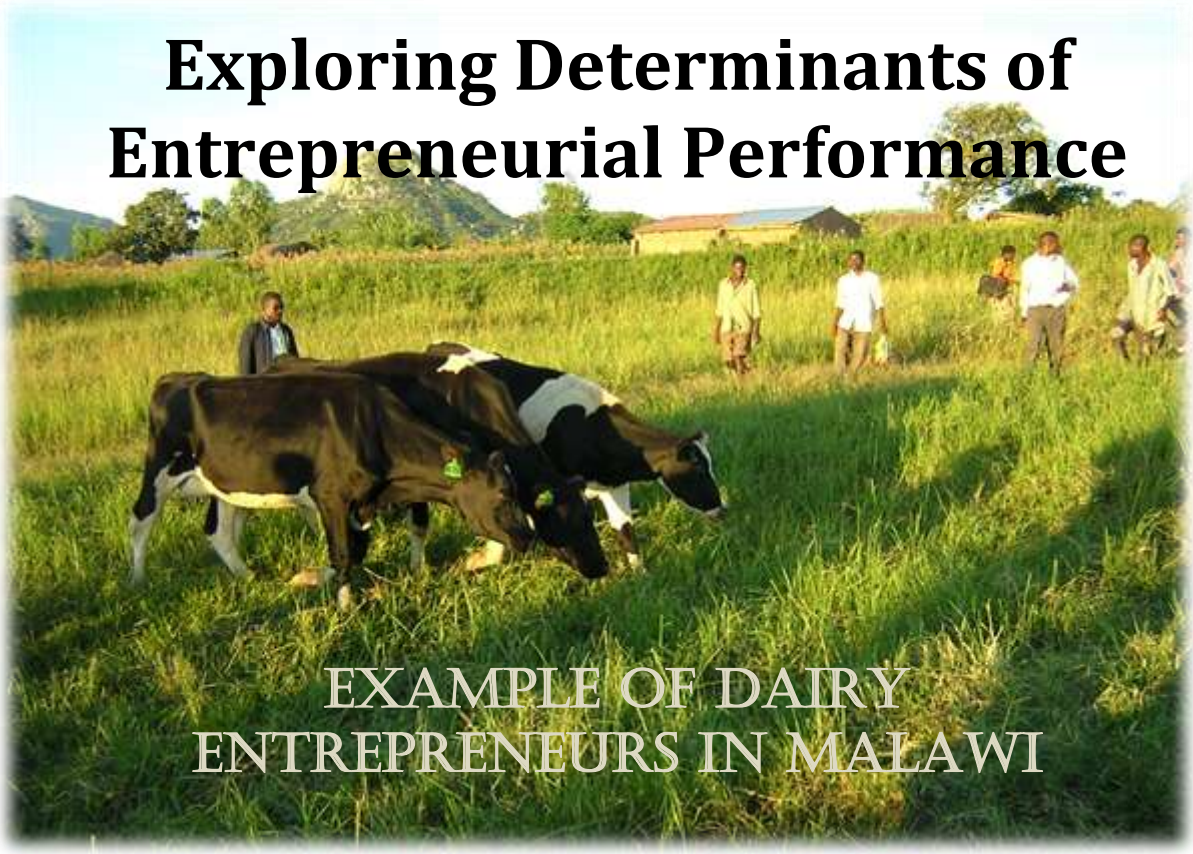
# Exploring Determinants of Entrepreneurial Performance




**by**

*Roy H Thompson*

30 December 2012

This thesis is submitted to the University of Derby in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy.

## Abstract

This thesis reports research into elements of entrepreneurial performance with a particular focus on gender differences and their determinants. Inductive research during the initial literature review uncovered a range of factors affecting performance leading to an investigation of smallholder dairy entrepreneurs in Central Malawi. The primary research utilised a mix of both quantitative and qualitative instruments including innovative use of an adaptation of the 'circle and stones' proportional piling instrument. This participatory technique explored changes in the household economy following the introduction of the dairy enterprise, including projecting entrepreneurial intentions into the future. A notable feature of the research was the use of a range of context-specific performance measures developed from an outcomes model. These were both separately applied in a performance ranking exercise, and compiled into an overall performance rating (OPR) which was then compared with the initial post-interview field performance rating (FPR). The research involved extensive use of internal and external triangulation of information sources, comparing results from different instruments in the field research, and situating and comparing primary research findings with those from the academic literature and analysis of secondary data. Despite controlling for factors including industry-type, size of enterprise, provision of business and extension support, and taking into account differences in age and educational background, the research uncovered gender disparities in entrepreneurial performance. The performance disparity was greater for those females who are the *de facto* head of their households, and lesser for those who have the support of a resident male partner. The finding of female underperformance runs contrary to the *a priori* expectation of industry key informants in Malawi, and much of the academic literature. The research included exploration of risk mitigation strategies and their potential effect on entrepreneurial performance, as possible explanatory factors. Follow-on fieldwork then sought alternative explanations for the gender differentials through focus group discussions and key informant interviews, which uncovered time constraints of females as a potential factor in underperformance. Future research direction indicated includes an in-depth exploration of the intra-household dynamics of time allocation in managing enterprises.

## Table of Contents

## List of Tables

## Table of Figures

## List of Photographs*



**photographs were taken by the researcher, photograph 1 in 2004 and the others in late 2008*

## List of Acronyms

| | |
|---|---|
| AIDS | Acquired Immune Deficiency Syndrome |
| AKF | Aga Khan Foundation |
| APS | Adult Population Survey (GEM) |
| BCS | Body Condition Score |
| CBO | Characteristics of Business Owners |
| CFAR | Centrala Företagsregistret (Swedish Statistics) |
| CPA | Certified Public Accountant |
| CREMPA | Central Region Milk Producers Association |
| DAHI | Department of Animal Husbandry and Industry |
| DfID | Department for International Development |
| DHS | Demographic and Health Surveys |
| ECF | East Coast Fever |
| EP | Entrepreneurial Performance |
| FGD | Focus Group Discussions |
| FHH | Female-Headed Household |
| FPR* | Field Performance Rating |
| FWRP | Female with Resident Partner |
| GEM | Global Entrepreneurship Monitor |
| GEMINI | Growth and Equity through Microenterprise Investments |
| GERA | Global Entrepreneurship Research Association |
| H[x] | Hypothesis (x = the hypothesis number) |
| HDI | Human Development Index (UN) |
| HH | Household |
| HHH | Household Headship (FHH, FWRP, MHH) |
| HIV | Human Immunodeficiency Virus |
| $Hyp_o$ | Null hypothesis |
| IFRC | International Federation of Red Cross & Red Crescent |
| KII | Key informant interviews |
| LDCs | Lesser Developed Countries |
| MASAFIII | Malawi Social Action Fund Phase III |
| MBA | Master of Business Administration |
| MBG | Milk Bulking Group |
| MCM* | Male-Centric Metric |
| MDEDPIII | Malawi Dairy Enterprise Development Programme Phase III |
| MHH | Male-Headed Household |

| | |
|---|---|
| MK | Malawi Kwacha (currency denomination in Malawi) |
| MOBs | Men-owned businesses |
| MPA | Milk Producers' Association |
| MSDSP | Mountain Societies Development Support Programme |
| MSE | Micro and Small enterprise |
| NFIB | National Federation of Independent Businesses |
| NSO | National Statistical Office |
| OIBM | Opportunity International Bank of Malawi |
| OPR* | Overall Performance Rating |
| PAVE | Participatory Approaches to Veterinary Epidemiology |
| PMP | Performance Monitoring Plan |
| PP | Proportional Piling technique |
| PPS | Probability proportional to size |
| PRA | Participatory Rural Appraisal |
| PSED | Panel Study of Entrepreneurial Dynamics |
| RDD | Random Digit Dialling |
| RoA | Return on Assets |
| RoI | Return on Investment |
| RRA | Rapid Rural Appraisal |
| SF | Sample Frame |
| SME | Small and Medium Enterprise |
| SPR* | Subjective Performance Rating |
| SPSS | Statistical Package for Social Science |
| SSA | Sub-Saharan Africa |
| TEA | Total Entrepreneurial Activity |
| TFR | Total Fertility Rate |
| UBoS | Uganda Bureau of Statistics |
| UCT | University of Cape Town |
| UK | United Kingdom (England, Scotland, Wales, N.Ireland) |
| UN | United Nations |
| UNHS | Uganda National Household Survey |
| US | United States of America |
| USAID | United States Agency for International Development |
| WFI | Work-Family Interface |
| WOBs | Women-owned businesses |

** construction of the researcher*

## Acknowledgements

Thank you to Prof Stephen Carter, for providing me with the encouragement to embark upon this research endeavour, out-of-season; Dr John Dakin, my Director of Studies, for keeping me focused on the practical requirements of a thesis and greatly helping me to structure and coalesce my conceptual thinking; Dr Stephen Longden, for mentoring while at the same time allowing me sufficient space to balance the competing demands of part-time study with the other aspects of day-to-day life; Richard Self, for his invaluable insights and his great assistance with critical thinking; Pro Vice-Chancellor Prof Michael Gunn, for latterly taking on the role of research mentor; Prof Benson Kandoole, formerly Executive Director of the Malawi Institute of Management, for his research guidance and inspiration to keep going; Vesta Thompson for her support and assistance with follow-on focus group work and MBG data collation; Peter Thompson, for giving me the impetus to embark on the research and for being an exemplary role model through his own academic endeavours at the University of Derby; MacMillan Masache, Moges Ayalew, and Stanley Golooba for their enthusiastic and tireless research assistance in both translation and field work during my primary research endeavours; Malcolm, Carla, Cathryn, McIvan and Sophie Thompson for their abundance of family support and encouragement; Dr Mary Muiruri, for helping me understand the demands of part-time research and offering support and guidance in meeting those demands; Isobel Manning, Sue Henson, Mark Sullivan, Anne  en and Marilyn Long for their administrative support and behind-the-scenes encouragement at every stage in the research process; Dr Hafedh Chekir Director and Dr Delia Barcelona (formerly Deputy Director) of the United Nations Population Fund (UNFPA) Arab States Regional Office, for allowing me to move to a part-time work schedule during the final stage of completing the writing-up of this thesis; Dr Joe Carvalho, for providing me with the rewarding opportunity to work in dairy enterprise development, the focus of the primary research; Dr Paul Duignan for his intellectual leadership in the development of results chains (outcome models). Last, but not least, a special thanks to all the individuals who participated in the interviews and discussions, too numerous to mention individually here, for their kindness and patience in support of this research endeavour.

## Dedication

*To the Memory of my Parents and Friends*

*Mrs Joan Fletcher Thompson*
*Born: Sheffield, 26-Oct-1917*
*Died: Sheffield, 09-Jun-2005*

*Mr George William Thompson*
*Born: Sheffield, 20-Apr-1915*
*Died: Chesterfield, 28-Mar-1995*

*Mr Joseph Kosamu*
*Died: Lilongwe, Mar-1993*

*Mrs Lucy Kosamu*
*Died: Lilongwe, Jul-1993*

## Glossary of Terms Used

| Term | Meaning | Source |
|---|---|---|
| *A priori* consideration | Made before or without examination; not supported by factual study | http://www.thefreedictionary.com/a+priori [accessed Mar 2011] |
| *A priori* reasoning | Proceeding from a known or assumed cause to a necessarily related effect | http://www.thefreedictionary.com/a+priori [accessed Mar 2011] |
| Antecedent influence | Formative influences prior to venture start-up derived from educational, occupational and networking experiences (paraphrase) | Brush and Hisrich (1991) |
| Axiology | A branch of philosophy that studies judgements about the role of values | Saunders *et al.* (2009) 5th edition pg. 587 |
| Basic Forage | Staple food of the dairy animal, including grasses and crop residues (such as maize cobs, groundnut holmes) | Researcher |
| Black Box theory | The mind is fully understood once the inputs and outputs are defined (almost impossibly) | http://www.servinghistory.com/topics/Black_box_theory [accessed Mar 2011] |
| Body Condition Score | A technique for assessing the condition of livestock at regular intervals. On a scale of 1-5, a score of 1 is extremely thin and a score of 5 is extremely fat | Dept. For Environment, Food and Rural Affairs |
| Business incubator | A unique and highly flexible combination of business and development processes, infrastructure and people, designed to nurture and grow small businesses by supporting them through the early stages of development and change | http://www.ukbi.co.uk/resources/the-framework.aspx [accessed Mar 2012] |
| Censoring | A form of missing data problem which is common in survival analysis. (See left censoring and right censoring for more detail). | http://survival-analysis.co.tv/ [accessed Apr 2011] |
| Conclusion Validity | The degree to which conclusions we reach about relationships in our data are reasonable | Trochim (2006) http://www.socialresearchmethods.net/kb/concval.php [accessed Jun 2012] |
| Confidence interval | The plus-or-minus figure usually reported in newspaper or television opinion poll results | http://www.surveysystem.com [accessed Feb 2011] |
| Confidence level | How often the true percentage of the population who would pick an answer lies within the confidence interval | http://www.surveysystem.com [accessed Feb 2011] |
| Construct Validity | The degree to which inferences can legitimately be made from the operationalisations in the study to the theoretical constructs on which those operationalisations were based | Trochim (2006) http://www.socialresearchmethods.net/kb/constval.php [accessed Jun 2012] |

| Term | Meaning | Source |
|---|---|---|
| Convenience sample | A sampling technique in which a sample is selected on the basis of convenience and ease | http://business.yourdictionary.com/convenience-sampling [accessed Feb 2011] |
| Cronbach's Alpha (α) | A statistic generally used as a measure of internal consistency or reliability of a psychometric instrument | http://www.experiment-resources.com/cronbachs-alpha.html [accessed Jan 2011] |
| Deductive reasoning | Begins with theory and narrows to testable hypotheses and observations to test these hypotheses (paraphrase) | http://www.socialresearchmethods.net/kb/dedind.php [accessed Feb 2011] |
| Dry dairy cow | A dairy cow that is currently not in lactation (not producing milk) | Researcher |
| East Coast Fever | A tick borne disease which can kill cattle within a week of visible symptoms appearing | www.lifethroughlivestock.org/4.htm [accessed Apr 2011] |
| Emergent design | All phases of the [design] process may change or shift after the researcher enters the field and begins to collect data | Creswell (2009) |
| Enterprise Discontin-uance | An enterprise which has ceased to operate at a given point of investigation (paraphrase) | Bates and Nucci (1989) |
| Entrepre-neurship | "...is about solving problems, something we carry with us as a human being, it is not just about making money" | Muhammad Yunus http://www.businessdictionary.com/videos/?297290589 [accessed Mar 2012] |
| Entrepren-eurial strategy mix | A 2 x 2 matrix comprising combinations of high and low innovation and risk scenarios (paraphrase) | Sonfield *et al.* (2001) |
| Epistemology | Study of the nature of knowledge and what constitutes acceptable knowledge in a field of study (paraphrase) | Saunders *et al.* (2009) 5th edition pg. 591 |
| Ethnographic research | The observation of and interaction with persons or a group being studied in the group's own environment | *http://medical-dictionary.thefreedictionary.com/ethnographic+research* [accessed Apr 2012] |
| External validity | The ability to generalise your study to other people and other situations | http://web.jjay.cuny.edu [accessed Jun 2012] |
| Human capital | Acquired human capabilities that are durable traits yielding some positive effects upon performance in socially valued activities | David and Lopez (2001) |
| Inductive reasoning | Begins with observations and from these builds broader generalisations and develops theories (paraphrase) | http://www.socialresearchmethods.net/kb/dedind.php [accessed Jan 2011] |
| Informal sector | A subset of production units which are not constituted as separate legal entities independently of the household or household members who own them | http://www.unescap.org/stat/isie/reference-materials/Definitions/Informal-Sector/Statistical-definition-Informal-Sector-ILO.pdf [accessed Apr 2012] |

