Exploring business pressures on the poultry industry with special reference to pre-harvesting protocols and dumping

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ABSTRACT

This mini-dissertation explores the business pressures on the poultry industry in South Africa, with special references to pre-harvesting protocols and dumping.

I extended prior work on pre-harvesting protocols and investigated the relationship between global trade and the influence of trade liberalisation on the domestic poultry market.

This mini-dissertation is motivated by two research questions: (1) Which pre-transportation method and protocol of broilers would enhance animal welfare of broilers and deliver good quality to abattoirs? (2) Is foreign trade of poultry into the RSA fair? (a) Does dumping exist in the industry? (b) What are the effects of dumping on the local industry?

This research offers two separate hypotheses: (1) H₀: Welfare perceptions and H₁: Good practice and (2) Fair trade versus dumping of products. It was hypothesised that manual catching, day or night and summer and winter loading are not negatively related to animal welfare of the broilers in the RSA. Distance from the abattoir is negatively related to animal welfare. In the second hypothesis dumping is negatively related to the poultry industry.

The goals of this mini-dissertation were to determine whether (1) foreign trade and (2) animal welfare movements do contribute to unnecessary cost and strain on an already struggling industry.

Previous research indicates that distance, season of the year and mechanical loading do have an effect on bird welfare and DOAs (Dead on Arrival). Previous studies have shown that the catching method did not influence the percentage of bruising.

Literature on globalisation and foreign trade shows that product dumping has a negative economic effect on domestic markets and industries. It also shows that dumping of products does exist on the local poultry industry's market.

Our most important contribution is to contribute to questions debated on in boardrooms, of which no straight answers to these problems are available due to the many factors that influence these answers. The study also advances our understanding of free trade.

We conducted a mixed method approach on the animal welfare study to compare perceptions (questionnaire / qualitative study) with data collected (quantitative study) during a comparison of two different loading practices.
A questionnaire (qualitative study) was used to determine the feeling of the consumer on imported poultry products, and to determine whether the feelings of the respondents are related to the industry’s fears on imported or dumped poultry products.

The findings of the research were that people’s perceptions regarding animal welfare, especially towards mechanical loading, are not found in that manual loading is not harmful to broilers, also that other factors are higher contributors to poor animal welfare. The research also found that dumping does exist in the RSA poultry industry and it places unprecedented pressure on the poultry industry as a whole. Contrary to our main objectives it was also found that dumping and mechanisation leads to higher unemployment within the RSA borders.

The results of the research indicate that undue and unfair pressures are being placed on the South African poultry industry. Managers should be watchful as to what pressures they must submit to. The industry and other role players should insist on a strategy towards domestic and foreign policies, in line with domestic and foreign food security and job creation.

In conclusion a balance should be found between financially fair pressures placed on the poultry industry, trade liberalisation, poverty and social upliftment to prevent the industry from final collapse.
I want to contribute this mini-dissertation to my wife and kids for their moral support and loving assistance. I also want to thank all the people involved in this study for their support and hard work, especially during the collection of the data.

Special thanks and honour goes to the Creator who gave me the power to conduct this research.

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ABBREVIATIONS

AD – Anti Dumping
AI - Avian Influenza (bird flu)
AMIE - Association of Meat Importers and Exporters
AGOA – African Growth and Opportunity Act
ANC – African National Congress
AO - Angola
AR - Argentina
AU - Australia
BF - Burkina Faso
BR - Brazil
CAN - Canada
CBH – Country Bird Holdings
CD - Congo
CEO – Chief Executive Officer
CL - Chile
CM - Cameroon
CN – China
DK - Denmark
DAFF – Department of Agriculture, Forestry and Fisheries
DE - Germany
DOA – “Dead on Arrival”
DTI – Department of Trade and Industry
EBITDA – Earnings before interest, taxes, depreciation and amortisation.
EFF – Economic Freedom Fighters
eNCA – eNews Channel Africa
ER - Eritrea
EU – European Union
FAWU - Food and Allied Workers Union
fin24 – Finweek (RSA business magazine)
FR – France
GATT – General Agreement on Tariffs and Trade
DE - Germany
GDP – Gross Domestic Product
GH – Ghana
HU - Hungary
IQF – Individually quick frozen
ITAC – International Trade Administration Commission
JP - Japan
KFC – Kentucky Fried Chicken
MEX - Mexico
NL - Netherlands
NRCS – National Regulator for Compulsory Specifications
NWU – North West University
NZ - New Zealand
PETA – People for Ethical Treatment of Animals
PL - Poland
RSA – South Africa
RUSS - Russia
S & P – Standard and Poor’s
SANCU – South African National Consumer Union
SAPA – South African Poultry Association
SQAM – The Standards, Quality Assurance, Accreditation and Metrology
SARS - South African Revenue Service
SAU - Saudi Arabia
SN - Senegal
SPS – Sanitary and Phytosanitary
SZ - Swaziland
TBT – Technical Barriers to Trade
TD - Chad
TH - Thailand
UA - Ukraine
UK – United Kingdom
US – United States
WTO – World Trade Organisation
R – RSA Rand (monetary unit)
$ - US Dollar (monetary unit)
£ - UK Pound (monetary unit)
€ - EU Euro (monetary unit)
KEY TERMS

Animal welfare, anti-dumping, broiler, broiler mortality, bruising, catching method, chicken, corticosterone, DOA, dumping, energetic exhaustion, exports, feed deprivation, H/L ratio, imports, liver, meat quality, stress, transport, World Trade Organisation.
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CHAPTER 1: NATURE AND SCOPE OF STUDY

1.1 Problem statement

The South African economy is under severe pressure over the last couple of years due to high crime rates, unemployment, negative currency and GDP growth rates, political instability, poor service deliveries (water, sanitation and electricity), severe temperatures and drought, including the downgrading of Standard and Poor’s (S&P) and Fitch ratings of South Africa (RSA) to junk status and other external pressures not mentioned. The poultry industry in RSA is not isolated from these factors and in reality is faced with its own set of challenges. In modern business economics the key is low input and high output; not only to stay competitive in a growing global business environment, but also to ensure a sustainable local industry to provide employment and food security and to contribute to GDP and economic growth. With globalisation on the rise, an increase in competitiveness became reality, but whether or not global trade is always done in a fair and equal manner, is debatable.

The most relevant current influential factors and/or role players in the RSA poultry industry that influences input cost are:

i. Nature
   a. Climate (drought)
      i. Feed (biological), price and availability (demand and supply)
      ii. Water availability
      iii. Biological health (livestock, poultry)
   b. Political and foreign policies
      a. Service delivery (water, sanitation and electricity supply)
      b. Department of Agriculture, Forestry and Fisheries (DAFF)
         i. Regulations
         ii. Audit requirements
         iii. Brining requirements
iv. Labelling and advertising requirements

v. Abattoir and slaughter requirements

c. Employment rules and regulations
   i. The Basic Conditions of Employment Act (75 of 1997)
   ii. Occupational Health and Safety Act (85 of 1993)
   iii. Minimum wages

d. Foreign trade
   i. Dumping (products sold at prices lower than production cost)
   ii. Currency rates: Rand (R) versus the United States (US) Dollar ($), United Kingdom (UK) Pound (£) or the European Union (EU) Euro (€)
   iii. Capital equipment (expensive automation)
   iv. Trade laws and regulations (unfair / unequal regulating policies to trade)

iii. Environmental movements (ecological movements)
   a. Conservation
   b. Green politics
   c. Animal rights movements

iv. Market and customer requirements
   a. Regular audits (monthly and annually)
   b. Product specification and compliances
   c. Production and process preferences

It is arguably not the only influential factors, but does play a current significant role in the competitiveness of the industry - local (against cheap imports) and abroad (regulations that withheld or complicate local producers to export into foreign countries like the European Union (EU). These factors can further be categorised on the basis of how strong the poultry industry,
which are already under tremendous pressure, can influence these occurrences from having a less negative effect on input and output costs.

In this mini-dissertation only two of these factors will be studied, and I will argue that there are unnecessary cost influencers that constitute unfair, wrongful and unjust influence on the industry to compete globally:

i. Foreign trade (product dumping)

ii. Animal rights movements

The effects that two of the outside cost influencers (foreign trade and animal rights movements) have on the local poultry industry and whether these effects are unfair, wrongful or unjust, will be researched.

Harvesting (loading) of livestock (33-34 day old chickens / broilers) is part of the supply chain link where hidden costs is a reality. The study will tend to answer some of these questions related to losses (mortality, bruising, financially and bird welfare) and to explore the effects of different pre-harvesting protocols on broiler chickens transported to abattoirs in a South African context. Research done in other countries could be proven to be different locally due to climate, genetic and altitude differences or factors. The importance of this article lies in the latter, to ensure that broilers are transported and handled according to South African variables to ensure efficient and effective handling.

Previous studies were done on broiler harvesting and transporting. According to Vecerek et al. (2006:1) the effects of travel distance and the season of the year on death rates of broilers transported to poultry processing plants are caused by poor welfare. The amount of birds dying, according to him, may serve as an indicator of welfare during loading and transport. Mortality rates of 0.247 % were recorded, but varied according to transport distance; 0.146 % (50 km maximum) to 0.862 % (>300 km). In the study the highest mortality was recorded in the summer months and in the mid-winter months. The study was done in the Czech Republic.

In another study done by Nijdam et al. (2005:1) the comparison of bruises and mortality, stress parameters and meat quality in manually and mechanically caught broilers were compared. Plasma samples were taken before and after catching (manual and mechanical methods) from the first and last loaded transport vehicles. Bruises were also recorded, from 0.022 to 25 %; out of these 40 % originate from catching and crating, others at the broiler houses before catching or at the processing plants. Catching and crating also lead to broilers that are dead on arrival.
(DOA) and ranged from 0.05 to 0.057 %. According to the journal, mechanical catching was associated with higher DOA percentages than manual catching in spring, although not that significant in autumn. The catching method did not influence the percentage of bruising or meat quality. The study also further concluded that the amount of stress (indicated by corticosterone levels) were the same for both methods of loading. Plasma levels increased during the start of catching and increased up to transport and shackling, but no large changes were observed during catching. As a conclusion their findings indicated that, to reduce stress of broilers at the last day of life, could be better focused on factors other than catching.

Yue et al. (2010:1) investigated the effects of transport stress on blood metabolism, glycolytic potential and meat quality in meat-type yellow-feathered chickens. This research was done in China. The tests were based on short- and long-distance transport. The test results suggested that transport did not cause any noticeable changes in overall meat quality. Breast meat drip loss and meat colour were affected.

According to Ghareeb and Böhm (2009:1) stress tolerance of broilers can be enhanced by feeding chickens “a symbiotic Biomin® IMBO (a combination of Enterococcus faecium), a prebiotic (derived from chicory) and immune modulating substances (derived from sea algae), with a dose of 1 kg/ton of the starter diets and 0.5 kg/ton of the grower diets).” They also found that H/L ratio responses (Heterophil (H) counts, Lymphocyte (L)) were a better indicator of stress than corticosterone. The findings of the research concluded that stress tolerance of broilers during handling and transporting could be enhanced by adding IMBO to feed for five weeks.

Research was done on feed withdrawal periods. According to Trampel et al. (2005:1), pre-harvest feed withdrawal affects liver lipid and liver colour in broiler chickens. The study was based on a grain processor who attempted to alter the 12-hour pre-harvest fasting period. Cornstarch derivative pallets (maltodextrin) and water were given for 6-hours, followed by 6-hours of no feed and water. This led to a change in the liver colour, lighter than normal, and caused many carcasses to be condemned for human consumption by meat inspectors after slaughter. Feed withdrawal is done to empty crops of feed and ingesta in the intestines are reduced. This is necessary not to contaminate the processing plant and carcasses (faecal contamination of poultry carcasses during automated evisceration), to reduce faecal excretion and external contamination during transport and to reduce feed cost.

The environmental conditions (temperature, season of the year and lighting) during feed withdrawal may also have an influence on the prescribed feed withdrawal time. The research concluded that if carbohydrate supplements are fed to broilers, the farmers should then notify the processing plant so that meat inspectors do not condemn the light livers as abnormal physiological state, due to the maltodextrin that were fed to the chickens.
Savenije et al. (2002:1) researched the effects of feed deprivation and transport on pre-slaughter blood metabolites, early post-mortem muscle metabolites and meat quality. He noted that with the exhaustion of the chickens’ internal energy stores, they may lack energy to cope with the conditions to which they are subjected; also that energy stored in the muscle at time of slaughter affects meat quality. The energy remaining can cause irreversible contraction at deboning, which results in increased toughness of the meat (complete depletion is reported to happen within six hours). Energy was not compromised during this experiment. According to Savenije et al. (2002:9), neither feed deprivation nor transport under good conditions for short periods of time significantly affected meat quality.

Inconsistencies, gaps and controversies do exist in the literature. This study will address these by focusing on issues related to a local poultry producer. Testing adequate feed withdrawal (determining sufficient time necessary not to contaminate the abattoir or the meat) periods in different environmental conditions, loading methods (manual versus semi-mechanical catching), traveling distance and the effect on DOA, bruising (animal welfare) and stress, taking environmental conditions into consideration again.

This study’s objective is to contribute to questions debated on in boardrooms; no straight answers to these problems are available due to the many factors that influence these answers, for example day to night loading, summer to winter loading, far travel distance versus close traveling distances, forklift (mechanical loading) versus manual loading.

With the years of improved broiler genetics and newer and more modern broiler houses and equipment, factors surrounding broiler behaviour and physiological strengths also changed. Animal welfare is becoming a huge topic. Animal welfare organisations like Peta in the US was and still is the driving force behind most of the welfare questions abroad; it is becoming a buzz word worldwide due to globalisation.

The study is further concerned with foreign trade policy and the effects of product dumping onto the local market. According to a report by Ajam (2017:3), from IOL news RSA, Kevin Lovell, of the South African Poultry Association (SAPA), says that of all locally consumed poultry, 26% is imported, of which 45% (24,000 tonnes) are chicken portions (bone-in). He further reported that out of all the countries exporting to the RSA, 81% originates from the EU. According to two other sources more than 130,000 people will lose their jobs in twelve months’ time if dumping is not stopped; RCL foods and CBH are already forced to close down facilities due to this problem. The CEO of CBH, Marthinus Stander, said that “the industry is on the brink of collapse.”
1.2 Research questions

a) Which pre-transportation method and protocol of broilers would enhance animal welfare of broilers and deliver good quality to abattoirs?

b) Is foreign trade of poultry into the RSA fair?
   i. Does dumping exist in the industry?
   ii. What are the effects of dumping on the local industry?

1.3 Objectives of the study

1.3.1 Primary objective

To determine whether foreign trade and animal welfare movements do contribute to unnecessary cost and strain on an already struggling industry.

1.3.2 Secondary objectives

The study will eliminate assumptions being made during loading and transportation of broilers. The research is in line with the organisation’s animal welfare policy and strategy, of which humane handling and wellbeing of the broilers are top priority. Second to this is profitability. The supply chain starts at parent’s stock level, to eggs and day-old chicks in the hatchery, to contract farmers who grow the broilers to the right size in an average period of 34 days. The loading and transporting of the broilers is the last event in the chain to the abattoir. Quality is of utmost importance, to be able to distribute a high quality product to the consumer. The consumer expects not only a high quality product from the organisation, but also that livestock has been taken care of in a humane manner. The study will also indicate whether the available results are compatible in a South African poultry operation and climate, and whether the higher cost to adhere to these prescribed methods are provable to the benefit of the cause.

Secondly the study will investigate the foreign trade policy of the RSA with the US, EU and UK. The trade guidelines and regulations, as laid out by the World Trade Organisation (WTO), what these guidelines entail and whether the RSA conform to these guidelines, will be explored. Part of this study will also be based on trade agreements, import tariffs and the effects thereof. Further considerations in the study will be based on why trade is necessary and if found to be the latter, why does it then have a negative effect on the local poultry industry? Lastly the study
will comprise of exports from the RSA to foreign countries; do export barriers exist? And also, is it based on fair trade agreements?

1.3.3 Specific objectives

The specific objectives of this research are:

1. To determine the best loading method (manual versus semi-mechanical)

   1.1 Stress of broilers and welfare (quality of broilers delivered to the processing plant)

      1.1.1 Mortalities (DOA): pre-catch, transportation and pre-slaughter

      1.1.2 Bruising

      1.1.3 Feed withdrawal times

2. To determine the influence of imports to South Africa (dumping) on the industry.

1.4 Research hypothesis

The aim or hypothesis of the study is to gain insight into the effects that different loading practices, distance travelled and season of the year have on mortalities of broilers, and in doing so, determining whether the outside pressures are just or unfair.

In Vecerek et al. (2006:1) death rates recorded in the Czech Republic were between 0.146 % and 0.862 %. In South Africa the mortality rates are assumed to be between 0 % and 0.40 %. In winter months mortality rates are expected to be lower and not higher than in the Czech Republic's winter months.

Nijdam et al. (2005:1) concluded that higher DOA rates were recorded during mechanical catching. Bruises ranged from 0.022 % to 25 %. The research concluded that the catching method did not influence the percentage of bruising. It is expected that the semi-mechanical method being tested might result in lower mortality and bruising rates. The semi-mechanical method is a South African design; never tested anywhere else.

In Trampel et al. (2005:1) it is suggested that environmental factors have an influence on the feed with draw time. The aim is to derive an adequate feed withdrawal time or times that is effective in any seasonal, temperature, humidity, distance and stress differences, without

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compromising animal welfare or contamination of processing plants, carcasses and external environments, thus enabling local producers of chickens to have an effective yet adequate feed withdraw programme.

