DELIVERABLE 3 – Methodological package

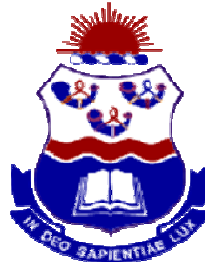## SADC/PRINT – VAIMS PROJECT

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Strategic positioning of South African Agriculture in dynamic global markets

P·R·I·N·T PROMOTION OF REGIONAL INTEGRATION IN THE SADC LIVESTOCK SECTOR

SADC SOUTHERN AFRICAN DEVELOPMENT COMMUNITY TOWARDS A COMMON FUTURE

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1.   Introduction

This deliverable reports on the methodological package or toolbox design for the VAIMS. Firstly, it provides a planning chart (time table) for such a study in a SADC member state.   Secondly, the data collection process by means of four questionnaires, i.e. input supplier, producer, trader, processors and retailers is described by explaining the rationale behind the different sections in the questionnaire. In the third section, guidelines on how to use the VAIMS package is provided followed by a discussion on the most useful procedures to analyse data captured in the fourth section. A standard template on reporting the information captured is provided in section five, where after Deliverable 3 is concluded in a final section.

2.   Planning the study

Depending on the extent of the study, i.e. the area and diversity of the region(s), it is foreseen that such a VAIMS study may last at least 13 weeks from inception to the finalization of the report. For a more intensive study, such as for a countrywide analysis, the time required may increase significantly to conduct surveys and analyzing the data obtained, obviously depending on the size of the team. Table 1 shows a planning chart with the typical activities required for a typical study provided the study area is relatively homogeneous.

Table 1:   VAIMS study planning chart

Once the survey site has been selected gathering more information on the study area is the next step in the VAIMS field study. A focus group discussion or other participatory activity, drawn from various members of the value chain, is exceptionally useful in gathering this kind of information. It is of vital importance that local experts/stakeholders are involved in selecting the survey/study area. Ideally such a focus group discussion would involve 10 to15 people from all stages or "links" of the chain. Conducting an initial participatory exercise enables several initial tasks to be carried out, including:

- Identification of key products (those of importance to the chain actors), and issues of seasonality;
- Identification of the key processing, transport and service actions and the actors that provide them;
- Identification of the key points at which exchanges occur, the form of the products exchanged, and the type of exchange mechanism used;
- Estimation of the numbers of actors involved in each stage/process, and the relationships that might exist between them (important in determining the sample size);
- Identification of the locations at which exchanges take place and the transport logistics commonly used;
- Identification of information sources;
- Identification of key informants;
- Informing the community about the nature of the study and the uses to which the results might be put;
- Alerting people to the need and possibility of their making a contribution to the problem definition and/or its analysis.

Logistical arrangements in terms of lodging and transportation should start as soon as the study area has been selected, specifically in the case of the producer surveys, where significant distances often need to be travelled to remote areas with often limited commercial housing infrastructure available for bigger teams of enumerators. Organizing logistics, can easily take up to four weeks, highlighting again the importance of an early start. The enumerators should be familiar with the survey

area, and have at least some agricultural background and also be fluent in the local language.

The actual surveys (data collection) should ideally be conducted over a relatively short time period, in order to minimize the effect of external factors in the survey results. Provided that an efficient group of enumerators was selected and trained, the research team should strive to complete the actual field work (completing the surveys) over a period of no more than two weeks (see Table 1 above).

3. Data collection (Questionnaires)

The following section gives a basic overview of the information that each question in the specific questionnaire aims at obtaining. This section should be read in conjunction with the questionnaire so as to be able to understand the objectives clearly.

3.1 Questionnaire 1: INPUT SUPPLIER SURVEY

The aim of this questionnaire is to acquire primary data on the operations of input suppliers (with specific reference to small scale livestock, more specifically small stock) in the SADC region to better understand their:
- operating practices and to evaluate the linkages with other segments in the value chain and
- to identify constraints and ways to improve the functioning of the value chain,

The aim of this Section is not to supply and analyse the whole input supplier chain but rather to gain some insight into some of the main role players that are involved. This questionnaire provides a general view of three major input suppliers that are known to influence animal production and are usually associated with any livestock value chain. If more detail is required, then a more comprehensive questionnaire should be developed. The questionnaire is divided into the following four sections:

1: General information on the input supplier

2: Feed supplier

3: Dips, Medicine, Vaccines

4: Credit providers

The same questionnaire has been used for the three sectors as identified above: Feed supplier; Dips, Medicine, Vaccines; and Credit providers with minor changes reflecting specific unique to that supplier inserted where applicable.

3.1.1 Section 1: Information on input supplier

This section collects general demographic information about the input supplier including the number of years in business (Q1.2).

3.1.2 Section 2: Feed supplier

Q2.1 and Q2.2 identifies the nature of the business entity and Q2.3-2.4 the size of the business.

Q2.5 identifies the main source of input material and includes factors such as local produced/processed or imported.

Q2.6 identifies the livestock species on which the business focuses.

Q2.7 enquires on the need for regulatory permits/licenses to sell feed and whether the supplier experiences difficulty in obtaining these. The answer to this query will enable statutory bodies to see whether they need to intervene to address this issue.

Q2.8-2.10 deal with transport issues such as mode of transport, distance, costs, etc.

Q2.11 and Q2.12 deal with payment methods whilst Q2.13 addresses the issue of consultancy by asking the trader whether he provides specialized advice and if so, what form and at what frequency.

Q2.14 is structured to determine the volume of feed traded whilst Q2.15 asks whether it is a branded product or not.

Q2.16 is a ranking of the major challenges that the trader experiences in the selling of animal feed.

Q2.17 is designed to monitor the business expansion plans (or not) of the trader over the next 12 months. The responses are designed in such a manner that policy makers can obtain an idea of the growth potential of the livestock industry in the region served by the trader. Some of the responses are also designed to highlight perceived impediments to this expansion.

3.1.3 Section 3: Dips, Medicine, Vaccines

This section of the questionnaire is the same as the previous section on animal/livestock feeds but focuses on animal health and asks questions around the supply chain of dips, medicine and vaccines. As it is similar to the previous set of questions, the specific questions will not be discussed further.

3.1.4 Section 4: Credit Providers

The first four questions (Q4.1-4.4) are designed to describe the business of the credit providers.

Q4.5 asks for reasons why credit is sourced whilst Q4.6 asks for a ranking of a list of a number of factors that are taken into account when approving or rejecting a credit application.

Answers to Q4.7 describe a typical payback period.

Q4.8 identifies (by means of ranking) whether the applicant approaches for a loan on his own or whether he has assistance and from whom.

Q4.9 asks the credit provider to quantify the percentage of his business that is directly linked to livestock, while Q4.10 enquires whether the credit provider supplies specialized advice on financial management.

Q4.11-12 is similar to that in Sections 2 and 2 where it asks the credit supplier about future expansion strategies and reasons for this decision. This information will help policy makers develop strategies to ensure that more applications are successful.

3.2   Questionnaire 2: LIVESTOCK PRODUCER SURVEY

The aim of this questionnaire is to acquire primary data on the operations of livestock producers (with specific reference to small livestock) in the SADC region to better understand their:

- production practices and to evaluate the linkages with other segments in the value chain and
- to identify constraints and ways to improve the functioning of the value chain,

The questionnaire is divided into the following seven sections:

    1: GENERAL HOUSEHOLD INFORMATION
    2: HOUSEHOLD ASSETS AND ACTIVITIES
    3: DETAIL OF LIVESTOCK OPERATIONS
    4: LIVESTOCK PURCHASES AND SALES
    5: COSTS OF PRODUCTION
    6: INFRASTRUCTURE
    7: MISCELLANEOUS INFORMATION

The following section will help with the training of the interviewers by explaining what is meant by each question as well as describing the type of answer that can be expected and where applicable, the interpretation thereof.

3.2.1   Section 1: General Household Information

The four questions asked in this section give an overview of the demographics of the respondents. The questions are standard and this information will be of value in giving a broad description of the producer. It is not meant to provide detailed demographic information of the households (composition, age, income, etc) – it is recommended that a more detailed and specific questionnaire be designed if more detailed information is required.

3.2.2   Section 2: Household Assets and Activities

The eight questions in this section deal with general information of the household assets and activities – once more this information is only of limited value as it is drawn to present background information for the VAIMS and not to provide specific information on the household(s).

Q 2.1 provides general detail on the perceived income that can be attributed to the various agricultural practices with two sub sections pertaining to livestock (production and trading). The questions are also structured to give an indication whether there has been a shift in the major income activities, this will be of value to policy makers as an indicator whether livestock activities have been increasing or decreasing. It does not however analyse why these trends occur.

Q2.2 gives further background on the farming history of the farmer as well as an indication of the level of training he has received. This information could give a possible explanation of his/her production performance (as described in Section 3).

Q2.3 queries the reason for the farmer being in business whilst Q2.6.2 asks more specifically why the producer keeps livestock.

Q2.4 gives an indication of the size of the operation by asking for the number of employees, it also evaluates whether it is a family only activity or whether other people are also employed. The questions also touch on the type of remuneration that the employees receive.