| Term | Meaning | Source |
|---|---|---|
| Instrument | A generic term researchers use for a measurement device such as a survey, test, questionnaire, etc. | http://researchrundowns.wordpress.com/quantitative-methods/instrument-validity-reliability/ [accessed Apr 2012] |
| Internal Validity | The approximate truth about inferences regarding cause-effect or causal relationships | Trochim (2006) http://www.socialresearchmethods.net/kb/intval.php [accessed Mar 2012] |
| Internal consistency | A measure of the precision between the observers or of the measuring instruments used in a study | http://writing.colostate.edu/guides/research/relval/com2a4.cfm [accessed Apr 2012] |
| Inter-rater reliability | The degree to which different raters / observers provide consistent estimates of the same phenomenon | http://www.socialresearchmethods.net/kb/reltypes.php [accessed Sep 2010] |
| Khola | Housing for the dairy animals including storage spaces for feeds | Researcher |
| Key informant technique | Obtaining information from a community resident in a position to know the community well | http://web1.msue.msu.edu/msue/imp/modii/iii00004.html [accessed Nov 2010] |
| Left censoring | Ignoring an outcome or an event of interest that has happened before the observation period starts (paraphrase) | Yang and Aldrich (2012) |
| Multi-collinearity | A condition that exists when independent variables are highly correlated | http://www.allbusiness.com [accessed Oct 2010] |
| Multivariate analysis | A generic term for any statistical technique used to analyse data from more than one variable. | wordnetweb.princeton.edu/perl/webwn [accessed Feb 2012] |
| n x m Chi Square contingency test | A statistical test used to examine differences in categorical variables; estimating how closely an observed distribution matches an expected distribution | http://ccnmtl.columbia.edu/projects/qmss/the_chisquare_test/about_the_chisquare_test.html [accessed Oct 2010] |
| Necessity entrepren-eurship | Entrepreneurship undertaken in the absence of any other means of livelihood (paraphrase) | www.gemconsortium.org/docs/download/2201 [accessed Sep 2010] |
| Networking | Creating a group of acquaintances and associates and keeping it active through regular communication for mutual benefit | www.businessdictionary.com [accessed Mar 2011] |
| Null hypothesis | A proposition that undergoes verification to determine if it should be accepted or rejected in favour of an alternative proposition | http://www.businessdictionary.com/definition/null-hypothesis.html [accessed May 2012] |
| Objective measurement (1) | The repetition of a unit amount that maintains its size, within an allowable range of error, no matter which instrument is used and no matter what is being measured | http://www.rasch.org/ [accessed Apr 2012] |

| Term | Meaning | Source |
|---|---|---|
| Objective measurement (2) | Neutral (bias free), relating to, or based on verifiable evidence or phenomenon instead of on attitude, belief, or opinion | http://www.businessdictionary.com [accessed Mar 2012] |
| Ontology | A branch of metaphysics relating to the nature and relations of being | http://www.ontology.co/ontology-definitions-one.htm [accessed Jul 2012] |
| Opportunity entrepren-eurship | Venturing into business as a result of a perceived marketplace opportunity and an improved state for the individual or group of individuals concerned (paraphrase) | www.gemconsortium.org/docs/download/2201 [accessed Sep 2010] |
| Outcomes model | Set out all of the important steps needed to get you from where you're now to the outcomes you want. Called by different names (program logics, program theories, ends-means diagrams, theories of change, strategy maps, results chains) | Duignan (2005-2012) http://www.outcomesmodels.org/ [accessed Apr 2012] |
| Paravet | A veterinary technician trained in veterinary medical diagnosis and able to perform routine veterinary medical procedures and deliver extension support in animal husbandry | Researcher |
| Participatory Rural Appraisal | A family of approaches and methods to enable local people to share enhance and analyse their knowledge of life and conditions, to plan and to act. | Chambers (1994) |
| Pass-on | Giving at least one of the female offspring (in this case a heifer calf) to a neighbour after growing the animal | Researcher |
| Phenomen-ology | The study of structures of consciousness as experienced from the first-person point of view | http://plato.stanford.edu/entries/phenomenology/#Bib [accessed Apr 2011] |
| Pluriactivity | The diversification of activities carried out by one household on and off the holding in order to secure the household's economy and welfare | Hetland (1986) |
| Positivism | An epistemological position that advocates the application of the methods of the natural sciences to the study of social reality... | Bryman and Bell (2007) |
| Proportional piling | A quantification technique widely used in participatory fieldwork to estimate income diversification | Sharp (2007) |
| Proxy Indicator | Indirect measure or sign that approximates or represents a phenomenon in the absence of a direct measure or sign | http://www.businessdictionary.com/definition/proxy-indicator.html [accessed Apr 2011] |
| Psychic income | Non-pecuniary rewards from employment or entrepreneurship (paraphrase) | Khanka (2009) |

| Term | Meaning | Source |
|---|---|---|
| Quasi-experiment | A type of experimental design that involves a control comparison group but lacking in random assignment (paraphrase) | Trochim (2006) http://www.socialresearchmethods.net/kb/quasiexp.php [accessed Mar 2011] |
| $R^2$ or Coefficient of Determination | The proportion of variance 'explained' by the regression model | Nagelkerk (1991) |
| Random digit dialling | Method of obtaining respondents for telephone interviews whereby the exchange digits are dialled and then with random dialling (paraphrased) | http://www.allbusiness.com/glossaries/random-digit-dialing/4964604-1.html [accessed Apr 2012] |
| Reliability | The degree to which an instrument measures the same way each time it is used | Trochim (2006) www.socialresearchmethods.ne [accessed Apr 2012] |
| Response rate | The proportion of completed interviews in the total number of eligible respondents | http://www.quantitativeskills.com/sisa/calculations/resprhlp.htm#References [accessed Apr 2012] |
| Right censoring | Ignoring an outcome or an event of interest that will happen after the observation period ends | Yang and Aldrich (2012) |
| Risk mitigation | Efforts taken to reduce either the probability or consequences of a threat | http://www.riskythinking.com [accessed Apr 2012] |
| Risk propensity | The perceived probability of receiving the rewards associated with success of a proposed situation which is required by an individual before s/he will subject her/himself to the consequences associated with the failure | Brockhaus (1980) |
| Risk aversion | An agent who prefers a certain outcome to a risky outcome with the same expected return | www.econmodel.com/classic/terms/risk_aversion.htm [accessed Apr 2012] |
| Sample frame | A list that includes every member of the population from which a sample is drawn | http://www.metagora.org/training/encyclopedia/frame.html [accessed Apr 2012] |
| Self efficacy (1) | A person's belief about his or her ability and capacity to accomplish a task or to deal with the challenges of life | www.businessdictionary.com/definition/self-efficacy.html [accessed Apr 2012] |
| Self efficacy (2) | Confidence in performing a specific task | Chowdhury and Endres (2005) |
| Sensitivity analysis | The study of how the uncertainty in the output of a model can be apportioned to uncertainty in the model input | Saltelli *et al.* (2008) |
| Statistical Hypothesis Testing | A procedure for deciding if a null hypothesis should be accepted or rejected in favour of an alternate hypothesis | http://www.businessdictionary.com/definition/hypothesis-testing.html [accessed Aug 2010] |

| Term | Meaning | Source |
|---|---|---|
| Subjective measurement | Based on, or related to, attitudes, beliefs, or opinions, instead of on verifiable evidence or phenomenon | http://www.businessdictionary.com [accessed Sep 2010] |
| Survival rate | Reflects the number of enterprises of a specific birth cohort that have survived | http://www.oecd.org/dataoecd/43/60/44069247.pdf [accessed Sep 2010] |
| Survivor bias | By studying only existing (surviving) businesses an element of sample bias is introduced (paraphrase) | Kepler and Shane (2007) |
| Theory of change | An explanatory and predictive model specifying and explaining assumed, hypothesised or tested causal linkages (paraphrase) | Patton (2002, p.163) |
| Time gap | The gap between the time available for work either domestically or in paid-work or self-employment and including rest time, and the time required for fulfill all domestic and income-earning tasks | Nihm et al. (2009) |
| Time poverty | Lack of enough time for rest and leisure after accounting for the time that has to be spent working | Bardasi and Wodon (2010) |
| Total Entrepren-eurial Activity | The number of nascent entrepreneurs (less then 6 months) plus new entrepreneurs (6-42 months) divided by the total number of adults surveyed | Global Entrepreneurship Monitor (GEM) |
| Triangulation | The use of two or more independent sources of data or data-collection methods within one study in order to help ensure that the data are telling you what you think they are telling you | Saunders *et al.* (2009) 5th edition pg. 602 |
| Validity | The extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform | http://researchrundowns.wordpress.com/quantitative-methods/instrument-validity-reliability [accessed Feb 2012] |
| Venture | An undertaking with an uncertain outcome | Researcher |
| Veterinary epidemiology | The study of disease in animal populations and factors that determine its occurrence | Catler and Mariner (2002) |
| Zero Grazing | The practice of harvesting forage crops and taking the green material to feed housed livestock | http://www.agriculturedictionary.com [accessed Nov 2010] |

# Chapter One – Introduction

# 1 Introduction

## 1.1. Thesis Structure

Chapter One begins by exploring the processes and stages involved in developing the thesis. This is followed by a description of the genesis of interest in the area of research in general, and the research topic in particular. This is followed by a discussion of the problem being addressed together with an overview of the academic research that frames it. The research gap is explored, and the aims and objectives of the research are presented. The researcher's prior professional experience and involvement in the area of primary research is related. Chapter Two establishes an operational definition for entrepreneurship and for entrepreneurial performance (EP) and explores the distinction between opportunity and necessity entrepreneurship. It contains a critical review of the literature and describes the conceptual model developed from the review. Research questions and hypotheses are then articulated.

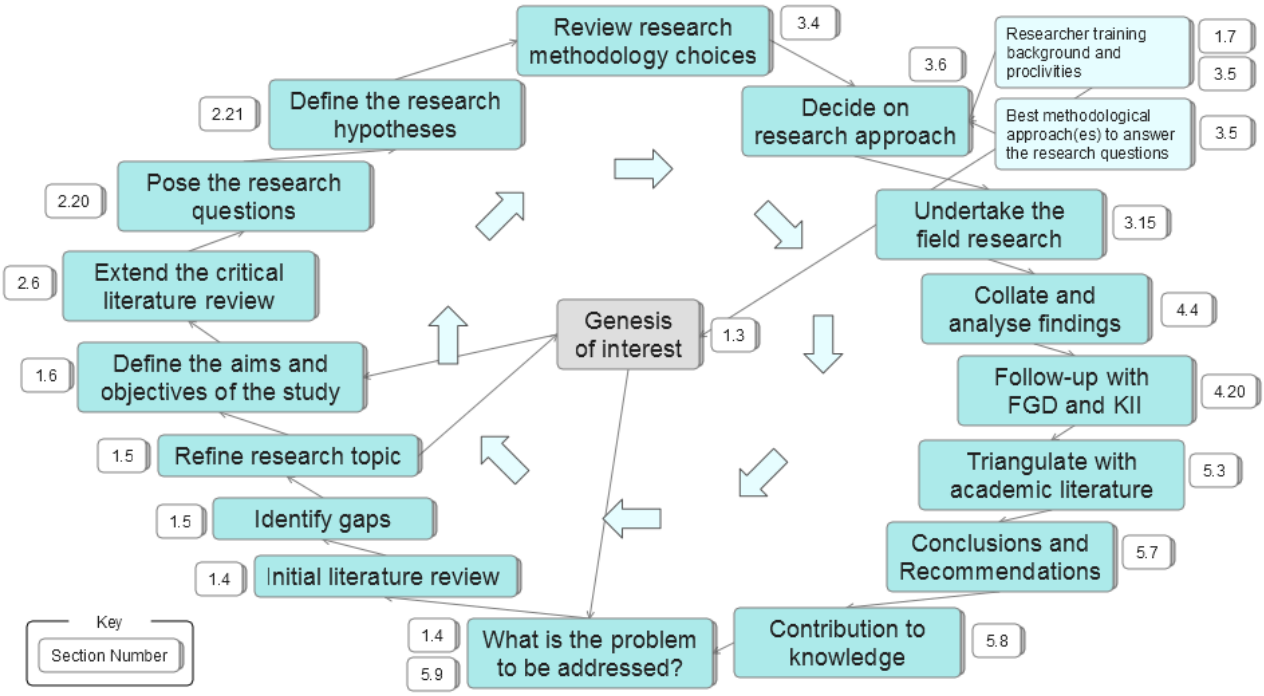
Chapter Three explains the methodological approach including the research philosophy and triangulation of primary research with the body of academic literature. Ethical considerations during the course of the research endeavour are explored, followed by a description of the sample frame and sample size determination for the primary research work. Finally, the constraints and limitations of the study are identified and considered. Chapter Four describes the study location and explores the *a priori* expectations and rationale for the performance framework. It contains an analysis of data, including consideration of the possible confounding effects of HIV/AIDs on the research findings and conclusions.

Chapter Five draws out the conclusions and recommendations that arise from the findings, including a refined conceptual model. There is triangulation of the research findings with the balance of findings from the academic literature. This is followed by responses to the hypotheses and research questions posed. There is discussion of the research contribution to knowledge. The chapter discusses the application of the model to policy and programmes in support of entrepreneurship, and explores whether or not there is a need for specially tailored assistance to entrepreneurs in the context of the case study. Finally, some thoughts are shared on opportunities to build on the primary research endeavour in future research.

## 1.2. Processes and Stages in Thesis Development

Figure 1 illustrates the processes and stages involved in thesis development:

Figure 1 : Thesis Processes and Stages*




**For a full-page version, see Figure A.15 on page 323.*

(Thompson, 2012)

The thesis development process begins with the genesis of interest (refer section 1.3 on page 21), which leads into a preliminary consideration of the problem to be addressed (refer section 1.4 on page 22). An initial literature review frames the problem and hones the area of interest leading to identification of research gaps and refinement of the research topic (refer section 1.5 on page 32). The aims and objectives of the study are defined and reflect the purpose of the study (refer section 1.6 on page 33).

Further critical review of the literature leads to specific research questions being asked with analysis developed by means of a series of hypotheses (refer section 2.21 on page 100). The research methodology choices made and the research approach in general arise from a blend of researcher strengths and consideration of the most appropriate methodological approaches to best answer the research questions (refer section 3.5 on page 113).

The researcher conducts the field investigation and collates and analyses the findings (refer section 4.4 on page 147). He presents these to the participants for reflection in focus group discussions (refer section 4.20 on page 176). Specific issues are further investigated in interviews with key informants, and themes are developed (refer section 4.21 on page 177). The researcher then formulates conclusions and recommendations from the findings (refer section 5.7 on page 219). He provides the contribution to knowledge (refer section 5.8 on page 221), and points to future research direction (refer section 5.9 on page 224). The thesis was developed and presented following these processes and stages.

## 1.3. Genesis of Interest in the Research

The initial impetus for the research emerged in 2005 during the course of development of an enterprise development strategy for the Mountain Societies Development Support Programme (MSDSP) in Dushanbe, Tajikistan (Aga Khan Foundation, 2012). The centrepiece of the strategy was the creation of business incubators. There was specific targeting of female-headed households and single mothers as recipients of additional assistance to enter the incubators:

> *"Women's economic group activities will be encouraged pro-actively provided that the enterprises are economically viable with proven market potential".*
>
> (Thompson and Shomurodov, 2005 p.17).

There was some recognition that females and particularly female-headed households (FHHs) required special treatment, but this was largely without empirical justification except for some internal MSDSP-collected household income and expenditure survey data which indicated that female-headed households (FHHs) were significantly poorer than male-headed households (MHHs). In the absence of more detailed household-level information the researcher, in his capacity as Manager of the Enterprise Development Unit of MSDSP, carried out extensive desk research during the course development of an enterprise support strategy (Thompson and Shomurodov, 2005).

