516.459				225.096				344.159			
df	564				228				315			
sig.	0.925				0.542				0.124			
Pseudo R-square	0.386				0.370				0.550			

Entrepreneurial Activity Models

Model	7				8				9			
EA=	-LL2	chi-square	df	sig.	-LL2	chi-square	df	sig.	-LL2	chi-square	df	sig.
Intercept	43,324[a]	0.000	0	-	355,757[a]	0.000	0	-	289,455[a]	0.000	0	-
FARMERTYPE					362.333	6.576	3	0.087				
GOAL_TYPE					407.447	51.689	15	0.000	359.427	69.972	15	0.000
PREPARATION					360.343	4.586	3	0.205				
KNW_TYPE					403.948	48.190	15	0.000	336.580	47.125	15	0.000
IMPROVISATION					484.227	128.470	3	0.000	426.062	136.607	3	0.000
OPPORTUNITY	124.840	81.516	9	0.000	376.166	20.409	9	0.016	313.537	24.087	9	0.004
Model Goodness of fit												
Pearson chi-square	0.000				553.927				333.279			
df	0				516				318			
sig.	-				0.120				0.267			
Pseudo R-square	0.172				0.574				0.560			

Entrepreneurial activity Models

Model	10				11			
EA=	-LL2	chi-square	df	sig.	-LL2	chi-square	df	sig.
Intercept	240,317[a]	0.000	0	-	125,098[a]	0.000	0	-
EXHIBITORS	252.837	12.520	3	.006	152.565	27.467	3	0.000
NETWORK_RANGE	541.653	301.336	3	.000	600.083	474.985	3	0.000
GOAL_TYPE	264.897	24.580	15	.056				
KNW_TYPE	271.048	30.731	15	.010				
IMPROVISATION	243.253	2.936	3	.402				
OPPORTUNITY	248.023	7.706	9	.564				
FAIR_TYPE	240.654	.337	3	.953				
WORK_SHOP	256.254	15.937	3	.001	145.228	20.130	3	0.000
Model Goodness of fit								
Pearson chi-square	31.958				51.232			
df	615				63			
sig.	1.000				0.856			
Pseudo R-square	0.849				0.807			

Annex 3. AgriProFocus Survey Template

Question Response

Interview preparation

1. GPS location _____

2. Date _____

Reason for attending

3. How did you learn about the event?

Printed media (newspaper)_____

Public announcements (radio / TV / flyers / banners)_____

Direct invitation through organizers_____

SMS_____

E-mail / internet_____

Someone told me (friend / colleague)_____

4. What is your reason for attending?

To meet with financial service providers_____

To get in touch with agro-input suppliers_____

To link to buyers / traders / processors_____

To look for agricultural / business support service providers_____

To attend the workshop / conference_____

No specific reason but did meet with financial service provider_____

No specific reason but did meet with agro-input supplier_____

No specific reason but did meet with buyers / traders / processors_____

No specific reason but did meet with agricultural / business support service providers_____

No specific reason but did attend the workshop / conference_____

General interest & none of the above_____

Only answer if you responded General interest & none of the above to Q4

5. Was the event worthwhile visiting?

Yes_____

No_____

Only answer if you responded No to Q5

6. Why? _____

Only answer if you responded To meet with financial service providers|To get in touch with agro-input suppliers|To link to buyers / traders / processors|To look for agricultural / business support service providers|To attend the workshop / conference|No specific reason but did meet with financial service provider|No specific reason but did meet with agro-input supplier|No specific reason but did meet with buyers / traders / processors|No specific reason but did meet with agricultural / business support service providers|No specific reason but did attend the workshop / conference to Q4

7. How did you prepare for the event?

Studied the programme_____

Read up on some documents_____

Prepared with colleagues / fellow farmers_____

Got help from a support agency / NGO_____

Brought a copy of my business plan_____

Brought information / samples of my business / products_____

Did not prepare myself- I just came_____

Professional details

Only answer if you responded To meet with financial service providers|To get in touch with agro-input suppliers|To link to buyers / traders / processors|To look for agricultural / business support service providers|To attend the workshop / conference|No specific reason but did meet with financial service provider|No specific reason but did meet with agro-input supplier|No specific reason but did meet with buyers / traders / processors|No specific reason but did meet with agricultural / business support service providers|No specific reason but did attend the workshop / conference to Q4

8. Questions about your profession / work

Continue _____

9. What is your job / profession?

Farmer_____

Agricultural input supplier (seed- feed- fertilizer- agro-equipment)_____
Trader / buyer / processor_____
Financial service provider (bank/MFI/insurance/investor)_____
NGO / development agency staff_____
Agricultural / business support service provider / consultant_____
Knowledge / education / training_____
Government official_____
Media_____
Student_____
Other_____

Only answer if you responded Other to Q9

10. Specify other job / profession _____

Only answer if you responded Farmer to Q9

11. Do you belong to a farmer group?

Yes_____
No_____

Only answer if you responded Yes to Q11

12. What is the name of your farmer group? _____

Only answer if you responded Agricultural input supplier (seed- feed- fertilizer- agro-equipment)|Trader / buyer / processor|Financial service provider (bank/MFI/insurance/investor)|NGO / development agency staff|Agricultural / business support service provider / consultant|Knowledge / education / training|Government official|Media|Other to Q9