The next set of questions deal with ownership issues. Q2.5 gives an indication of landownership as well as the major land use activity. Q2.6 deals specifically with the ownership of livestock and reasons for keeping livestock (Q2.6.2) whilst Q2.6.1 is designed to analyse the breeds present as well as the changes in breed types that have occurred over the past 5 years. The cattle breed is an open ended question with the idea of obtaining more generic information as to breed type (e.g. indigenous versus *B. Taurus* type) and the questions should be seen in context of trying to determine reasons for change in breed type as it is argued that as the producers improve their productivity they will start changing their breed/herd to meet the more stringent commercial requirements. This change is also closely correlated with Q2.6.2 which deals with the reasons why the producer keeps livestock.

Q2.7 and Q2.8 deal specifically with the satisfaction of the producer as pertaining to the marketing of livestock and is also a link to the trader survey. Q2.9 will give an indication whether an association will help the producer satisfy his marketing requirements.

3.2.3 Section 3: Detail of Livestock Operations

The set of questions in this section deals with the annual animal dynamics within the production system and is divided into a number of questions replicated for cattle, sheep and goats. The questions are designed so as to give an indication of the gender and age composition of the herd/flock as well as the number of livestock (per gender/age) traded / consumed / died during the year. This section also assigns a monetary value to the animals. What is also of value is the information gleaned from the deaths (diseases, drought, theft, predators, etc.). These answers will help policy makers in decided what interventions they can make to help improve the production efficiency of the producers.

Q3.2 explores the producer's growth strategy and gives an indication of the future direction of the enterprise.

Q3.3 is specific about animal identification so as to place the production system relative to a commercial highly formulated value chain where traceability and farm of origin is of paramount importance.

3.2.4 Section 4: Livestock Purchases and Sales

The set of questions in this section expand the knowledge obtained from Q3.1 and asks for more detail pertaining to the livestock purchases and sales – once more this section is classed according to species (Q4.1). Within species the group is further divided into age and gender categories. These questions also make use of specific codes as well as values. Note that animal numbers purchased / sold is not included in this section as it has already been collected in Q3.1. This set of questions forms the backbone of a number of the Performance measures and it is thus critical that as much detail as possible be collected.

Each of the coded columns deals with a particular section(s) in the commodity chain which is an integral part of the VAIMS and should thus be captured. For example, the question on where the animals (according to species, age and gender) are purchased and/or sold (Farm gate, Village market, Parallel local sales pen, Local collection point, Local business centre, Local dip tank, Regional auction yard, Regional town and/or Other) will not only provide information pertaining to the producer but also on the trader (Q3.1 in the Trader questionnaire).

Another link between the two sectors (producer and trader) is Q4.2 which asks specifically where the information on livestock price is obtained from – the answer obtained here is an obvious intervention point for Government and/or policy makers.

Q4.3 evaluates the influence of the various role players in the purchasing / sales value chain and in Q4.4 changes in their importance/influence over the past five years are noted.

Q4.6-8 deals with the issue of transport (costs, whom and mode) of the animals to and from the market.

Q4.9-12 deal specifically with the use (or not) of a broker / middleman for the purchases / sales of the livestock. Where a broker /middleman is used, the questions is posed (Q4.10) on whether a formal contract is drawn up between the interested parties, and in Q4.11 more detail of the contract as pertaining to the type and condition of the animal(s) is collected.

Q4.13 evaluates the seller's perception of the attributes that buyers look for when purchasing animals. This data is linked to that in the Trader's questionnaire (Q3.7).

3.2.5 Section 5: Costs of Production

This section evaluates the costs that are linked to the production of the livestock and consists of physical units (numerical) as well as a number of codes for the place of purchase as well as who paid for the purchase. The total cost per commodity is also included as is a time related to the payment. This allows for the calculation of costs per time unit.

3.2.6 Section 6: Infrastructure

This section asks the producer to rate the infrastructure available and will allow the identification of various potential constraints within the production facet of the value chain. These can then be addressed by the relevant bodies such as policy makers / government.

3.2.7 Section 7: Miscellaneous Information

Q7.1 in this section deals with the producer's perception of the information that is available to him for his various production facets / practices.

While Q7.2 asks the producer whether his/her livestock business has changed over the past five years, Q7.3 asks the producer to rank potential constraints to the

business and Q7.4 the risks and is similar to Q6.4 and Q6.5 in the trader's questionnaire.

3.3 Questionnaire 3: LIVESTOCK TRADER SURVEY

The aim of the Livestock Trader questionnaire is to acquire primary data on the operations of livestock traders (with specific reference to small-scale livestock, more specifically small-stock) in the SADC region to better understand their:

- trading practices and to evaluate the linkages with other segments in the value chain, and
- to identify constraints and ways to improve the functioning of the value chain.

The questionnaire is divided into the following seven sections:

> 1: GENERAL HOUSEHOLD INFORMATION
>
> 2: BASIC INFORMATION AND LIVESTOCK OPERATIONS
>
> 3: LIVESTOCK PURCHASES
>
> 4: LIVESTOCK SALES
>
> 5: COSTS OF PRODUCTION
>
> 6: MISCELLANEOUS INFORMATION

It is recognized that a trader could be active in the trading of living livestock and/or in meat. If the latter, he could also be classified as a processor (Questionnaire 4). None the less, this questionnaire is designed to identify the commodity that is traded.

3.3.1 Section 1: General Household Information

The first four questions (Q1.1-1.4) is similar (with the same constraints) to that in the producer's questionnaire and gives basic demographic information on the Trader. Thereafter the questions are more specific as pertaining to the trader's business.

Q1.5 asks whether the trader is registered as a commercial company which is then followed by two questions that identify the commodity that he trades in: own livestock production (Q1.6) or meat (Q1.7).

Q1.9 and Q1.10 identify how longer the trader has been practicing and whether he has any training in this trade. This section ends with Q1.10 that is designed to give an idea on the size (number of people employed) of the operation and the costs involved with this employment.

3.3.2 Section 2: Basic Information and Livestock Operations

The first two questions measure the level of satisfaction of the trader as pertaining to the buying and selling of his livestock – these questions are species specific.

Q2.3 is designed to give an indication of what proportion of the total trade is linked to livestock (livestock and meat sales) and what the change in these proportions have been over the past year as well as five years ago. This information will give policy makers an idea of what the dynamics are within the trader community as a whole.

The next set of questions are more specific and are designed so as to give an idea of the infrastructure available for the traders – this will allow for the identification of issues that require interventions from Government and/or policy bodies. Q2.4 identifies whether there are any holding facilities for live animals and what the duration is that animals are contained. Q2.5 questions land ownership and is the same as Q2.5 in the Producer's questionnaire.

Q2.6 also asks whether the trader is a member of an organized association or group – information that will be of value to policy makers.

3.3.3 Section 3: Livestock Purchases

Q3.1 is a more expanded questionnaire than Q3.1 from the Producer's questionnaire although it is also portioned into species, age and gender classes. This specific questionnaire asks detail about the time (month) when animals are purchased as well the number, body weight and value of the animals. It also includes additional information about the source of price information as well as the means (and costs) used to get the animals to the trader's premises. There are also questions that

identify the reasons for the purchase of the animals. Some of the questions are open ended whilst others are coded. The results of these questions are used to develop the value chain further when combined with Q3.2. The latter questions identify the source of the trader's livestock as well as trends/changes that have occurred over the past number of years (one and five years). This information will also be of value to policy makers.

Q3.3 is designed to determine the level of interaction between the traders on various trading issues.
Q3.4 and Q3.5 identifies the mode of transport used for the animals as well as who covers the cost at purchase.

Q3.6 identifies whether the trader uses a broker and quantifies the costs of such.

Q3.7 quantifies the quality attributes that the trader seeks when purchasing animals and is similar to Q4.11 from the Producer's questionnaire where the specifications of the contracts are noted.

Q3.8-Q3-10 focus on whether the traders use contracts and the parameters specified in the contracts.

3.3.4 Section 4: Livestock Sales

This section is very similar to the section on Livestock purchases (Q3...) and also has open ended questions that require numbers and values as well as questions that require to be coded. Q4.1 is also classified into gender and age by species. Additional information such as source of price information, transport details / costs, etc. is also included. These questions all help to develop the value chain and to give critical information to policy makers. A typical output will be price per kg of livestock.

Q4.2 identifies the key channels used for sales as well as the changes that have occurred in these over the past five years – these channels are also specified according to species.

The next two questions deals with the transport of the sold animals (Q4.3-4.4).

The last number of questions in this section is related to the use or not of a Broker for the sale of the animals. Included in these questions (Q4.8) is a rating scale of the quality attributes that buyers look for.

3.3.5 Section 5: Costs of Production

This section quantifies the costs linked to the trader's business and consists of a serious of questions that quantify the units, price per unit and then where these were purchased and how they were purchased (both coded). The final column links the time of payment. All these parameters help determine the direction of the value chain.

3.3.6 Section 6: Miscellaneous Information

Q6.1 identifies the sources and reliability of the information used by the Traders. The first column (source) consists of a serious of questions with coded answers whilst the second section ranks these according to their perceived reliability.

Q6.2 identifies how the Trader's business has changed over the past 5 years whilst Q6.3 ranks potential constraints and Q6.4 risks according to perceived level of importance.

3.4 Questionnaire 4: LIVESTOCK/MEAT PROCESSOR/RETAILER SURVEY

The aim of this questionnaire is to acquire primary data on the operations of livestock processors and retailers (with specific reference to small-scale livestock) in the SADC region to better understand their:
• operating practices and to evaluate the linkages with other segments in the value chain, and
• to identify constraints and ways to improve the functioning of the value chain.