This included a review of secondary datasets and reports, which were both country-specific and regional or global, comparing levels of entrepreneurship across countries. What stood out in the cross-country comparisons was a clear and consistent pattern,

between gender and the level of participation in entrepreneurship, irrespective of geographical location, cultural influences or socio-economic status of participants. The overall finding appeared to be one of consistently lower rates of involvement in entrepreneurship of females compared to males (Hancock and Fitzsimmons, 2004).

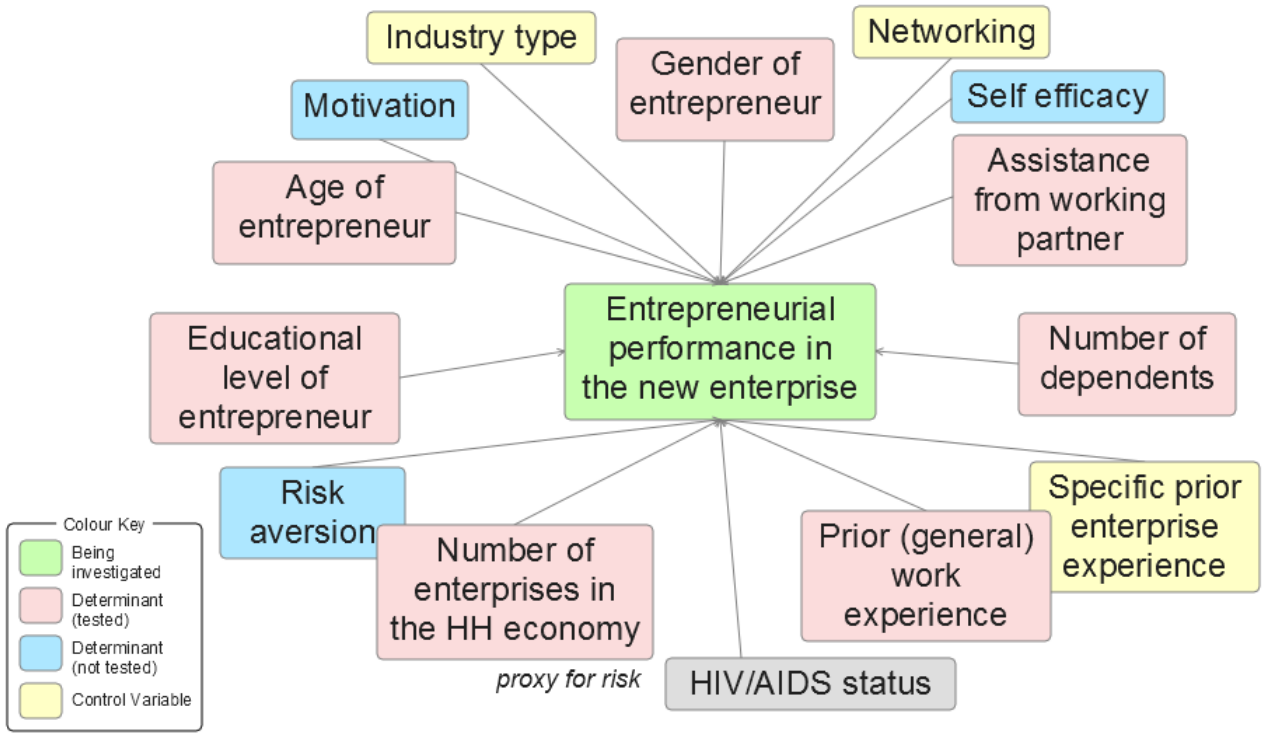
This raised a question in the mind of the researcher as to what was really behind these differentials in participation. What was the root of the differential participation? Were there factors that prevented females from greater participation or did they choose individually not to participate for other reasons? This sparked initial interest to investigate further the field of research and given the researcher's extensive background as a performance monitoring and evaluation specialist, led to a particular interest in exploring entrepreneurial performance and its determinants.

## 1.4. Problem Addressed and Research Overview

The problem addressed in this thesis relates to determinants of entrepreneurial performance (Fine *et al.*, 2012; Morris *et al.*, 2011; Khanka, 2009; Okurut, 2008; Chirwa, 2008; Coy *et al.*, 2007; Obben et al, 2003; Kodithuwakku and Rosa, 2002; Lerner *et al*., 1997; Rosa *et al.*, 1996) with particular emphasis on differences between females and males in relation to their participation and performance in entrepreneurship (Peterman *et al*., 2011; Adoram, 2011, Gathenya *et al.,* 2011; Bardasi *et al.*, 2011; Amin, 2010; Spring and Ruthashobya, 2009; Quisumbing and Pandolfelli, 2009; Horrell and Khrishnan, 2007).

Inductive analysis provided the basis for refinement of an *a priori* conceptual model developed during the initial literature review (Figure 2). The primary research tested the veracity of elements of this conceptual model, and the findings were then triangulated with those in the academic literature (Saunders *et al.,* 2009 pg. 593).

Figure 2 : Potential Determinants of Enterprise Performance




In this overview, elements of the model are explored:

**Education:** Educational level of the entrepreneur is seen to be one of the significant determinants of entrepreneurial performance in a number of studies in developing countries including, South Africa (Peters and Brijlal, 2011; Hietalahtil and Linden, 2006), Kenya (Gathenya *et al.*, 2011), Malawi (Chirwa, 2008), Uganda (Okurut, 2008), and Vietnam (Nam *et al*., 2010).

Dickson *et al.* (2008) found strong evidence to support the relationship between levels of general education and several entrepreneurial success measures, across a range of both developed and developing countries. Van der Sluis *et al.* (2003) estimate from their meta-analysis of a large number of developing country case studies that one year of schooling raises enterprise income by an average of five percent, similar to the average return in developed industrialised countries. Additionally, they found that returns to education tend to be higher for females and in agricultural societies where literacy rates are typically lower. Olaniyan and Okemakinde (2008) present empirical evidence linking investment in education to economic growth and development in Nigeria.

Calvo and Garcia (2010) argue that the entrepreneur is the most important resource in the creation of an organisation and that knowledge acquired through formal education inevitably enriches the entrepreneur's human capital and benefits both maintenance and growth of the enterprise under their control. In their study of Spanish entrepreneurs they found that while general level of education of the entrepreneur was a determining factor, particularly in larger enterprises, the entrepreneur's previous enterprise experience had the greatest impact, using venture growth as their measure of entrepreneurial performance.

In their extensive literature review, Swinney *et al.* (2006) followed the approach of Fasci and Valdez (1998) in focusing their research on one industry type. They recognised that there was convincing evidence of a confounding influence in measuring entrepreneurial performance when enterprises from different sectors were grouped together and treated homogeneously. They found that gender and education interact to impact reported firm performance. Since the performance measure used was a subjective assessment by the owner, this raises further questions about the relationship between educational level and levels of self-efficacy, and between levels of self-efficacy and self-assessment of entrepreneurial performance.

**Age:** Fine *et al.* (2012) in their study of Chinese entrepreneurs found sufficient evidence to support their initial hypothesis that younger entrepreneurs exhibit higher performance. Measures of performance included both external (auditor) and self-appraisals, and age was found to be a significant determinant of performance in the external appraisal. According to de Kok *et al.* (2010, p.5) few studies have related age of the entrepreneur to measures of entrepreneurial performance and therefore the *"current understanding of the role of age in entrepreneurial activity is still too fragmented to draw any definite conclusions..."* Parker (2006) investigated the extent to which entrepreneurs in their decision-making adjust their beliefs in the light of new information, and found that younger entrepreneurs respond significantly more sensitively to new information. If sensitivity of response to new information correlates with performance this implies that younger entrepreneurs exhibit higher performance.

Kimuya (2001) made a contradictory finding, in his study of rural-based entrepreneurs in Kenya, that older entrepreneurs exhibit higher levels of performance. Justification for the

finding was that an entrepreneur's age closely correlates with number of years of business experience as well as access to resources through personal acquisitions or inheritance, and that these are both positively related to performance. This finding is supported by analysis of the Global Entrepreneurship Monitor (GEM) surveys since 2001, which indicates that rates of discontinuance of enterprises fall with age of the entrepreneur up to the age of 64 years (refer Figure 5 on page 57).

The same analysis indicates that within each age category female entrepreneurs consistently experience lower levels of discontinuance compared to males. If the inverse of discontinuance, rate of survival, is taken to be an important measure of entrepreneurial performance (EP) this would suggest that female entrepreneurial performance is superior to males across a broad sweep of countries. The only other finding of superior EP uncovered in the academic literature is by Chirwa (2008) in his study in Malawi, who attributes superior performance to preferential access to credit.

**Gender:** Peterman *et al.* (2011) in their investigation of gender differences in agricultural productivity in Nigeria and Uganda found that both female owners of plots (those with a resident partner) and female-headed households (FHHs) exhibited lower levels of productivity than males, particularly in the dry savannah areas. From this finding they established a working hypothesis that the dry savannah ecology with its greater demands for collection of fuel and water is likely to impose a greater domestic work burden on females thereby reducing the time they can spend on farming activities. Such considerations suggest potential issues relating to ‘time poverty’ among females when faced with multiple responsibilities of income earning and care for the family.

Okurut (2008) found evidence of female underperformance in his analysis of Ugandan micro-entrepreneurs across a range of sectors, including the livestock sector, and attributed the differences to be broadly related to educational levels and experience. Conversely, Chirwa (2008) found no evidence of female underperformance in Malawi among small- and micro-entrepreneurs across the non-agricultural sectors against an EP measure of profit margin, and when measuring performance in terms of employment growth he found that females outperformed males.

Gilbert *et al.* (2002) in their study of Malawian smallholder farmers participating in an agronomic trial found that when inputs were supplied equitably to all, female farmers

were just as productive as their male counterparts were. They surmised that gender differences for farmers outside the experimental trials to be because of larger holdings, a higher proportion of land area devoted to cash crops, and differential access to government extension support. Horrell and Khrishnan (2007) support this finding in their study of female and male-headed households in Zimbabwe who found that, controlling for inputs, there were no differences in productivity between the two groups. Bardasi *et al.* (2011) provided further support in their analysis of World Bank Enterprise Survey data within three developing regions, including Sub-Saharan Africa (SSA). While female firms were smaller, they found no evidence that they were markedly less efficient.

**Working partner:** Peterman *et al.* (2011) found that plot-level agricultural productivity in Uganda was lowest among crops with mixed-gender ownership, compared with those owned solely by females and males. They speculated that this might be because of intra-household tensions. Chirwa (2008) in his study of non-agricultural entrepreneurs in Malawi found that female-owned enterprises grew faster in terms of employment growth compared to either male- or mixed-gender-owned enterprises, which may imply that joint ownership of an enterprise with a resident partner confers no advantages.

In contrast, Khanka (2009) in his Indian study found that married entrepreneurs performed better than their unmarried counterparts did. He went even further to speculate, on the basis of background information in the Indian cultural context, that female entrepreneurs with resident partners were likely to be more successful than their male counterparts, although this was not empirically tested in his study. Cooper *et al.* (1994) found some evidence to suggest that those enterprises with partners (albeit not necessarily domestic partners) exhibited higher levels of performance.

**Dependents:** Circumstantial evidence suggests that domestic demands, related to number of dependents to be cared for, may impinge upon time devoted to the enterprise and thereby affect performance. This is likely to affect females disproportionately (Jennings and McDougald, 2007). Wesley *et al.* (2009) in their study of dual-career professional couples in India found that, despite some evidence of a shift in domestic responsibilities from females to males, the primary responsibilities at home remained predominantly with women. Niehm *et al.* (2009) in their exploration of the link between small family business survival and the overlapping demands of family and business,

found that one distinguishing feature of surviving enterprises was that entrepreneurs brought in paid workers to either assist in the business or the home to make up the 'time gap'.

In a qualitative study of Lebanese female entrepreneurs, Jamali (2009) found that when asked to rank the three most important barriers encountered in the course of their entrepreneurship experience, the majority put balancing work and family life as the most important barrier. Lawson (2007) in his investigation of rural households in Lesotho found evidence that in general men experienced more 'time poverty' than women, and this was primarily attributed to the male's role in livestock keeping. Despite the general finding, he found that female-headed households (FHHs) suffered significantly more 'time poverty' that male-headed households (MHHs). A larger household size was seen to be generally associated with less time poverty, but this might change depending upon the ages of dependents and their ability to contribute and ease the burden of the entrepreneur in their income earning and domestic responsibilities.

Fairlie and Robb (2009) found evidence that female business owners work fewer hours and may have different preferences for the goals of their businesses, and suggested that this may have implications for performance and partially explain the differences in performance between male and female owned enterprises. This implies that females may cut back on their time allocation to business in favour of more time with family. Singh and Belwal (2008) discovered that among Ethiopian female entrepreneurs there was a mixed response with regard to having sufficient time to manage their businesses effectively and take care of family responsibilities, and their findings were inconclusive.

Bird and Sapp (2004) in their study of small business success found that females in their study group underperformed relative to males despite having fewer dependents, which implies that other factors were more important in influencing performance. There is evidence in the academic literature that female entrepreneurs may deliberately restrict the growth of an enterprise in order to achieve a balance between their work demands and demands of family life (Jennings and McDougald, 2007; Orser and Hogarth-Scott, 2002) suggesting a status of 'time poverty' (Bardasi and Wodon, 2010).

**Work experience:** Gabrielsson and Politis (2012) point to the extensive body of literature linked to human capital theory that emphasises the value of personal

investments in human capital via both education and work experience as explanatory factors for entrepreneurial success. Lafuente and Rabetino (2011) in their study among Romanian small firms confirmed their hypothesis that an entrepreneur's previous work experience was an important factor in explaining differences in entrepreneurial performance.

Fairlie and Robb (2009) provide evidence that one of the factors explaining underperformance of female entrepreneurs was less 'business human capital' acquired through prior work experience in a similar business. Cooper *et al.* (1994) found that entrepreneurs who were not in the workforce prior to starting the venture had lower levels of performance in terms of both survival and growth. This finding is supported by Carter *el al.* (1997) for males but not for females, and tentatively by Boden and Nucci (2000) who related female underperformance to both the lower levels of educational attainment and prior exposure to paid work experience.

**Enterprise Mix:** If it is accepted that enterprise diversification is "*a self-insuring strategy used by farmers to protect against risk*" (Mishra *et al.*, 2004 p.1) then the degree of diversification of enterprises provides a plausible proxy measure for the level of risk mitigation being adopted. Kiggundu (2002) relates diversity of the enterprise-mix to the African context in his notion of the '*octopus organization'* whereby the entrepreneur's risk mitigation strategy involves engaging in several unrelated business types concurrently. In the event that the external environment for one enterprise becomes unfavourable affecting returns to that enterprise, others will be there to make up the shortfall and since they are unrelated, the hope is that whatever is impairing the declining enterprise will not affect the others in the same way. Block and Webb (2001) in their analysis of enterprise diversification strategies in post-famine Ethiopia found suggestive evidence that perceptions of risk factors influenced subsequent diversification decisions.

Chirwa (2008) found that the lower performing entrepreneurs (in terms of profitability) had more enterprises. He speculated that inefficiency in time allocation among the various enterprises might be leading to higher levels of managerial inefficiency. In contrast, Kodithuwakku and Rosa (2002) in their longitudinal study of Sri Lankan farmers found that those entrepreneurs who had emerged as the most successful had

typically diversified into other ventures. At the time of investigation, they had an average of 3.7 enterprises per household, albeit with a range from 1 – 10 enterprises within this elite group, and there is some support for this from Block and Webb (2001) in their work in Ethiopia. Quisumbing and Pandolfelli (2009) raise an important issue in their consideration of gender and performance, in considering cases where gender may not be the most important determinant, but instead may mask other determinants closely correlated with gender. They suggest that these might include age, marital status, education level, and size of landholding. They suggest that failure to recognise this may result in less than effective targeting of interventions to support entrepreneurs.