13. What is the name of your company / organisation? _____

Results

Only answer if you responded To meet with financial service providers|No specific reason but did meet with financial service provider to Q4

14. What type of financial services are you looking for?

Opening a bank account_____
Opening a savings account_____
Credit / loan_____
Leasing product_____
Equity investment_____
Bank overdraft facility_____
Guarantee_____
Insurance_____
Grant_____
Technical assistance_____
I am not sure yet_____
Other_____

Only answer if you responded Other to Q14

15. Specify the other financial service you are looking for. _____

Only answer if you responded Credit / loan|Leasing product|Equity investment|Bank overdraft facility|Guarantee|Grant|Other to Q14

16. What financial amount are you looking for? _____

Only answer if you responded To meet with financial service providers|No specific reason but did meet with financial service provider to Q4

17. Have you made contact with financial service providers today?

Yes_____
No_____

Only answer if you responded Yes to Q17

18. With how many financial service providers have you made contact?

1_____
2_____
3-5_____
More than 5_____

Only answer if you responded Yes to Q17

19. Have you succeeded in doing business with one or more financial service providers?

Closed a deal to get the service / amount I was looking for_____
Made an appointment to follow-up with them after today_____
Got useful information to make up my mind in the future_____
Not been succesful at all_____

Only answer if you responded Closed a deal to get the service / amount I was looking for|Made an appointment to follow-up with them after today|Got useful information to make up my mind in the future to Q19

20. With which financial service providers are you going to follow-up? _____

Only answer if you responded To get in touch with agro-input suppliers|No specific reason but did meet with agro-input supplier to Q4

21. What type of agro-inputs are you looking for today?

Seed / seedlings (varieties)_____
Animal Feeds_____
Veterinary products_____
Fertilizer_____
Agro-chemicals (crop protection / nutrition)_____
Equipment / tools_____
Machinery for (pre-/post) post harvest_____
Packaging material_____
I am not sure yet_____
Other_____

Only answer if you responded Other to Q21

22. Specify the other agro-input you are looking for. _____

Only answer if you responded Seed / seedlings (varieties)|Animal Feeds|Veterinary products|Fertilizer|Agro-chemicals (crop protection / nutrition)|Equipment / tools|Machinery for (pre-/post) post harvest|Packaging material|Other to Q21

23. What quantity of agro-inputs do you need? _____

Only answer if you responded To get in touch with agro-input suppliers|No specific reason but did meet with agro-input supplier to Q4

24. Have you made contact with agro-input suppliers today?

Yes_____
No_____

Only answer if you responded Yes to Q24

25. With how many agro-input suppliers have you made contact?

1_____
2_____
3-5_____
More than 5_____

Only answer if you responded Yes to Q24

26. Have you succeeded in doing business with agro-input suppliers?

Closed a deal to get the service / amount I was looking for_____
Made an appointment to follow-up with them after today_____
Got useful information to make up my mind in the future_____
Not been succesful at all_____

Only answer if you responded Closed a deal to get the service / amount I was looking for to Q26

27. What is the financial value of the agreement with agro-input suppliers? _____

Only answer if you responded Made an appointment to follow-up with them after today|Got useful information to make up my mind in the future to Q26

28. With which agro-input suppliers are you going to follow-up? _____

Only answer if you responded To link to buyers / traders / processors|No specific reason but did meet with buyers / traders / processors to Q4

29. Which crops / products are you planning to sell?

Cash crops (cocoa, coffee, cotton, sugarcane, tea, tobacco , etc.)_____
Cereals (barley, maize, millet, rice, sorghum, wheat etc.)_____
Dairy (cheese, milk, etc.)_____
Fruits (apple, avocado, banana, mango, melon, papaya, passion, pineapple, etc.)_____
Livestock (camel, cows, goats, poultry, piggery, rabbit, sheep, etc.)_____

Oilseed (coconut, palmoil, peanuts, sesame, shea, soybean, sunflower, etc.)_____
Pulses and seeds (beans, peas, lentils etc.)_____
Spices (chillis, cinnamon, ginger, pepper, etc.)_____
Tubers (casava, potatoes,matoke, sugar, sweet potatoe, ugali, yams, etc.)_____
Vegetables (cabbage, carrot, cucumber, tomato, eggplant, lettuce, onion, etc.)_____
Other_____

Only answer if you responded Other to Q29

30. Specify the other crops / products are you planning to sell. _____

Only answer if you responded To link to buyers / traders / processors|No specific reason but did meet with buyers / traders / processors to Q4

31. Which quantity of crop / products are you planning to sell? _____

Only answer if you responded To link to buyers / traders / processors|No specific reason but did meet with buyers / traders / processors to Q4