The questionnaire is divided into the following seven sections, these include:

     1: GENERAL HOUSEHOLD INFORMATION

     2: OPERATIONS

     3: LIVESTOCK MEAT PURCHASES

     4a: PRIMARY PROCESSING

     4b: SECONDARY PROCESSING

     5: MEAT SALES

     6: COSTS OF PRODUCTION

     7: MISCELLANEOUS INFORMATION

This questionnaire has been designed to include both processors as well as retailers as it is recognised that most operations have some form of vertical integration. The first section thus deals with the slaughter (abattoir) activities – these are typical of a processor whilst the last sections of the questionnaire deal with buying/selling (retail) of meat and meat products.

3.4.1 Section 1: General Household Information

Q1.1-1.2 supplies the basic background information about the respondent.

Where Q1.3 identifies whether the respondent has a registered company, Q1.4 identifies the level of vertical integration of the processor/retailer by identifying whether live animals are also traded – this information helps with the development of the value chain. The next two questions identify the experience of the respondent as well as his training in farming activities. Q1.7 is also designed to supply more information on the respondent's activities so as to help develop the value chain matrix.

Q1.8 identifies the size of the business as well as the remuneration costs linked to the employees.

Q1.9 further identifies the products sold by species – information that will help develop the flow and matrix of the value chain.

3.4.2 Section 2: Operations

Q2.1-1.2 identifies the level of satisfaction of the processor/retailer as pertaining to the buying and selling arrangements of the livestock (if applicable) whilst Q2.3 identifies whether the respondent is part of an association or not. The later information will help policy makers to identify bodies involved in the processing and retail of animal and meat products.

3.4.3 Section 3: Livestock Meat Purchases

Q3.1 quantifies the animal and meat purchases made by the processor/retailer according to species. Note that there are some questions here that do not require an answer (eg. meat cuts cannot be counted as number of animal purchased). Information on price information, from whom and where the animals/meat products are purchased, as well as the form of payment all require coded answers. These questions all help develop the direction of flow of products and relevant information through the value chain matrix.

Q3.2 ranks the most and least important months of trade for each species. This information will allow Government and policy makers to see whether there are seasonal fluctuations that require intervention so as to ensure a constant supply of meat products to the consumer.

Q3.3 quantifies the importance of various supply channels to the processor/retailer and also identifies the direction of change in these – the information is collected separately for the different species.

Q3.4 identifies the person responsible for paying for the transport of the purchases (Q3.1) whilst Q3.4.1 quantifies the distance travelled for each species.

Similar to the previous two questionnaires, Q3.5 identifies whether a middleman is used for the purchases and the amount paid to him per kg meat by species.

Q3.6 asks the processor/retailer to class the quality attributes that are taken into account when purchasing the specific commodity (animal and/or meat). Various quality attributes that are linked to modern consumer concerns such as feed type and medication used are also included in this section as are more traditional meat quality parameters such as grading/classification, meat/fat colour, etc.

Q3.7-9 deals with the issue of whether contracts are used for this section of the value added chain. Q3.8 also identifies the level/depth of the contract as pertaining to specifications and Q3.9 quantifies the percentage of each species traded under the contract.

3.4.4 Section 4a: Primary Processing

3.4.4.1   Primary Processing

This section identifies the position of the respondent in the value chain; specifically whether they are involved in the primary (slaughter) processing (Q4.1). If the respondent is not involved, then the interviewer automatically moves on to Section 4b.

There is a possibility that a primary processor could hold/fatten animals in a feedlot prior to slaughtering (Q4.2) and Q4.2.1 quantifies the duration that the animal(s), according to species, is kept in the feedlot. This information also helps develop the flow/direction of the value chain.

Q4.3 identifies the scope of animal slaughtering (Q4.5 identifies the abattoir's capacity) to see whether there is more than one species slaughtered. Q4.6 quantifies the number of animals per species slaughtered in a month whilst Q4.7 quantifies how many days per week (also hours per day) the abattoir is in use.

Frequently, abattoirs slaughter animals for a fee and this question is raised in Q4.4. The answer collected here will influence the income of the operation.

Q4.8 deals with animal health issues and asks whether the live animals are inspected and identifies by whom and also quantifies the costs of this inspection per species. Q4.9 codes for reasons of rejection of animals at slaughter point – information that can help authorities identify problems in the production phase. Q4.10 is similar to Q4.9 but deals with meat inspection whilst Q4.11 identifies reasons for rejection of carcasses.

3.4.4.2 Section 4b: Secondary Processing

This section deals with the further processing of the meat (note that processors/retailers who do not slaughter their own animals would start answering from Q4.12).

Q4.13 identifies whether meat is custom processed for a specific customer and quantifies (%) the amount processed by species.

Where Q4.14 identifies the cooler and freezer storage capacity of the business, Q4.15 quantifies the average amount (kg) of meat held in storage per day by species.

Q4.16 evaluates the level of sophistication used in the packaging of the meat whilst Q4.17 identifies whether the facility is inspected by a designated officer. The responses will provide guidance to policy makers on whether interventions (from a health perspective) are required.

3.4.5 Section 5: Meat Sales

This section evaluates the level of meat (whole/half/quarter/ carcasses and/or deboned primary cuts) and/or product (cooked or packaged, offal, and/or other) sales and helps develop the direction of the value added links in the VAIMS model. Q5.1 consists of a number of open ended and coded questions, collected per species.

Additional information obtained in this section includes information on pricing (where sourced) as well as to whom and where the meat/products are sold and the form of payment. The number of sales per week is also quantified. Q5.2 ranks the most and least important month (s) for sales – this helps determine whether there is a seasonal effect on this section of the value added chain.

Q5.3 quantifies the importance of the various channels of sales and also identifies any changes that may have occurred over the past five years. Q5.4-5.8 addresses the issue of whether brokers/middlemen are used in the selling chain and whether there is a formal contract (Q5.5). Q 5.6 identifies whether various quality attributes are specified in the contact.

Q5.7 asks the processors/retailers to rate the importance that they perceive their meat buyers place on various meat quality parameters. This information helps identify marketing strategies that would be applicable throughout the value added chain (eg. farm of origin).

The results from these questions under Section 5 are used to determine the performance indicators as well as the product flow in the value chain model.

3.4.6 Section 6: Costs of Production

This section quantifies the different production/processing units purchased as well as their unit costs – results that are used in the calculation of the performance indicators. There are also three coded questions in this section that deal with the place of purchase, who paid for the costs as well as the time linked to the later.

3.4.7 Section 7: Miscellaneous Information

The first question (Q7.1) in this section deals with sources and reliability of the information received by the processor/retailer – these responses are all coded. Q7.2 deals with the change over the past five years in the business and addresses issues such as expansion, improved technology, etc. – this information is valuable for policy

makers as it allows them to analyse the state of affairs and identify areas where interventions may be made.

Q7.3 and Q7.4 rank the constraints and risks that may be experienced by the processors/ retailers.

4.   VAIMS guidelines

4.1   System Prerequisites and Installation

The VAIMS system will run on any desktop or notebook computer running Windows XP Service Pack 2 or Windows Vista.
The installation procedure for VAIMS is as follows:

- Insert the VAIMS CD in your computer's CD-ROM or DVD-ROM drive.

- The VAIMS Setup should Autorun; if it does not, go to My Computer and open up the file system of the VAIMS CD. Double-click on the Setup program Icon.

- Follow the prompts of the Setup program.

- Once Setup has completed, run VAIMS either via the Desktop Shortcut or via the link in the Windows Start Menu.

4.2   Initial Setup

Before attempting to use the system to complete any Questionnaires, it is necessary to complete the steps mentioned in this section.

4.2.1 Importing a Questionnaire

Before any Questionnaires can be entered into the system; the Questionnaire template must first be added to the system. This is done by using the Import

Questionnaire screen, which is accessed by selecting File->Import Questionnaire. This action should display the dialog shown in Figure 1 Importing a Questionnaire.
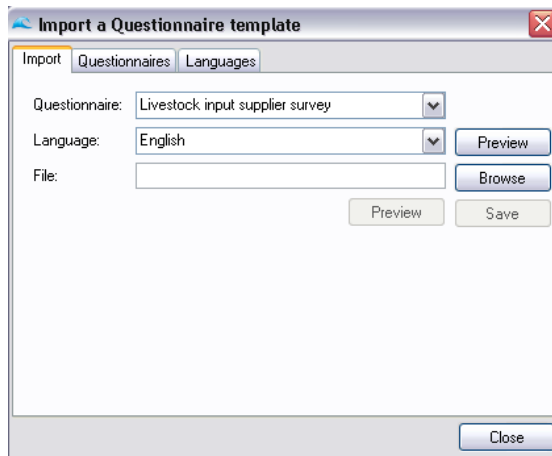
Figure 1:   Importing a Questionnaire

The Import Questionnaire screen consists of three sections:

- Import: Used to link a new Questionnaire template to a specific base Questionnaire Language.

- Questionnaires: Used to add a new base Questionnaire to the system.

- Languages: Used to add a new Language to one of the system's base Questionnaires.

It is recommended that any action on this screen be confirmed or handled by a Riptide Technology team member.