**Industry type:** The industry effect has a potentially confounding influence in measuring performance as has been acknowledged by researchers (Anna *et al.*, 2000; Shim and Eastlick, 1998; Carter *et al.*, 1997; Kalleberg and Leicht, 1991). Kepler and Shane (2007) controlled for industry effect in their study as did Carter *et al.* (1997), Watson and Robinson (2003), Alowaihan (2004), Du Reitz and Henrekson (2000) and Shim and Eastlick (1998). Other researchers including Bates and Nucci (1989) did not control for industry-type in their investigation, running the risk, in hindsight that higher rates of enterprise discontinuance in one industry-type, coupled with high levels of participation by one group within that type, might then erroneously lead to findings of lower performance for that group. The case study avoids this pitfall in that it focuses not only on one industry type but further on a single enterprise, in a comparative analysis of entrepreneurial performance.

**Networking:** Watson (2007) was able to establish a significant positive relationship between networking and performance as measured by business survival. He put has forward evidence to suggest that females exhibit lower levels of networking with males in their earlier stages of entrepreneurship but that networks increase as their enterprises age, such that gender differences disappear over time (Klyver and Terjesen, 2007). There is evidence in the academic literature of lower levels of same-sex networking among female entrepreneurs (Birley *et al.*, 1987; Buttner, 1993).

Table 1 : Authors' Positioning in Relation to Performance Determinants Explored

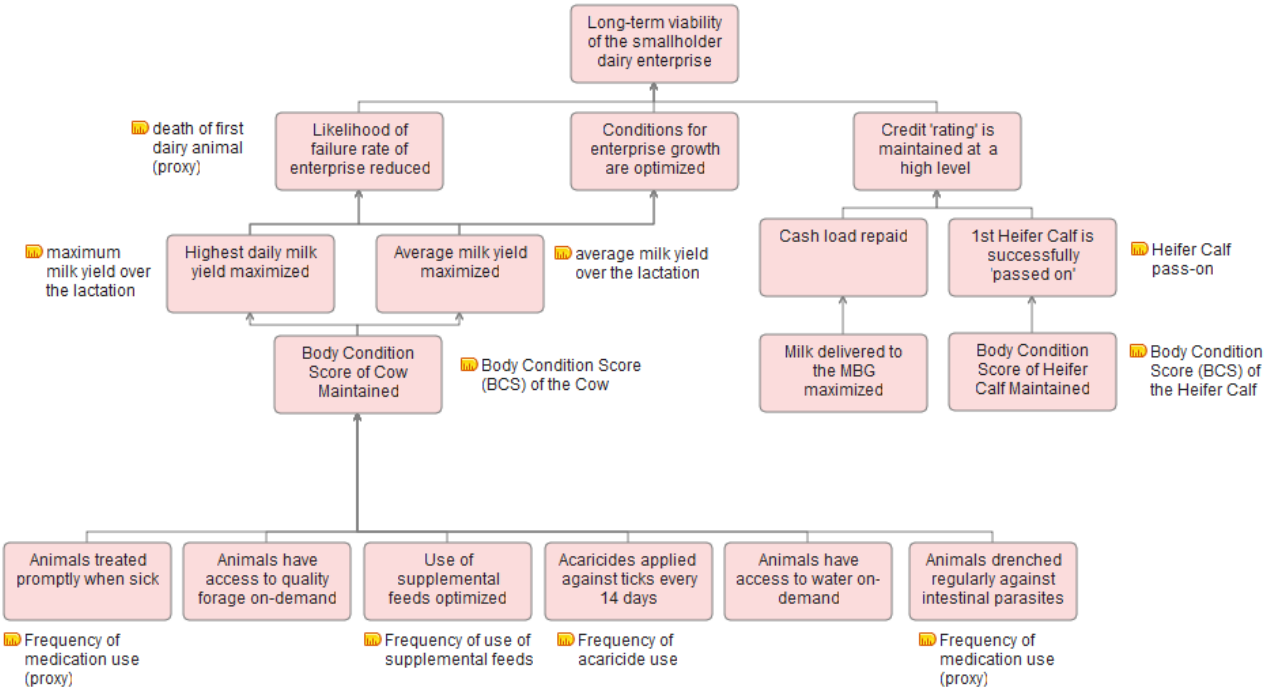
| Potential Determinant of Performance | Authors' Positioning in the Academic Literature |
|---|---|
| Educational level | Agree: Peters and Brijlal, 2011; Gathenya *et al*, 2011; Nam *et al.*, 2010; Calvo and Garcia, 2010; Okurut, 2008; Swinney *et al.*, 2006 (females); Chirwa, 2008; Bhattacharjee *et al.* (2008); Dickson *et al.* (2008); Hietalahit, 2006; Van der Sluis *et al.* (2003); Cooper *et al.* (1994)<br>Disagree: Otoo *et al.* (2011); Khanka, 2009; Swinney *et al.* (males), Fasci and Valdez, 1998 |
| Age | Agree: Fine *et al.*, 2012; de Kok *et al.*, 2010; Parker, 2006, GEM, 2008 |
| Gender | Agree: Bardasi *et al.*, 2011; Amin, 2010; Khanka, 2009; Kepler and Shane , 2007; Horrell and Khrishnan, 2007; Chirwa, 2008 (profit margin); Gilbert *et al.*, 2002<br>Disagree: Peterman *et al.*, 2011; Okurut. 2008; Chirwa, 2008 (employment) |
| Assistance from a working partner | Agree: Khanka, 2009; Cooper *et al.* (1994)<br>Disagree: Peterman *et al.*, 2011; Chirwa, 2008 |
| Number of dependents | Agree: Wesley *et al.,* 2009; Niehm *et al.,* 2009; Jamali, 2009; Lawson, 2007 (individuals); Jennings and McDougald, 2007; Orser and Hogarth-Scott, 2002<br>Disagree: Fairlie and Robb, 2009; Singh and Belwal, Lawson 2008 (HH heads); Bird and Sapp, 2004 |
| Prior work experience | Agree: Lafuente and Rabetino, 2011; Fairlie and Robb, 2009; Boden and Nucci (2000); Fasci and Valdez (1998); Carter *et al.*, 1997 (males); Cooper *et al.* 1994<br>Disagree: Carter *et al.*, 1997 (females) |
| Number of enterprises in the enterprise-mix | Agree: Chirwa (2008), Mishra *et al.*, 2004, Kiggundu (2002)<br>Disagree: Kodithuwakku and Rosa (2002) |

The study builds upon the body of entrepreneurship work globally and in particular within the 'developing' countries where there has been a dearth of research in this area (Brush and Cooper, 2012; Kshetri, 2011; Bardasi *et al.*, 2011). It focuses on Malawi in the Southern Africa region where the researcher has lived and worked intermittently since first arriving there as a DfID intern in 1978 and a project he was personally involved with as the manager of the Heifer scheme which distributed the high-grade dairy animals to the nascent smallholder dairy entrepreneurs.

The approach in establishing a 'dependent' entrepreneurial performance measure by which to assess possible determinants, is to build an 'outcomes hierarchy' or 'theory of change' (Duignan and Bjorksten, 2005; Duignan, 2004, Patton, 2002) based on causal logic linking intermediate outcomes to the final outcome of "*long-term viability of the dairy enterprise*" as presented in Figure 23 on page 117. The narrative of the causal

logic is presented in section 2.4 on page 40 and the figure is placed here in Chapter One to introduce and illustrate the process involved.

Figure 3 : Performance Framework and Measures for Dairy Entrepreneurship*




**For a full-page version, see Figure A.16 on pg. 323*

The case study focuses on gender differences in smallholder dairy entrepreneurship in Malawi. Women constitute 69% of the full-time farmer population in Malawi (Gilbert *et al.*, 2002). The research will contribute to the understanding of the determinants of entrepreneurial performance, particularly for female entrepreneurs. Potentially there will be wider application in the research efforts to apply a more context-driven approach to entrepreneurial performance measurement.

## 1.5. Identifying the Research Gap

Despite recent advances in the study of gender and entrepreneurship, it can still be characterised as a field of enquiry, which is emerging (Kshetri, 2011). Earlier research paid little attention to the differential performance of enterprises within specific industry types (Bates and Nucci, 1989) and this muddied the clarity of findings and conclusions made regarding aspects of differential performance (Alowaihan, 2004; Boden and Nucci, 2000; Du Reitz and Henrekson, 2000; Smeltzer and Fann, 1989). There are a strictly limited number of research projects considering gender differentials in entrepreneurial performance among entrepreneurs operating within the same enterprise-type (Chirwa, 2008).

Researchers have matched entrepreneurs in terms of factors such as level of business training and exposure (antecedent influence) only in a few cases (DeMartino and Barbato, 2003). Entrepreneurship research has focused primarily on high-income countries with a dearth of studies in low and middle-income countries (Brush and Cooper, 2012). This presents an opportunity for greater concentration of effort in research focusing in entrepreneurship and specifically on entrepreneurial performance in lesser-developed countries (LDCs) and particularly within the African continent (Spring and Rutashobya, 2009).

According to a current analysis of the body of literature on female entrepreneurship, there has been of-late an increase in the adoption of more diverse methodological approaches and techniques. The move away from an exclusively positivist approach to embrace more qualitative methodologies to complement quantitative methodologies of investigation is considered desirable (Brush and Cooper, 2012; de Bruin, Brush, and Welter 2007). The study combines mixed-methods in its design, including establishing a suite of subjective and objective measures of performance using qualitative and quantitative information. These measures are developed using a performance framework specific to the case study of smallholder dairy entrepreneurship in Malawi. This enables assessment of entrepreneurial performance, which is in-line with current thinking concerning the use of more flexible definitions of enterprise success and a departure from the use of traditional measures of performance.

According to Simpson *et al.* (2012) drawing on the work of authors such as Watson *et al. (*1998) the multi-dimensional nature of performance is often overlooked in the quest for a single convenient one- or two-dimensional measure such as growth, profit, turnover, profitability, or return on assets. They note that few studies obtain objective performance measures from operational performance measures, and consider that a robust methodology to estimate performance must necessarily be longitudinal. This research study is longitudinal in its ability to 'look back' to the start-up of the enterprises and establish entrepreneurial performance some four years on, and then, in a second round of investigation, some six years after commencement of the enterprises.

The research focuses on entrepreneurs who, by virtue of the assistance in business start-up provided, commenced their entrepreneurial ventures at around the same time; had similar levels of business exposure and training at the commencement of the enterprise; and were provided with the same level of training and follow-on support. This represents a relatively 'controlled environment' (refer Table 21 on page 101) which is found in a strictly limited number of field investigations (Kodithuwakku and Rosa, 2002).

## 1.6. Aims and Objectives

The aim of the research is to investigate key elements of a researcher-developed conceptual model of potential determinants of entrepreneurial performance and gender differentials in performance, in order to determine strategies for tailored assistance to females participating in enterprise start-up.

The specific objectives of the research are:

i) To critically review the literature and theoretical concepts to explore the potential determinants of entrepreneurial performance with a particular focus on exploration of gender differentials in entrepreneurial performance;

ii) Taking the example of dairy entrepreneurs in Central Malawi, and triangulating with findings from the academic literature, to investigate potential determinants of entrepreneurial performance and gender differentials in performance;

iii) Based on the findings in i) and ii) above to assess the requirement for assistance to smallholder dairy entrepreneurs with a particular focus on tailored support to female entrepreneurs, and with the potential for application to a wider group of entrepreneurs involved with similar programmes in similar settings.

The questions that arise from the aims and objectives detailed here are developed in section 2.20 on page 98 after further review and discussion of the academic literature.

### 1.7. Researcher Experience and Involvement in the Area of Primary Research

The researcher worked from Oct. 2001 to Mar. 2005 for Land O'Lakes, Inc. on the USAID-funded Malawi Dairy Enterprise Development Programme (MDEDP). In 2004 he managed the Heifer Loan sub-project which sourced high-grade Friesian/Holstein and Jersey/Guernsey dairy animals (mostly Heifers in-calf) from Zambia, Tanzania and South Africa. Animals were distributed on-loan to smallholder farmers who were all members of Milk Bulking Groups (MBGs) and within an 8km (5 mile) radius of already established milk collection centres.


Photograph 2: Ellen Mtanga (FWRP)

The project sought to allocate animals to as many registered female members of the MBGs as males. The conditions of the loan were that each farmer would undertake to deliver all milk not consumed within the household (household consumption is typically around 1.1 litres per day) to the milk bulking centre, where it would be collected by one of the processors. The proceeds of one litre of milk sold to the processors per day would go towards cash repayment of the loan. In addition, the first female calf would be cared for up to the age of 18-24 months when it would be passed on to another farmer in the group on the waiting list to receive an animal.

The cash repayment plus the repayment in-kind of the 'pass-on' female calf constituted full-repayment of the loan. The project helped each MBG to establish revolving funds for drugs and for supplementary feeds. In addition, the MBGs established a 'cow mortality' fund to provide replacement animals based on a projected mortality rate of up to 5% of animals per year.

Although animals were distributed in both the Central and Northern regions of the country for logistical reasons, the case study was focused on farmers within Milk Bulking Groups (MBGs) of the Central Region. The researcher sought and obtained permission for the study from the governing body the Central Region Milk Producers Association (CREMPA). The fieldwork for the Malawi field research study was carried out during December 2008 and January 2009 by the researcher with assistance in translation and technical assessment of the dairy enterprises by Macmillan Masache, former extension officer and paravet on the Land O'Lakes Malawi Dairy Enterprise Development Programme.

This chapter has detailed the processes and stages in development of the thesis, which began with the genesis of interest in the research, and explored the problem to be addressed through an inital review of the literature. The research gap was identified and this led to the definition of the aims and objectives of the research project. The chapter detailed the researcher's prior experience and involvement in the area of primary research. In Chapter Two working definitions of entrepreneurship and entrepreneurial performance are developed for the purposes of this research. The chapter contains a critical review of the academic literature and explores the conceptual model of determinants of entrepreneurial performance developed from the review, leading to articulation of the research questions and hypotheses.

# Chapter Two - Literature Review

# 2 Literature Review

## 2.1. Introduction

In Chapter One the background to the research was discussed, and the aims and objectives of the research established. The processes and stages of the thesis development were outlined, and there was an overview of the research in relation to potential determinants set out in the preliminary conceptual model. In Chapter Two this is taken further by an interrogation of the literature and by addressing the central issue of which measures are being used and should be used in assessing entrepreneurial performance. Working definitions of entrepreneurship and entrepreneurial performance are developed for the purposes of this research. The chapter ends with the formulation of research questions and hypotheses.

## 2.2. Defining Entrepreneurship

A single definitive definition of 'entrepreneurship' has proven to be elusive among the academic community (Avanzini, 2009). The term is often used loosely to refer to a whole range of activities from intention to start a business to actually practising business. According to Kelley *et al.* (2010) entrepreneurship encompasses multiple phases from having the ability and intent to start businesses to actually starting and then running new businesses. As de Groot (2001 p.4) states, "*entrepreneurship is not an individual process but a collective one, involving many actors in addition to the entrepreneur*".

Some authors define entrepreneurship in terms of the personal qualities of an individual that contribute to success in business (Chu, 2000; Johnson, 1990). Entrepreneurship in this context is referring to the characteristics of those who venture into business; the subject and not the object of business creation and management. Such characteristics typically include, motivation to achieve, goal setting, creativity, need to be in charge (locus of control), persistence, and need for autonomy. This could be categorised as a person-centred definition. The definition implies that a person, once an entrepreneur, will keep acting entrepreneurially irrespective of the activity they are involved with (Crant, 1996; Fagenson, 1993). Krueger and Brazeal (1994, p.102) venture that, "*Entrepreneurs are made, not born*".