The second part of the study will consist of a study concerning anti-dumping; an investigation into the different role players in the market. Included in this study will be the objectives of the WTO, importers, exporters, local producers, employment rates, the role that the government plays in the protection of local industries and to research the question of dumping.

1.4.1 Literature / theoretical study

The literature study will be based on different sources, electronically collected. The first part of the study, pre-harvesting protocols, will be based on academic research journals and articles from Google scholar and Ebscohost.

In the second part of the study regarding "anti-dumping", a mixture between academic research journals, articles and news websites will be used. According to Bryman (2015:78), newspapers must be seen as secondary to published literature in books and journals, but he also adds that the level of analysis in some may be high. In this study newspaper articles will be used to try and create a time line of the issue at hand, to build on the premonition whether anti-dumping regulation is a prerequisite for the poultry industry to survive.

1.4.2 Empirical study

A mixed method of research approach will be followed, with a triangulation approach. In Bryman (2015:62) mixed methods research is described as a combination or integration of quantitative and qualitative research in one single project.

He also states that triangulation is the use of quantitative research to corroborate qualitative research findings, and vice versa. The qualitative design in this research will be used to cross check managers’ perceptions regarding animal welfare against the quantitative results.

The qualitative research will be used to determine the perception and feeling in the industry regarding foreign trade and dumping as main issue to foreign trade.
The research is based on data collection and scientific results, but also has another angle. Animal welfare is a difficult discipline due to the fact that welfare has different meanings to different people. It is based on the eye of the beholder; what can be seen cruel to some, might be interpreted differently by others. This research is quantitative because of numerous numerical data that will be collected and qualitative to survey different individuals regarding their personal opinions and knowledge. As discussed, the sampling method for the qualitative research will be purposeful sampling, for the reasons given, and will be used to check the opinions of employees against the data gathered.

According to Bryman (2015:63) “qualitative research can be used to guide quantitative research” by providing hypotheses, hunches or perceptions that can be tested using a quantitative research approach.

The study will be of longitudinal design in nature. The same group will be examined at different time intervals according to Welman (2005:95). The reason why this design is relevant is because of the changes due to the changes in seasons and day and night variables.

The time period for the day and night intervals will be 24 hours and for seasonal changes (summer versus winter) the time estimation will be 4 to 5 months.

Welman (2005:96) distinguishes between three types of longitudinal designs:

1. Panel design
2. Cohort design
3. Trend design

In this project trend design will be appropriate, as different samples will be measured from the same population and documentation or records will be used as measure of the dependent variable.

Research on anti-dumping will be based on a qualitative approach, through self-completion questionnaires, to establish the relationship between theory and research. The study design will be cross sectional, meaning that different groups will be measured; those working in the industry as well as members of the public.
1.5 Research method

1.5.1 Unit of analysis

According to Kotze (2007:18) the units of analysis can be identified by asking which entity you want to draw conclusions for. Units of analysis and sampling units (entities from which data is collected) could be the same, but is not always the case.

In this case data will be collected during loading of broiler chickens onto trucks that will be transported to an abattoir for slaughter. Sampling units would consist of different feed extraction times and two loading methods. Other factors that play an intriguing part in the process include summer and winter, day and night and travelling distances from the abattoir.

Data collected from the different scenarios will measure dead on arrival (DOA counts) of the birds transported and bruising kilograms per bird.

Long (2004:1175) describes a unit of analysis as the most basic element of research; the subject of study (who or what). It is also said that units of analysis may be different from units of observation.

The unit of analysis would be broiler chickens - to test the different pre-harvesting protocols and the influence loading has on animal welfare of the birds or chickens loaded and transported and secondly the quality of the birds delivered to an abattoir.

According to Maree (2007:178), sample size is an important consideration; it would be problematic when you are in the data analysis phase and one would realise that the sample is too small, or a sub-group of the population is not represented by the sample. Three factors to consider are the type of statistical analysis, accuracy required and the characteristics of the population.

Money and time are restricting the use of entire populations, which is the reason why samples are used instead of an entire population. Because statistical analysis of data is going to be used, the sample size will be small in this research.

The quantitative sample will consist of 96 samples taken in total.

The qualitative sample will consist of professionals in the industry, employees and customers chosen (questionnaire).
“The logic of using a sample of subjects is to make inferences about some larger population from a smaller one; the sample.” Berg (2001:29)

Probability sampling will be used in the quantitative research part. To be more precise, stratified random sampling - to ensure that certain segments are represented in the sample by dividing the population into subgroups (strata) - and independent samples of each stratum are then selected.

Qualitative research will be based on purposeful sampling. Bickman and Rog (2008:235) explain this as the process where people are deliberately selected, in this case professionals within the poultry sector. This is done because the type of information required cannot be gathered at any other sector or institution.

Research on anti-dumping will be based on a quantitative approach, through self-completion questionnaires, to establish the relationship between theory and research. The study design will be cross sectional, meaning that different groups will be measured; those working in the industry as well as members of the public.

The unit of analysis, in this case broilers or chickens, are caught daily for the various processing plants of “The Company”. The collection of data will be done within a maximum radius of 200 km from the processing facility.

All information required for the research is the property of the institution. Data relating to the different variables will be collected at internal farms and at the processing plant, where data will be readily available.

No problem or difficulty existed with regards to access to the unit of analysis. Directors of “The Company” have granted the necessary permission for the research. The data will be collected from internal broiler farms, of which they have also given their consent on the research proposal to take place.

The population, or in this case broiler chickens, and the harvesting thereof, form part of the daily function of the inbound logistics department, which directly falls under my management.

Lastly, the proposal and research, when completed, will be to the advantage of the poultry industry.
Inclusion criteria used with consideration to the research question includes factors that will enable to determine that the specific variables under study are more likely to show an effect on animal welfare and quality of broilers transported and delivered to the processing plant.

Loading methods (forklift versus manual loading) are variables that will determine animal welfare of the broilers. Distance from processing plants, summer versus winter loading, day or night and feed withdrawal times are variables that will determine the quality of the birds delivered to the processing plant.

Mortality rates and bruising figures or data will determine the welfare of the broilers under the different types of loading methods and conditions. Exclusion criteria are applied to variables which generally meet the inclusion criteria, but must be excluded because they cannot complete the study or possess unique characteristics that may confound the results. Broiler size and age will have no effect on the study and are therefore excluded from the study.

No alternative unit of analysis will be appropriate to answer the primary research question as the question is directly related to the harvesting of broiler chickens. Tests to be conducted to verify data will be done on the broilers to determine whether different stress levels are present – this in itself can only be done on broilers.

1.5.2 Data collection

The quantitative sample will consist of 96 samples taken in total and will be collected in the field at farms where loading takes place.

Summer loading:

- 60 km travel time: day loading will consist of 12 samples and night loading of 12 samples.
- 200 km travel time: day loading will consist of 12 samples and night loading of 12 samples.

Winter loading:

- 60 km travel time: day loading will consist of 12 samples and night loading of 12 samples.
- 200 km travel time: day loading will consist of 12 samples and night loading of 12 samples.
Each sample unit will consist of two measurements, which include:

1. DOA count
2. Bruising per kg

Examples of the data collection plan (ANNEXURE 1 – DATA COLLECTION PLAN) and the data collection sheet (ANNEXURE 2 – DATA COLLECTION SHEET) are attached to provide a better insight to what is explained above.

The qualitative sample will consist of professionals in the industry, employees and customers chosen:

1. Plant general managers (3 different plants)
2. Directors (The Company)
3. Technical managers (agricultural)
4. Catching managers (3 different plants)
5. Quality managers (3 different plants)
6. Employees
7. Customers

An example of the questionnaire (ANNEXURE 5 – QUESTIONNAIRE) is attached. The questionnaire is self-developed and designed in such a manner to provide the study with an overall view or perception of the chosen professionals, employees and customers.

1.5.3 Research procedure and suggested time frame

The qualitative data will be gathered by means of questionnaires. The questionnaires are done on “Google forms” which will be emailed to all 100 plus respondents and received back electronically.

The quantitative data will be collected in the field at different dates and times. The data collection plan indicates the number of samples to be taken as well as all the variables that need to be taken into account. The data collection sheet’s purpose is to capture all the data on an easy to use sheet to ensure that the data will be correctly recorded and thus be reliable.
According to Bryman (2015:74) a Gant chart helps you to graphically plan, coordinate and track the tasks in a research process. Because of the dynamic and fast changing environment in the poultry operation, the Gant chart indicates the months in which summer and winter months’ data will be gathered, as well as when the questionnaires and data analysis are planned (ANNEXURE 3 – GANT CHART). Although the horizontal and vertical axes differentiate from the book, it still is possible to see when the different research processes are planned to take place. The chart may also be amended as the research progresses and tasks have been completed.

Lastly, a process flow diagram for data collection, in conjunction with the Gant chart, shows the sequence of the planned data collection (ANNEXURE 4 – FLOW DIAGRAM). Because of the time lapse between summer and winter months and the time constraint, all qualitative data will be collected in April 2017 due to the gap that exists between the seasons and to prevent wasting time.

Once all data has been collected by the end of July 2017, a statistical data analysis will be conducted in the month of August.

1.5.4 Data analysis

The questionnaire or qualitative data will be examined or analysed first to establish a set of perceptions regarding the effect of the harvesting and transportation protocols on broilers and how it is perceived regarding animal welfare and the quality of the product at the processing plant.

The qualitative data derived from the questionnaire will be collected electronically through Google forms on Excel. The statistics department of the NWU will then analyse the data. Frequency tables to calculate the mean and standard deviations are used. The Cronbach alpha, a reliability test to test if the internal consistency of the data is acceptable and reliable, will also be used (Anon (2017:1). The use of a bar chart and frequency table will be adequate to establish or show which perceptions are more likely to occur between the recipients.

The data analysis of the quantitative data will then be analysed to interpret the effect of the different variables on the loading and transportation of the broilers. The data sheet used will be on Excel format.

The four main independent variables are:

1. Distance
2. Loading method

3. Feed withdrawal times

The dependent variables are:

1. Animal welfare (stress)

2. Quality of the product delivered

To test the data from the quantitative portion of the study, the Levene’s test for equality of variances will be used (Anon (2008:1), to check that variables are equal for all samples when data comes from an abnormal distribution), and t-test for equality of means, used to compare the means (to find evidence of a significant difference between population means), and if H₀ or H₁ of the hypothesis should be accepted or rejected.

These analysis methods will enable the researcher to analyse the data and to be able to make conclusions on the research question: “Which pre-transportation method and protocol of broilers would enhance animal welfare of broilers and deliver good quality to abattoirs?”

1.5.5 Ethical considerations

An important ethical consideration is the harming of the broilers during the study. Feed withdrawal periods will be done as per prescribed time frames. Chickens will not be pushed to extreme food deprivation; the test or result is aimed at minimising prescribed times rather than to lengthen the withdrawal times. Catching methods will be done under close supervision and the welfare of the broilers will be closely monitored.

1.6 Limitations of the study

The one part of the study about animal welfare is limited to two specific loading methods and takes place only in specific areas in the RSA; other areas with different climates might have different results.

Foreign trade is limited to the RSA; a broader international scope might be necessary to fully comprehend the issues involved.
1.7 Layout of the study

The chapters in this mini-dissertation are presented as follows:

Chapter 1: Introduction

Chapter 2: Literature review

Chapter 3: Empirical study

Chapter 4: Conclusion and recommendations
CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The poultry industry in the RSA has experienced several difficult years according to Bolton (2015:17) due to cheap imports, high feed costs, rising electricity tariffs and impending regulations to cap the levels of brining allowed in frozen chicken products. Although the industry has grown in recent years, it still does not produce enough poultry meat to satisfy the local demand; the shortfall is made up of imports.

The industry is cost efficient in growing and processing of broilers and meat, compared to international competitors or poultry meat producers. The introduction of feed cost according to Bolton (2015:17) can be seen as the main contributor for the participants to be less competitive due to higher production costs. This is the reason why the industry is struggling to be competitive in the global markets, according to him. The local poultry industry provides for about 108,000 people employment and contributes more than 16 % of the agricultural sector to the gross domestic product (GDP). In Omarjee (2017:1) the following was reported by SAPA: “10,000 tonnes of poultry meat replace a thousand jobs.”

Taking the industry’s role in the economy into consideration, especially employment and food security, the long term sustainability needs to be prioritised.

The poultry industry is in a crisis as reported by DAFF, Department: Trade and Industry, DTI (2017:1). The department lists seven reasons why:

1. Market preferences (developed countries consume white meat – developing countries brown meat)
2. Distortions in the global agriculture market (subsidies)
3. Competitiveness
4. Increase in key input costs:
   a. Feed
   b. Electricity
   c. Labour
5. Drought
6. Increased imports

An interesting fact is the number of people employed by the industry; one of the reasons given by Bolton why sustainability needs to be prioritised. According to the industry report by DAFF,

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DTI (2017:3) retrenchments are underway at the largest producer, Rainbow (RCL foods). Other smaller poultry producers have either closed their businesses, filed for business rescue, or have been acquired by larger companies. The unemployment rate rose by 1.2 % to 27.7 % in the first quarter of 2017. In a report by Taborda (2017), this rate is at a 13-year high and the labour force increased by 577,000 to 22.42 million. The number of unemployed persons rose by 433,000 to 6.2 million. Losses of 44,000 in agriculture were recorded.

According to the report by Bolton (2015:5): “Poultry producer, Country Bird, said at the time that a combination of static volumes with no significant increase in selling prices resulted in margin erosion for the sector.” According to them, low import tariffs need to be challenged, or else the poultry industry “would remain depressed and under threat.”

Other added costs to the industry include production regulations by regulatory departments, high costly customers’ demands and preferences, which include anything from costly external audits to processing and supply chain methods based on social pressures. The last mentioned point is an added cost pressure that is not necessarily based on scientific proof, but rather on public or welfare groups’ emotions and opinions.

### 2.2 Overview of the poultry industry

The agricultural sector in the RSA is regulated by the department of agriculture, forestry and fisheries (DAFF). The agricultural sector contributes roughly 2.4 % to the South African economy or GDP according to (SATS, 2017:1), of which the poultry industry contributes more than 16 % to the department, according to Bolton (2015:1). The GDP for the first quarter of 2017 for the entire RSA economy was -0.7 %, with an estimated unemployment of 27.7 % out of a population of 55.91 million in mid-2016.
Table 2-1: Gross value of agricultural products

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Crops (incl. Maize &amp; Soya)</td>
<td>R41,832,867.00</td>
<td>R34,160,635.00</td>
<td>R30,173,523.00</td>
<td>R38,965,150.00</td>
<td>R48,782,978.00</td>
<td>R52,481,588.00</td>
<td>R59,514,224.00</td>
<td>R55,597,819.00</td>
<td>R62,986,715.00</td>
</tr>
<tr>
<td>Horticultural products (incl. Citrus &amp; potatoes)</td>
<td>R31,392,242.00</td>
<td>R34,899,354.00</td>
<td>R36,215,894.00</td>
<td>R38,956,717.00</td>
<td>R43,473,027.00</td>
<td>R51,292,823.00</td>
<td>R59,022,417.00</td>
<td>R63,954,762.00</td>
<td>R70,943,004.00</td>
</tr>
<tr>
<td>Animal products (incl. Poultry meat &amp; eggs)</td>
<td>R63,152,762.00</td>
<td>R66,991,807.00</td>
<td>R69,195,231.00</td>
<td>R76,922,089.00</td>
<td>R83,308,570.00</td>
<td>R90,266,072.00</td>
<td>R102,445,524.00</td>
<td>R113,684,641.00</td>
<td>R120,128,788.00</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>R136,304,871.00</td>
<td>R135,405,796.00</td>
<td>R135,584,652.00</td>
<td>R155,248,510.00</td>
<td>R175,563,375.00</td>
<td>R194,044,481.00</td>
<td>R220,982,565.00</td>
<td>R233,237,242.00</td>
<td>R259,770,507.00</td>
</tr>
<tr>
<td>Maize</td>
<td>R21,926,055.00</td>
<td>R16,399,129.00</td>
<td>R13,485,988.00</td>
<td>R16,725,290.00</td>
<td>R25,123,585.00</td>
<td>R25,051,453.00</td>
<td>R28,496,153.00</td>
<td>R24,560,485.00</td>
<td>R28,094,016.00</td>
</tr>
<tr>
<td>Percentage of Maize contribution</td>
<td>16%</td>
<td>12%</td>
<td>10%</td>
<td>11%</td>
<td>14%</td>
<td>13%</td>
<td>13%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Poultry Meat</td>
<td>R22,878,512.00</td>
<td>R24,800,577.00</td>
<td>R24,504,971.00</td>
<td>R26,376,791.00</td>
<td>R28,343,063.00</td>
<td>R30,673,196.00</td>
<td>R34,216,286.00</td>
<td>R38,807,151.00</td>
<td>R36,699,896.00</td>
</tr>
<tr>
<td>Percentage of Poultry meat contribution</td>
<td>17%</td>
<td>18%</td>
<td>16%</td>
<td>13%</td>
<td>15%</td>
<td>16%</td>
<td>16%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>Cattle &amp; Cales slaughtered</td>
<td>R13,187,567.00</td>
<td>R12,841,366.00</td>
<td>R15,443,328.00</td>
<td>R19,196,831.00</td>
<td>R23,662,097.00</td>
<td>R25,052,199.00</td>
<td>R24,937,576.00</td>
<td>R28,287,245.00</td>
<td>R33,002,889.00</td>
</tr>
<tr>
<td>Percentage of Cattle &amp; Cales contribution</td>
<td>10%</td>
<td>10%</td>
<td>11%</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
<td>11%</td>
<td>12%</td>
<td>13%</td>
</tr>
<tr>
<td>Sheep &amp; Goats slaughtered</td>
<td>R3,355,736.00</td>
<td>R3,422,856.00</td>
<td>R3,827,199.00</td>
<td>R4,355,638.00</td>
<td>R4,547,780.00</td>
<td>R4,940,922.00</td>
<td>R6,196,653.00</td>
<td>R6,651,391.00</td>
<td>R7,158,715.00</td>
</tr>
<tr>
<td>Percentage of Sheep &amp; Goats slaughter</td>
<td>2%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Pigs slaughtered</td>
<td>R2,583,644.00</td>
<td>R2,889,521.00</td>
<td>R2,871,809.00</td>
<td>R3,205,408.00</td>
<td>R3,635,440.00</td>
<td>R3,948,006.00</td>
<td>R4,595,066.00</td>
<td>R5,072,217.00</td>
<td>R5,566,721.00</td>
</tr>
<tr>
<td>Percentage of Pigs slaughtered</td>
<td>2%</td>
<td>0%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Statistics:

- **Maize**: 12%/128%
- **Poultry Meat**: 16%/166%
- **Cattle & Cales slaughtered**: 13%/250%
- **Sheep & Goats slaughtered**: 3%/213%
- **Pigs slaughtered**: 2%/215%

Table 2-1 is a summary of gross value of agricultural products by DAFF, SAPA (2017a:1), to gain further in-depth knowledge into the role that the poultry industry is playing in the country’s economy. Firstly, it is important to note that poultry is the main contributor (16 %), followed by maize production (12 %) and thirdly cattle and calves slaughtered (11 %). Between 2008 and 2017 the poultry industry grew by 160 %, of which the highest rate were between 2014 and 2015, at 113 %, and a notable decline between 2015 and 2016 of just 94 %, the lowest in 8 years.
Table 2-2: Per capita consumption

Per Capita Consumption
Source: SAPA & DAFF; March 2017

### Production
Unit: 1000 tonnes

<table>
<thead>
<tr>
<th>Year</th>
<th>Beef</th>
<th>Mutton &amp; Goat</th>
<th>Pork</th>
<th>Poultry</th>
<th>Milk</th>
<th>Eggs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>745.94</td>
<td>134.94</td>
<td>160.69</td>
<td>1348.73</td>
<td>3044.01</td>
<td>375.21</td>
</tr>
<tr>
<td>2016</td>
<td>1123</td>
<td>180.3</td>
<td>243.05</td>
<td>1677.85</td>
<td>3515.42</td>
<td>477.93</td>
</tr>
</tbody>
</table>

**Growth**: 151%, 134%, 151%, 124%, 115%, 127%

### Consumption
Unit: 1000 tonnes

<table>
<thead>
<tr>
<th>Year</th>
<th>Beef</th>
<th>Mutton &amp; Goat</th>
<th>Pork</th>
<th>Poultry</th>
<th>Milk</th>
<th>Eggs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>765.94</td>
<td>172.61</td>
<td>186.99</td>
<td>1,596.56</td>
<td>3,037.45</td>
<td>375.56</td>
</tr>
<tr>
<td>2016</td>
<td>1,099.57</td>
<td>191.87</td>
<td>264.52</td>
<td>2,199.81</td>
<td>3,511.83</td>
<td>464.85</td>
</tr>
</tbody>
</table>

**Growth**: 144%, 111%, 141%, 138%, 116%, 124%

-7%, -13%

### Per Capita Consumption
Unit: kg/annum

<table>
<thead>
<tr>
<th>Year</th>
<th>Beef</th>
<th>Mutton &amp; Goat</th>
<th>Pork</th>
<th>Poultry</th>
<th>Milk</th>
<th>Eggs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>16.18</td>
<td>3.64</td>
<td>3.95</td>
<td>33.76</td>
<td>39.14</td>
<td>7.61</td>
</tr>
<tr>
<td>2016</td>
<td>19.47</td>
<td>3.4</td>
<td>4.69</td>
<td>39.05</td>
<td>37.66</td>
<td>7.89</td>
</tr>
</tbody>
</table>

**Growth**: 120%, 93%, 119%, 116%, 96%, 104%

**Note:**

1.) Beef grew steadily from 2005 to 2016
   Beef produce 7% more than consumption

2.) Poultry grew until 2011, 2012 showed a decline in production, 2015 it equaled 2011, but in 2016 fell back again.
   The same pattern is only visible 2013-2014 in consumption
   Poultry produce 13% less than consumption

Table 2-2, SAPA (2017a:1) is a summary of per capita consumption. Poultry consumption has increased more than production. Cattle produces 7% more than consumption compared to poultry meat that produces 13% less than consumption.
Table 2-3: Estimated broilers per week / market share in the chicken industry RSA 2016

<table>
<thead>
<tr>
<th>Producers</th>
<th>Percentage market share</th>
<th>Broilers per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016</td>
<td>bIm2015</td>
</tr>
<tr>
<td>Astral:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Festive &amp; Goldi</td>
<td>20.3%</td>
<td>21%</td>
</tr>
<tr>
<td>Country Fair</td>
<td>13.2%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Mountain Valley</td>
<td>6.2%</td>
<td>6.7%</td>
</tr>
<tr>
<td></td>
<td>0.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Rainbow</td>
<td>18.5%</td>
<td>18.9%</td>
</tr>
<tr>
<td>Country bird</td>
<td>5.8%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Sovereign EC</td>
<td>3.9%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Fouries</td>
<td>3.3%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Daybreak Farms</td>
<td>2.7%</td>
<td>2.89%</td>
</tr>
<tr>
<td>Rossgro Agri</td>
<td>1.9%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Henwill</td>
<td>1.9%</td>
<td>1.75%</td>
</tr>
<tr>
<td>Sovereign NW</td>
<td>0.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>CC chicks</td>
<td>1.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Kroons</td>
<td>0.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Grainfield</td>
<td>2.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Spiff</td>
<td>0.7%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Sangiro</td>
<td>1.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Mike’s</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Bush valley</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Sterkfontein</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Crest Choice</td>
<td>0.6%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Imports</td>
<td>20.5%</td>
<td>16%</td>
</tr>
</tbody>
</table>

The market share in the RSA chicken industry is summarised in Table 2-3 and Figure 2-1, SAPA (2015:1). Astral can be seen as the biggest producer at 20.3 %, Rainbow at 18.5 %, Country bird at 5.8 % and so on. Imported chicken has a market share of 20.5 %; this includes chicken dumping. Imported chicken has a higher market share than the biggest poultry producer in the RSA.
Comparing the market share figure, Figure 2-1 with the per capita consumption in Table 2-2, whereby production of poultry in 2016 stood on 1,677.85 (1,000 tonnes) and consumption on 2,199.81 (1,000 tonnes), it is a sector where local growth in production and employment creation is possible.

Another interesting fact to take into consideration is feed production needed to supply the poultry industry with animal nutrition. The poultry industry in the RSA is one of the largest users of maize, soya and other locally farm-produced products. Ingredients in animal feed include oilcake production, of which soybean is the most frequently used, followed by sunflower (providing high quality protein) according to Mogala (2015:18). According to the DAFF report annual maize production is estimated at 10.5 million tonnes, of which 4.5 million tonnes are used in animal feeds. Another ingredient is fishmeal, although a limited amount is used in feed formulation. According to DAFF, Mogala (2015:11), animal feed production segmental shares of poultry usage was 40% in 2014 and 29% for beef and sheep in second place.
Figure 2-2: Production shares of animal feed, 2014

Table 2-4: Animal Feed Production by Specie 2013/14

<table>
<thead>
<tr>
<th>Years</th>
<th>Production Shares</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy</td>
<td>18%</td>
<td>1,629,649</td>
<td>1,880,000</td>
<td>1,974,000</td>
<td>1,997,688</td>
<td>2,057,619</td>
</tr>
<tr>
<td>Beef &amp; Sheep</td>
<td>29%</td>
<td>3,339,144</td>
<td>3,038,000</td>
<td>3,156,482</td>
<td>3,211,089</td>
<td>3,297,788</td>
</tr>
<tr>
<td>Pigs</td>
<td>8%</td>
<td>932,642</td>
<td>810,746</td>
<td>851,283</td>
<td>855,539</td>
<td>855,539</td>
</tr>
<tr>
<td>Poultry</td>
<td>40%</td>
<td>4,339,642</td>
<td>4,324,885</td>
<td>4,477,890</td>
<td>4,505,214</td>
<td>4,587,489</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
<td>550,180</td>
<td>601,397</td>
<td>626,469</td>
<td>576,708</td>
<td>582,152</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10,791,257</td>
<td>10,655,028</td>
<td>11,086,124</td>
<td>11,146,238</td>
<td>11,380,587</td>
</tr>
</tbody>
</table>

Figure 2-2, and Table 2-4, Mogala (2015:11) illustrate the usages and percentages of animal feed production.

To summarise: the poultry industry’s contribution to GDP is 16 % in the agricultural sector, followed by 12 % maize production, of which the poultry industry is the main user of maize in animal food production of 40 %.

The first important fact to note is the influence that the poultry industry has on maize consumption and secondly the importance of this consumption or usage on the total GDP of the agricultural sector. It is clear that poultry does have a positive contribution in the agricultural sector as far as consumption of feed is concerned.

The industry outlook according to BFAP (2016:37), is that chicken consumption will still be higher than beef and sheep over the next ten years. This is based on affordability in a slower income growth environment. Poultry producers are left vulnerable to rising feed costs due to
weather conditions (drought), currency depreciation and because of the intensive use of feed grains in the production process. Another factor mentioned was the price of “IQF” or individual quick frozen pieces that did not increase to the same extent as feed products. According to BFAP (2016:37) “The chicken to maize price ratio has trended downwards” as a result of the drought-induced maize prices. In an article by Omarjee (2017:2), the ratio was lower than the break-even level of 8:5:1 since June 2015.

Better weather conditions and lower maize prices are however predicted for 2017, placing the industry on a positive growth path, although below the levels prior to 2011. Lastly, it is observed through the trend of the last five years that imports will account for even a bigger share of consumption growth than domestic production. According to Omarjee (2017:1), it was reported by Fin24, that in the first quarter of 2016 imports were 288,081 tonnes, consisting of EU 45.5 %, Brazil 43.2 % and the remainder mostly from the US. According to the AGOA agreement, an annual limited amount of 65,000 tonnes will be imported from the US, and lower priced imports from the EU of an estimated 57,000 tonnes per month. The WTO trade profile of SA (WTO, 2016:1), shows that the EU and US were among the main export and import countries for 2016.

![Main export destinations, 2016](image)

**Agricultural Products**

<table>
<thead>
<tr>
<th>Top exported products (Million US$)</th>
<th>Value 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrus fruit, fresh or dried</td>
<td>1166</td>
</tr>
<tr>
<td>Wine of fresh grapes</td>
<td>662</td>
</tr>
<tr>
<td>Apples, pears and quinces, fresh</td>
<td>549</td>
</tr>
<tr>
<td>Grapes, fresh or dried</td>
<td>535</td>
</tr>
<tr>
<td>Maize (corn)</td>
<td>334</td>
</tr>
</tbody>
</table>

**Figure 2-3:** WTO Trade Report of SA Exports
Figure 2.3, WTO (2016:1) also illustrates the top exported, and Figure 2.4, WTO (2016:1) the top imported agricultural products for 2016, meat and edible offal according to the report valued at an estimate 372 million US$, the third biggest imported product for the year.

Has SA liberalised its trade? Edwards (2005:3) wrote that significant progress was already made in tariff reductions, though not any faster than other lower middle-income economies. The paper also reports that the impact of trade liberalisation on poverty is dependent on the extent of liberalisation. Sensitivity tests that were done showed that, by raising nominal protection on agriculture, effective protection was raised in agriculture, but it lowered effective protection in manufacturing (food products that use agricultural products as intermediate inputs).
For SA industries to compete in a global environment, whether it is domestically against foreign or imported products or to export to other countries, the same domestic constraints need to be addressed. As in Edwards and Alves (2006:17) there are domestic constraints to export growth during the 1990’s and onwards. They are:

- Relative prices and competitiveness of manufacturing
  - Foreign and domestic prices as well as exchange rates
  - Variable cost of production
    - Negative domestic price inflation,
    - Relative productivity and wages
  - Infrastructure
    - As example, access to good rail infrastructure
  - Human capital
    - Availability of skilled labour, ability to diversify into high technology sectors
  - Tariffs and export measures
    - Improving of performance by lowering cost
    - Reduce incentive to produce local relative to export market

In a speech by the minister of DTI, Davies (2009:1), at the destruction of goods function, one can gather that the Department of Trade is concerned with SA’s economic crisis. In essence the minister highlighted the importance of product quality standards for both domestic and international trade; consumer confidence regarding safe, quality products, technical regulations prescribing goods traded domestically and also compatible with trading partners to facilitate trade. The Standardisation, Quality Assurance, Accreditation and Metrology (SQAM) objective is to take out harmful and unsafe products domestically and also to ensure producers and exporters to improve standards and quality assurance into international markets.

To comply with the World Trade Organisation / Technical Barriers to Trade (WTO / TBT) agreement, the minister said that the recalling of non-complying products and penalties to the manufacturers, distributors and sellers of consumer abuse is an important task by the National Regulator for Compulsory Specifications (NRCS) board. He stated that poor people with limited access to product information and safety standards often fall prey to malfunctioning products. Products include food (health effect), paraffin heaters and stoves, motorcycle helmets, electrical equipment and so forth (safety effect).

The question remains; will the last mentioned actions and government boards be sufficient in protecting SA from becoming a dumping ground to the rest of the international trading community? Do the foreign trade policies and agreements really constitute fair trade? Who are the real benefactors of trade deals with Africa?
2.3 Definition of harvesting and dumping

2.3.1 Definition of harvesting

The first definition, *harvesting*, is also known in the poultry industry as the catching of chickens. It is a very physical and demanding labour intensive work. Different methods and processes have been developed over the years to increase cost effectiveness and animal welfare. The paper is concerned with the relationship between cost effectiveness and animal welfare, although employment is also brought into the picture due to the current economic climate in the RSA.

The following is a summary of the different catching methods that are known, together with some facts regarding certain differences between these methods that are important:

**Table 2-5: Catching method comparison**

<table>
<thead>
<tr>
<th>Catching Method</th>
<th>Birds being carried</th>
<th>Placed into crate or module</th>
<th>Birds loaded inside / outside house</th>
<th>Welfare approved</th>
<th>Labour intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Fully automated</td>
<td>None</td>
<td>Module</td>
<td>Inside</td>
<td>No</td>
<td>Low</td>
</tr>
<tr>
<td>ii) Semi-Automated</td>
<td>Five per hand – upside down (by legs)</td>
<td>Module</td>
<td>Inside</td>
<td>Yes</td>
<td>Medium</td>
</tr>
<tr>
<td>iii) Manual</td>
<td>Five per hand – upside down (by legs)</td>
<td>Crates</td>
<td>Outside</td>
<td>No</td>
<td>High</td>
</tr>
<tr>
<td>iv) Semi-Automated</td>
<td>One @ time - upright (placed into crate upright, <em>not carried</em>, picked up by placing both hands under the belly)</td>
<td>Crates</td>
<td>Inside</td>
<td>Yes</td>
<td>High</td>
</tr>
</tbody>
</table>

*Auto, Semi-auto & Manual Catching*

*Test – Hybrid manual & forklift*
Visual examples or photos are included to help explain the methods and processes involved in harvesting of poultry (ANNEXURES 6 TO 9).

Fully automated methods are not yet being employed in the RSA; harvesting methods used locally are the semi-automated system, also known as EZ-load, whereby birds are loaded inside poultry houses in modules that are offloaded by forklifts from trucks and brought into broiler houses. The next step in the process includes the picking up of chickens, normally five per hand, and then carried to the modules and placed into drawers. When the module is full, the forklift takes the module outside to the truck and places it on the trailer.

The second method comprises of manual labour; no forklifts are involved. Employees offload crates from the truck to make space for loading. A step or walk frame is then placed at the side of the truck to enable catchers to easily place chickens into crates. The process involves catchers entering broiler houses, picking up the birds, five per hand (same method as the EZ-load), but then carry the chickens to the outside of the broiler house and place it onto the trucks into the crates. Workers on the trucks then stack the crates onto each other.
The “ONLY” two differences between the two processes include the loading of the chickens into the crates inside or outside of the broiler house and secondly the crate (manual) versus the module system (forklift).

According to animal welfare activists this activity, or as it is called manual catching, is not an acceptable loading practice; they prefer the EZ-load system. It is worth mentioning that, although the EZ-load system is the preferred choice, the manner in which the birds are loaded into the drawers (exactly the same as manual catching), are still a concern. The reason being is the way the chickens are carried upside down by their feet and then placed into the drawers, thus their plight that the birds should be picked up by both hands under the belly of the chicken and then placed into the drawers one by one. Although this seems a very good practice, it is merely impossible due to the height of the drawers and the time constraint it will have on a factory that slaughters 210,000 birds per day, or 9,000 birds per hour.