32. Have you made contact with buyers / traders / processors today?

Yes_____
No_____

Only answer if you responded Yes to Q32

33. With how many buyers / traders / processors have you made contact?

1_____
2_____
3-5_____
More than 5_____

Only answer if you responded Yes to Q32

34. Have you succeeded in doing business with buyers / traders / processors?

Closed a deal to sell the amount I planned for_____
Made an appointment to follow-up with them after today_____
Got useful information to make up my mind in the future_____
Not been succesful at all_____

Only answer if you responded Closed a deal to sell the amount I planned for to Q34

35. What is the financial value of the agreement with buyers / traders / processors?

_____

Only answer if you responded Made an appointment to follow-up with them after today|Got useful information to make up my mind in the future to Q34

36. With which buyers / traders / processors are you going to follow-up? _____

Only answer if you responded To look for agricultural / business support service providers|No specific reason but did meet with agricultural / business support service providers to Q4

37. What type of agricultural / business support services are you looking for?

Agronomic services_____
Animal health services_____
Business planning_____
Climate and environmental services_____
Certification_____
Financial management support_____
ICT_____
Irrigation and water management_____
Market information_____
Marketing_____
Organisational development_____
Research and (soil) testing_____
Road transport and shipping_____
Training in farming practices_____
Vocational / entrepreneurship training_____
Weather information_____
Other_____

Only answer if you responded Other to Q37

38. Specify the other agricultural / business support services are you looking for.

_____

Only answer if you responded To look for agricultural / business support service providers|No specific reason but did meet with agricultural / business support service providers to Q4

39. Have you made contact with agricultural / business support service providers today?

Yes_____

No_____

Only answer if you responded Yes to Q39

40. With how many agricultural / business support service providers have you made contact?

1_____

2_____

3-5_____

More than 5_____

Only answer if you responded Yes to Q39

41. Have you succeeded in doing business with agricultural / business support service providers?

Closed a deal to get the service I need_____

Made an appointment to follow-up with them after today_____

Got useful information to make up my mind in the future_____

Not been succesful at all_____

Only answer if you responded Closed a deal to get the service I need to Q41

42. What is the financial value of the agreement with agricultural / business support service providers?

_____

Only answer if you responded Made an appointment to follow-up with them after today|Got useful information to make up my mind in the future to Q41

43. With which agricultural / business support service providers are you going to follow-up?

_____

Only answer if you responded To attend the workshop / conference|No specific reason but did attend the workshop / conference to Q4

44. Which was for you the single most interesting session / presentation of the workshop / conference?

_____

Only answer if you responded To attend the workshop / conference|No specific reason but did attend the workshop / conference to Q4

45. Did you learn something today at the workshop / conference?

Yes_____

No_____

Only answer if you responded Yes to Q45

46. What did you learn at the workshop / conference? _____

Only answer if you responded Yes to Q45

47. What will you do with the lessons / information / knowledge of the workshop after today?

I need to share and discuss with colleagues / fellow farmers if we can use the infomation_____

I can use the insights right away to improve my own business_____

I intend to link to some of the presenters / participants to further deepen my knowledge_____

I encourage the organizers to organize a follow-up to the event_____

Other_____

Only answer if you responded Other to Q47

48. Specify the other action you will do with the lessons / information / knowledge of the workshop after today. _____

Only answer if you responded To attend the workshop / conference|No specific reason but did attend the workshop / conference to Q4

49. Do you have any suggestion for the organizers for follow-up to this workshop / conference?

Yes_____

No_____

Only answer if you responded Yes to Q49

50. What is your suggestion for the organizers for follow-up to this workshop / conference.

_____

Event evaluation (overall)

51. What did you learn at the fair/event today? _____

52. Choose one of the following statements

The event has provided me with more business opportunities and knowledge than I hoped for_____

The event provided me with some useful information and contacts_____
The event while interesting did not give me a lot of new information_____
The event was a waste of my time_____

53. Please rate the quality of the event (on a scale of 4)
    4: Good_____
    3: Satisfactory_____
    2: Average_____
    1: Poor_____
54. If a similar event would be organised: would you attend again?
    Yes_____
    No_____
    Not sure yet_____
55. What should the organisers improve?
    Information beforehand_____
    Registration process_____
    Event location / accessibility_____
    Event atmosphere_____
    Session / forum facilitation_____
    Exhibition space_____
    Exhibition / entry fees_____
    Time for networking_____
    None of the above_____

Personal details

Only answer if you responded Continue to Q8
56. From which district are you? _____
Only answer if you responded Continue to Q8
57. Gender
    Female_____
    Male_____
Only answer if you responded Continue ! to Q8
58. What age group are you in?
    < 25 yrs_____
    25 - 50 yrs_____
    > 50 yrs _____
Only answer if you responded Continue ! to Q8
59. Can we contact you at a later moment for more information?
    yes_____
    No_____
Only answer if you responded yes to Q59
60. Name _____
Only answer if you responded yes to Q59
61. Mobile phone number _____
Only answer if you responded yes to Q59
62. E-mail address _____
Only answer if you responded yes to Q59
63. Can we take your picture?
    Yes_____
    No_____
Only answer if you responded Yes to Q63
64. Take picture with phone / tablet _____