Other definitions refer more to the object of the endeavour, the enterprise itself, and the person linked to the enterprise is then seen to exhibit entrepreneurial qualities in response to the challenge of developing and managing the enterprise. Within this definition anyone can potentially act entrepreneurially at some time in their lives. Gartner (1998) argues that the trait approach to entrepreneurship research, which focuses on the personality traits of an individual, has proven to be unfruitful, at least up to the time of his writing. He advocated behavioural approaches (whereby an entrepreneur was seen as a set of activities involved in enterprise creation) as a more fruitful approach in conducting research that would have value.

Any study of entrepreneurship cannot separate the 'dancer', the entrepreneur, from the 'dance', the enterprise. This view is supported by Di-Masi (n.d.) who makes the point that two individuals with similar traits may nevertheless achieve very different results in the performance and their ventures. Bruyat and Julien (2001) argue that it is not possible to distinguish the subject and object of entrepreneurship and we must of necessity study them as one entity, the individual and the 'new value creation'. They argue that the inherent complexity associated with entrepreneurship requires that all dimensions, individual, enterprise and environment (enabling or disenabling) must be analysed in concert.

Kondo (2010, p.299) in his efforts to distinguish between 'business' and 'social' entrepreneurs characterises successful business entrepreneurs as "*innovative individuals, who create new value, are risk takers, have a vision, capitalise on opportunities, are adaptable and can put people and factors together to make things happen."* In contrast, successful social entrepreneurs are seen to be *"willing to self-correct, share credit with others, break free of established structure, cross disciplinary boundaries, work quietly, and in possession of strong ethical impetus."* The author then defines a third type of entrepreneur termed a 'social business entrepreneur' with a balanced or hybrid commitment to both profits and social responsibilities. This blurring of typology is also encountered by Williams and Nadin (2011) who provide illustrations of informal entrepreneurs combining both 'for-profit' and social objectives in their entrepreneurial endeavours.

Based on the above, a working definition of entrepreneurship, developed by the researcher, for the purposes of the study is therefore set out as:

> *The pursuit of a venture or ventures to fulfil economic and social outcomes for both the benefit of the enterprise and the entrepreneur*

The term 'venture' is used to encompass notions of risk and uncertainty. The outcomes are not simply economic but with social implications also. Benefits accrue to both the entrepreneur, who derives benefit from the enterprise, and the enterprise, which is sustained and nurtured by virtue of the attention and care of the entrepreneur (Morris *et al.*, 2011).

### 2.3. Opportunity vs. Necessity Entrepreneurship

Necessity entrepreneurship is undertaken in the absence of any other means of livelihood (the absence of any other income earning opportunity). In contrast, opportunity entrepreneurship represents the venturing into a business because of a perceived opportunity in the marketplace; an improved state for the individual or group of individuals concerned (Kelley *et al.*, 2010). Other terms which also convey a similar understanding of this distinction include 'push' and 'pull' entrepreneurship, the 'push' being necessity; being pushed into entrepreneurship by the lack of a suitable alternative means of livelihood, and the 'pull' being the lure of an opportunity for better prospects in terms of income earning opportunities or the perception of a better lifestyle.

Thus study focuses on 'opportunity entrepreneurship' rather than 'necessity entrepreneurship'. In reality there is some blurring in the distinction between opportunity and necessity entrepreneurship (Williams and Williams, 2011; Hughes, 2003). Many established entrepreneurs report that their initial foray into entrepreneurship was undertaken out of necessity. Reasons could be loss of paid employment or some other significant life-changing event such as divorce or bereavement. Subsequently and in retrospect this 'push' into entrepreneurship proved to be an 'opportunity in disguise'. The enterprise opened up new possibilities for livelihood creation that had not previously been considered and in some cases provided an escape from dependence upon paid employment.

Data provided by a number of studies in developing countries indicate that opportunity entrepreneurship far outstrips the levels found in developed countries. This suggests that there is in fact sufficient scope to focus on opportunity entrepreneurship in Africa and particularly in the context of Malawi and the entrepreneurial group in which the primary research has been undertaken. The primary research focused on smallholder dairy entrepreneurs, who without doubt ventured into the industry to exploit a perceived opportunity.

## 2.4. Defining Entrepreneurial Performance

It is difficult to find any definitions of entrepreneurial performance in the academic literature. Khanka (2009) defines performance in general as "*an outcome or result from an activity in relation to its determinants or correlates such as efforts and inputs*". Most attempts at definition tend towards discussion of aspects of measurement.

Chrisman *et al.* (2005) define enterprise performance in terms of "*aggregate absolute growth in sales and employment over a venture's formative years*" and this represents a common approach of many researchers in defining performance by selecting one or two key measures of performance as a way of defining the outcome. If sustainability of the enterprise constitutes one of the measures of performance then the converse, discontinuance would represent at least a proxy measure of lack of performance. We might therefore define entrepreneurial performance as the sustainability of the enterprise. However, enterprises may continue with minimal profitability, sustained only by the entrepreneur's hope of a 'change of fortune' in the future, and as such the enterprise would not be deemed to be adequately performing but merely to be subsisting at the margin perhaps even in perpetuity (Cooper *et al.,*1994).

Following on from the working definition of entrepreneurship to encompass both the individual and the venture, the object of the entrepreneurial endeavour, the working definition of entrepreneurial performance used in the case study is based on the sustainability of the enterprise operated by the entrepreneur as embodied in the final performance outcome *"long-term viability of the …. enterprise"* (refer Figure 23 on page 117). Intermediate outcomes cascade down from this final outcome to provide a performance framework with a suite of entrepreneurial performance outcomes and measures that all lead into the final outcome.

## 2.5. Measures of Entrepreneurial Performance in the Academic Literature

The most widely used performance measure is growth in number of employees (Kepler and Shane, 2007; Verheul *et al.*, 2004; Du Reitz and Henrekson, 2000; Shim and Eastlick, 1998; Fasci and Valdez, 1998; Chaganti and Parasuraman, 1996; Cooper, 1994; Smeltzer and Fann, 1989). Number of employees is closely related to enterprise size and there is empirical evidence to the effect that male operated enterprises are significantly larger than females in terms of sales volumes (Verheul *et al.*, 2004; Shim and Eastlick, 1998). Net income and profitability levels, unless they are standardised to make them invariant of scale, are also positively related to size of enterprise (Du Reitz and Henrekson, 2000). Performance measures that are linked to size of enterprise (not invariant of scale) may therefore be reflecting other attributes of an enterprise. This may be particularly misleading in an analysis of gender differentials in performance, resulting in an assessment of superior performance where none exists in actuality.

Performance measures selected by researchers which are invariant of scale include the ratio of net profit to gross revenue (Fasci and Valdez, 1998) and return on investment (Kalleberg and Leicht, 1991; Chaganti and Parasuraman, 1996). Subjective assessment of performance by entrepreneurs of their own and other enterprises (Kepler and Shane, 2007; Brush and Vanderwerf, 1992; Kalleberg and Leicht, 1991) may potentially provide a measure which is also invariant of scale, unless the size of the enterprise is implicit in the entrepreneur's assessment of performance.

Chandler and Hanks (1993) outline some of the inherent challenges in measuring enterprise performance, particularly in their focus of investigation on new venture performance. These include the fact that new ventures are mostly privately owned, with no legal requirement to divulge performance information. They point to the need to acquire performance data meeting the criteria of: relevance, availability, reliability, and validity. They used three different approaches to measure performance and then triangulated them with each other to test the internal consistency of their approach, namely: measuring firm performance in broadly defined categories, secondly the use of subjective measures of executive or owner satisfaction with firm performance, and thirdly the use of subjective measures of firm performance from the perspective of a firm's competitors.

They make the statement that the *"multidimensional nature of performance measures remains problematic".* While they rate the multiple dimensions involved in subjective assessment of performance highly for internal consistency they caution that the enterprise founder's assessment may be biased towards expectations of what performance should be rather than the actuality. They also question the inter-rater reliability of performance assessment, in that different people may have different levels of satisfaction with the same level of performance. They therefore bring into question the reliability of a subjective performance index as a good proxy measure for entrepreneurial performance.

Intuitively survival or sustainability of the enterprise has to be one of the principal measures of enterprise performance. If the enterprise ceases to exist then that would seem to be an obvious sign that an enterprise has not been successful. Despite this, there are a number of reasons why enterprises may be discontinued and not all necessarily represent negative outcomes (Boden and Nucci, 2000). Equally, as noted on page 40, enterprises may survive without flourishing and possibly can languish in a state of marginal survival (Cooper *et al.*, 1994) such that the absence of discontinuance does not imply success.

The definition of what constitutes successful entrepreneurial performance is a central issue particularly in an assessment of gender differentials in entrepreneurial performance (Simpson *et al.*, 2012; Ahl, 2006; Watson and Robinson, 2003, Cooper, 1993). In their extensive review of gender-related literature in African entrepreneurship Spring and Ruthashobya (2009) discuss performance determinants of numerous authors throughout the article but without any consideration of how entrepreneurial performance is actually measured.

If females perceive and measure entrepreneurial performance differently to males, then there is likelihood that assessing performance using only 'convenience measures' may inadvertently lead to the use of male-centric measures (MCMs) or measures which are not invariant of scale, thereby biasing any analysis. Khanka (2009) considers that 'psychic income' may be as important as economic performance to the entrepreneur, which supports Miller (2006) and the earlier work of Bradle and Boles (2003). This implies that subjective self-assessment of performance by entrepreneurs may have

value as one means of capturing the many factors that provide the entrepreneur with the myriad of non-pecuniary rewards which may constitute psychic income.

Watson and Robinson (2003) bring in the dimension of risk to their assessment of performance by using not only average profit but also variation in their measure of performance. They use variation in profit as a proxy measure of risk and while their finding is that males do exhibit higher overall levels of profitability than females, they qualify this in showing that they also exhibit a higher degree of variation, and by implication risk-taking, in attaining this level of profit. When the same analysis is made this time controlling for variation/risk by the use of a reward-to-variability ratio they demonstrate that the gender differential in performance disappears.

The selection of performance measures is therefore a critical issue in the synthesis of findings and conclusions from the academic literature. If indeed, females consciously limit the size of their enterprises (Brush, 1992) and adopt risk-averse strategies in their development (Sexton and Bowman-Upton, 1990) then females may well be consciously trading off higher profit levels for lower levels of risk. Measures of performance which ignore these strategic approaches will inevitably create an inherent bias in entrepreneurial performance measurement.

This raises a further question of who is doing the measuring, and whether the choice of measures is actually reflecting a male-centric view of performance. Du Reitz and Henrekson (2000) contend that the female underperformance hypothesis is strictly only true if "*economic performance of female entrepreneurs is inferior to the performance of their male counterparts with identical preferences*." The decision to grow an enterprise to a certain size and not beyond, leads to consideration of the potentially differing female motivations in moving into entrepreneurship (Manolova *et al.*, 2012; DeMartino and Barbato, 2003) as well as the disproportionately greater burden on females in the work-family interface (WFI) and their resultant focus on maintaining a sustainable work-family balance (Jennings and McDougald, 2007).

Further consideration of the appropriate choice of entrepreneurial performance measure is made by Hammer and Hershman (2011) in their critique of the typical measures used by managers to measure performance in their companies. They categorise flaws in articulation of measures into seven categories: vanity, provincialism, narcissism,

laziness, pettiness, inanity and frivolity. Of these the most pertinent for this study are '*pettiness*', measuring only a small component of what matters, and '*laziness*', assuming prior knowledge of what is important to measure without adequate thought or effort.

Table 2 provides an illustration of difference entrepreneurial performance measures used by a cross-section of authors in the academic literature. One notable example is Spring and Ruthashobya (2009) who discussed entrepreneurial performance in Africa in detail but without any consideration of what measure was used in its assessment.

Table 2 : Measures of Entrepreneurial Performance Used by Researchers

| Author(s) | Year | Geog. focus | Performance Measures |
|---|---|---|---|
| Fine *et al.* | 2012 | China | External and self-appraisal multiple criteria |
| Bardasi *et al.* | 2011 | Includes SSA | Sales revenue, value added, total factor productivity, sales and employment growth |
| Gathenya *et al.* | 2011 | Kenya | Return on Assets, self-assessment, sales |
| Peters and Brijlal | 2011 | South Africa | Employees and sales |
| Peterman *et al.* (pg. 1490) | 2011 | Nigeria, Uganda | Agricultural productivity (value/area) |
| Amin | 2010 | Africa | Employees and sales |
| Nam *et al.* | 2010 | Vietnam | Vertical integration and export levels |
| Khanka | 2009 | India | Profitability |
| Quisumbing and Pandolfelli | 2009 | Includes SSA | Agricultural productivity |
| Spring and Ruthashobya | 2009 | Africa | None despite performance cited 12x |
| Okurut | 2008 | Uganda | Sales Revenue |
| Chirwa | 2008 | Malawi | Profit margin and growth in employment |
| Hietalahtil and Linden | 2006 | South Africa | Protection against vulnerability |
| Swinney *et al.* | 2006 | USA | Owner self-reported performance |
| Horrell and Khrishnan | 2007 | Zimbabwe | Agricultural productivity and profitability |
| Kepler and Shane | 2007 | USA | Discontinuance, Employees, SPR |
| Jennings and McDougald | 2007 | Canada | Employees, Gross revenue, Net income |
| Morris *et al.* | 2006 | USA | Venture growth |
| Alowaihan | 2004 | Kuwait | Gross revenue, Net income |
| Verheul *et al.* | 2004 | Netherlands | Profits, Revenue growth, Employment |
| Watson and Robinson | 2003 | Australia | Profit (average), Variability in Profit |
| Du Reitz and Henrekson | 2000 | Sweden | Sales, Profit, Employment, Orders |
| Boden and Nucci | 2000 | USA | Survival (discontinuance) |
| Shim and Eastlick | 1998 | USA | Sales, Employees, Profit margins |
| Fasci and Valdez | 1998 | USA | Ratio of net profit to gross revenue |
| Chaganti and Parasuraman | 1996 | USA | Sales volume, Employment growth, RoA |
| Cooper *et al.* | 1994 | USA | Employment growth |
| Brush | 1992 | USA | Venture growth |
| Kalleberg and Leicht | 1991 | USA | RoI, Market share, Subjective assessment |
| Smeltzer and Fann | 1989 | USA | Employees, Revenues, Growth rates |
| Longstreth *et al.* | 1987 | USA | Net income |

## 2.6. Exploring Potential Determinants of Enterprise Performance

### 2.6.1. Identifying determinants using quantitative multivariate analysis

Okurut (2008) explored the determinants of microenterprise performance in Uganda in an econometric analysis of data from the Uganda National Household Survey (UNHS) of 2002-03 collected by the Uganda Bureau of Statistics (UBoS). The performance measure employed in the analysis was monthly sales revenue of the firm, and factors hypothesised as influencing this were those deemed internal to the firm including characteristics of the entrepreneur such as educational level, age, prior business experience and gender of the enterprise owner, and level of physical capital stock of the enterprise. Those considered external were location of the enterprise and industry type.

*A priori* expectations were that education level, extent of business experience, and extent of business assets would have a positive and significant effect on performance. Conversely, the author hypothesised that a rural location and female ownership of the enterprise would have a negative effect on performance. He classified the microenterprises into five categories, livestock, poultry, beekeeping and fishing (Livestock), forestry (Forestry), mining, quarrying, and manufacturing (Manufacturing), hotels, lodges, bars, restaurants, and eating-places (Hotels), and trade and services (Trade). Each of the five categories was treated separately in the analysis. Of the 6,371 microenterprises in the database, 35% were solely female-owned, 62% were solely male-owned and the remainder were partnerships.