To test this theory whether loading or harvesting birds manually or mechanically and by placing them into a crate one by one inside the broiler house or by carrying them to a truck outside the house five per hand per person, a pallet system has been developed that can carry the crates into the broiler house, place the crates next to the catchers and thereby make it possible to load each chicken into the crate one by one. When full, the crates are stacked onto each other on the pallet and then taken out of the broiler house by forklift. It is then placed onto a truck and restacked.

This will then be compared to a fully manual loading system by means of mortality (DOA) and also bruising figures, to establish whether manual loading does have an adverse effect on animal welfare and also the fairness of such a system against the financial implication for a small company or organisation in an already troubled industry.

2.3.2 Definition of dumping

The second definition, dumping, occurs when an export company exports or sells its product to a foreign country at a price lower than it would sell it in its own domestic market, or even at a price below the product’s average production cost. The definition of dumping as per Gale (2008:1), is the selling of products at prices less than normal value, or prices less than average cost of producing the product (incl. allocation fixed costs and profit).

To understand why a manufacturer would be interested in selling its products at prices below selling price or even below cost to a foreign market at a loss, further research was necessary. According to Gale (2008:1) exporting companies might decide on dumping based on five
possible scenarios which include predatory dumping, market demand decline, high inventory, seasonable or perishable products, introduction to new markets and geographical discrimination. Further explanation as follows:

1. Predatory dumping is when an exporter lowers its prices to injure and drive out competition in a foreign market to achieve monopoly power; once achieved, the exporter will raise the products' price again.

2. Market demand decline happens when demand drives the selling price down to a level below average cost.

3. When a firm has substantial high inventory, or perishable products that need to be sold before the expiry date, or lastly fashionable products that have reached the end of its product cycle, the prices can be lowered, even below cost, to get it sold.

4. Geographical price discrimination occurs when a firm sells its products in one market at higher prices (due to lower price elasticity) and sells the same products in other markets at lower prices (where price elasticity is higher).

In an article by Kimberley (2016:1), a fresher approach to trade dumping is discussed. Included in the discussion is a list of advantages and disadvantages for the exporting countries that take part in dumping. In this article dumping is defined as the lowering of sales price of exports to gain “unfair” market share.

Advantages for dumping product in a foreign market could be:

- When a country subsidises exporters, enabling them to sell below cost and thereby increase its comparable advantage in that industry.
- For an export country to create jobs in their own domestic market.
- To attack the foreign country’s industry.
- To put the foreign country’s industry out of business in order to dominate that industry.

Disadvantages for dumping product in a foreign market could be:

- Very expensive to sustain and could run over extended periods before success is realised.
- Subsidy costs all add up to the exporting country’s sovereign debt.
- The international trade organisations (WTO and EU) will heavily censure the exporting country.
- Trade partners normally retaliate by means of restrictions and tariffs.
The use of restrictions and tariffs are normally done by the anti-dumping filings, a much controversial subject in the global trading community. The “General Agreement on Tariffs and Trade” (GATT) is a legal agreement between many countries that covers international trade in goods. WTO member countries are represented on the board of the council for trade and goods (goods council), who are in return responsible for functioning of the GATT agreement. The WTO published a web page that elaborates on the technical information on anti-dumping (WTO (2017:1)).

It became apparent as international trade were more liberated and trade tariffs were lowered, so were AD duties increasingly being imposed due to inadequacies in the guidance of determination of material injury as a result of so-called dumping of products. This led to the negotiation of more detailed codes by the members of GATT. In 1967 the first code (Kennedy Round code) were drawn up, but had little practical significance due to the US who never signed. In 1980 (Tokyo Round Code) provided more guidance regarding determination of dumping and of injury.

GATT 1994 provides the basic principles in trade between WTO members. Article VI of GATT 1994 authorises the use of AD duty on imports of a specific product, where dumping threatens to injure a domestic industry, or materially slows down a domestic industry. In Mankiw and Swagel (2005:10) it is stated that the US and EU initiate the largest number of antidumping suits; also that US companies use AD as a shield to protect themselves from competition. As early as 2002, Prusa and Skeath (2002:2) identified two motives why countries use AD, economic and strategic. They based economic motives on a response to unfair trade and / or special protection. Strategically they based the motives on club and retaliation. Previously users of AD protection are considered club members and retaliation as countries who file AD actions against those who had previously filed against them.

The first users of AD actions goes back as far as 1904, CAN followed in 1906, and AU the US, FR and UK in 1921. AD increased dramatically between 1980 and 1990. The traditional users in the 1980’s were AU, CAN, EU, NZ and the US. New users from 1990 onwards include SA, BR and MEX to name but a few.

In Prusa (2005:1) the author continued his view and arguments on AD, in the sense that AD is becoming a bigger problem for international trade, in the sense that AD laws’ intended use for economical harmful practices is just a clever form of protectionism. The blame is placed on GATT’s approval on AD, the reason why AD has evolved into a problem for international trade.
The proliferation of AD is also discussed in the paper and the outcome seemed that the high income countries dominate the filings of AD, as much as two thirds of all AD disputes. The two strongest supporters are the US and the EU and as put by Prusa (2005:11): “they would like to retain AD so that they can protect their politically important industries. Yet, preserving this option means that many politically important export-orientated industries now face AD protection in many export markets.”

According to Kimberley (2016:2), the role of the WTO in AD:

- All members must adhere to the multilateral trade agreement (GATT)
- AD committee meet twice a year (review of AD actions)
- They will not dump products
- Or enforce tariffs, and
- Must prove dumping has occurred
  - By proofing harm has occurred to the local industry
  - Exporters price is lower in the foreign market than own domestic market
  - Price charged by exporter in another country
- To demonstrate what the normal price should be

If proven, then the complaining country can institute AD tariffs without being in violation of the GATT agreement.

In SA AD investigations are handled in the Department of Trade and Industry (DTI) and administered by the trade remedies directorates; the outcomes are published in the international trade administration commission’s reports as per Chad (2005:38).

2.4 Literature review: “Dumping” and the effects on the RSA poultry industry

The SA poultry industry has been struggling for more than a decade now to keep its head above water. Injuries to the local industry date back as far as 2002, during which a couple of smaller producers had to close their doors due to financial difficulties. One of the reasons at that time already was due to cheap imported chicken, high input costs of which livestock feed played a huge role as well as other input costs, for instance electricity and infrastructure-related services. The rest of this paper’s research will reflect on the time line starting in 2013 and by scrutinising the different reflection points in the poultry industry, trying to establish whether the poultry industry has a case against dumping of products.
On 10 September 2013 a meeting was held by the Department of Agriculture, Forestry and Fisheries related to the status of poultry tariffs in SA and the impact of proposed tariff increase for poultry imports. Inputs were made by SAPA, AMIE and the Competition Commission who briefed the portfolio committee on agriculture, forestry and fisheries. In the meeting Johnson (2013:1) states that AMIE felt that an increase in import tariffs would cause food prices to rise, limit consumers to choice and access of products, reduce quality and will be a threat to food security. They argued that the industry should be globally competitive with access to export markets, better cost management and to grow bigger birds. Later in this paper most of these points will be put to the test. AMIE further said that imports made up only 10.2 % of the local poultry market. In 2013 the EU (open trade agreement) imported 55 % and Brazil a total of 29 % of all imports. They further argued that tariffs would have little effect on trade because of the open trade agreement with the EU.

SAPA on the other hand argued that a tariff increase would have been less than a 10 % price increase, to partly cover feed cost inflation at the time. The intent was to establish a fair competing environment. SAPA further also highlighted that the poultry industry was, to put it in SAPA’s words, “devastated by dumped imports and needed protection from the imports explosion, which had suppressed prices.” Electricity and input costs (feed and fuel) were also mentioned as well as the then 110,000 jobs that were at risk.

The Competition Commission on the other hand was there for the consumer. They raised the question of whether to protect the poultry industry or the consumer by allowing imports, thus creating a more competitive industry.

SAPA made another important note, in that countries over the world are protecting their industries for reasons like employment and food security by means of trade measures. Exporting countries at the time exported their products to SA, but did not approve of, neither supported SA’s abattoirs. These countries were BR, EU, CN and RUSS, AU and NZ. Overseas exporters’ facilities were never visited by SA, which in itself posed a risk to food safety. The main reason no exports were allowed was due to ostrich flu; an argument that exists till today. Lastly SAPA also argued that imports caused developing farmers to struggle. Another reason mentioned that posed a real problem to the industry at the time were the high soya and maize prices due to bad weather in the US; government took the blame for electricity, food and labour input costs and it was also the main reasons why the SA poultry industry had become globally uncompetitive.

Since 2013 to date numerous plights for and behalf of the industry have been made by different associations and groups; the next part of the research will highlight some of these actions.
The Department of Trade and Industry DTI (2015:1 - 5) made an announcement in June 2015 regarding a breakthrough in a dispute regarding the export of bone-in chicken pieces to SA and the renewal of the AGOA, SA-US trade and investment relationship for the next ten years. To summarise - the important factors of the research are: firstly a quota of 65,000 tonnes can be imported from the US per annum, secondly a large part will go to historical disadvantaged people, thirdly the agreed quota will be administered by the DTI, DAFF and SARS, fourthly, SPS or technical issues for US exports on poultry, beef and pork will be finalised as well as other SPS matters or issues were discussed, including poultry, avocados, litchis, citrus and race horses to facilitate their exports to the US.

Other implications mentioned were the domestic poultry industry and its ability to manage any negative effect on production and jobs due to the balancing of the quantum of imports, assistance and market access opportunities for exports, relationship and development of the poultry sector including the small farmer sector, US support for small farmers and new opportunities for poultry importers.

The most important aspect from the AGOA is the contribution the agreement makes in terms of exporting more value-added products and improvement on the trade relationship between the two countries.

As with any relationship, not everybody agrees on the sentiment that SA has regarding some of its international trading partners. “AGOA is a trade agreement between 39 sub-Saharan African nations” (Jason (2015:1 - 5). Historically it was first signed in 2000 by President Clinton.

As an activist the author argues that the US economic policy has done nothing in the past to promote democracy, transparency or sustainability on the African continent. Africa’s economy was never seen as a global role player until recently; now global policymakers all want to stake a claim in the enormous resource endowment of the continent. Rhetoric use include focus on partnership and development and as the author quoted US Secretary of State, Hillary Clinton, at a US-Africa trade policy forum: “Let’s help each other make Africa all that it can be.” According to the author, this is very misleading, due to a statement made by Michael Battle, US Ambassador to the African Union: “If we don’t invest on African continent now, we will find that China and India have absorbed its resources without us and we will wake up and wonder what happened to our golden opportunity of investment.”

To sum it up, Jason (2015:2 - 4) further explains his vision under 3 subtitles. One: “The big Catch”, two: “Dubious Eligibility” and lastly: “Who benefits?”

“The big catch”: the reduction in trade barriers did help some countries to export to the US, as an example Lesotho’s garment manufacturers exporting $400 million worth of merchandise, but
the catch come from the right of the US president to re-evaluate a country for AGOA eligibility. Conditions laid out included: promotion of a market-based economy, protection of private property rights, minimised government interference (price, subsidies and ownership of economic assets) and lastly, all barriers of trade and investment towards the US must be eliminated. This entails an elimination of all tariff protections, opening up Africa’s markets to US goods and certainly applicable to this research on dumping, it will lead to the undermining of local industries. Benin as example exported nothing, whereas imports were estimated at $600 million US goods, undercutting local producers. Interesting information according to Jason (2015:2) is that the countries that did export significantly have petroleum and mineral deposits. In essence, the US opens new markets to export goods to, and on the other side of the coin, extract oil and minerals on a much easier trade base.

“Dubious eligibility”: the conditions of membership of AGOA, including reduction in poverty, uphold rule of law, political pluralism, right of due process, fair trial, equal protection, combatting of corruption and bribery and refrain from gross violations of human rights; these are not actually applied or does not apply for that matter. Jason (2015:3) states that countries known for these violations are actually been approved for AGOA eligibility. As an example, CM was used by the author, because of the government’s rules being undemocratic, one-party state, obstructions of political meetings, harassment of journalists, torturing of human rights activists and turns a blind eye to child labour, but as concluding statement he mentions that the country has a lot of oil. Other examples of countries benefitting from the US double standards include TD, ER, BF, AO, SZ and the CD. In deregulation of oil and mineral resources, the argument is that the US actually takes away incentives for such countries to build economies because they do not rely on income taxes for revenues any more, which at the end causes the erosion of states, followed by endemic corruption and as result an increase in repressiveness to keep the ruling government or party in power.

“Who benefits”: no stipulation is made that the exporting countries need to be African; most of the companies are American, Chinese and Indian. It is true that jobs are still being created, but again it is not required by AGOA that jobs have to go to Africans; highly skilled jobs are imported from developed countries like the US. Again as example, Angola, where most of Exxon’s engineers are from the US.

Jason (2015:3) states that AGOA can benefit African countries by changing a few conditions; first, no more economic liberalisation. How can it be seen fair for the US, EU, JP and CN to use tariff protections and subsidies in early industry development stages, but African countries in dire need for development are denied such privileges? Secondly political reform should be taken seriously, thirdly local labour and contracts should apply to at least 80 % of the country and the final suggestion in this article is the use of quotas for the right reasons, for instance
where it's needed most. Jason feels that the US is not concerned about the wellbeing of other nations, but rather in meeting its own energy requirements and exporting capabilities.

Lastly Jason (2015:4) quotes King Leopold II of Belgium, 1875 as Europe bestowed on Africa: “I do not want to miss a good chance of getting us a slice of this magnificent African cake.”

Brooks (2015:2) confirms the criteria the US president uses to determine which countries are eligible to form part of the AGOA agreement. In the article only two factors or issues could have ruined SA change of the renewal; first is a procedural matter of the US Congress and the second matter is related to authorisation for products made abroad to have easy access to US markets. Under the second issue was the automobile industry competing directly with US products and the import barrier on US poultry exports to SA. Accordingly the US complains about paying higher import duties compared to countries like the EU, as much as 37.5 % lower.

An important point in the research is then to ask the question why the poultry imports to SA are being so much in the spotlight and not the automobile exports to the US.

Also stated in the article is the US unhappiness with the anti-dumping complaints raised by SA. Is this then a form of retaliation by the US? Secondly they argue that lower income people would be able to enjoy a cheaper chicken dinner. To answer the latter would require further research into the real price that the end consumer pay domestically, compared to locally produced chicken.

Exports from SA to the US in 2014 amounted to $55 million (fruits and vegetables), $51 million (wine and beer) and $48 million (tree nuts). The automobile industry played a key role in the export revenue, with an employment estimate of 30,000 workers. In June 2017, exports to the US amounted to 7.3 % and imports from the US to 8.5%, thus the US exported to SA a value of $4,162 million dollars more than SA exported to the US.

The US clearly pressured SA during the AGOA negotiations to lower its import tariffs or anti-dumping duties. The US should rather address anti-dumping rules at the WTO according to William (2015:5), yet it is the US who is strongly opposed to any anti-dumping reforms. Recently the Trade Promotion Authority bill was passed; its objective to it is “to preserve the ability of the US to enforce vigorously its [anti-dumping] laws” (William (2015:6)).

Other trade facts under the US AGOA agreement include imported goods from sub-Saharan African countries which totalled $26.8 billion; the largest portion of the imports were petroleum products, non-trade products in 2013 accounted to only $4.9 billion (Anon (2016:1)).
Crotty (2016:1) reported in Business Day that CEO of CBH, Marthinus Stander, believed that the relationship between the industry and government needs to be overhauled. In a report to the North West government, the relationship was described by a lack of trust, due to government’s concern of what was described as an absence of transformation and inefficiency in the local industry. According to this report, the reason why the industry was “sacrificed to AGOA-related demands” and brining injection regulations was due to the lack of trust from government.

This part of the research will be based on newspaper articles as explained previously in 1.4.1 in this paper:

Table 2-6:  Time Line ~ News Articles & Head Lines; RSA Poultry Industry

<table>
<thead>
<tr>
<th>Reference</th>
<th>Article name and description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.Zokwana (2015:1)</td>
<td>Major changes for producers of poultry meat – Brining levels limit on whole carcasses to 10 % from 8 %. Individual portions to 15 % (no previous limit) (October 2015).</td>
</tr>
<tr>
<td>c.Nkosi (2016)</td>
<td>AGOA poultry agreement imports will kill thousands of jobs – shutting out emerging farmers, posing a health risk to our people (January 2016).</td>
</tr>
<tr>
<td>e.Wolpert (2016)</td>
<td>Salt water levels in chicken exploit consumers – AMIE – The association is thrilled with the court’s judgement of rejecting SAPA’s application to set aside brining caps (September 2016).</td>
</tr>
<tr>
<td>f.Harper (2016)</td>
<td>No pot of gold at the end of this rainbow: RCL, Rainbow announced intention to retrench more than 1,000 jobs at its Camperdown facility (October 2016).</td>
</tr>
<tr>
<td>g.Lovell (2016:2)</td>
<td>The war of the chickens: research in Netherlands concluded that SA produces chicken for less than EU, TH, almost the same as US and more than BR, AR and the UA (October 2017).</td>
</tr>
<tr>
<td>i.(Allix, 2016)</td>
<td>FAWU workers protest against chicken dumping – at the EU delegation in Pretoria (November 2016).</td>
</tr>
</tbody>
</table>
More detailed discussion on the articles listed in Table 2-6:

a. In October 2015, Fin24 reported major changes for producers of poultry meat (Zokwana (2015:1). The amendment states that brine injections for whole carcasses are limited to 10 % from 8 % and for individual portions a cap is set on 15 %; no previous limit was prescribed. Additives and formulations of the injected brine should now be included in the name of the product. In reply on the new brining regulations, FIN24 (2016a), SAPA CEO, Kevin Lovell, said that the new regulation will make chicken unaffordable to many of the poor, forces the industry to shrink further and would also affect other suppliers (soya and maize) in the industry.