4.2.1.1   Adding a base Questionnaire name

This tab allows the base Questionnaire names to be added to the system. Only a person with Administrative Access to the VAIMS system will be allowed to add a new Questionnaire name.   New base Questionnaires are added by typing the Questionnaire's name into the provided text box and clicking the Add button. See Figure 2 Adding a base Questionnaire name.
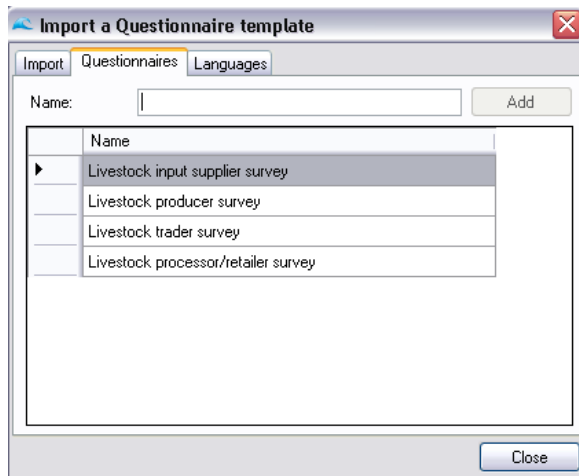
Figure 2:   Adding a base Questionnaire name

4.2.1.2   Adding a Language to a base Questionnaire

This tab allows extra Languages to be added to base Questionnaires. First select the relevant base Questionnaire name from the provided drop-down list. Then fill in the name of the new Language in the provided text box and press the Add button. See Figure 3 Adding a Language to a base Questionnaire.
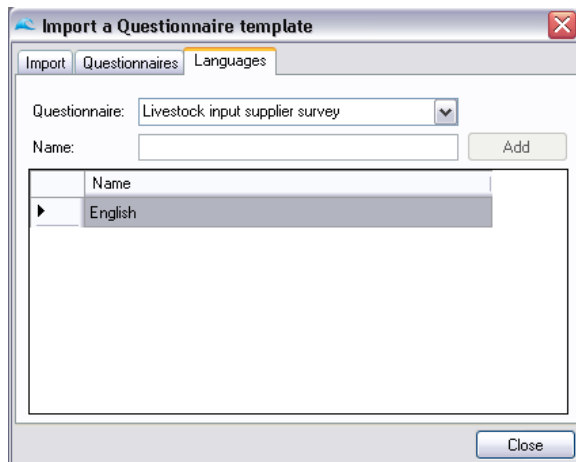
Figure 3:   Adding a Language to a base Questionnaire

4.2.1.3 Linking a Questionnaire template to a specific base Questionnaire Language

This tab allows for the linking of .csv files to a specific base Questionnaire Language (see Figure 4 Import Tab).
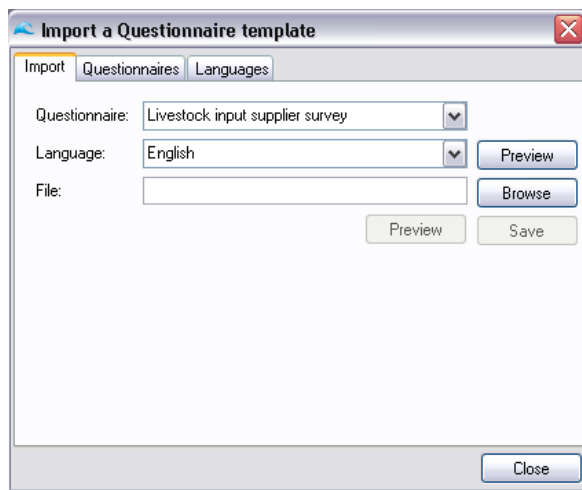

Figure 4:   Import Tab

Firstly select the relevant base Questionnaire from the first drop-down list; then select the relevant Language from the second drop-down list. If there is already a Questionnaire loaded into the system, for the relevant Language, the Preview button next to the Language will become active. Clicking on this Preview button will allow the user to see what the Questionnaire, currently loaded into the system, looks like. Next, click on the Browse button and search through the file system for the relevant .csv file which will act as a template for the Questionnaire Language (see Figure 5 .csv File for an example of the Table 2 .csv template).

	A	B	C	D	E
1	Question Type	Question Number	Question Text	Column Names	Row Names
2	1				
3	1		VAIMS: Livestock input supplier survey		
4	1				
5	2		DATE		
6	2		TIME STARTED		
7	2		TIME ENDED		
8	1				
9	2		Name of Enumerator		
10	2		Enumerator code		
11	1				
12	2		District (code):		
13	1				
14	2		Ward (code):		
15	1				
16	2		Village (code):		
17	1				
18	1		SECTION 1: GENERAL INFORMATION		
19	1				
20	2	1.1	Respondent's, Name		
21	4	1.2	Respondent's information		
22	2		Gender		
23	2		Martial status		
24	2		Age (years)		
25	2		Years of schooling		
26	2	1.3	Number of years in business		
27	2	1.4	Position of respondent in business		

Figure 5:   .csv File

Table 2:   .csv Format

| Question Type	Question Number	Question Text	Column Names	Row Names
1 (Used to create headings or blank lines.)	Leave Blank	The heading text or leave blank	Leave blank	Leave blank
2 (Used to create a question with a single answer.)	The number to be displayed next to the question text.	Contains the question text.	Leave blank	Leave blank
3 (Used to create a question with a table.)	The number to be displayed next to the question text.	Contains the question text.	Contains the table column names. Enter them in the following format: !#Column Name!#Column Name!#Column Name	Contains the table row names. Enter them in the following format: !#Row Name!#Row Name!#Row Name
4 (Used to create a subheading.)	The number to be displayed next to the question text.	Contains the question text.	Leave blank	Leave blank
5 (Used to create a question with a single answer which is a Date.)	The number to be displayed next to the question text.	Contains the question text.	Leave blank	Leave blank
6 (Used to create a question with a single answer which is a Time.)	The number to be displayed next to the question text.	Contains the question text.	Leave blank	Leave blank

If the .csv file is in the correct format (as shown in Table 2 .csv Format), the Preview button underneath the Languages drop-down list will become active. Pressing the button will allow the user to see a preview of what the Questionnaire will look like once imported. Once the user is satisfied with the look of the Questionnaire; clicking the Save button will link the template to the chosen Questionnaire Language. If a template is already associated with the chosen Questionnaire Language, the user will be given the option of replacing the existing template with the new one (see Figure 6 Saving a Questionnaire template).
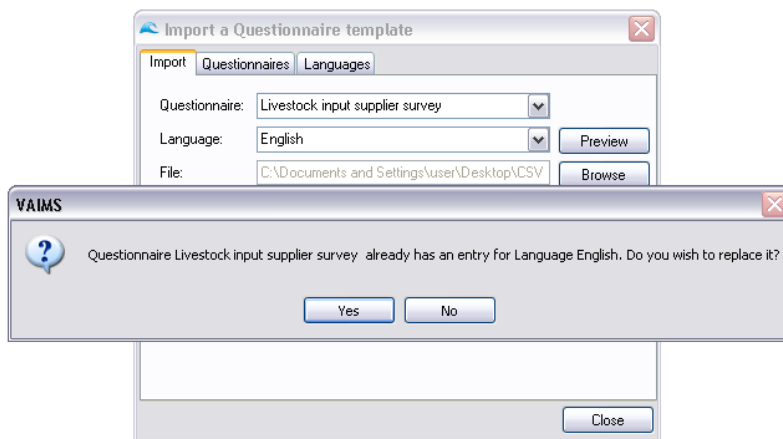
Figure 6:   Saving a Questionnaire template

4.2.2 Adding an Enumerator

In order for a Questionnaire to be completed the person entering the Questionnaire must select an Enumerator for the Questionnaire. This list needs to be populated with valid Enumerators beforehand. The New Enumerator… screen allows for these entries to be made. The New Enumerator… screen may be accessed by selecting File->New Enumerator…. This will display the dialog as shown in Figure 7 New Enumerator… dialog.
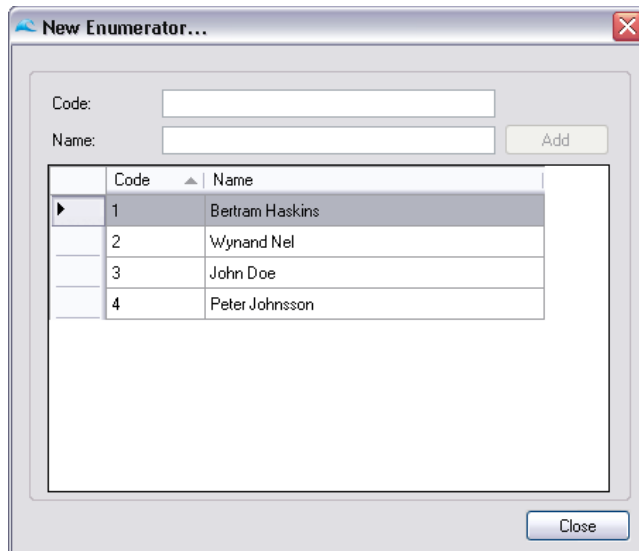
Figure 7:   New Enumerator… dialog

The list which dominates the dialog contains the Codes and associated Names for all of the currently registered Enumerators. The dialog has 2 fields which need to be completed before the Add button will become active:

- An unique (Enumerator) Code must be entered.

- An unique (Enumerator) Name must be entered.

Once the Add button has been clicked, or the user has pressed the Enter key in any of the text fields, the new Enumerator will be added to the list displayed on screen.