Table 3 : % of Microenterprises by Sector and Gender - Okurut (2008 p.79)

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The table uses data which can be accessed at

Okurut, F. (2008) *Determinants of Microenterprise Performance in Uganda,* ICFAI Journal of Agricultural Economics, 5(1), 77-87

Table 3 provides the distribution of enterprises by broad sector overall and by gender of owner. While 27% of enterprises are classified as falling within the manufacturing sector, 41% of female-owned enterprises are found in the manufacturing sector, and this

is likely to be in mini-manufacturing, although there is no specification beyond the broad category in the paper. *A priori* expectations would be for there to be a higher than average percentage of females involved in trade as well as the service sector, and while females are over-represented in the hotel sector, they are under-represented in the broad sector of trade which includes the service sector.

The author found that female entrepreneurs were significantly older than their male counterparts in three of the sectors, forestry, livestock, and trade. There was a significant positive relationship between education level of the entrepreneur and performance of the enterprise in terms of the chosen measure of sales revenue. The same was true for years of business experience, which was approximated by the number of years that the enterprise had been in existence. This finding could be the result of survival of the enterprises under investigation and 'left censoring' of those enterprises that had not survived at the time of investigation (Yang and Aldrich, 2012), but this potential bias is not discussed by the author.

Similarly, while the analysis showed that the stock of physical capital was positively correlated with the performance measure, there was some discussion about the possibility that higher performing enterprises may be carrying higher levels of physical stock, and that the level of physical capital stock acts as the engine for earnings generation and was a determinant of performance. The analysis indicated that being female-owned had a negative and significant effect on microenterprise sales revenue for an enterprise across all of the sectors. The author concluded from this analysis that female-owned enterprises were under-performing relative to male-owned enterprises.

Chirwa (2008) utilised secondary data from a national survey of micro and small-scale enterprises (MSEs) in Malawi, to explore the relationships between hypothesised determinants and performance. He used profit margin and growth in employment as his performance measures in an econometric study. He deliberately selected a sub-sample of 3,074 non-agricultural enterprises from the database of 22,000 households, unlike Okurut who included agriculture and particularly livestock among his choice of enterprise groupings. No reasons for this are provided in the article.

The author derived a list of potential determinants of performance from a literature review, with particular attention being paid to prior empirical models of enterprise performance. He suggested four main categories of factors that affect performance, detailed in Table 4.

Table 4 : Potential Determinants of Enterprise Performance - Chirwa (2008 pp.348-351)

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The table uses data which can be accessed at

Chirwa, E. (2008) *Effects of Gender on the Performance of Micro and Small Enterprises in Malawi*, Development Southern Africa Vol. 25, No. 3

The two dependent variables used in his analysis were profit margin and employment growth. Gender of the enterprise owner was the first and 'central' independent variable in his analysis and for this he disaggregated owners into female-owned, male-owned and mixed-owned enterprises. The second category of explanatory variables included personal characteristics of the entrepreneur, marital status, education, business skills training and business experience. In the third category of 'business characteristics' the author included number of enterprises operated as a measure of diversification. Finally, a number of variables were included to control for differences among enterprises and avoid these confounding the analysis of effect of the principal determinants.

Findings suggested that although male-owned enterprises tended to perform better than those that were female-owned the difference was not statistically significant. In terms of employment growth, female entrepreneurs outperformed males. Level of education was a determining factor for female entrepreneurs (but not for males) in as far as female entrepreneurs with higher levels of education, at junior secondary level and tertiary level, exhibited higher performance. In contrast, ownership of multiple enterprises was negatively correlated with performance, and the author speculated that inefficiency in time allocation among the various enterprises might be leading to higher levels of managerial inefficiency with this in turn manifesting in lower levels of performance of the enterprise under investigation.

His results indicated that MSEs with access to credit grew 11 per cent faster than those without access did. In the case of Malawi, microfinance institutions typically target women in their non-agricultural lending, with the result that a higher proportion of female-owned enterprises have access to credit. He considered it unsurprising that female entrepreneurs exhibited higher levels of growth in employment given their preferential access to credit.

Khanka (2009) investigated potential 'correlates' of entrepreneurial performance among a sample of entrepreneurs in the Assam State of India. His hypotheses and findings are presented in Table 5.

Table 5 : Exploring Correlates of Entrepreneurial Performance - Khanka (2009)

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The table uses data which can be accessed at

Khanka S. (2009) *Correlates of Entrepreneurial Performance in a Less Developed Region: Evidence from Assam*, The Journal of Business Perspective, Vol.13, No. 4

Yordanova (2011) in her study of Bulgarian entrepreneurs tested a number of hypotheses in relation to gender and entrepreneurial performance, including:

- H1: Female entrepreneurs are less likely to exhibit growth intentions than male entrepreneurs
- H2: Female entrepreneurs are less likely to have growth intentions because they are less likely to attach importance on financial motives for start-up
- H3: Gender differences in willingness to take risks partially account for gender differences in growth intentions
- H4: Female entrepreneurs are less likely to have growth intentions because they possess fewer resources for starting and running a business
- H5: Gender differences in management style partially account for gender differences in growth intentions
- H6: Gender differences in support from family and friends partially account for gender differences in growth intentions
- H7: Differences in the industry in which female- and male-owned businesses operate partially account for gender differences in growth intentions

The author does not discuss the findings of each hypothesis in detail but merely presents the multiple regression tables and makes the general conclusion that Bulgarian female entrepreneurs are less likely to exhibit entrepreneurial intentions than their male counterparts. The hypotheses developed indicated the promise of fruitful findings but this was unfortunately not realised in the analysis.

Cooper *et al.* (1994) took pains to draw a clear distinction between three possible outcomes of enterprises as they develop. These are, failure, arriving at a state of 'marginal survival', and those enterprises demonstrating high levels of growth. Their study focused on aspects of human and financial capital at start-up as predictors of future enterprise performance.

Table 6 details their hypotheses and corresponding findings. The study began in 1995 using a sample frame of approximately 13,000 members of the National Federation of Independent Businesses (NFIB) who reported having recently become business owners. There were 4,814 returns (37% response rate) and from these the researchers filtered out 2,994 respondents who had become business owners in the previous 17 months. All industry types and all geographic regions of the USA were included in this sample. Follow-up surveys were conducted in 1986 and 1987 with non-responses dealt-with using three different methods. Those who failed to return the questionnaire were sent a letter with an enclosed postcard to be returned, indicating whether they were still

in business, were out of business, or had sold their firms. Those for whom the post office was unable to deliver the letter with enclosed postcard were classified as discontinued. The NFIB membership records were used to classify the remaining firms.

The performance measure used in the study was growth in employment. Specifically, enterprises were classified as high growth if they achieved at least 50% growth in employment over the 3-year period of investigation, as well as added at least two employees. The 'hybrid' combination of employment growth criteria was deliberately chosen to avoid bias towards smaller enterprises, where % growth in employment would be from a lower base and for larger firms where a growth in absolute numbers of employees would have been more readily achieved.

Table 6 : Exploring Determinants of Entrepreneurial Performance
Cooper *et al.* (1994)

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The table uses data which can be accessed at

Khanka S. (2009) *Correlates of Entrepreneurial Performance in a Less Developed Region: Evidence from Assam*, The Journal of Business Perspective, Vol.13, No. 4

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When the researchers controlled for 'know-how', capital and industry type in their multivariate analysis they found that businesses headed by females were still

underperforming relative to males. They surmised that other factors which had not been captured in their multivariate model, such as for example differential access to networks, may be the actual determining factors behind the lower performance levels. Their conclusion was that more research was needed to identify these unobserved factors.

Potential limitations of the study included issues of causality. For example, rather than the causal logic of initial capital creating more successful entrepreneurial outcomes, the actual causality might be reversed in that more promising ventures had attracted higher levels of initial capital. The study extended for a fixed period of three years and issues of possible 'right censoring' were acknowledged, in this case with the consideration that some enterprises might need a longer period in order to demonstrate increased levels of performance.

### 2.6.2. Identifying determinants using qualitative ethnographic analysis

Kodithuwakku and Rosa (2002) document a research study, which is particularly pertinent to the present study, in that there are parallels in the nature of a 'naturally occurring' quasi-experimental environment. In 1984, ten years prior to the timing of the field research, the flood plain of the lower Mahaweli River in Sri Lanka had been cleared of bush, and dams and irrigation systems built. Landless families were each allocated two and a half acres (one hectare) of land, and therefore families started with the same level of economic resources in commencing their agricultural enterprises.

The basic question addressed by the researchers was why was it that some rural entrepreneurs in Sri Lanka were much more successful than others albeit within the same community, and with access to the same resources. The researchers during the course of the field research discovered that ten years after the commencement of land settlement programme a minority of rural entrepreneurs, (both male and female) had become relatively prosperous, in contrast to the majority who were still impoverished, and this minority group had an elevated social as well as economic status within the community.

The 'opportunistic research design' of the settlement scheme created a number of control factors detailed in Table 7.

Table 7 : Factors Controlled in the Sri Lanka Research Study
Kodithuwakku *et al*. (2002)

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The table uses data which can be accessed at

Kodithuwakku, S. and Rosa, P. (2002) *The Entrepreneurial Process and Economic Success in a Constrained Environment,* Journal of Business Venturing 17 pp. 431–465

While there were many factors that the research design was able to control for, the researchers acknowledge that there remained what they termed 'residual antecedent factors'. Individuals and households brought with them the 'baggage' of somewhat different levels of education; different family sizes; and different family networks. While few had received little formal education, some had more education than others. Family sizes would potentially allow more individuals to provide work assistance on the farm, while at the same time adding the burden of higher levels of consumption.

The study began initially with a 'positivist' methodological approach, whereby the researcher drew up a range of possible determinants, and constructed a semi-structured questionnaire. The researcher envisaged that a statistical analysis of carefully defined and validated dependent and independent variables would dominate the research, supported by limited qualitative data from open-ended questions. The plan was for the compilation of a sample of successful and non-successful farmers based on a pre-defined number of performance measures such as, number of employees, sales turnover, assets owned, and social standing. The researcher would then randomly select individuals within a selected rural geographical area, which contained marked differences in wealth between farmers. The pilot activity revealed problems in the original design, not the least of which was the availability of reliable data for the pre-defined performance measures.

As a result of the pilot the study moved from a positivist to a more interpretivist and phenomenological approach, which involved an extended period of time interacting with

the study group, and consisting of a mixture of repeated interviews, direct participant observation and collection of secondary data. With the aid of key informants, the researcher was able to differentiate individuals within the study village into three groups. The first comprised those who were considered to be economically successful and increasing their asset base during the period of investigation (n=37). The second were those who were also considered successful but with a declining asset base (n=12). The latter and by far the larger group were those who were rated as economically unsuccessful non-commercial farmers whose current income derived predominantly from selling their own labour (n=268). This means that of the study participants only 12% were deemed successful and growing, 4% successful but not growing and 85% unsuccessful in that they were not operating viable enterprises, which could sustain them without recourse to selling their labour elsewhere.

The prognosis of what differentiated and polarised the relatively small number of successful entrepreneurs from the large number of unsuccessful ones, was somewhat complex. Successful entrepreneurs were able to draw upon their social networks to create opportunities both in farm and non-farm economic activities. They had typically diversified into other business ventures with an average number of 3.7 enterprises relative to a more limited (albeit unspecified) number of enterprises operated by those who were rated as being unsuccessful entrepreneurs.

Successful entrepreneurs were seen to have “creatively mobilised the resources under their control” as well as discovering opportunities for new enterprises. They operated strict control over their home consumption, and exhibited ‘delayed gratification’ in favour of re-investing in their enterprises and accumulating capital. There was another group of entrepreneurs discovered who had enjoyed initial success and had diversified their range of enterprises, but then owing to managerial inadequacies had failed to manage this expanded number of enterprises and had become unsuccessful.

Those who managed to accumulate resources first and sustain them tended to be the winners who were able to gain control of the larger land units. They acquired surpluses and translated these into a wider range of enterprises, which generated further surpluses by selling to the less successful within the community. The least successful were forced to lease their land to the more successful, and to sell their labour to them.

## 2.7. Educational Attainment and Performance

Peters and Brijlal (2011) in their study of South African entrepreneurs, using employees and sales as their performance measures, found a positive relationship between educational level and entrepreneurial performance (EP). In their study of Kenyan women SMEs, Gathenya *et al.* (2011) found a relationship between education and EP, using both objective measures of performance and a self-assessment rating. Their recommendation for needed remedial action involved special courses and programs for those women entrepreneurs with primary education only, although there is no specificity regarding content and approach for such initiatives. They quote Sonfield *et al.* (2001) in stating that "*education equips women with the knowledge and skills they need to more effectively manage, be more strategic and succeed in their businesses."* Nam *et al*. (2010) found in their study of Vietnamese exporters that the performance of an enterprise is also considerably influenced by the human capital of the entrepreneur, including formal education.

Calvo and Garcia (2010) in their study of Spanish entrepreneurs using venture growth as their measure of entrepreneurial performance found that while general level of education of the entrepreneur was a determining factor, the entrepreneur's previous enterprise experience had the greatest impact. Okurut (2008) found that returns in microenterprises in Uganda were positively and significantly influenced by education level. Nevertheless, within the livestock sector, despite females having higher levels of education than males they still exhibited lower levels of performance.

The approach of Swinney *et al.* (2006) followed that of Fasci and Valdez (1998) and Okurut (2008) in investigating within industry types, to avoid any 'industry effect' (refer section 2.15 on page 92). Swinney *et al.* (2006) investigated the gender and education level of the entrepreneur as possible influences on small firm performance within the retail and services sectors in the U.S. They concluded that while education alone was not a significant factor in EP for males, for female entrepreneurs a higher level of education did translate into improved entrepreneurial performance. Since the performance measure used was an owner self-reported subjective assessment of the enterprise, this raises additional questions concerning the relationship between

educational level and self-assessment of entrepreneurial performance, which were not fully explored in the article.

Khanka (2009) along with Fasci and Valdez (1998) find no evidence in their studies that educational level had any effect upon entrepreneurial performance (EP). Khanka explains his finding by proposing that formal education is not necessary for starting and running an enterprise, or for high levels of entrepreneurial performance, as evidenced by the success of entrepreneurs with limited education, citing some notable examples to support this assertion. Otoo et al. (2011) support this finding in their study of female entrepreneurs in both Niger and Ghana, where females with no formal education actually outperformed those with secondary education. Cowling and Taylor (2001) considered that enterprise specific training was more important than academic skills alone in influencing EP. In the case of Fasci and Valdez (1998) all entrepreneurs had a base accounting vocational training which was directly related to their enterprise, and to some extent it could be argued that educational level was a controlling rather than a determining factor in their analysis.

Chirwa (2008) in his study of micro- and small enterprises in Malawi found that education is a critical factor for the success of female-owned enterprises. Dickson *et al.* (2008) found strong evidence to support the relationship between levels of general education and several entrepreneurial success measures within their literature review, and this was across a range of both developed and developing countries. Bhattacharjee *et al.* (2008), in their econometric analysis of newly created French firms found that a higher education level for the entrepreneur was a determining factor influencing the survival rate of their enterprise, and that the extent of this positive association depended on the previous experience of the entrepreneur in the labour market. Their findings suggested that the extent of the impact of education on survival was always strongest among the sub-group who had previous experience in the sector of the enterprise they were operating. This suggests, and this is borne out by their analysis, that the impact of previous experience in the sector of enterprise choice is equally significant as their educational level.

Hietalahtil and Linden (2006) in their study of the socio-economic impacts of microcredit on women's welfare in north-eastern South Africa found that those who were more

educated tended to have a better 'starting point' and were more capable of protecting themselves against vulnerability. Van der Sluis *et al.* (2003) estimate from their meta-analysis of a large number of developing country case studies that one year of schooling raises enterprise income by an average of five percent. Their findings indicated that returns to education tend to be higher for females and in agricultural societies where literacy rates are typically lower.