According to him information and true facts about brining were ignored by DAFF and that importers of IQF were not able to compete in this market segment up to date, thus the reason for them to participate in the campaign against brining. Every 10,000 tonnes of imported meat equals 1,000 local jobs lost in SA. The South African National Consumer Union (SANCO) also confirmed that they share the same sentiment of price hikes in chicken products.

b. The minister of trade and industry was informed of a possible suspension of the AGOA trade deal. Kevin Lovell told Fin24 that it was because of salmonella testing protocols.
Tests on imports from the US would only be on the final product and not subjected to multiple tests on breeders, feed ingredients, farms and abattoirs plus the final product; this places human and animal health at risk; Fin24, McDonald (2016a).

c. In a news interview on eNCA, after US president Barack Obama gave SA an ultimatum regarding AGOA because of imports of poultry that are blocked due to health concerns, Cebekhulu (IFP) said that dumping should be stopped and that the local industry should be enhanced. The industry supports many local people; it will not help to import cheap meat when people lose their jobs and they will in any event starve because they will not have money, even if food is in abundance. He urged people to buy local; eNCA, Nkosi (2016).

d. RCL Foods CEO, Miles Daily, announces a decrease in RCL Foods’, or as it was known, Rainbow Chicken, financial reports. The impact of chicken imports on its EBITDA declined by 12.8 % to R1.8 billion. He adds that the losses are due to imports, largely from Brazil; Money web, Mahlaka (2016).

e. Dawid Wolpert (AMIE) said that the association is thrilled about the court judgement rejecting SAPA’s application to set aside brining caps; Fin24, Wolpert (2016).

f. An announcement was reported on 2 October 2016 by RCL Foods that Rainbow chicken intend to retrench more than a 1,000 jobs due to the ongoing imports and the effects thereof on the domestic market; City press, Harper (2016).

g. Fin24, Lovell (2016:2), reported that independent research that was done by the University of Wageningen, NL, concluded that RSA’s poultry industry produces at lower cost than EU, TH, almost the same as the US and more than BR, AR and the UA. Kevin Lovell added that almost 12,000 jobs could be lost by the end of 2016, adding to the jobs already lost, but on a positive note he said that all is not lost; there are still 120,000 jobs to fight for.

Kevin Lovell made pictures available of imported chicken from the US and also questions the quality and health aspects of the imported product. In his interview he mentions that the standards of imported chicken from the US are lower than the standards applied to all other imported and local products as part of the AGOA pressures; FIN24 (2016b:2).

h. David Wolpert (AMIE) told Fin24 that the chicken industry should stop whingeing; according to him imports are less than 13 % of the total chicken consumption in the RSA. He feels that globalisation benefits society and that the RSA wants imported chicken because of its quality and because it is not our over-brined local botoxed product; Fin24 Wolpert (2016).

i. The first of many protests by the Food and Allied Workers Union (FAWU) started in 2016; it must also be noted that it was also a historical event as CEOs, senior management and lower also participated in the protest actions. Poultry workers belonging to FAWU marched from Pretoria Fountains to the building of the EU delegation, in protest against chicken dumping, report by Business Day, Allix (2016).
j. The union’s general secretary, Katishi Masemola, handed over a memorandum to the EU representative to cease dumping of chicken, because it has a devastating effect on the poultry industry. EU had, at the time, 0 % import duties, against the 37 % of the US. Marthinus Stander, CEO of CBH, told the Farmer’s Weekly that the march will be followed up on 29 November 2016 to the Provincial Legislature, Pietermaritzburg and on 30 November 2016 to Parliament in Cape Town; Farmer’s Weekly, Uys (2016).

The poultry industry will see the smaller players to close down or being acquired by the bigger players as a result of high import volumes and the ban on brining; Business Day, Crotty (2016). According to the interview with Marthinus Stander, imported chicken (brown meat / on the bone) from the US and EU (who prefer white meat) are seen as waste and are therefore exported to RSA at a price below the production cost of the foreign country.

k. In November 2016 the SA government approved a 13.9 % “safeguard duty” on imported frozen chicken legs from the EU, after complaints were investigated by the RSA International Trade Administration Commission (ITAC) and recommended the duty to minister Rob Davies; Fabricius (2016), Fin24. The EU indicated that they would contest the decision based on technical grounds and also that it is not necessary as the DTI had stopped trade from EU states, DK, FR, GE, HU, NL and PL as a result from avian flu outbreak.

l. The minister of the DTI, Rob Davies, feels that the domestic industry should be defended against dumped imports from the EU or face a collapse, although the local industry needs to become more competitive. They cannot achieve this whilst imports are not managed; an influx of “spare parts” will not help to solve the problems domestically; Business Day, Crowley (2017).

m. In a letter Malema urges minister Rob Davies to impose a 50 % tariff on poultry imports. He also said that the origin of meat should be clearly indicated on packaging in order for consumers to distinguish between dumped and locally produced chicken; Fin24, Peyper (2017)

n. Research done by the Wageningen University of Netherland showed that the RSA’s poultry industry operates efficiently as per Chris Schutte (CE) of Astral foods. The research followed after the EU claimed that the RSA poultry’s problem is due to structural problems. The EU is accused of dumping and in defence said that the RSA’s poultry industry is not competitive. According to the research results, whole birds are locally produced 10 % and 29 % cheaper than EU countries, even with the high maize prizes the last couple of years. EU produces whole birds between R29/kg and R32/kg, but they sell leg quarters locally at R15/kg. He said that this is enough proof that dumping exists. SA is ranked in the top 5 % of producers. US and EU are outperformed by the local industry; the only countries better
than the RSA are the South American countries (CL and BR). Lastly he stated that the RSA government are concerned and that they will give some assistance; Business Day, Hasenfuss (2017).

o. Reuters reports that SAU stopped imports of beef and chicken from BR because of food safety. Health inspectors were caught taking bribes in order to allow rotten meat being exported. BRF RSA, the world’s biggest poultry exporter was amongst the companies; Arab news, Reuters (2017).

p. More countries (Santiago, CL and CN) blocked exports from Brazil due to health scare. Thirty people was arrested; the multinational BRF group and two meat processing plants operated by local Peccin were shut down; FIN24 (2017).

q. The poultry industry is in a crisis, meat import volumes have increased since 2009; from 3,500 tonnes to 30,000 tonnes per month; BusinessDay (2017).

r. IOL reported that RSA retailers are selling dumped chicken products either at marginally cheaper prices or at the same price of locally produced chicken. The safety of locally produced chicken is traceable and must comply with rigorous requirements; consumers never know how many times dumped chicken has been refrozen or repacked, which is a potential health risk. Other factors like the Brazilian meat scandal and high domestic unemployment make it even worse to import dumped products.

Mike Schussler (chief economist at Economist.co.za) said that the RSA has enough spare capacity to meet the demand; he does not agree with Sarita van Wyk (Shoprite spokesperson) who said that retailers need to buy 2 % imported poultry products due to a shortage in supply. If no spare capacity existed, RCL would not have to scale down. 13 Rainbow outlets were up for sale, costing 1,350 people their jobs. The company also closed one shift at Hammersdale. Retrenchments took place during January 2017. Scott Pitman (RCL spokesperson) believes that 130,000 people could lose their jobs by the end of 2017, should chicken dumping continue. Marthinus Stander (CEO, CBH) told IOL news that the poultry industry is on the brink of collapse; CBH also gave notice in August 2016 of closing one of their abattoirs situated in Mahikeng. David North (Pick n Pay) and Mark Godfrey (Spar) say that they buy locally produced chicken. Godfrey says that the listed company only buys locally produced chicken; IOL news, Ajam (2017).

The SA poultry industry is not entirely alone in the matter of dumping. In October 2016 FairPlay, a nonprofit initiative, was formed under the leadership of Francois Baird (Baird (2017). The mission of FairPlay: “To end the scourge of dumping as an illegal and immoral trade practice,” and its vision: “A world where dumping no longer exists, with free trade according to the rules.”
FairPlay already formed alliances with organisations and experts from the US, CAN, UK and SA to formulate and promote strategies to help the poultry industry and the government with plans that will work in the fight against dumping. In SA FairPlay united SAPA and FAWU in the fight against dumping.

On 3 August 2017 FairPlay held a one-day summit in partnership with the University of Johannesburg. The keynote address was delivered by Justice Richard Goldstone. A petition was finalised (over 8,000 signatories already) that will be send to president Jacob Zuma and TDI minister Rob Davies. Francois Baird, founder of FairPlay, said that the gathering exceeded their expectations, Baird (2017). This was also reported in the Business Report on 3 August 2017. The EU claims that subsidies of almost 80 billion euros to agricultural producers in EU and also that 20 % of agricultural income which derives from subsidies have no effect on imports to the RSA. This, according to FairPlay, is both false and misleading; it was designed to protect EU farmers against volatile markets and in reality makes dumping financially viable.

On 10 August FairPlay announced that the EU still has made no admission to dumping, nor any promise that dumping will be stopped; they just claim that there is no proof. Poultry farming in SN, CM and GH was destroyed by the EU who ignores its own international objectives of development and cooperation, as reported by Chris Ward and published by Devex.com on 17 August 2017. Chris Ward is actively involved in the FairPlay movement and is based in CAN. The report’s heading states his opinion about the SA poultry, in that he does not believe that the industry will survive beyond 2018, Baird (2017). KFC is supporting local poultry producers 100 % and has lent its support to FairPlay, reported on 18 August 2017 in the Business Day by Colleen Goko, Baird (2017). Francois Baird wrote in a letter about three EU countries, the NL, DE and UK which were penalised for dumping in 2015 as proof of past offences and have continued ever since.

On 30 September 2017 FairPlay distributed a conversation on Twitter that took place between David Wolpert (AMIE) and Capricorn FM, whereby David Wolpert admittedly says that the EU dumps chicken in SA; in his own words: “No dumping taking place at the moment, because of 95 % of EU countries are suffering from bird flu at the moment.” FairPlay (2017).

Figures for imports in June 2017, SAPA (2017b), based on SARS verified stats, showed an import drop of 32.2 % in December, due to AI-related bans, but were soon replaced by US imports; increased by 8.2 % in January and 4.9 % in February 2017. Imports for 2016 increased
by 17.1 % or 81,708 tonnes compared to 2015. Imports are 24 % higher than the 5-year average.

2.5 Casual factors to the study

In this study only two casual factors that have an influence on the SA poultry industry are being investigated. They are as follows:

1. Is the pressure that animal welfare groups place upon the industry and the cost thereof, by implementing automated machines at a high cost, justifiable?

2. Is it fair trade to import (dump) chicken at prices below exporters’ manufacturing costs? Does the current export dumping justify anti-dumping actions according to the WTO or GATT agreement?
CHAPTER 3: EMPIRICAL STUDY

3.1 Introduction

The empirical study consisted of a qualitative and quantitative section. Care was taken to ensure that participants remained anonymous and to ensure that all questions could be answered truthfully, without fear of outside intimidation as the topics are sensitive due to the economic pressures on the poultry industry.

3.2 Gathering of data

The qualitative study data was collected electronically. The questionnaire was done on Google forms and was sent out by electronic mail to 113 possible respondents, of which 86 replies were collected. The NWU statistic department analysed the data and send it back for own interpretation.

The quantitative study started in the summer months (January, February) of 2017. A forklift pallet system was designed for the project and data results were collected from an independent abattoir. No employee employed at the time in the abattoir knew about the tests that were conducted in the field. Data were collected in the summer and winter months, day and night time, from various farms ranging from 60 or less kilometres from the abattoir to 200 km away.

During the trail, feed withdrawal times were also being tested, ranging from six hours before slaughter to eight hours before slaughter.

3.3 Results and discussion

3.3.1 Questionnaire

3.3.1.1 Demographics

Demographics are discussed in figure 3-1, 3-2 to figure 3-8. In figure 3-1, the age percentages range from age 23, to the oldest participant at age 72. The average age or mean at 40.58 years. Out of a sample of 86 participants 67.4% were males, and 32.6% females in Figure 3-2.

Figure 3-3, household dependants, shows a minimum dependants of 0, maximum of 7. Out of these samples 34.9% have 4 dependants, and 1.2% have 1 or 7 dependants. Figure 3-4 indicated that 26.7% of the households does have a business, and 73.3% does not have a
business. The following figure 3-5, farm % per households, indicated that 17.4% of the households does own a farm. Occupational % consist out of a well-diversified sample in figure 3-6. Figure 3-7, education %, consist out of 27.9% with graduate degrees, post grad degrees at 25.6%, college diploma 24.4%, and lastly high school diploma of 22.1%, again indicating a balanced diversified sample.

Figure 3-8, industry %, 64% of the sample consist out of agriculture, 12.8% manufacture, 5.8% transport & logistics, 2.3% sales, 2.3% finance, and other 1.2%.

**Figure 3-1:** Demographics: Age Percentage

**Figure 3-2:** Demographics: Gender Percentage

**Figure 3-3:** Demographics: House Hold Dependents Percentage
Figure 3-4:  Demographics: House Hold Business Percentage

Figure 3-5:  Demographics: House Hold Farm Percentage

Figure 3-6:  Demographics: Occupation Percentages
3.3.1.2 Imports (dumping)

Table 3-1: Part B: Imported poultry (Dumping questionnaire) ~ Imports

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 If imported chicken were available today, you would buy imported brands</td>
<td>73.00%</td>
<td>16.30%</td>
<td>10.50%</td>
<td>0.00%</td>
<td>1.37</td>
<td>0.669</td>
</tr>
<tr>
<td>2 Poultry (chicken) imports compared to local brand’s quality is better</td>
<td>59.30%</td>
<td>29.10%</td>
<td>10.50%</td>
<td>1.20%</td>
<td>1.53</td>
<td>0.731</td>
</tr>
<tr>
<td>3 You are overall satisfied with your experience using imported chicken</td>
<td>59.30%</td>
<td>23.30%</td>
<td>17.40%</td>
<td>0.00%</td>
<td>1.58</td>
<td>0.774</td>
</tr>
<tr>
<td>4 You would recommend imported chicken to a friend or colleague</td>
<td>68.60%</td>
<td>20.90%</td>
<td>10.50%</td>
<td>0.00%</td>
<td>1.42</td>
<td>0.677</td>
</tr>
<tr>
<td>5 If imported chicken were available today, you would buy the product</td>
<td>66.30%</td>
<td>19.80%</td>
<td>14.00%</td>
<td>0.00%</td>
<td>1.48</td>
<td>0.731</td>
</tr>
<tr>
<td>6 You would buy imported produced chicken</td>
<td>66.30%</td>
<td>19.80%</td>
<td>12.80%</td>
<td>1.20%</td>
<td>1.49</td>
<td>0.763</td>
</tr>
<tr>
<td>7 You absolutely trust the information on imported poultry products</td>
<td>54.70%</td>
<td>34.50%</td>
<td>8.10%</td>
<td>1.20%</td>
<td>1.52</td>
<td>0.699</td>
</tr>
</tbody>
</table>

Part B of the questionnaire relates to imported products and dumping. The possible answer and scale to each question were:

1. Strongly disagree
2. Disagree
3. Agree
4. Strongly agree
The results of the questionnaires were statistically analysed by frequency tables and a reliability test was also performed, called the Cronbach alpha. An alpha coefficient of 0.70 and greater is deemed reliable, meaning the internal consistency is acceptable.

The reliability measure (Cronbach’s alpha) on the questions is an alpha coefficient of 0.89, meaning that the internal consistency was excellent and reliable.

The highest mean is 1.58 (question 3) which tends to 2, thus meaning that they disagree and the lowest mean is 1.37 (question 1) which tends to 1, meaning that they strongly disagree.

Question B1, 73 % strongly disagreed and 16.3 % disagreed that they would buy imported chicken. Only 10.5 % agreed with 0 % strongly agreed (89.5 % vs. 10.5 %).

Question B2, 59.3 % strongly disagreed and 29.1 % disagreed in that they did not feel that the quality of imported chicken is better than local chicken. 10.5 % agreed and 1.2 % strongly agreed that imported quality is better (88.4 % vs. 11.6 %).

Question B3, 59.3 % strongly disagree and 23.3 % disagree that they were not satisfied with their experience using imported chicken. 17.4 % agree or were satisfied and 0 % strongly agreed to be satisfied (82.6 % vs. 17.4 %).

Question B4, 68.6 % strongly disagree and 20.9 % disagree that they would recommend imported chicken to a friend or colleague. Only 10.5 % agreed that they would recommend imported chicken to a friend or colleague and 0 % strongly agreed (89.5 % vs. 10.5 %).

Question B5, 66.3 % strongly disagreed and 19.8 % disagreed on buying imported chicken if available. 14.0 % agreed on buying imported chicken; 0 % strongly agreed (86 % vs. 14 %).

Question B7, 66.3 % strongly disagreed that they would buy imported chicken and 19.8 % disagreed. 12.8 % agreed and 1.2 % strongly agreed that they would buy imported chicken (86 % vs. 14 %).

Question B9, 54.7 % strongly disagreed that they absolutely trust information on imported poultry products and 34.9 % disagreed. 8.1 % agreed and 1.2 % strongly agreed that they trust the information on imported poultry products (89.5 % vs. 9.3 %).