4.2.3 Adding a Country

In order for a Questionnaire to be completed the person entering the Questionnaire must select the Country in which the Questionnaire was completed. This list needs to be populated with valid Countries beforehand. The New Country… screen allows for these entries to be made. The New Country… screen may be accessed by selecting File->New Country…. This will display the dialog as shown in Figure 8 New Country… dialog.
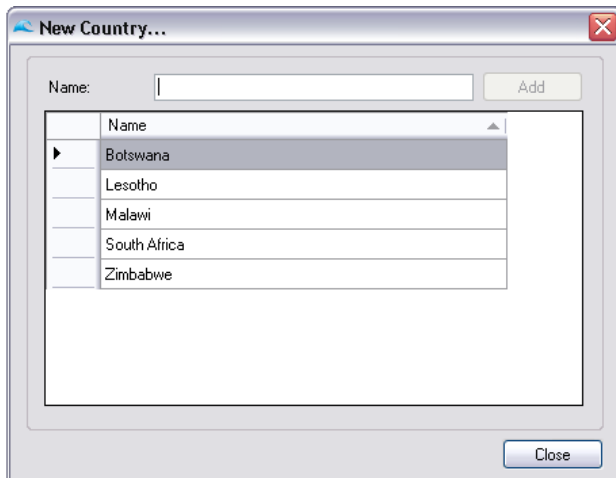
Figure 8:   **New Country… dialog**

The list which dominates the dialog contains the Names for all of the currently registered Countries. The dialog has a (Country) Name field which needs to be completed uniquely before the Add button will become active.

Once the Add button has been clicked, or the user has pressed the Enter key in the text field, the new Country will be added to the list displayed on screen.

4.2.4 Adding a District

In order for a Questionnaire to be completed the person entering the Questionnaire must select the District in which the Questionnaire was completed. This list needs to be populated with valid Districts beforehand. The New District… screen allows for these entries to be made. The New District… screen may be accessed by selecting File->New District…. This will display the dialog as shown in Figure 9 New District… dialog.
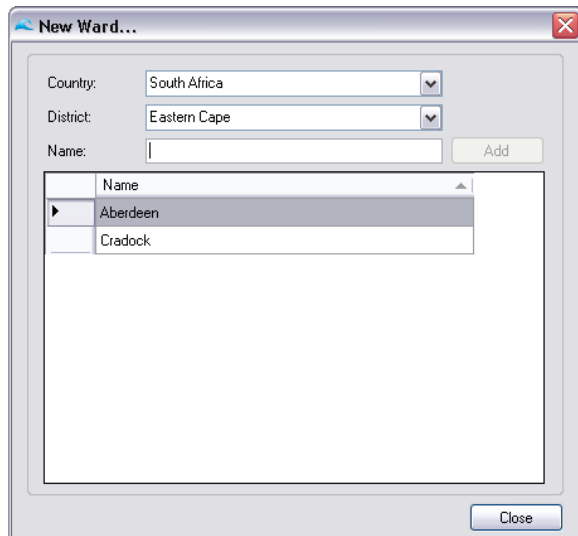
Figure 9:   New District… dialog

The list which dominates the dialog contains the Names for all of the currently registered Districts in a specified Country. The list of registered Districts will be updated once the required Country has been selected from the drop-down list. The dialog has a (District) Name field which needs to be completed uniquely before the Add button will become active.

Once the Add button has been clicked, or the user has pressed the Enter key in the text field, the new District will be linked to the selected Country and added to the list displayed on screen.

4.2.5 Adding a Ward

In order for a Questionnaire to be completed the person entering the Questionnaire must select the Ward in which the Questionnaire was completed. This list needs to be populated with valid Wards beforehand. The New Ward… screen allows for these entries to be made. The New Ward… screen may be accessed by selecting File->New Ward…. This will display the dialog as shown in Figure 10 New Ward… dialog.
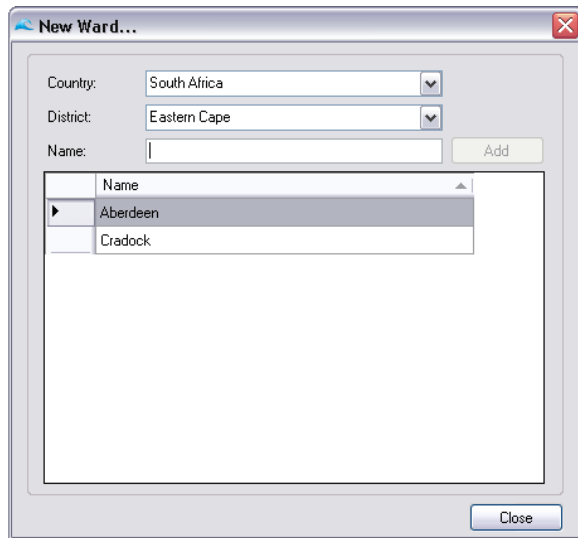
Figure 10:   New Ward… dialog

The list which dominates the dialog contains the Names for all of the currently registered Wards in a specified District. The list of registered Wards will be updated once the required Country and District have been selected from the drop-down list. The dialog has a (Ward) Name field which needs to be completed uniquely before the Add button will become active.

Once the Add button has been clicked, or the user has pressed the Enter key in the text field, the new Ward will be linked to the selected Country and District and added to the list displayed on screen.

4.2.6 Adding a Village

In order for a Questionnaire to be completed the person entering the Questionnaire must select the Village in which the Questionnaire was completed. This list needs to be populated with valid Villages beforehand. The New Village… screen allows for these entries to be made. The New Village… screen may be accessed by selecting File->New Village….   This will display the dialog as shown in Figure 11 New Village… dialog.

Figure 11:   New Ward… dialog

The list which dominates the dialog contains the Names for all of the currently registered Villages in a specified Ward.   The list of registered Villages will be updated once the required Country, District and Ward have been selected from the drop-down list.   The dialog has a (Village) Name field which needs to be completed uniquely before the Add button will become active.
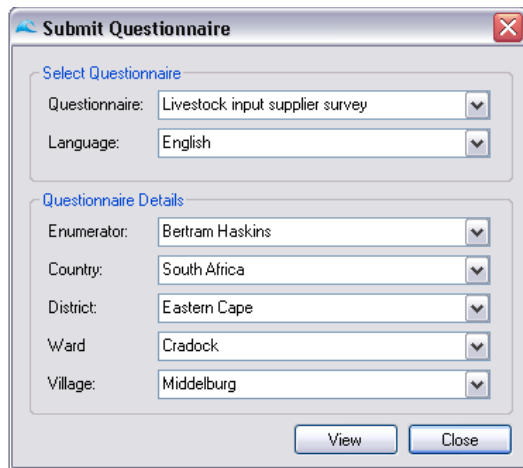
Once the Add button has been clicked, or the user has pressed the Enter key in the text field, the new Village will be linked to the selected Country, District and Ward; before being added to the list displayed on screen.

4.3   Submitting a Questionnaire

This part of the program is used to manually enter a completed Questionnaire into the system.   The user may elect to enter a Questionnaire by one of the followings means:

- Following the link File->Submit Questionnaire.

- Clicking on the Submit Questionnaire toolbar icon.

- Using the keyboard shortcut Ctrl+Q.

The Submit Questionnaire dialog (as shown in Figure 12 Submit Questionnaire dialog) has options for selecting which specific Questionnaire type should be completed and in which Language it should be displayed. The user also has to select which Enumerator has supervised completion of the form as well as in which Country, District, Ward and Village the Questionnaire was completed. The user may then click the View button to display the specific Questionnaire or click the Close button to close the Dialog.

Figure 12:   Submit Questionnaire dialog

Once the View button has been clicked, the specific Questionnaire will be displayed with the chosen values for Enumerator, District, Ward and Village already filled in. An example of a generated Questionnaire is shown in Figure 13 Questionnaire Example. At the top right-hand corner of the form the current Questionnaire number (as generated by the system) will be displayed in red. The user may then fill in the required fields of the Questionnaire; leaving empty any fields deemed irrelevant for the specific Questionnaire. At the bottom right-hand corner of the Questionnaire a Submit button and a Cancel button is displayed. Clicking the Submit Button will save the details of the Questionnaire.   Clicking the Cancel button will close the Questionnaire without saving any of the details.

Figure 13:   Questionnaire Example

4.4   VAIMS Workspace

The Workspace is the screen on which the value chains will be drawn; Figure 13 VAIMS Workspace shows an example Workspace.
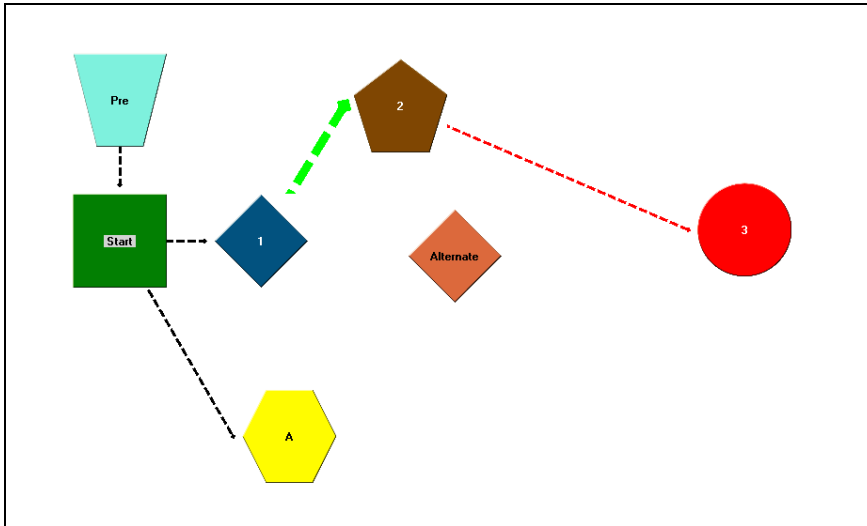
Figure 14:   VAIMS Workspace

Multiple Workspaces may be active on screen at any given time. The user may create a new Workspace by one of the following means, all of which will display the Workspace Wizard dialog as shown in Figure 15 Workspace Wizard:

- Following the link File->New Workspace…

- Clicking on the New Workspace… toolbar icon.