## 2.8. Age of Entrepreneur and Performance

Fine *et al.* (2012) in their study of Chinese entrepreneurs found sufficient evidence to support their hypothesis that younger entrepreneurs exhibit higher performance. Measures of performance included both external audits and self-appraisal. Age was found to be a significant determinant of performance in the external audits. According to de Kok *et al.* (2010), their research indicated a negative relationship between age and employment creation of enterprises three years after start of operation. Lévesque and Minniti (2006) found that younger people are more likely to start a new firm than the more elderly. Their empirical model produced a peak in new firm creation among the 25-34 age-group, with declining levels among the older age groups. They rationalised this finding with the declining rate of return to entrepreneurship with advancing years.

Their finding is broadly supported by analysis of the GEM South Africa adult population survey (APS) dataset for 2009 (Figure 4) which shows that the proportion of those involved in entrepreneurial activity would appear to increase from 18 to 35 years peaking among the 35-44 year olds. Thereafter the 'prevalence' of entrepreneurial activity declines among the age range of 45-54 year olds, and substantially declines among those who are 55 years and over.

Figure 4 : Illustration of Entrepreneurial Activity by Age
GEM South Africa 2009


While this illustrates the degree of involvement in entrepreneurial activity amongst the different age cohorts it does not say anything about the performance of those involved in enterprises. Figure 5 draws upon a consolidated dataset of all the countries who have participated in the GEM surveys from 2001-06 and filters out those individuals who have been involved in entrepreneurial activity, then investigates discontinuance rates among them by age group and gender.

Figure 5 : Discontinuance Rates for Entrepreneurs by Age and Gender
GEM Consolidated 2001-06

The findings demonstrate a consistent pattern by age cohort irrespective of gender from 18 to 64 years, with discontinuance rates being higher among the younger cohorts and consistently falling to lower levels as age progresses. The only exception is the 65+ age group for males where discontinuance may well be related to an option to divest the enterprise as a retirement option. This aberration is not shared among the female entrepreneurs. Rates of discontinuance among female entrepreneurs are consistently lower than those for males (with the exception of the under 18 years age group). This suggests that if survival is the antithesis of discontinuance then females exhibit higher rates of survival than males. If survival rate is taken to be one of the principal indicators of entrepreneurial performance, then globally this points to a general situation where female entrepreneurs outperform males irrespective of age.

Parker (2006) investigated the extent to which entrepreneurs in their decision-making adjust their beliefs in the light of new information, and found that younger entrepreneurs respond significantly more sensitively to new information. If sensitivity of response to new information correlates with performance this implies that younger entrepreneurs exhibit higher performance.

## 2.9. Gender of Entrepreneur and Performance

The academic body has been divided as to whether there exist gender differentials in entrepreneurial performance. Bardasi *et al.* (2011) in their analysis of World Bank Enterprise Survey data (www.enterprisesurveys.org) within three developing regions, including Sub-Saharan Africa (SSA) found that despite female firms being relatively smaller there was no evidence that they were less efficient than those owned by males.

Conversely, Khanka (2009) in his study of first-generation entrepreneurs in Assam, India found no evidence that female entrepreneurs underperform. In an earlier work, Carter and Rosa (1998) highlight the importance of methodology in the observation of gender differences, and particularly the necessity to move beyond a superficial level of analysis using aggregated data. Spring and Rutashobya (2009) in their review of gender-related literature themes in African Entrepreneurship cite findings indicating female under-performance relative to males.

Gilbert *et al.* (2002) in their study of Malawian smallholder farmers participating in an agronomic trial, discovered that when inputs were supplied equitably to all, female farmers were as productive as their male counterparts. Gender differences for farmers outside the experimental trials were seen to be because of males having larger holdings, a higher proportion of land area devoted to cash crops and differential access to government extension support. Horrell and Khrishnan (2007) in their study of rural female-headed households in Zimbabwe also found that when inputs were controlled for there were no differences in productivity between female and male-headed households. Chirwa (2008) found no evidence of underperformance in Malawi among small- and micro-entrepreneurs in non-agricultural sectors against an EP measure of profit margin, but did find performance differentials using a measure of employment growth, and this in favour of females.

Peterman *et al.* (2011) in their investigation of gender differences in agricultural productivity in Nigeria and Uganda provide evidence that both female owners of plots (those with a resident partner) and female-headed households (FHHs) exhibited lower levels of productivity than males, particularly in the dry savannah areas. From this finding they established a working hypothesis that the dry savannah ecology with its greater demands for collection of fuel and water is likely to impose a greater domestic work burden on females thereby reducing the time they can spend on farming activities, and affecting their performance. Such considerations suggest potential issues relating to 'time poverty' among females when faced with the dual responsibilities of income earning and care for the family. Okurut (2008) found evidence of female underperformance in his analysis of Ugandan micro-entrepreneurs across a range of sectors, including the livestock sector.

Kepler and Shane (2007) argue that much of the prior research to test differences between female and male entrepreneurship performance has suffered from research design flaws which potentially have led to misleading findings and conclusions. They acknowledged that differences do exist between female and male enterprises in terms of a number of factors, including level of business experience prior to start-up, and female preference for low risk / low return enterprises. Nevertheless, they concluded that when controlling for potentially confounding factors, such as survival bias and motivation, gender did not affect new venture performance.

Table 8 : EP Hypotheses and Findings of Kepler and Shane (2007, pp. 6-10)

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The table uses data which can be accessed at

Kepler, E. and Shane, S. (2007) *Are Male and Female Entrepreneurs Really That Different*?, Office of Advocacy, the United States Small Business Administration, of the United States government.

The sample frame for their study came from the Panel Study of Entrepreneurial Dynamics (PSED), with the actual sample comprising 685 new business people, of which 268 are females. The PSED sample frame was developed through randomised dialing of 65,622 households throughout 48 US States. The identification of an entrepreneur came through a positive response to the question, "*Are you, alone or with others, now trying to start a new business?*" Respondents were followed up through telephone interview and mail questionnaire 12, 24 and 36 months after the initial

contact. The hypotheses put forward by the researchers to be tested in the research are set out in Table 8 together with their findings.

Risk preference was measured in three ways: The first, low risk-low return, was elaborated on a scale from '*being the sole owner of a business that would provide a good living, but with little risk of failure, and little likelihood of making you a millionaire'* to '*a business that was much more likely to make you a millionaire but had a much higher chance of going bankrupt.*' The second was the respondent's estimate of the probability that his or her venture would still be in operation in five years, and the third that other new ventures would still be in operation in five years.

The researchers controlled for a multiplicity of variables, including: industry experience; start-up experience; supervisory experience; previous management experience; age, education and ethnic group of the founder; marital status; household size; household net worth; employment status at first interview; residential status within the locality; organisational form of start-up; and industry sector. The authors recognised that the PSED data may suffer from inherent limitations, including the emphasis on beliefs and attitudes rather than actual actions.

Watson and Robinson (2003) add another important dimension into the consideration of what makes for performance by introducing the factor of risk into the equation of performance. They acknowledged that findings of previous studies indicating females 'underperform' relative to males in growth in profit had been accurate. While profits for male controlled small and medium enterprises (SMEs) were found to be significantly higher for males than females, they also discovered that variability in profits among male owned businesses was much higher than for females.

Instead of using the 'traditional' indicators of performance they used as their performance measures (i) average profit made and (ii) variability in profits. Using variation in profits as a proxy for risk, and computed a 'return to variability ratio' their performance assessment took into account both the level of profitability and also the variation in profits. When controlling for the variation in profit by using this measure, they discovered that there was no significant difference between females and males in performance. They speculated from their findings that females may well be exercising more caution in committing resources to their entrepreneurial ventures, and that this

should be regarded positively. They found that this held true no matter the size, age or industry-type of the enterprise.

Du Reitz and Henrekson (2000) examined four performance variables in their research of 4,200 Swedish firms as detailed in Table 9. Their sample frame was a population of 137,000 firms with between 1 and 20 employees drawn from the Statistics Sweden *Centrala Företagsregistret* (CFAR). They drew a stratified random sample from this population with strata consisting of industry type, size of firm, and region.

Table 9 : EP Measures used by Du Reitz and Henrekson (2000)

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The table uses data which can be accessed at

Du Reitz, A. and Henrekson, M. (2000) *Testing the Female Underperformance Hypothesis,* Small Business Economics, 14, pp. 1-10.

nature of the survey instrument used and the market research skills of the company commissioned and the interviewers. Unfortunately, firms where managerial control was jointly exercised by both males and females (12% of respondents) were excluded from the sample and further analysis. This was unfortunate, in that it would have provided an important dimension to the study, but the opportunity was foregone in their efforts to focus purely on solely male and female-operated enterprises.

Figure 6 : Employee Size by Gender
Du Reitz and Henrekson (2000)

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The figure uses data which can be accessed at

Du Reitz, A. and Henrekson, M. (2000) *Testing the Female Underperformance Hypothesis,* Small Business Economics, 14, pp. 1-10.

An immediate finding of the study was that female controlled enterprises had a very different employment profile from those controlled by males, with male enterprises being significantly larger than females (Figure 6). This finding is typical of female owned enterprises, and points to the difficulty of utilising employee size as one of the principal measures of entrepreneurial performance.

Table 10 demonstrates the relative differences in industry type by gender, with females typically gravitating more towards retail and services and males to manufacturing and construction. Industry type is therefore a consideration in assessing performance differentials, if performance is related to industry type in any way.

Table 10 : Industry Type by Gender
Du Reitz and Henrekson (2000)

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The table uses data which can be accessed at

Du Reitz, A. and Henrekson, M. (2000) *Testing the Female Underperformance Hypothesis,* Small Business Economics, 14, pp. 1-10.

The researchers found that while male operated businesses were significantly larger than females, the gender differences in profitability, employment growth and growth in orders and commissions disappeared after controlling for other confounding effects including industry type. Despite this finding, when their data were examined at the most aggregate level the results were that females tended to underperform relative to males. The implication was therefore that the reason that previous studies had confirmed the hypothesis of relative underperformance was because their analysis had not been sufficiently rigorous in controlling for confounding influences.

They also raised a fundamental issue in their assessment of relative performance, concerning differences in preferences between females and males. Their contention was that the yardstick used to measure relative performance in of itself may be wrongly calibrated, if more females than males choose to pursue other goals than merely growing their businesses. They suggest that female entrepreneurs differ from male entrepreneurs in viewing their businesses as merely one component in a wider system including family, community and friends.

Shim and Eastlick (1998) set out to determine whether Hispanic female and male enterprises differed with respect to personal background, business organisational characteristics; financial performance; business growth strategies; perceived business problems; and patterns of information usage and networking. They used a model of small business growth which classified enterprises into chronological stages of (i) existence; (ii) survival; (iii) success; (iv) take-off; and (v) resource maturity. They found differences in the age profiles of females and males with 65% of females being under 44 years of age compared to 39% of males; and associated differences in the numbers of years of business experience. This differential in age distribution with proportionately younger female runs contrary to the majority of studies. The educational profiles of females and males were similar, as was their cultural orientation.

Although female-owned businesses had relatively lower sales volumes and numbers of employees no gender differences were revealed in profit margins or growth in sales and employment. The potentially confounding effect of industry type on performance would appear to have been controlled for, given that the chi-square test yielded a non-significant value despite indications of the existence of a relatively higher proportion of

females in service and retail and of males in manufacturing and construction. Figure 7 is typical of gender distribution according to industry type. While 51% of female owned enterprises are in the service sector compared to 43% of male owned enterprises, the pattern is reversed for manufacturing and construction.

Figure 7 : Industry Type by Gender
Shim and Eastlick (1998)

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The figure uses data which can be accessed at

Shim, S. and Eastlick, M. (1998) *Characteristics of Hispanic Female Business Owners: an Exploratory Study*, Journal of Small Business Management, 36(3), pp. 18-34.

Chaganti and Parasuraman (1996) sampled female and male owned businesses and noted differences in number of employees and typed of business operated (Table 11).

Table 11 : Respondent Profiles by Gender Demonstrating Controls
Chaganti and Parasuraman (1996)

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The table uses data which can be accessed at

Chaganti, R. and Parasuraman, S. (1996) *A Study of the Impacts of Gender on Business Performance and Management Patterns in Small Business*, Entrepreneurship Theory and Practice, 21(2), pp. 73-75.

Three measures of performance were used in their comparative analysis: sales volume; growth in employment; and return on assets (ROA). Findings were that women-owned

businesses had significantly lower sales volumes than MOBs but exhibited similar levels of employment growth and return on assets.

Kalleberg and Leicht (1991) tested a number of hypotheses about the relationship between the survival and 'successes' of small businesses headed by men and women. The researchers recognised the importance of the 'industry effect' as a potentially confounding influence in any gender comparison of enterprise performance. The number of respondents and the response rate in the first round of interviews by industry type are given in Table 12.

Table 12 : Industry Type and Response Rates Kalleberg and Leicht (1991)

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The table uses data which can be accessed at

Kalleberg, A., and Leicht, K. (1991) Gender and Organisational Performance: Determinants of Small Business Survival and Success, Academy of Management Journal, 34(1), pp. 136-161.

The researchers attempted to return to the same respondents in the second and third rounds of interviewing albeit with some non-responses and failure to re-interview owing to firms having ceased operating. Over the three-year period of study, they calculated the 'death rate' of business among those initially sampled to be 8% per annum. Their hypotheses and findings are provided in Table 13.

Table 13 : Hypotheses and Findings of Kalleberg and Leicht (1991)

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The table uses data which can be accessed at

Kalleberg, A., and Leicht, K. (1991) Gender and Organisational Performance: Determinants of Small Business Survival and Success, Academy of Management Journal, 34(1), pp. 136-161.

While the researchers recognised that organisational survival was a 'fundamental aspect of performance' they also explored the 'nuances' of discontinuance by sub-categorising 'organisational death' into a number of discrete groupings including: complete dissolution, bankruptcy, relocation, merger, sale to a larger company and reorganisation. Measures of performance were also multivariate, including accounting-based measures of financial performance and subjective measures of stakeholders' evaluations of performance, such as their degree of satisfaction with the operations and profitability of the enterprise.

In the process of analysis of their findings, the researchers further hypothesised that entrepreneurs typically fail in entrepreneurial ventures several times before finally achieving success. Males may be more likely than females to take the risks associated with repeated attempts to start new businesses.

The authors explore limitations of the study; the most significant being 'left and right censoring'. They acknowledge that left censoring was present in the study since sampled enterprises were within the sample frame because they had survived. Those that had failed were not present to be sampled. Right censoring occurred because the longitudinal study could not follow the enterprises over more than three years and those still surviving by the third year might have 'died' later. Although the researchers did not apply any modifications to their statistical analysis to compensate, they were alert to the possibility of sample bias and incorporated this consideration in their findings and conclusions.

Smeltzer and Fann (1989) found in their sample of 58 women and 59 male-owned and managed enterprises that while female and male networking differed "firms managed by men and women did not statistically differ in number of employees, annual revenues, or growth rates". Brush (1992) in her review of academic research during the 1980's noted that, "*differences between male and female business owners have been found in educational and occupational background, motivations for business ownership, business goals, business growth, and approaches to business creation."* She proposed a new framework for interpreting gender differences which she called the 'Integrated Perspective'. Her proposition was a woman's perception of business is very different. Instead of viewing an enterprise as a separate economic unit her contention was a woman perceives business more as an "interconnected system of relationships".

Brush acknowledged that there was a 'great disparity in financial performance between male- and female-owned businesses' but suggests that profit and growth may not be the main drivers of female enterprise. The constructs that produce this finding, she suggests, are "based on the assumption that the venture is viewed as a separate economic entity designed primarily to achieve profit through competitive advantage." Whereas personal success is considered to be synonymous with high income and wealth she suggests that women view personal success as achieving a balance

between family and work, and therefore other measures of success are needed beyond mere wealth creation. These may include measures of self-fulfillment and being of assistance to others. Women may make a conscious choice not to grow their businesses instead opting to pursue other goals, including optimising their work-life balance.