The conclusion from part B of the questionnaire shows an overwhelming negative reaction towards imported poultry products. The respondents said on average that they do not trust the quality and information of imported poultry, nor were they satisfied using the product. The majority of the respondents would not buy imported chicken if it were available today.
The reliability measure (Cronbach’s alpha) on B15 is an alpha coefficient of 0.89, only questions B6, B8 and B11 were 0.62, meaning that the internal consistency could be questionable, but are reliable.

The highest mean is 3.50 (question 15) which tends to 4, thus meaning that they strongly agree. The lowest mean is 3.08 (question 8) which tends to 3, meaning that they agree.

Question B6, 7.0 % strongly disagreed and 5.8 % disagreed that their first reaction to local chicken would be positive. 38.4 % agreed and 48.8 % strongly agreed their reaction would be positive towards local chicken (12.8 % vs. 87.2 %).

Question B8, 2.3 % strongly disagreed and 12.8 % disagreed that they absolutely trust information on local produced products. 57 % agreed and 25.6 % strongly agreed trusting information on local products (15.1 % vs. 82.6 %).

Question B11, 0 % strongly disagreed and 4.7 % disagreed on local chicken as value for money. 58.1 % agreed and 37.2 % strongly agreed that local produced chicken is value for money (4.7 % vs. 95.3 %).

Question B15, 3.5 % strongly disagreed and 3.5 % disagreed on poultry selling at lower prices in SA is unfair to local producers. 32.6 % agreed and 60.5 % strongly agreed that lower imported prices are unfair (7 % vs. 93 %).

The respondents agreed quite average on if their first reaction towards local chicken is positive and also that they absolutely trust the information on local chicken products, thus rating locally produced poultry products as value for money.

They strongly agreed that imported poultry selling at lower prices in South Africa than where produced abroad is unfair to local producers, even if local producers produce at lower cost than abroad.
The last part relates directly to price and dumping and also tested the feeling of respondents on unemployment.

The highest mean is 3.56 (question 13) which tends to 4, thus meaning that they strongly agree. The lowest mean is 1.31 (question 14) which tends to 1, meaning that they strongly disagree.

Question B10, 7.0 % strongly disagreed and 24.4 % disagreed that price is very important. 40.7 % agreed and 26.7 % strongly agreed on the importance of price when choosing poultry products (31.4 % vs. 67.4 %).

Question B12, 17.4 % strongly disagreed and 39.5 % disagreed that locally produced chicken prices would be extremely higher than imported chicken. 44.2 % agreed and 40.7 % strongly agreed (31.4 % vs. 67.4 %).

Question B13, 3.5 % strongly disagreed that imported dumped products will have an effect on the unemployment rate in SA and 5.8 % disagreed. 44.2 % agreed and 40.7 % strongly agreed (9.3 % vs. 90.7 %).

Price was agreed on average to be very important when choosing this type of product (poultry). Also that chicken prices would be extremely higher when comparing locally produced chicken to imported chicken. The question if imported (dumped) poultry products at prices lower than locally produced products will have an effect on the unemployment rate in SA was on average strongly agreed upon.

Lastly the respondents strongly disagreed that dumping from foreign countries are a myth.
3.3.1.3 Animal welfare

Table 3-4: Part C: Animal Welfare and Broiler Quality (Animal Welfare)

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>You know the process of poultry loading and transportation to the processing plants</td>
<td>4.70%</td>
<td>8.10%</td>
<td>44.20%</td>
<td>40.70%</td>
<td>3.24</td>
<td>0.801</td>
</tr>
<tr>
<td>You are involved or have relevant knowledge of any part of poultry production, farming and or loading and transportation</td>
<td>5.80%</td>
<td>7.00%</td>
<td>40.70%</td>
<td>44.20%</td>
<td>3.26</td>
<td>0.838</td>
</tr>
<tr>
<td>Feed withdrawal periods to ensure a clean crop for processing should never be &lt; than 8 hours</td>
<td>5.80%</td>
<td>16.30%</td>
<td>52.30%</td>
<td>16.30%</td>
<td>2.87</td>
<td>0.779</td>
</tr>
<tr>
<td>Distance for transporting poultry has an effect on broiler quality and animal welfare</td>
<td>5.80%</td>
<td>11.60%</td>
<td>59.30%</td>
<td>16.30%</td>
<td>2.93</td>
<td>0.742</td>
</tr>
<tr>
<td>Distance of travel will have an effect on the carcass quality of chicken meat in the processing plant</td>
<td>5.80%</td>
<td>26.70%</td>
<td>47.70%</td>
<td>12.80%</td>
<td>2.73</td>
<td>0.779</td>
</tr>
<tr>
<td>Bird welfare will be not be compromised when travelling longer distances</td>
<td>24.40%</td>
<td>36.00%</td>
<td>29.10%</td>
<td>5.80%</td>
<td>2.13</td>
<td>0.848</td>
</tr>
<tr>
<td>There is a difference in broiler welfare during transit between day and night transportation</td>
<td>3.50%</td>
<td>22.10%</td>
<td>58.10%</td>
<td>5.80%</td>
<td>2.74</td>
<td>0.637</td>
</tr>
<tr>
<td>Mechanising processes (harvesting of broilers) in the industry lead to job losses</td>
<td>0.00%</td>
<td>18.60%</td>
<td>55.80%</td>
<td>15.10%</td>
<td>2.96</td>
<td>0.618</td>
</tr>
</tbody>
</table>

The reliability measure (Cronbach’s alpha) on the questions is an alpha coefficient of 0.70, meaning that the internal consistency is acceptable and reliable.

The highest mean is 3.26 (question 2) which tends to 3, thus meaning that they agree. The lowest mean is 2.13 (question 9) which tends to 2, meaning that they disagree.

The first part of the questionnaire was based on the respondent’s knowledge regarding loading practices and to get an overall view on factors relating to animal welfare and standard practices. Question 1 and 2 were based on the individual knowledge regarding loading and transportation of broilers. In response 12.8 % of respondents indicated that they do not know and 84.9 % of respondents indicated that they do, of which 44.2 % agreed and 40.7 % strongly agreed to know the process.

Of the respondents 12.8 % are not involved in the poultry production, farming or loading processes. 40.7 % agreed and 44.2 % strongly agreed to be part of a poultry process.

Question 6 tested the perception or knowledge on feed withdrawal periods; whether it should be < than 8 hours. 5.8 % strongly disagreed, 16.3 % disagreed and 52.3 % agreed. 16.3 % strongly agreed (22.1 % vs. 68.6 %).

Question 7, the distance from abattoirs and the effect it has on broiler quality and welfare were tested. 5.8 % strongly disagreed, 11.6 % disagreed and 59.3 % agreed. 16.3 % strongly agreed (17.4 % vs. 75.6 %).

Question 8, distance will have an effect on carcass quality of chicken meat in the processing plant. 5.8 % strongly disagreed, 26.7 % disagreed and 47.7 % agreed. 12.8 % strongly agreed (32.6 % vs. 60.5 %).
Question 9, bird welfare will not be compromised when travelling longer distances. 24.4 % strongly disagreed, 36 % disagreed and 29.1 % agreed. 3.5 % strongly agreed (60.5 % vs. 32.6 %).

Question 11, there is a difference in broiler welfare during transit between day and night transportation. 3.5 % strongly disagreed, 22.1 % disagreed and 58.1 % agreed. 5.8 % strongly agreed (25.6 % vs. 64 %).

Question 12, mechanising processes (harvesting of broilers) in the industry lead to job losses. 0% strongly disagreed, 18.6 % disagreed and 55.8 % agreed. 15.1 % strongly agreed (18.6 % vs. 70.9 %).

The respondents agreed on the question regarding “Feed withdrawal” - to ensure a clean crop, it should never be less than eight hours. They also agreed on the question of distance having an effect on broiler quality and animal welfare and an effect on carcass quality of chicken meat in the processing plant, although they did disagree that bird welfare will not be compromised on when travelling longer distances. The respondents did also on average agreed regarding a difference in broiler welfare during transit between day and night transportation.

Finally the respondents agreed that mechanising (harvesting of broilers) in the industry will lead to job losses.

**Table 3-5: Part C: Animal Welfare and Broiler Quality (Forklift Loading)**

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>11.60%</td>
<td>40.70%</td>
<td>38.40%</td>
<td>2.30%</td>
<td>2.34</td>
<td>0.728</td>
</tr>
<tr>
<td>5</td>
<td>11.60%</td>
<td>25.60%</td>
<td>46.50%</td>
<td>8.10%</td>
<td>2.56</td>
<td>0.828</td>
</tr>
<tr>
<td>10</td>
<td>14.00%</td>
<td>34.90%</td>
<td>39.50%</td>
<td>2.30%</td>
<td>2.33</td>
<td>0.767</td>
</tr>
</tbody>
</table>

The highest mean is 2.56 (question 5) which tends to 3, thus meaning that they agree. The lowest mean is 2.33 (question 10) which tends to 2, meaning that they disagree.

This part of the questionnaire was formed to understand the respondent’s feelings and knowledge regarding loading practices, or mechanical loading versus manual loading.

Question 4, mechanical loading are best practice towards animal welfare. 11.6 % strongly disagreed, 40.7 % disagreed, 38.4 % agreed and 2.3 % strongly agreed (52.3 % vs. 40.7 %).

Question 5, mechanical loading would outperform manual loading financially. 11.6 % strongly disagreed, 25.6 % disagreed, 46.5 % agreed and 8.1 % strongly agreed (37.2 % vs. 54.7 %).
Question 10, bird welfare can be better controlled using mechanical loading practices. 14 % strongly disagreed, 34.9 % disagreed, 39.5 % agreed and 2.3 % strongly agreed (48.8 % vs. 41.9 %).

On average the respondents disagreed that mechanical loading of birds are best practice towards animal welfare, or that bird welfare can be better controlled using mechanical loading practices. They however did agree that mechanical loading would outperform manual loading financially.

Table 3-6: Part C: Animal Welfare and Broiler Quality (Manual Loading)

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual loading of birds is harmful to broilers and causes undue stress, bruising and mortality</td>
<td>17.40%</td>
<td>46.50%</td>
<td>25.60%</td>
<td>3.50%</td>
<td>2.16</td>
<td>0.770</td>
</tr>
</tbody>
</table>

The mean of 2.16 tends to 2, meaning that they disagree.

The last section asked respondents whether manual loading of birds is harmful to broilers and causes undue stress, bruising and mortality. 17.4 % strongly disagreed, 46.5 % disagreed 25.6 % agreed and 3.5 % strongly agreed (64 % vs. 29.1 %).

The average response was of disagreement towards manual loading being harmful to broilers and causes undue stress, bruising and mortality.

3.3.2 Data analysis (loading method)

Data is statistically analysed using Anova:

1. The Levene’s test is done to interpret the homogeneity of the data, or in other words if the variances are of the same nature or approximately equal. The hypothesis used is: if p<0.05 then the bottom row is interpreted, H0 is rejected and H1 is accepted. If p>0.5 the top row of the results are interpreted for t, H0 is then rejected and H1 accepted (p = Sig).

2. The T-test is used to compare the means. If N>30, n1,n2, the T-test is robust to violations of homogeneity of variance, thus no difference between the two samples. The hypothesis used is: if p<0.05, H0 is rejected and H1 is accepted. If p>0.5, H0 is then accepted and H1 rejected; the means are not significantly different and the difference is only by chance and cannot be generalised to the population. The 2-tailed test only tells us that there is a difference in competency scores (p = Sig [2-tailed]).
Table 3-7: Data Analysis – Day & Night

Data analysis

Levene's test for equality of variances
T-test for Equality of Means

Catching Day/Night

Group Statistics

<table>
<thead>
<tr>
<th>SHIFT</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOA Kg</td>
<td>31</td>
<td>21.90</td>
<td>17.57</td>
<td>3.16</td>
<td>0.38</td>
</tr>
<tr>
<td>Night</td>
<td>35</td>
<td>30.81</td>
<td>23.14</td>
<td>3.91</td>
<td></td>
</tr>
<tr>
<td>BRUSING CATCH REJECT KG</td>
<td>Day</td>
<td>31</td>
<td>3.38</td>
<td>1.11</td>
<td>0.20</td>
</tr>
<tr>
<td>Night</td>
<td>35</td>
<td>3.97</td>
<td>1.43</td>
<td>0.24</td>
<td></td>
</tr>
</tbody>
</table>

Independent Samples Test

<table>
<thead>
<tr>
<th>Mass</th>
<th>Levene’s Test for Equality of Variances</th>
<th>T-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig</td>
</tr>
<tr>
<td>DOA Kg</td>
<td>Equal variances assumed</td>
<td>2.358</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>-1.772</td>
</tr>
<tr>
<td>BRUSING CATCH REJECT KG</td>
<td>Equal variances assumed</td>
<td>0.143</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>-1.887</td>
</tr>
</tbody>
</table>

a) Statistical analysis between day and night loading (DOA):

1. \( H_0 \): Day (DOA)
   \( H_1 \): Night (DOA)
2. Levene’s test result: equal variances assumed, \( p (0.130) > 0.05 \), the top row of results are interpreted for \( t \). Accept \( H_0 \) and \( H_1 \) are rejected.
3. T-test:
   i. Sig 2-tailed test: \( p (0.086) > 0.05 \). Accept \( H_0 \) and \( H_1 \) are rejected; the means are not significantly different. The difference between day and night (21.9 & 30.81) could be by chance and cannot be generalised to the entire population.
4. Effect size: 0.38; according to the guidelines a small effect.

b) Statistical analysis between day and night loading (bruising):

1. \( H_0 \): Day (bruising)
   \( H_1 \): Night (bruising)
2. Levene's test result: equal variances assumed, \( p (0.707) > 0.05 \), the top row of results are interpreted for \( t \). Accept \( H_0 \) and \( H_1 \) are rejected.
3. T-test:
i. Sig 2-tailed test: p (0.068) > 0.05. Accept H₀ and H₁ is rejected, the means are not significantly different. The difference between day and night (3.38 & 3.97) could be by chance and cannot be generalised to the entire population.

4. Effect size: 0.41; according to the guidelines a small effect.

### Table 3-8: Data Analysis – Distance; Close & Far

#### Data analysis

Levene's test for equality of variances

<table>
<thead>
<tr>
<th>KM</th>
<th>DOA Kg</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Close</td>
<td>44.00</td>
<td>22.52</td>
<td>18.22</td>
<td>2.75</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>Far</td>
<td>26.00</td>
<td>33.41</td>
<td>23.23</td>
<td>4.56</td>
<td></td>
</tr>
</tbody>
</table>

BRUISING CATCH REJECT KG

<table>
<thead>
<tr>
<th>KM</th>
<th>DOA Kg</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Close</td>
<td>44.00</td>
<td>3.58</td>
<td>1.10</td>
<td>0.17</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>Far</td>
<td>26.00</td>
<td>4.22</td>
<td>1.71</td>
<td>0.34</td>
<td></td>
</tr>
</tbody>
</table>

**Guidelines**

<table>
<thead>
<tr>
<th>Effect Size</th>
<th>Small Effect</th>
<th>Medium Effect</th>
<th>Large Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.2</td>
<td>0.5</td>
<td>0.8</td>
</tr>
</tbody>
</table>

#### Independent Samples Test

Levene’s Test for Equality of Variances

<table>
<thead>
<tr>
<th>KM</th>
<th>DOA Kg</th>
<th>Equal variances assumed</th>
<th>F</th>
<th>Sig.</th>
<th>t</th>
<th>df</th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.75</td>
<td>0.39</td>
<td>-2.18</td>
<td>66.00</td>
<td>-10.89</td>
<td>5.00</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equal variances not assumed</td>
<td>-2.05</td>
<td>43.16</td>
<td>0.05</td>
<td>-10.89</td>
<td>5.22</td>
<td>0.05</td>
<td></td>
</tr>
</tbody>
</table>

BRUISING CATCH REJECT KG

<table>
<thead>
<tr>
<th>KM</th>
<th>DOA Kg</th>
<th>Equal variances assumed</th>
<th>F</th>
<th>Sig.</th>
<th>t</th>
<th>df</th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.13</td>
<td>0.08</td>
<td>-1.89</td>
<td>66.00</td>
<td>-0.64</td>
<td>0.34</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equal variances not assumed</td>
<td>-1.70</td>
<td>37.51</td>
<td>0.10</td>
<td>-0.64</td>
<td>0.37</td>
<td>0.10</td>
<td></td>
</tr>
</tbody>
</table>

#### Statistical analysis between close and far travel distance (DOA):

1. H₀: Close (DOA)
   H₁: Far (DOA)

2. Levene’s test result: equal variances assumed, p (0.39) > 0.05, the top row of results are interpreted for t. Accept H₀ and H₁ are rejected.

3. T-test:
   i. Sig 2-tailed test: p (0.03) < 0.05. Reject H₀ and H₁ is accepted; the means are significantly different. The difference between close and far (22.52 & 33.41) could not be by chance and can be generalised to the entire population.

4. Effect size: 0.47; according to the guidelines a small effect that trend towards a medium effect.

d) Statistical analysis between day and night loading (bruising):

1. H₀: Close (bruising)
H₁: Far (bruising)
2. Levene’s test result: equal variances assumed, p (0.08) > 0.05, the top row of results are interpreted for t. Accept H₀ and H₁ is rejected.
3. T-test:
   i. Sig 2-tailed test: p (0.06) > 0.05. Accept H₀ and H₁ is rejected; the means are not significantly different. The difference between close and far (3.58 & 4.22) could be by chance and cannot be generalised to the entire population.
4. Effect size: 0.37; according to the guidelines a small effect.