- Using the keyboard shortcut Ctrl+N.
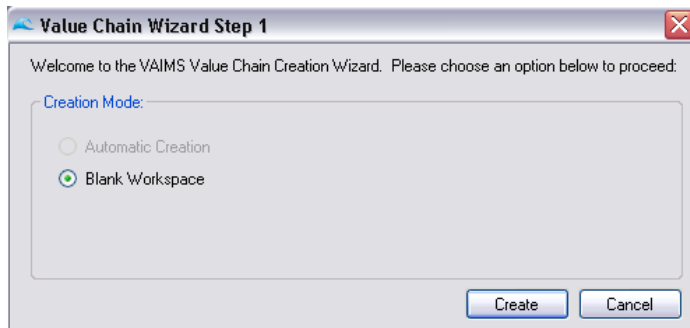
Figure 15:   Workspace Wizard

The Workspace can be manipulated in 2 ways:

- Workspace Wizard: Used to initially generate a value chain via a series of on-screen prompts. If the user chooses to; the Workspace Wizard may be skipped.

- Manual Workspace Manipulation: Manipulate the value chain by means of the mouse and keyboard shortcuts.

4.4.1 Workspace Wizard

This part of the VAIMS system may be used to automatically generate a Value Chain by selecting certain options such as Country, District, Ward, etc.

4.4.2 Manual Workspace Manipulation

Manual Workspace manipulation allows the user to manipulate an existing value chain in order to better make use of the available on-screen space, add extra items to an existing value chain or create a new value chain from scratch. The following options are available:

- Create a new, unlinked base Actor

- Create a new Actor from an existing Actor

- Create a new link between existing Actors

- Remove a single Actor from the Workspace

- Remove an Actor as well as its child Actors from the Workspace

- Remove a link between two Actors

- Strengthen or weaken the Link between two Actors

- Rename an Actor

- Change an Actor's font colour

- Move a single Actor

- Move multiple Actors

- Move all Actors

4.4.2.1   Create a new, unlinked base Actor

This option is used whenever the user wants to add a new Actor to the Workspace which is not linked to any of the other Actors in the Workspace. This is accomplished by right-clicking on an empty area of the Workspace and selecting the New Base Actor option from the pop-up Menu. The system will then display the New Actor… dialog (Figure 16 New Actor… dialog).

Figure 16:   New Actor… dialog

The New Actor… dialog requires the user to complete the Name field with a unique Actor name, select the type of Actor to be created as well as (optionally) select the colour in which the Actor name should be displayed on the Actor. The font colour may be changed by clicking on the coloured bar next to the Font Colour label and choosing the required colour from the Color Dialog (Figure 17 Color dialog). Clicking the Create button on the New Actor… dialog will place the new Actor on the Workspace at the spot where the user clicked. Clicking the Cancel button will close the New Actor… dialog without creating a new Actor.
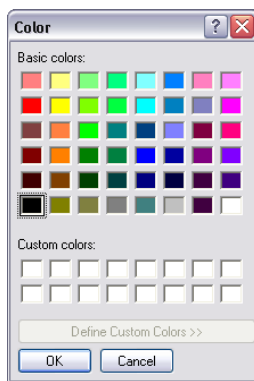
Figure 17:   Color dialog

4.4.2.2   Create a new Actor from an existing Actor

The user might want to create a new branch for an existing value chain by creating a new Actor. This is done by right-clicking on an existing actor and selecting the New… option from the pop-up menu. The user then needs to select whether a new Forward or Backward actor should be created:

- Forward Actor: The link will be created from the current Actor, pointing towards the newly created actor.

- Backward Actor: The link will be created from the newly created actor, pointing towards the current actor.

Selecting either Forward or Backward will display the New Actor… dialog, as shown in Figure 4.2.1a New Actor… dialog. The user now has the added option of choosing the Strength of the Relationship between the current and the newly created Actor – 1 being the weakest (thinnest line) and 5 being the strongest. The user is also able to choose the colour of the link by clicking on the coloured bar next to the Link Colour label and selecting the desired colour from the Color Dialog. Clicking the Create button will create the new Actor next to the current Actor on its right-hand side; if there is already another Actor at this position, the new Actor will be placed behind it. Clicking the Cancel button will close the New Actor… dialog without creating a new Actor.

4.4.2.3   Create a new link between existing Actors

The user might want to create a new relationship between two existing Actors. This is done by right-clicking on an existing actor and selecting the New… option from the pop-up menu. The user then needs to select whether a link should be created to a Forward or a Backward Actor:

- Forward Actor: The link will be created from the current Actor, pointing towards the newly created actor.

- Backward Actor: The link will be created from the newly created actor, pointing towards the current actor.
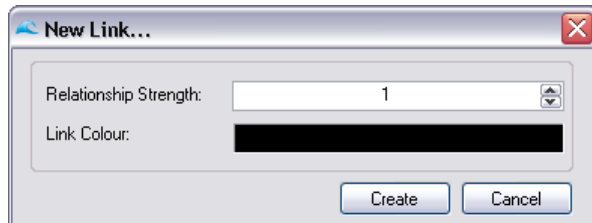
When the user hovers with the mouse cursor over the Forward Link or Backward Link option, a further menu will pop out, displaying a list of available Actors to which the current Actor may link. Clicking on any one of these Actor names will display the New Link… dialog as shown in Figure 18 New Link… dialog.

Figure 18:   New Link… dialog

On the New Link… dialog the user has the option of choosing the Strength of the Relationship between the two Actors – 1 being the weakest (thinnest line) and 5 being the strongest. The user is also able to choose the colour of the link by clicking on the coloured bar next to the Link Colour label and selecting the desired colour from the Color Dialog. Clicking the Create button will create the new Link between the Actors. Clicking the Cancel button will close the New Link… dialog without creating a new Link.

4.4.2.4   Remove a single Actor from the Workspace

Whenever the user wants to remove an Actor from the value chain, this can be accomplished by right-clicking on the Actor, which needs to be removed, selecting the Remove option from the pop-up menu and then selecting the Current Actor option. A dialog box will be displayed which will ask the user to confirm whether or not the Current Actor should be removed from the Workspace. If the user clicks the Yes button, the Actor, along with all of its Links to other Actors will be removed. If the user clicks the No button, the removal operation will be aborted.

4.4.2.5   Remove an Actor as well as its child Actors from the Workspace

Whenever the user wants to remove an Actor from the value chain along with all of the Child Actors linked to it, this can be accomplished by right-clicking on the Actor, which needs to be removed, selecting the Remove option from the pop-up menu and then selecting the Current Actor with Children option. A dialog box will be displayed which will ask the user to confirm whether or not the Current Actor and its Child Actors should be removed from the Workspace. If the user clicks the Yes button, the Actor and its Child Actors, along with all of their Links to other Actors will be removed. If the user clicks the No button, the removal operation will be aborted.

4.4.2.6   Remove a link between two Actors

Whenever the user wants to remove a Link between two actors, this can be accomplished by right-clicking on one of the Actors sharing the Link, selecting the Remove option from the pop-up menu and then hovering the mouse cursor over the Forward Link or Backward Link option. As soon as the mouse hovers over either of the two options; all relevant Actors to which this type of link is active from the current Actor, will be displayed. When the user clicks on one of these Actor names, a dialog box will be displayed. This will ask the user to confirm whether or not the Link should be removed from the Workspace. If the user clicks the Yes button, the Link will be removed. If the user clicks the No button, the removal operation will be aborted.

4.4.2.7   Strengthen or weaken the Link between two Actors

Whenever the user wants to change the strengthen or weaken a Link between two actors, this can be accomplished by right-clicking on one of the Actors sharing the Link, selecting the Relationships option from the pop-up menu and then hovering the mouse cursor over the Strengthen To… or Weaken To… option. As soon as the mouse hovers over either of the two options; all relevant Actors to which this Actor has links, will be displayed. When the user clicks on one of these Actor names, the

Link to that Actor will either be strengthened or weakened. Links cannot be made weaker than a level of 1 or stronger than a level of 5.

4.4.2.8   Rename an Actor

If the user wants to rename any Actor on the Workspace, this can be accomplished by right-clicking on the Actor and selecting the Maintenance option from the pop-up menu and then selecting Rename. This will open up the Rename Actor dialog (as shown in Figure 18 Rename Actor dialog). The user may then enter a new unique Actor name and click on the Rename button in order to rename the current Actor. Clicking on the Cancel button will close the Rename Actor dialog without renaming the Actor.
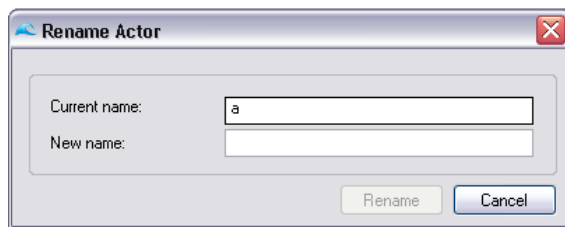
Figure 19:   Rename Actor dialog

4.4.2.10   Change an Actor's font colour

If the user wants to change the font colour of any Actor on the Workspace, this can be accomplished by right-clicking on the Actor and selecting the Maintenance option from the pop-up menu and then selecting Change Font Colour. This will open up the Color dialog (as shown in Figure 17 Color dialog). The user may then select a new font colour or close the dialog without changing the font colour.

4.4.2.11   Move a single Actor

The user may at any time left-click on any of the Actors on the Workspace, hold down the left mouse button and drag the Actor to a new position on the Workspace.

4.4.2.12   Move multiple Actors

The user may want to move more than one Actor at a time, this can be accomplished by left-clicking on a blank area of the Workspace, holding down the left mouse button and dragging a selection rectangle around all of the Actors which need to be moved. The user must then left-click on one of the selected Actors (they will all be highlighted), hold down the left mouse button and drag the selected Actors to a new position on the Workspace. Once the user has moved the Actors to their new position, the Actors must be de-selected, by pressing Ctrl+D, before continuing with any tasks on the Workspace.

4.4.2.13   Move all Actors
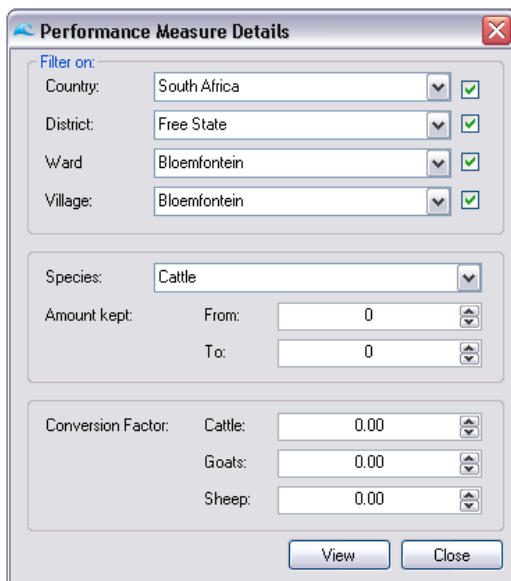
The user may want to move all Actors at the same time, this can be accomplished by pressing Ctrl+A. The user must then left-click on one of the selected Actors (they will all be highlighted), hold down the left mouse button and drag the selected Actors to a new position on the Workspace. Once the user has moved the Actors to their new position, the Actors must be de-selected, by pressing Ctrl+D, before continuing with any tasks on the Workspace.

4.4.2.14   Submitting a Questionnaire

The user may want to submit a Questionnaire from the workspace. This is done by right-clicking on the Actor for which the Questionnaire needs to be submitted and then left-clicking on Submit Questionnaire in the pop-up menu. The procedure for submitting a Questionnaire is the same as described in Section 3. Submitting a Questionnaire.

4.4.2.15   Displaying Performance Measures

The user may want so display any one of the performance measures for a specific Actor. This is done by right-clicking on the Actor for which the Questionnaire needs to be submitted and then hovering over Performance Measures in the pop-up menu. The user may then select the Performance Measure which needs to be displayed. Depending on which Performance Measure was chosen, a screen may be displayed which will allow the user to set certain variables for the specific Performance Measure. An example of this screen is shown in Figure 20 Performance Measure Details dialog.

Figure 20:   Performance Measure Details dialog

4.5   Displaying Performance Measures

Performance Measures may be displayed from the Main Menu screen by selecting the Performance Measures menu item and then selecting a specific Performance Measure from the drop-down list. Once a Performance Measure has been selected, a Choose Actor dialog (as shown Figure 21 Actor dialog) will be displayed.
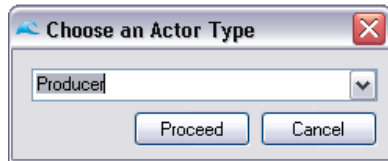
Figure 21:   Choose Actor dialog

The user can then choose for which type of Actor the Performance Measure must be displayed.   After which, depending on which Performance Measure has been selected, a screen may be displayed which will allow the user to set certain variables for the specific Performance Measure (see Figure 4.2.14a Performance Measure Details dialog).

5.   Analysing the data

5.1   Background and analytical approach

In the VAIMS system data relevant to value chain structure and function is collected and tabulated in Microsoft Excel.$^{®}$ Access to the data is enabled by a software interface, but the analytical aspects of VAIMS remain embedded in Excel.   This approach allows flexibility on the part of the user in that data are readily available for a wide range of analysis.   The software interface has the primary functions of (i) organising and capturing the data, and generating selected key performance measures of universal interest (ii) linking data entry, retrieval and analysis to a diagrammatic representation of the value chain (enabled by a drawing wizard).   The data compilation and analysis, and generation of output, use Excel.

As pointed out in VAIMS' literature review, value chain analysis is a new and rapidly-developing field, with few fixed references or standards for performance measures, indicators of structure, or even unambiguous categories of actors or enterprise types. For this reason the analysis embedded within VAIMS' software interface has been kept to a minimum at this stage of development, in favour of making available the data for use in Excel applications.

5.2   Data entry, storage and compilation

5.2.1 File formats

Survey data are saved onto observation-specific Excel spreadsheet files. For the majority of analytical tasks, these are then accessed to generate analysis. New questionnaires, and their new elements, developed within the software interface are stored as blank templates in comma-separated variable (.csv) format. For the most part, analysis makes direct use of the stored questionnaires (in .xls format).

5.2.2 Filters

Access to the data is mediated by filters allowing the user to select subsets of the available data based on geographic location and subdivision, species, stage of the chain, and size of operation. (see section 4.4.2.15 above). This facility may be disabled in order to view the entire data set.

5.3   Analysis available

Pursuant to VAIMS' purpose, value chain performance measures available within the software interface feature primarily the components of value addition, its summation and distribution amongst chain actors. In addition, the capacity of the value chain to transmit quality incentives is included.   These two analyses constitute the universally-recognised value chain performance measures.   The VAIMS interface also produces a number of summary statistics from the stored Excel sheets.

Other analysis entails use of Excel functions on the stored (Excel) files.   This extends to performance measures beyond those displayed above – particularly those of an experimental or exploratory nature, characterisation of the sample according to its distribution, and average and other indicative measures of variables from within the sample.

Figure 22 shown below represent these outputs from the software interface. Summary data (below) provided by the interface calibrates the sample in terms of size and relevance to candidate problems and opportunities.

Figure 22:   Summary data

Revenue calculations (Figure 23 below) provide further detail of the structure of the sample. Elements of revenue (cash sales and value of increases in animal numbers (a proxy measure relevant to systems where sales are minimal)) are also presented.

Microsoft Excel - VAIMS performance measures.xls

File Edit View Insert Format Tools Data Simetar Window Help

D15

	B	C	D	E	F	G	H
19	Number of questionnaires completed				5	3	3
20							
21	Performance measure	Definition	Formula	Species		Agent	
22	Revenue at each stage				Producer	Trader	Processor/retailer (monthly)
23		Annual income		Cattle	9900	175000	70840
24		received from	= Sales price x	Sheep	1000	144000	42500
25		sales of value-	Quantity sold	Goats	4220	35000	90000
26				TOTAL	15120	354000	203340
27			PLUS				
28		Sum of Value of	Sales price *	Cattle	900		
29		livestock	(Number consumed +	Sheep	1010		
30		consumed at	number given away)	Goats	250		
31			PLUS				
32		Sum of change in	Sales price * (Net	Cattle	5700		
33		value of livestock	increase in number	Sheep	1140		
34		on hand	of animals on hand)	Goats	5800		
35							
36				Cattle	1375	14583	70840
37				Sheep	263	12000	42500
38	TOTAL MONTHLY REVENUE			Goats	856	2917	90000
39	Performance measure	Definition	Formula	Species	Producer	Trader	Processor/retailer (monthly)