Table 3-9: Data Analysis – Summer & Winter

<table>
<thead>
<tr>
<th>Data analysis</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levene’s test for equality of variances</td>
<td>Small Effect 0.2</td>
</tr>
<tr>
<td>t-test for Equality of Means</td>
<td>Medium Effect 0.5</td>
</tr>
<tr>
<td>Catching Summer/Winter</td>
<td>Large Effect 0.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Season</strong></td>
<td><strong>DOA Kg</strong></td>
</tr>
<tr>
<td><strong>N</strong></td>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>Summer</td>
<td>16.00</td>
</tr>
<tr>
<td>Winter</td>
<td>54.00</td>
</tr>
<tr>
<td>Summer</td>
<td>16.00</td>
</tr>
<tr>
<td>Winter</td>
<td>54.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent Samples Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOA Kg</strong></td>
<td><strong>BRUISING CATCH REJECT KG</strong></td>
</tr>
<tr>
<td><strong>Levene’s Test for Equality of Variances</strong></td>
<td><strong>t-test for Equality of Means</strong></td>
</tr>
<tr>
<td><strong>F</strong></td>
<td><strong>Sig.</strong></td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>2.47</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>0.95</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>4.06</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>-0.14</td>
</tr>
</tbody>
</table>

e) Statistical analysis between summer and winter (DOA):

1. H₀: Summer (DOA)
   H₁: Winter (DOA)
2. Levene’s test result: equal variances assumed, p (0.12) > 0.05, the top row of results are interpreted for t. Accept H₀ and H₁ is rejected.
3. T-test:
   i. Sig 2-tailed test: p (0.29) > 0.05. Accept H₀ and H₁ is rejected; the means are not significantly different. The difference between summer and winter (31.39 & 25.14) could be by chance and cannot be generalised to the entire population.
4. Effect size: 0.26; according to the guidelines a small effect.

f) Statistical analysis between summer and winter loading (bruising):

1. \( H_0: \) Summer (bruising)
   \( H_1: \) Winter (bruising)
2. Levene’s test result: equal variances assumed, \( p (0.05) > 0.05, \) the top row of results are interpreted for t. Accept \( H_0 \) and \( H_1 \) is rejected.
3. T-test:
   i. Sig 2-tailed test: \( p (0.85) > 0.05. \) Accept \( H_0 \) and \( H_1 \) is rejected; the means are not significantly different. The difference between summer and winter (3.76 & 3.84) could be by chance and cannot be generalised to the entire population.
4. Effect size: 0.04; according to the guidelines a small to zero effect.

Table 3-10: Data Analysis – Manual & Forklift

<table>
<thead>
<tr>
<th>Data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levene's test for equality of variances</td>
</tr>
<tr>
<td>t-test for Equality of Means</td>
</tr>
</tbody>
</table>

**Catching Manual/Forklift**

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small Effect</td>
</tr>
<tr>
<td></td>
<td>0.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOA Kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forklift</td>
<td>35.00</td>
<td>19.28</td>
<td>15.66</td>
<td>2.65</td>
</tr>
<tr>
<td>Manual</td>
<td>35.00</td>
<td>33.85</td>
<td>22.78</td>
<td>3.85</td>
</tr>
<tr>
<td>BRUISING CATCH REJECT KG</td>
<td>35.00</td>
<td>3.54</td>
<td>1.46</td>
<td>0.28</td>
</tr>
<tr>
<td>Manual</td>
<td>35.00</td>
<td>4.10</td>
<td>1.26</td>
<td>0.38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>---</td>
<td>------</td>
</tr>
<tr>
<td>DOA Kg</td>
<td>Equal variances assumed</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
</tr>
<tr>
<td>BRUISING CATCH REJECT KG</td>
<td>Equal variances assumed</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levene's test for equality of variances</td>
</tr>
<tr>
<td>t-test for Equality of Means</td>
</tr>
</tbody>
</table>

**g) Statistical analysis between forklift and manual (DOA):**

1. \( H_0: \) Forklift (DOA)
   \( H_1: \) Manual (DOA)
2. Levene’s test result: equal variances not assumed, \( p (0.02) < 0.05, \) the bottom row of results are interpreted for t. Reject \( H_0 \) and \( H_1 \) is accepted.
3. T-test:
i. Sig 2-tailed test: p (0.00) < 0.05. Reject $H_0$ and $H_1$ is accepted; the means are significantly different. The difference between forklift and manual (19.28 & 33.85) could not be by chance and can be generalised to the entire population.

4. Effect size: 0.64; according to the guidelines a medium effect.

h) Statistical analysis between manual and forklift loading (bruising):

1. $H_0$: Forklift (bruising)
   $H_1$: Manual (bruising)
2. Levene’s test result: equal variances assumed, p (0.45) > 0.05, the top row of results are interpreted for t. Accept $H_0$ and $H_1$ is rejected.
3. T-test:
   i. Sig 2-tailed test: p (0.09) > 0.05. Accept $H_0$ and $H_1$ is rejected; the means are not significantly different. The difference between forklift and manual (3.54 & 4.10) could be by chance and cannot be generalised to the entire population.
4. Effect size: 0.38; according to the guidelines a small effect.

3.4 Summary

The data sample was well diversified between male and female, age, dependants, occupation, education and industry. The data, quantitative and qualitative, was proved to be reliable and internally intact.

3.4.1 Qualitative data summary (imports)

Table 3-11: Part B: Imported Poultry ~ Imports Conclusion

<table>
<thead>
<tr>
<th>Question</th>
<th>Disagree</th>
<th>Agree</th>
<th>Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 If imported chicken were available today, you would buy imported brands</td>
<td>89.30%</td>
<td>10.50%</td>
<td>Local</td>
</tr>
<tr>
<td>2 Poultry (chicken) imports compared to local brand’s quality is better</td>
<td>88.40%</td>
<td>11.70%</td>
<td>Local</td>
</tr>
<tr>
<td>3 You are overall satisfied with your experience using imported chicken</td>
<td>82.60%</td>
<td>17.40%</td>
<td>Local</td>
</tr>
<tr>
<td>4 You would recommend imported chicken to a friend or colleague</td>
<td>89.50%</td>
<td>10.50%</td>
<td>Local</td>
</tr>
<tr>
<td>5 If imported chicken were available today, you would buy the product</td>
<td>86.10%</td>
<td>14.00%</td>
<td>Local</td>
</tr>
<tr>
<td>6 You would buy imported produced chicken</td>
<td>86.30%</td>
<td>14.00%</td>
<td>Local</td>
</tr>
<tr>
<td>7 You absolutely trust the information on imported poultry products</td>
<td>89.60%</td>
<td>9.30%</td>
<td>Local</td>
</tr>
</tbody>
</table>

The data in Table 3-11, 3-12 and 3-13 was further simplified to get an overall understanding of domestic consumers’ preference and feelings to either imported products or locally produced...
products. For the purpose of this study what came out as important in Table 3-11 is the consumers’ distrust on the information of imported poultry and that they are in many instances not educated to know the difference between imported chicken and locally produced chicken. The overall preference is clearly towards locally produced chicken as derived from Table 3-11; quality, satisfaction and trust seem to be very important when buying eatable products.

Table 3-12: Part B: Imported Poultry ~ Local Production Conclusion

<table>
<thead>
<tr>
<th>Question</th>
<th>Disagree</th>
<th>Agree</th>
<th>Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Your first reaction to local chicken products would be positive</td>
<td>12.80%</td>
<td>87.20%</td>
<td>Local</td>
</tr>
<tr>
<td>8 You absolutely trust the information on local produced products</td>
<td>15.10%</td>
<td>82.60%</td>
<td>Local</td>
</tr>
<tr>
<td>11 You would like to rate local chicken as “value for money”</td>
<td>4.70%</td>
<td>95.30%</td>
<td>Local</td>
</tr>
<tr>
<td>15 Imported poultry selling at lower prices in South Africa than produced abroad is unfair to local producers, even if local producer produce at lower cost than abroad</td>
<td>7.00%</td>
<td>93.10%</td>
<td>Local</td>
</tr>
</tbody>
</table>

On average the local consumer’s reaction to locally produced chicken is positive. From Table 3-12 consumer trust towards eatable products can be clearly seen. Although the preference is 82.6 % for local production, one would have expected it to be higher. What stands out is “value for money” and that the consumer feels that imports are unfair to the local producer on the bases of price or cost.

Table 3-13: Part B: Imported Poultry ~ Price / Unemployment Conclusion

<table>
<thead>
<tr>
<th>Question</th>
<th>Disagree</th>
<th>Agree</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Price is very important to you when choosing this type of product (poultry)</td>
<td>31.40%</td>
<td>68.60%</td>
<td>Price is important when choosing a product</td>
</tr>
<tr>
<td>12 Comparing to imported chicken, locally produced chicken prices would be extremely higher than imported chicken</td>
<td>56.90%</td>
<td>43.00%</td>
<td>Imported products land in RSA at prices below production cost; Imports sold to the market at prices just below the market price</td>
</tr>
<tr>
<td>13 Do you think that imported (dumped) poultry products at prices lower than locally produced products will have an effect on the unemployment rate in South Africa, should the SA poultry industry shrink any further?</td>
<td>93.70%</td>
<td>6.30%</td>
<td>Local industry already showed signs of shrinking. Retrenchments already a reality in the industry</td>
</tr>
<tr>
<td>14 Do you think that dumping of products from foreign countries are a myth?</td>
<td>95.00%</td>
<td>5.00%</td>
<td>Domestic market in RSA are aware of cheap imports and dumping</td>
</tr>
</tbody>
</table>

It is clear from Table 3-13 that consumers are aware of products being dumped in the RSA. Price, when choosing a product, did not come out as strong and almost confirms previous data on trust, quality and product satisfaction. One can derive from this that a consumer might be “willing to pay more” for a product that is deemed safe and healthy. In the literature review SAPA’s statements regarding cheap imports, which are sold in shops at prices just below the local market’s retail prices, seem plausible. The importers argued that they bring in affordable products to help the underprivileged or poor in affording to buy more protein. The data though does not reflect this argument even by 60%. A major concern is the already high RSA unemployment rate; the response was overwhelming in that imported or dumped products will have an effect on employment domestically.
3.4.2 Mixed method: Quantitative and qualitative data combined summary (pre-harvesting protocols)

One of the study’s objectives is to contribute to questions debated on in boardrooms for which no straight answers exist. The statement made in the objective seems to ring true by perusing through the quantitative and qualitative data. The highest percentage and lowest percentages were notably lower than what was seen in Part B of the questionnaire. The purpose of this summary is to evaluate the data, whether there is a plausible difference in different pre-harvesting protocols and to establish whether the prescribed methods are necessary or even fair regarding the pressures placed on an already struggling industry.

Table 3-14: Part C: Animal Welfare Conclusion

<table>
<thead>
<tr>
<th>Question</th>
<th>Disagree</th>
<th>Agree</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed withdrawal periods to ensure a clean crop for processing should never be &lt; than 8 hours</td>
<td>22.10%</td>
<td>68.60%</td>
<td>Disagree</td>
</tr>
<tr>
<td>Distance for transporting poultry has an effect on broiler quality and animal welfare</td>
<td>17.40%</td>
<td>75.60%</td>
<td>Agree</td>
</tr>
<tr>
<td>Distance of travel will have an effect on the carcass quality of chicken meat in the processing plant</td>
<td>32.50%</td>
<td>60.50%</td>
<td>Agree</td>
</tr>
<tr>
<td>Bird welfare will be not be compromised when travelling longer distances</td>
<td>60.40%</td>
<td>32.60%</td>
<td>Agree</td>
</tr>
<tr>
<td>There is a difference in broiler welfare during transit between day and night transportation</td>
<td>25.60%</td>
<td>63.90%</td>
<td>Disagree</td>
</tr>
<tr>
<td>Mechanising processes (harvesting of broilers) in the industry lead to job losses</td>
<td>18.60%</td>
<td>70.90%</td>
<td></td>
</tr>
</tbody>
</table>

The data collected from both methods are summarised in Table 3-14. It can be derived from the table that distance does play a role in bird welfare; the data confirms the respondents’ answers. Distance had a significant medium effect on DOA and a small insignificant (no) effect on bruising. Feed withdrawal periods were tested and ranged from 6 to 8 hours; no contamination was found during slaughter. One must be careful when considering feed withdrawal <8 hours. Factors like light in the chicken coops at night plays a big role; birds sleep when it’s dark and will not drink water during this time, which might lead to feed congestion. Spilled feed on the bedding or floor of the chicken coop might also contribute to feed crop congestion. The question about day and night harvesting and the effect it has on bird welfare showed no significant effects on DOA and bruising, thus is not plausible.

Note the question regarding mechanising the loading process and the effect it will have on job losses or unemployment; the rating was the second highest on all the welfare scores. This also confirms the importance to establish factual answers when cornered with pressures from the outside.
Table 3-15: Part C: Forklift Loading Conclusion

<table>
<thead>
<tr>
<th>Question</th>
<th>Disagree</th>
<th>Agree</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Mechanical loading of birds are best practice towards animal welfare</td>
<td>52.30%</td>
<td>40.70%</td>
<td>Agree</td>
</tr>
<tr>
<td>5. Mechanical loading would outperform manual loading financially</td>
<td>37.20%</td>
<td>54.60%</td>
<td></td>
</tr>
<tr>
<td>10. Bird welfare can be better controlled using mechanical loading practices</td>
<td>48.90%</td>
<td>41.80%</td>
<td>Agree</td>
</tr>
</tbody>
</table>

The data and the responses agree on mechanical loading not being the best practice towards animal welfare, neither can bird welfare be better controlled using mechanical loading. This was also found to be the case in previous research by Nijdam et al. (2005:1). Financial implications regarding mechanical loading versus manual loading will be different for each situation and depending on the “pay-back” period or protocol a producer follows as well as if a producer is financially capable of investing. Mechanical loading however does seem to have a lower impact on DOAs. The current labour force rules and the political situation give rise that mechanical loading could become best practice especially when considering that manual loading is very labour intensive, it requires physical stamina and it is due to employee availability and sustainability.

Table 3-16: Part C: Animal Welfare Conclusion

<table>
<thead>
<tr>
<th>Question</th>
<th>Disagree</th>
<th>Agree</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Manual loading of birds is harmful to broilers and causes undue stress, bruising and mortality</td>
<td>63.90%</td>
<td>29.10%</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Finally, it is found plausible that manual loading of birds are not harmful to broilers and does not cause undue stress, bruising and mortality. The effects were medium on DOA and small on bruising.

Data between summer and winter also showed small effects on DOA and bruising.

The second biggest factor related to bird welfare is loading method; manual loading had a medium effect on DOA and none to bruising. If the loading process was unacceptable, the effect would have been large and would have indicated some effect on bruising.

To conclude, the biggest factor related to bird welfare was distance, effecting DOA and bruising, but the differences only had a medium effect on the variances.

To conclude, manual loading is not significantly more harmful to broilers than mechanical loading, as statistically indicated.
CHAPTER 4: CONCLUSION

4.1 Introduction

The poultry industry does unavoidably show signs of financial degradation and losses throughout the study. At first glance however it is easy to make an assumption that the industry is in trouble due to drought, inefficiencies and local service delivery defaults, because it undoubtedly does have an influence on the poultry industry. The study purposefully was focused on exploring pressures on the poultry industry, with special reference to pre-harvesting protocols and dumping, due to time constraints. Other pressures having an effect on the industry include government policies, employment act, natural resources, environmental policies and market or customer requirements.

Unnecessary pressures placed on the poultry industry contribute to higher cost that constitutes unfair, wrongful and unjust influence and in effect cripples the industry to effectively compete domestically against foreign imports and also globally as a known exporter.

4.2 Conclusions

4.2.1 Conclusion on pre-harvesting protocols

In Chapter 1 Nijdam et al. (2005:1) found that the method of catching had little significant effect on mortality and did not influence the percentage of bruising. The same results were derived from the empirical study. Mortality variances had a medium effect on manual loading, but were not recorded as a reason to be alarmed. The perception that manual loading causes excessive animal welfare abuse is not plausible. In Chapter 1 Vecerek et al. (2006:1) reported that the highest mortality was recorded on far travel distances and the season of the year; according to Vecerek in the summer months and the mid-winter months. The data from this research confirmed that distance has an effect on mortality rates and bruising, but no significant variance were found between summer and winter, although extreme summer months will play a role in mortality. Day and night time loading had no effect at all, nor a significant effect on mortality and bruising.

Perception and generalisation were created through animal right organisations because of one or two producers abroad, of which their employees were caught in the act and filmed whilst abusing chickens during loading operations. The abuse was caught on film during EZ-loading practices in one instance and had nothing in common with manual loading. Unnecessary production costs or investments will lead to the closure of smaller role players in the industry.
The mechanising of loading equipment will also increase unemployment in the RSA and smaller producers will be forced to close their doors, in the event of alternative loading methods becoming compulsory. This in return will have an even greater effect on the unemployment rate in the RSA, which were already on 27.7% in the first quarter of 2017.

In conclusion, the pressure placed on poultry producers in the RSA to invest in mechanical or automated equipment to enhance animal welfare is unjust and unfair, based on animal welfare perceptions, standards, added financial constraints and employment.

4.2.2 Conclusion on dumping

International trade, world economies and globalisation have a seemingly great effect on local and domestic industries. It is a game of tug and war on a global scale and negotiation and agreements must be carefully considered on government level. The local poultry industry pleaded with the RSA government since 2002 for protection against dumping of products from foreign countries.

The WTO regulates foreign trade under GATT. AD duties increased as trade were more liberated and trade tariffs were lowered. The two strongest supporters of AD as per Prusa (2005:11), are the US and EU who would like to retain AD so that they can protect politically important industries. Evidently the US and EU are also the two countries being accused of dumping products onto the RSA market. It is clearly not an easy task for the DTI under minister Davies to find a balance between imports and exports and to be aware of possible retaliation of countries who could impose even higher tariffs on imports to their own markets.

SAPA clearly stated that the poultry industry welcomes poultry being imported, as long as it’s done in a fair and competitive manner. The industry does not want economical protectionism; they want dumping and unfair trade to stop.

The most important trade policies related to the research include the AGOA agreement between the RSA and US and the free trade agreement between the RSA and EU. The AGOA agreement was renewed in 2015, after the US pressured the RSA to lower import tariffs and anti-dumping duties. The US are criticised by numerous writers; one such writer Jason (2015:3) explains the conditions of membership of AGOA and how it’s actually not applied in many sub-Saharan countries. He also explains the reason or agenda why the US is involved in the African countries. The RSA poultry industry is prevented by export barriers and SPS regulations to export, but under the AGOA act the US has far less red tape when exporting poultry into the country.
Other reasons why countries would choose to dump products in foreign countries are explained in 2.3.2 in this paper.

The fight for survival of the poultry industry started warming up during the AGOA trade negotiations. The outcome of the negotiation gave the US the right to import a quota of 65,000 tonnes of chicken into the RSA per annum. Locally the industry was met with yet another blow when the brining limits were decreased and initiated in October 2015.

Another fight that brewed inside the borders was between SAPA and AMIE; AMIE on the one side feels that imports are best for the economy and SAPA defends the poultry industry from collapsing.

In as early as October 2016 RCL announced their intention to retrench more than 1,000 workers, which in fact did happen in 2017. This inspired workers, managers and CEOs from all parts of the industry to collectively arrange protest marches.

Minister Davies was confident after the AGOA negotiations that the poultry industry would not be negatively affected. In January 2017 in a report by Crowley (2017), Minister Davies said that the RSA must defend chicken farmers from EU or face collapse. Politicians got involved and urged the minister to impose higher tariffs. They also urged that imported poultry products to clearly indicate the origin for the consumer to make informed purchases.

In March 2017 countries started banning poultry meat from BR after health scares, due to health inspectors taking bribes, allowing the sale of rancid products. SAPA announced that imported poultry by the EU came into the RSA at prices well below their own production costs and are then resold on the local market at prices marginally cheaper or at similar prices of the local produced product. These products are called brown meat or meat on the bone; EU consumers prefer white chicken meat.

Dumping is real and, if not managed, can destroy the local chicken industry. This was also partially confirmed in the empirical study and the literature study. The government is also well aware of the problem as per DTI (2017:1) report on the crisis of the poultry industry. AMIE on the one hand argues that the industry is not effective and seeks economic protection so that imported chicken would feed the poor due to low prices and government should not impose AD tariffs. Their arguments do not hold water; firstly, the price of imported chicken sold at retailers and other shops does not reflect low prices, in fact imported chicken could be bought by importers for as low as R15/kg and resells at R25/kg and more. Many AD activists and poultry producers have asked the question of who is getting fat out of this deal. The RSA poultry industry was found as efficient as the global producers by the University of Wageningen, NL. David Wolpert from AMIE also argued that imports are necessary for food security and
sustainability, but what happens when the exchange rate turns against the consumer, or foreign countries are plagued with bird flu? This currently is the case in the EU and BR currently is banned to export due to rotten meat. No imports will be entering the RSA harbours - it would have devastating effects on food sustainability and security. It is important that, although the global trade wants to impose trade liberalisation, it must not be done to the detriment of destroying domestic income and livelihood. As stated in Chapter 2.4: “Cebekhulu (IFP) said that dumping should be stopped and that the local industry should be enhanced. The industry supports many local people; it will not help importing cheap meat when people lose their jobs and they will in any event starve because they will not have money - even if food is in abundance. He urged people to buy local”, eNCA, Nkosi (2016). This argument also makes sense on a micro-economic level. Local industries contribute to a country's monetary funds, if they have to close down, the government will have less funds. As stated in Chapter 2.4: “countries do not build their economies any more, because they do not rely on income taxes for revenues, which, at the end, causes the erosion of states, followed by endemic corruption and as a result an increase in repressiveness to keep the ruling government or party in power,” Jason (2015:3).

The study has shown the contribution the poultry industry makes on the local front, be it consumption of animal feed, GDP contribution, food safety and security, food sustainability or employment.

Lastly Wolpert (AMIE) admitted that dumping from the EU is real, according to FairPlay (2017). To finally answer the research question on dumping, foreign trade of poultry into the RSA is not done on a fair trade agreement. Dumping definitely exists and the effects of dumping on the local industry can already be seen. RCL, the second largest producer, had to close one shift and sold some of its farms. More than 1,000 workers were retrenched during this process. Other smaller producers have either closed their doors or were acquired by bigger firms in the industry.

Groups like FairPlay do not believe that the industry may survive under these circumstances beyond 2018.

4.3 Recommendations

The poultry industry and the government have been in discussion and hearings since 2016. It is my recommendation to the government, SAPA and other role players to strategise the way forward on the basis of “charity begins at home.”
The US and EU, first-world countries, do not make a secret of protecting what they deem as important industries; then why should the RSA? The RSA as a developing country should negotiate trade deals that are to the benefit of both parties.

Consumers should be able to clearly identify imported products from local products.

Lastly, although unemployment was never mentioned as an objective, the important role that the poultry industry plays in employment should not be underestimated and should be exploited to create more jobs in the RSA.

4.4 Achievement of the objectives of the study

The first objective of the study was achieved. More reliable answers to questions relating to pre-harvesting protocols were found.

It was further determined that both loading methods deliver the same results and that it would not be fair to force a producer, in financial constraint, to move away from manual loading onto mechanical loading.

The influence of imports (dumping) to the RSA was determined and evidence was found that dumping does exist.

4.5 Recommendations for future research

To investigate other possible industries or opportunities within industries where employment is also possible and to what extent. Developing countries and global trade: “Is global trade enhancing developing countries?” or should organisations like the WTO not investigate the impact of global trade on smaller developing economies, and by doing so, protect these economies from total destruction and poverty.

4.6 Summary

The pressures on the poultry industry are real and ongoing. Pre-harvesting protocols and dumping are only the tip of the ice berg. Not all outside influences can be labelled as unfair due to human intervention, but these that can be should be managed and controlled. The specific pressures discussed in the paper are definitely unjust and unfair and should not be ignored. The poultry industry does play an important role in RSA economy.
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SA’s chicken industry is in a crisis’ - RCL Foods chief.  
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SA should not lower standards for US - SA poultry.  
*Fin24*, 8 January.  

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*eNCA*, 15 January.  

Poultry producers to face tight margins in 2017.  
*Fin24*, 6 January.

Impose 50% tariff on poultry imports, urges Malema.  
*Fin24*, 12 January.  


## DATA COLLECTION PLAN

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<th>DATA COLLECTION PLAN</th>
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<tbody>
<tr>
<td><strong>SUMMER</strong></td>
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<td><strong>DAY</strong></td>
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<tr>
<td><strong>KM</strong></td>
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<td>FEED LIFT</td>
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<tr>
<td>2 Forklift</td>
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<tr>
<td>Total loads:</td>
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</tbody>
</table>

| **SUMMER** | **SUMMER** | **WINTER** | **WINTER** |
| **DAY** | **NIGHT** | **DAY** | **NIGHT** |
| **KM** | 200 | **KM** | 200 |
| FEED LIFT | 6 | 2 Manual | 6 | 2 Manual |
| 3 Forklift | 7 | 2 Manual | 7 | 2 Manual |
| 8 | 2 Manual | 2 Forklift | 8 | 2 Manual |
| 2 Forklift | 2 Forklift | 2 Forklift | 2 Forklift |
| Total loads: | 12 | Total loads: | 12 |

| **WINTER** | **WINTER** |
| **DAY** | **NIGHT** |
| **KM** | 60 | **KM** | 60 |
| FEED LIFT | 6 | 2 Manual | 6 | 2 Manual |
| 2 Forklift | 7 | 2 Manual | 7 | 2 Manual |
| 8 | 2 Manual | 2 Forklift | 8 | 2 Manual |
| 2 Forklift | 2 Forklift | 2 Forklift | 2 Forklift |
| Total loads: | 12 | Total loads: | 12 |

**TOTAL SAMPLES:** 96
**ANNEXURE 2 – DATA COLLECTION SHEET**

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<th>SUMMER / WINTER</th>
<th>DATE:</th>
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<td>FARM:</td>
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<td>*** KM:</td>
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**DAY / NIGHT**

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<tr>
<th>HOUSE NUMBER:</th>
<th>**** 6 / 7 / 8 Hours pre slaughter</th>
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<tr>
<td></td>
<td>YES</td>
<td>NO</td>
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**FEED LIFT TIME**

- **Loading times:** (10:00 - 14:00) / (18:00 - 23:00)

**LOADING METHOD: MANUAL**

<table>
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<tr>
<th>TRUCK NUMBER</th>
<th>Count</th>
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**LOADING METHOD: FORKLIFT**

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<th>Fleet number &amp; load number</th>
<th>Count</th>
<th>DOA</th>
<th>Bruising</th>
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</tbody>
</table>
**ANNEXURE 3 – GANT CHART**

**Gant Chart**

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<th>DAY</th>
<th>JAN</th>
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<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
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- **Saturday & Sundays (No Work)**
- **Summer loading Day & Night**
- **Winter loading Day & Night**
- **Qualitative research survey (Questionnaire)**
- **Data Analysis & Final document preparation**

*Due to the dynamic movement of schedules, an exact date for each test per farm not possible, the preliminary Gant chart provides a general planning, to indicate time lines, and that the process is workable.*
**Flow Diagram**

**Process flow diagram (Data collection)**

- **Quantitative**
  - Collect DATA @ loading site
  - Summer loading day

- **Quantitative**
  - Collect DATA @ loading site
  - Summer loading night

- **Qualitative**
  - Collect DATA
  - Questionnaires by email (Google Forms)

- **Quantitative**
  - Collect DATA @ loading site
  - Winter loading day

- **Quantitative**
  - Collect DATA @ loading site
  - Winter loading night

- **Qualitative & Quantitative**
  - Data analysis & Final paper preparations
Exploring pressures on the poultry industry: with special reference to pre-harvesting protocols and dumping

Welcome to an MBA survey conducted by Francois Jacobsz.

The subject of my study is to investigate the effects of outside influences on the local industry regarding cost and sustainability. I hope to achieve a more in depth understanding of these influences, and through this study create awareness and understanding for other South Africans.

The mini-dissertation name is: “Exploring pressures on the poultry industry: with special reference to pre-harvesting protocols and dumping”.

It is important to note that this survey is anonymous, thus, the reason for doing it electronically. It will take you approximately 5 minutes.

Lastly, I want to appeal with you to take part in this survey, because of the effect imports (dumping), and other influences has on the local poultry industry, and employment.

“The agricultural sector contributes roughly 2.4% to the South African economy or GDP according to Anon (2017b:1), of which the poultry industry contributes more than 16% to the department, according to Bolton (2015:1). The GDP for the first quarter of 2017 for the entire RSA economy was -0.7%, with an estimated unemployment of 27.7% out of a population of 56.91 million in mid-2016”.

Part A: Demographical Questions

1. What is your age (in years)?

2. Are you male or female?
   Mark only one oval.
   ○ A. Male
   ○ B. Female

3. Which of the following best describes the principal industry of your organization?
   Mark only one oval.
   ○ A. Agriculture
   ○ B. Advertising & Marketing
   ○ C. Manufacturing
   ○ D. Sales
   ○ E. Retail and consumers durables
   ○ F. Transportation & Logistics
   ○ Other:

4. Does anyone in your household own a business?
   Mark only one oval.
   ○ A. Yes
   ○ B. No

https://docs.google.com/forms/d/1jAv2ZqpyeFwku3Hm2TEixMSTvItV92k5_3bc-USpA/edit?1

1/4
5. Does anyone in your household own a farm?
   Mark only one oval.
   - A. Yes
   - B. No

6. What is the highest education you have achieved?
   Mark only one oval.
   - A. Less than high school diploma
   - B. High school diploma
   - C. College diploma
   - D. Graduate degree
   - E. Post graduate degree

7. Which of the following best describes your current occupation function?
   Mark only one oval.
   - A. General worker
   - B. Administrative personnel
   - C. Supervisor role
   - D. Operational manager (Junior)
   - E. Operational manager (Senior)
   - F. General Manager
   - G. Financial manager (Cost accountant)
   - H. Financial manager (Finances)
   - I. Divisional Director
   - J. Group Director or higher
   - Other: __________________________

8. How many people currently live in your household?

Part B: Imported poultry (Dumping questionnaire)
Exploring pressures on the poultry industry, with special reference to pre-harvesting protocols and dumping

9. Mark only one oval per row.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>If imported chicken were available today, you would buy imported brands</td>
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<tr>
<td>Poultry (chicken) imports compared to local brand’s quality is better</td>
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<td>You are overall satisfied with your experience using imported chicken</td>
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<td>You would recommend imported chicken to a friend or colleague</td>
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<tr>
<td>If imported chicken were available today, you would buy the product</td>
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<td>Your first reaction to local chicken products would be positive</td>
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<tr>
<td>You would buy imported produced chicken</td>
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<td>You absolutely trust the information on local produced products</td>
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<tr>
<td>You absolutely trust the information on imported poultry products</td>
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<tr>
<td>Price is very important to you when choosing this type of product (poultry)</td>
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<td>You would like to rate local chicken as “value for money”</td>
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<tr>
<td>Comparing to imported chicken, locally produced chicken prices would be extremely higher than imported chicken</td>
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<td>Do you think that imported (dumped) poultry products at prices lower than locally produced products will have an effect on the un-employment rate in South-Africa, should the S.A. - poultry industry shrink any further?</td>
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<td>Do you think that dumping of products from foreign countries are a myth?</td>
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<td>Imported poultry selling at lower prices in South Africa than produced abroad is unfair to local producer, even if local producer produce at lower cost than abroad</td>
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Part C: Animal welfare and broiler quality

Should your answer be “STRONGLY DISAGREE” to question 24 and 25, you can I leave the rest of the question blank and click submit.
Exploring pressures on the poultry industry: with special reference to pre-harvesting protocols and dumping

10. Mark only one oval per row.

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<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tr>
<td>You know the process of poultry loading and transportation to the processing plants</td>
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<td>You are involved or have relevant knowledge of any part of poultry production, farming and or loading and transportation</td>
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<td>Manual loading of birds is harmful to broilers and causes undue stress, bruising and mortality</td>
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<td>Mechanical loading of birds are best practice towards animal welfare</td>
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<td>Mechanical loading would outperform manual loading financially</td>
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<td>Feed with draw periods to ensure a clean crop for processing should never be &lt; than 8 hours</td>
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<td>Distance for transporting poultry has an effect on broiler quality and animal welfare</td>
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<td>Distance of travel will have an effect on the carcass quality of chicken meat in the processing plant</td>
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<td>Bird welfare will be not be compromised when traveling longer distances</td>
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<td>Bird welfare can be better controlled using mechanical loading practices</td>
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<td>There is a difference in broiler welfare during transit between day and night transportation</td>
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<td>Mechanising processes (harvesting of broilers) in the industry lead to job losses</td>
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ANNEXURE 6 – I) FULLY AUTOMATED CATCHING PROCESS

**Forklift & Automated Catching**

- Modules loaded onto truck
- Automatic chicken harvester
- Modules taken to truck by forklift
- Birds loaded into module via a conveyor belt
ANNEXURE 7 – II) SEMI ~ AUTOMATED CATCHING PROCESS

Forklift & Module Catching

- Birds picked up by hand
- Modules loaded onto truck
- Modules taken to truck by forklift
- Birds carried to modules in the house (5 per hand)
ANNEXURE 8 – III) MANUAL CATCHING PROCESS

No Forklift & Manual Catching

Crates are stacked after filled with chickens

Birds picked up by hand

Birds placed into crates on truck – (step being used for height)

Birds carried to outside of house to be loaded
ANNEXURE 9 – IV) SEMI ~ AUTOMATED (FORKLIFT – PALLET) CATCHING PROCESS

Forklift & Pallet Catching

- Crates pallet loaded onto truck (Crates offloaded from pallet)
- Crates placed next to catchers
- Chickens placed crates (not upside down)
- Crates on pallet to truck by forklift
To whom it may concern,

LANGUAGE EDITING

This letter serves as proof that the following document was submitted for language editing in November 2017:

Author: Francois Jacobsz
Document type: Mini-Dissertation: MBA (NWU)
Title: EXPLORING Pressures ON THE POULTRY INDUSTRY: WITH SPECIAL REFERENCE TO PRE-HARVESTING PROTOCOLS AND DUMPING

I applied all reasonable effort to identify errors and made recommendations about spelling, grammar, style and punctuation.

I attempted to be consistent regarding language usage and presentation.

The bibliography was also checked and corrections were made where necessary.

I confirmed the content as far as possible, but cannot be held responsible for this as all facts could not be confirmed. This remains the responsibility of the author.

Thank you very much.

Kind regards.

Rentia Mynhardt