Performance measures
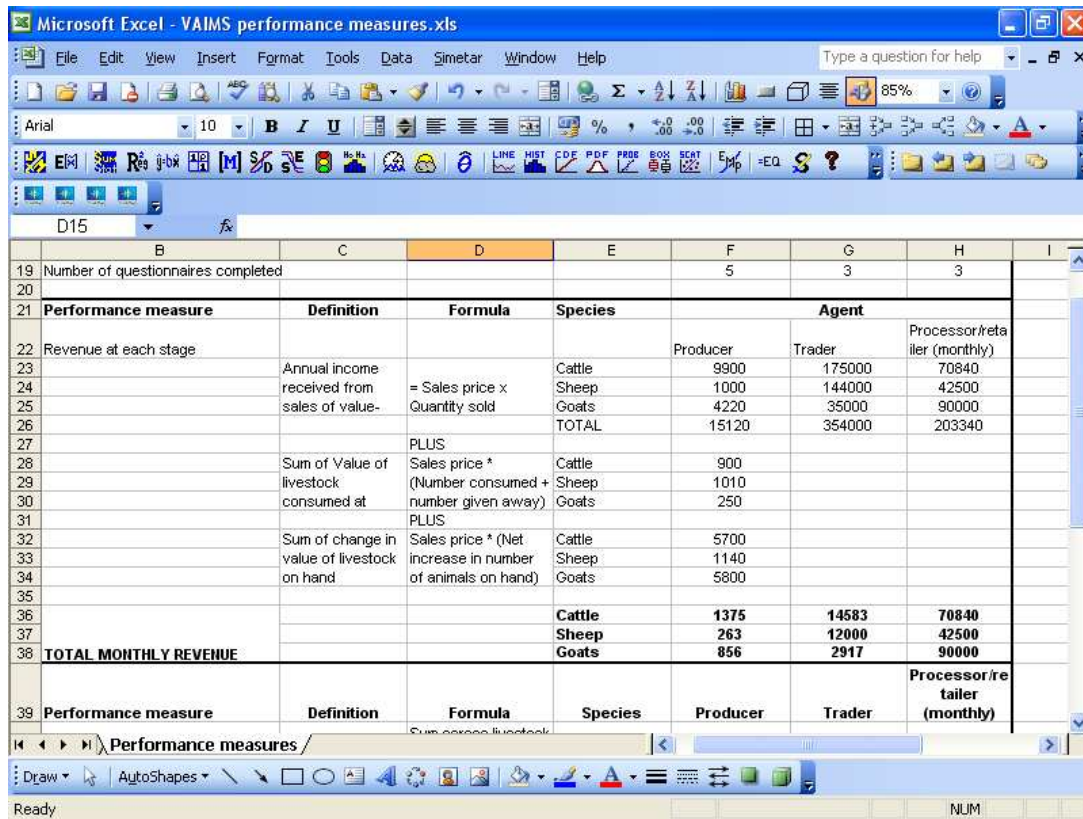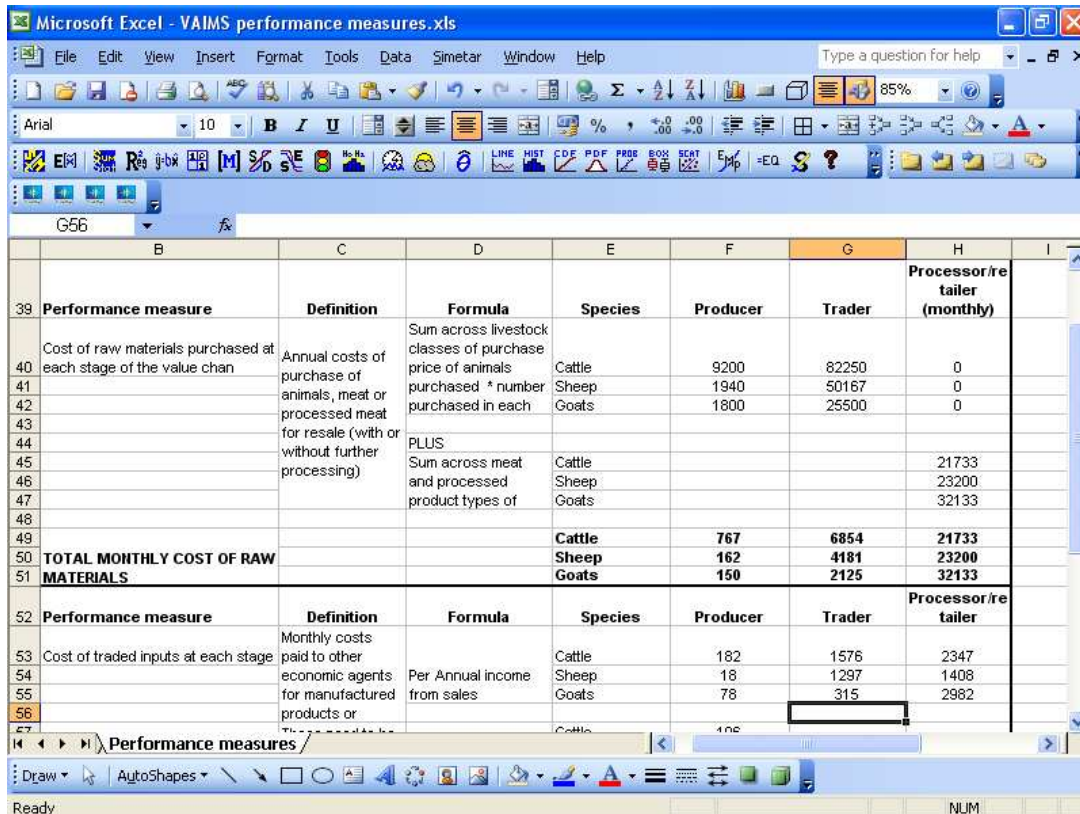
Draw ▼ AutoShapes ▼

Ready   NUM

Figure 23:   Revenue

Central to measures or value added is the delineation between costs of traded inputs and costs of raw materials. The cost output table (Figure 24 below) presents these data. This enables further analysis in Excel, for example the calculation of average production costs, expressed per kg liveweight sold.

			Producer	Trader	Processor /retailer
Averege production cost / kg live weight sold	At every level of the chain per/live animal/kg sold	Cattle	1.21	0.43	3.08
		Sheep	4.98	5.46	3.50
		Goats	1.41	1.74	2.53

39	Performance measure	Definition	Formula	Species	Producer	Trader	Processor/retailer (monthly)
40	Cost of raw materials purchased at each stage of the value chan	Annual costs of purchase of animals, meat or processed meat for resale (with or without further processing)	Sum across livestock classes of purchase price of animals purchased * number purchased in each	Cattle	9200	82250	0
41				Sheep	1940	50167	0
42				Goats	1800	25500	0
43							
44			PLUS				
45			Sum across meat	Cattle			21733
46			and processed	Sheep			23200
47			product types of	Goats			32133
48							
49				Cattle	767	6854	21733
50	TOTAL MONTHLY COST OF RAW			Sheep	162	4181	23200
51	MATERIALS			Goats	150	2125	32133
52	Performance measure	Definition	Formula	Species	Producer	Trader	Processor/retailer
53	Cost of traded inputs at each stage	Monthly costs paid to other economic agents		Cattle	182	1576	2347
54			Per Annual income	Sheep	18	1297	1408
55		for manufactured	from sales	Goats	78	315	2982
56		products or					
57				Cattle	106		

Figure 24: Costs of raw materials and traded inputs

Value added is presented (Figure 25 below) subdivided by species and stage of chain. It should be noted that this can be further decomposed by use of the filters to enhance the focus. Although the software interface's output focuses on value addition *per se*, its decomposition and allocation to stages is motivated by the available numbers. Using simple Excel features, for example, enables a calculation of shares of value added as follows (it should be noted that these figures are examples only):

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Shares of Value Added

	Producer	Trader	Processor /retailer
Cattle	1%	12%	88%
Sheep	0%	27%	73%
Goats	1%	1%	98%

Value added per kg carcase weight

Cattle	0.03	0.82	21.38
Sheep	0.33	11.18	9.29
Goats	0.15	0.26	20.58

Figure 25:   Value added

Further chain performance measures available from the VAIMS software interface includes the ability of the chain to transmit quality incentives. The example below (see Figure 26) presents the three stages' perceptions of buyers' needs, in the context of attributes that buyers "always" seek when purchasing animals. The presented extent of agreement is then available for presentation in graphs (done by the software), as regression analysis and analysis of variance using excel or in terms of frequencies.

	F (Producer)	G (Trader)	H (Processor/retailer)	I (Producer)	J (Trader)	K (Process or/retailer)
Other			0			0
♫ Questionnaires	5	3	3			
	Always			Always		
Age	4	2	0	80	67	0
Sex	3	1	0	60	33	0
Breed	2	1	0	40	33	0
Weight (measured)	5	3	2	100	100	67
Weight (apparent)	0	0	0	0	0	0
Grade		0			0	
Condition of animal	5	3	0	100	100	0
Free of disease	2	2	2	40	67	67
Specified use of feed or medicine	0	0	0	0	0	0
Pelt condition	0	0		0	0	
Pelt colour	0	0		0	0	
Time of delivery	0	0	1	0	0	33
Place of delivery	0	0	0	0	0	0
Advance payment	0	0	0	0	0	0
Colour of product			2			67
Packaging			3			100
Brand			0			0
Time since slaughter			0			0
Origin of animal (place it came from)			0			0
Perceived healthiness of the product			1			33
Organic or low-input production			0			0
Other			0			0
♫ Questionnaires	5	3	3			

Figure 26: Value chain transmission of buyers' preferences fro quality attributes

6. Conclusion

The VAIMS package is a systematic method of collecting, entering, capturing, managing, analysing and interpreting the data generated in quantitative studies of the value chain. VAIMS' interpretation of the value chain as a data-generating entity is a significant advance on earlier work reviewed, which dealt more with the conceptual issues and relationships between stages in the chain than the utilisation of the quantitative information. VAIMS' other main advance is its address to multiple stages of the chain in a consistent manner, providing for measurement of performance at chain level, rather than enterprise level.

The VAIMS software interface provides user-friendly access to a limited number of analytical procedures. Its primary purpose is an interactive means of generating questionnaires and managing the data as it is captured. Its automated analysis capacity is constrained to elements of value addition and transmission of incentives

by the chain. This is to minimise the "black box" interpretation of, and in association with presentation of all constituent formulae helps to maintain the transparency of the analysis. A further feature to aid transparency is the capacity for filtering the sample to enhance focus on a group of interest – frequently small farmers and businessmen, but extending to analysis on a regional basis.

In all cases, VAIMS' automated output appears in Excel files, which can themselves be used to generate further analysis. The output files generated are standard in structure and format, thus further aiding consistency in interpretation across regions and over time. This consistency enables use of VAIMS as a benchmarking tool, specifically by appropriate application of filters that subdivide data for comparisons.

The majority of analysis available in VAIMS is generated "freestyle" within Excel by the user. This spans the continuum of descriptive statistics (most also generated by the VAIMS software interface) through to advanced statistical and mathematical analysis. The patchy nature of value chain survey data necessitates the user's capacity to drop or censor variables or observations, a feature not available in automated software but very well suited to analysis using Excel.