Some of the alternative measures of performance of women-owned businesses suggested include: societal contribution; employment security; innovative management practice; customer satisfaction; social responsiveness; and business goal achievement (incorporating goals espoused by female business-owners themselves). Training approaches that reflect an alternative business motivation of balancing work and family life would mean more emphasis being placed on cooperative strategies, development of negotiation skills and cultivation and maintenance of personal relationships.

Fasci and Valdez (1998) focused their study on a particular enterprise in their exploration of gender differentials in performance. They found that businesses that were established to attain greater flexibility and achieve better work-life balance had significantly lower profit ratios. Further, 95% of respondents who cited this as their primary motivating factor were women. Boden and Nucci (2000) used rates of discontinuance as their measure of enterprise performance in examining the relationship between the owner characteristics of male- and female-owned businesses and the survival prospects of new business ventures. The principal finding was that average survival rates of male-owned enterprises during the two periods were four to six percent higher than for those owned by females. They tested *a priori* hypotheses in an attempt to explain the performance differential. Their main hypothesis related to the nature of prior work experience influencing the quality of human capital brought to the start-up venture. They filtered their selection to include only enterprises within the retail and services industries, in an attempt to control for variation the levels of start-up capital required.

They were careful to avoid the potentially confounding influence of 'left censoring' by excluding enterprises that were more than two years old at the time of the survey and which might represent a self-selected group of survivors. The hypothesised casual logic of Boden and Nucci is illustrated in Figure 8. The researchers did find evidence that

there was a positive relationship between survival rates of enterprises and owners that have previously been in paid employment for more than 10 years. They suggested that this may represent a co-relationship between years of paid employment and accumulation of financial capital and that the true causal factor affecting survival may be the level of financial capital injected into the start-up venture rather than years of prior work experience.

Figure 8 : Causal Logic of Boden and Nucci (2000)*

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The figure uses data which can be accessed at

Boden, R. and Nucci, A. (2000) *On the Survival Prospects of Men's and Women's New Business Ventures*. Journal of Business Venturing, 15(4), 347-362.

They found, somewhat surprisingly, that years of prior owner managerial experience did not appear to be a determining effect of the rate of survival of an enterprise, and this held true for both males and females. Survival prospects were also positively related to the owner's level of education, and this held true for both males and females. Nevertheless, within the educational cohorts, there remained differences in survival rates between males and females.

Contrary to expectation, enterprises that were started from nothing rather than acquired as on-going entities exhibited better prospects for survival. Their *a priori* reasoning was that existing businesses would have existing customer bases and at a measure of 'good will' which would assist them to achieve improved performance. Since the findings were 'irrefutable' then this suggests that an alternative hypothesis based on the results of

their research would be that those taking over existing enterprises through purchase may well be acquiring as many challenges as opportunities that prompted the previous owners to divest themselves of their business.

Alowaihan (2004) in researching the performance of male- and female-owned small businesses in Kuwait pointed to the need for more research in 'developing countries' where social structures are different from 'western countries'. The questionnaire used was an adaptation of the one used by Hisrich and Brush (1984) and also by Lerner *et al.* (1997). He made reference to two schools of thought: the liberal feminist perspective which contends that females experience barriers to entrepreneurship such access to finance. In contrast, the social feminist perspective is that females are not socially conditioned for entrepreneurship in their interaction with an array of societal influences at home, in schools and in the workplace.

Figure 9 : Gender Differences in Age of Entrepreneurs - Alowaihan (2004)

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The figure uses data which can be accessed at

Alowaihan, A. (2004) *Gender and Business Performance of Kuwaiti Small Firms: A Comparative Approach*, IJCM, Vol.14, No 3 and 4.

The performance measures used were gross revenue and income since they were the only quantitative indicators of performance that were included in the questionnaire. Alowaihan acknowledges that other measures of performance may be pertinent but argues that the norm is to measure performance in terms of financial indicators. His findings were that female-owned businesses were relatively older than males and tended to be concentrated in the service sector (45% of female businesses) in contrast to male-owned businesses where three quarters of businesses were found in the retail and trade sectors. Marital status and numbers of children were not significantly different

between males and females, but female entrepreneurs were better educated, a feature of Kuwaiti society in general.

Females, despite being significantly older than males (Figure 9), had less business experience with 42% having less than two years of experience compared to 18% of males. Three quarters of female respondents stated that this venture was their first business experience in contrast to males with 51% having no previous business venture and 23% recording one previous venture prior to their current one. Approximately the same proportion of respondents had fathers who had been in business (38% for females and 34% for males).

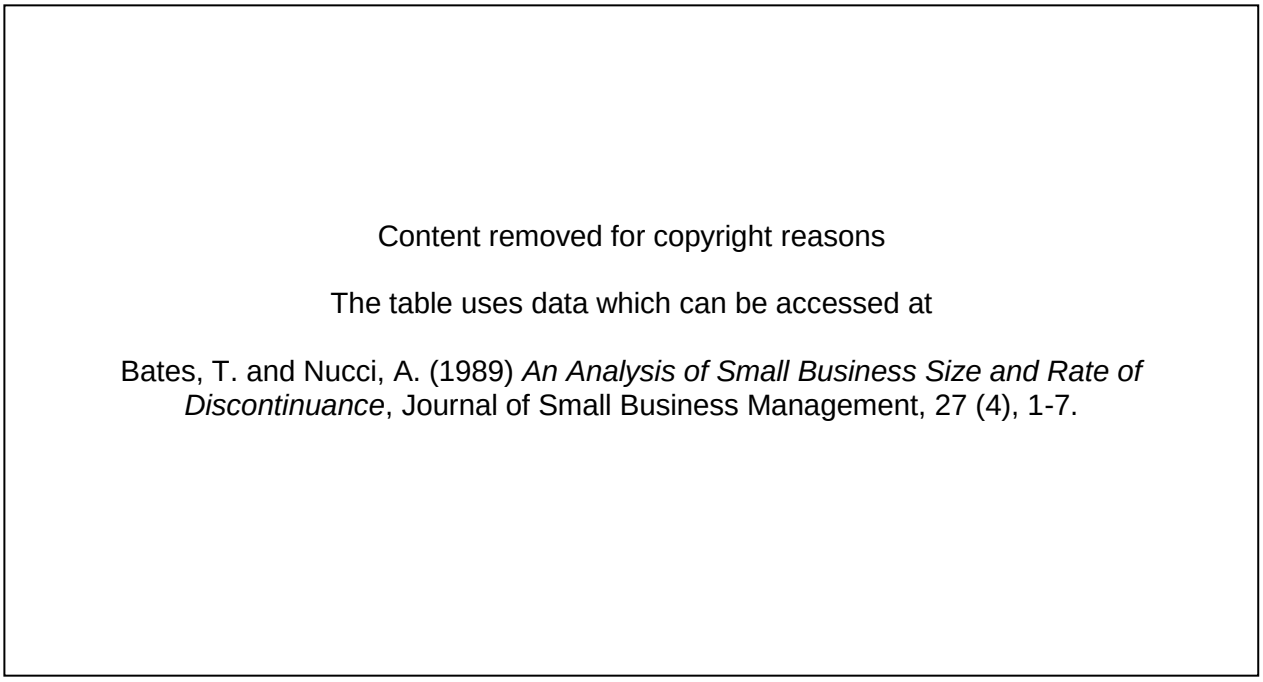
From the findings he proposed a set of working hypotheses to explain the underperformance of female entrepreneurs. These included the relatively lower levels of business experience and the type of education obtained by females, with greater emphasis on liberal arts and less on business and technical skills. Some consideration of differential family responsibilities of females was implied. While Alowaihan (2004) uses one set of terminology to describe the two schools of thought relating to female entrepreneurship Carter *et al.* (1997) referred to these using the terms situational and dispositional perspectives. Bardasi *et al.* (2011) provide a different nomenclature for the two categories but with entirely the same sense, the '*constraint-driven gap'* perspective and the '*preference-driven gap'* perspective. The situational or constraint-driven perspective sees women being denied equal access to opportunities, and being blocked from acquiring the necessary skills to compete on a level playing field with men. Once these hindrances are removed then the contention is that any differentials in performance between males and females would disappear.

The dispositional or 'preference driven' perspective sees women and men having not only a different set of experiences but also having acquired a different way of operating in the world by virtue of their exposure to differing educational opportunities and other societal influences. The authors contend that there is a middle ground where the two perspectives intersect, which they term as an 'integrative approach'. In this view, females shape their business operations in such a way as to combat any systematic biases which may be stacked up against them by using their dispositional characteristics. The perspective therefore possibly assumes that both forces are

operating at the same time and interact to define a different style of business operation from that typically associated with male-operated businesses.

In an investigation of the relationship between size of enterprise and discontinuance rates Bates and Nucci (2000) demonstrated an inverse relationship between size of enterprise and their 'discontinuity prevalence rate' within each size category (Figure 10). While the overall rate of discontinuance was 34% or one-third almost half of those in the smallest category (under $5,000 revenue per annum accounting for 39% of all small businesses) had ceased operation. To the extent that enterprises operated by females are generally smaller in size than those operated by males, size of enterprise may therefore represent another confounding influence in any determination of gender differentials in entrepreneurial performance.

Figure 10 : Relationship between Size of Enterprise and Rate of Discontinuance
Bates and Nucci (1989)




Since there is likely to be a positive relationship between size and age of enterprise the relationship between discontinuance rate and firm size is also symptomatic of younger firms going out of business at higher rates than those that have become established and 'mature' in an industry.

## 2.10. Relationship of Assistance from Working Partner to Performance

Khanka (2009) in his study of entrepreneurs in Assam, India found that married entrepreneurs performed better than their unmarried counterparts did. He went even further to speculate, on the basis of background information in the Indian cultural context, that female entrepreneurs with resident partners were likely to be more successful than their male counterparts. Cooper *et al.* (1994) in their exploration of the determinants of entrepreneurial growth among U.S. entrepreneurs found some evidence to suggest that those enterprises with partners (albeit not necessarily domestic partners) exhibited higher levels of performance, and this is supported by Honig (1998) in his study of micro entrepreneurs in Jamaica.

In contrast, Peterman *et al.* (2011) found that plot-level agricultural productivity in Uganda was lowest among plots with mixed-gender ownership, compared with those owned solely by either females or males. They speculated that this may be as a result of intra-household tensions over management of the plot. Chirwa (2008) in his study of non-agricultural entrepreneurs in Malawi found that female-owned enterprises grew faster in terms of employment growth compared to either male- or mixed-gender-owned enterprises, which implies that joint ownership of an enterprise with a resident partner confers no advantages in entrepreneurial performance

## 2.11. Relationship of Number of Dependents and WFI to Performance

Wesley *et al.* (2009) in their study of dual-career professional couples in India found that, despite some evidence of a shift in domestic responsibilities from females to males, the primary responsibilities at home remained predominantly with women, resulting in higher family participation by females in those activities than males. Niehm *et al.* (2009) in their exploration of the link between small family business survival and the overlapping demands of family and business, found that one distinguishing feature of surviving enterprises from those that had failed was that entrepreneurs brought in paid workers to either assist in the business or the home to make up the 'time gap'. Greene *et al.* (2003 p.28) consider that *"personal decisions about timing and commitment to the business currently play a greater role in women's entrepreneurial choices than they do for men".*

In a qualitative study of Lebanese female entrepreneurs, Jamali (2009) found that when asked to rank the three most important barriers encountered in the course of their entrepreneurship experience, the majority put balancing work and family life as the first and most important barrier. Lawson (2007) in his investigation of rural households in Lesotho found evidence that in general men experienced more 'time poverty' than women, and this was primarily attributed to the male's role in livestock keeping. Despite the general finding, he found that female-headed households (FHHs) suffered significantly more 'time poverty' than male-headed households (MHHs). A larger household size was seen to be generally associated with less time poverty, but this might change depending upon the ages of dependents and their ability to contribute time and ease the burden of the entrepreneur in their income earning and domestic responsibilities.

Fairlie and Robb (2009) found that female business owners work fewer hours and may have different preferences for the goals of their businesses, and suggested that this may have implications for performance and partially explain the differences in performance between male and female owned enterprises. Singh and Belwal (2008) discovered that among Ethiopian female entrepreneurs there was a mixed response with regard to them having sufficient time to manage their businesses effectively and take care of family responsibilities, and their findings were inconclusive. Bird and Sapp (2004) found that females in their study group underperformed relative to males despite having fewer dependents, which implies that other factors were more important in influencing performance. There is further evidence in the academic literature that female entrepreneurs may deliberately restrict the growth of an enterprise in order to achieve a balance between their work demands and demands of family life (Jennings and McDougald, 2007; Orser and Hogarth-Scott, 2002) suggesting a status of 'time poverty' (Bardasi and Wodon, 2010).

Mokomane (2009) explored work-family conflict among females in South Africa from a perspective of gender equality and women's empowerment. Her contention is that increased female participation in employment does not necessarily translate into increased welfare for women since they, "*continue to be primarily responsible for the general management of their households*". While she acknowledges that work-family conflict can be bi-directional she argues that the family domain is more likely to suffer

from work commitments rather than vice versa. This will then force females to develop coping strategies that will likely manifest in them not being able to maximise either income generating opportunities in entrepreneurship or career aspirations in wage employment.

Time demands for each partner for unpaid work by couple combination are reproduced in Figure 11. Females in formal employment spend a markedly lower percentage of their time in unpaid work than those in informal employment. In contrast the percentage of time males spend in unpaid work is much lower than for females and does not differ significantly between those in informal employment compared with those in formal employment.

Figure 11 : % Time Demand for Unpaid Work by Couple Combination
Mokomane (2009) - Male/Female X Axis

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The table uses data which can be accessed at

Mokomane, Z. (2009) *Work-family Conflict and Gender Equality in South Africa*, 26th IUSSP International Population Conference, Marrakech, Morocco,, 27 Sep - 2nd Oct

The author suggests that women are likely to opt for 'mother friendly' types of employment, including self-employment, and this is likely to include part-time work. An additional qualification, specific to South Africa is that a large percentage of households are female-headed. According the Demographic and Health (DHS) Surveys of 1998 and 2004 the percentage of FHHs was 42% for both years. Mokomane cites evidence from other parts of the developing world to demonstrate that females, in order to cope with the dual responsibility of both work and family, adopt coping strategies which include engaging in informal employment including entrepreneurship. There is an assertion that among the choice of income generating activities available, females tend towards those

which offer sufficient “flexibility, autonomy, and geographic proximity to home to allow them to combine paid economic activity with family responsibilities”.

The author proposes that an additional dimension to the rising burden of work borne by females in South Africa emanates from the HIV/AIDs pandemic in the country. South Africa has one of the highest HIV prevalence rates worldwide and the largest number of HIV infected people of any country worldwide. There is evidence that more than 90% of care givers are women. With the shift from hospital to home-based care of those suffering from AIDs, females have taken on the brunt of the increased workload in their role as carers at home, and this has further exacerbated the level of work-family conflict.

The hypothesis of Jennings and McDougald (2007) is that a female-entrepreneur, who has family commitments, will more likely adopt a growth-constraining work family interface (WFI) strategy than a male entrepreneur with an equal level of family commitments. The female entrepreneur may attempt to *‘do it all’* by working harder in both domains, and bridging them to the greatest extent possible; in this way trying to balance both roles and cope in both domains. If this proves to be an impossible mission then something must give, and the argument is that a female with family commitments will almost always put family before work or business, with the result that growth-constraining WFI strategies are adopted along the lines of those illustrated in Table 14.

The authors assert that female-entrepreneurs may go further than this by deliberately restricting growth in the size of their enterprises. The rationale is that they perceive that a large-scale enterprise will place more stress on their WFI and put more pressure on the already tenuous coping strategies that have been carefully put in place to achieve some sort of work family life balance. They explored considerations of work-family interface (WFI) in their attempt to explain ‘a persistent performance differential between male-headed and female-headed firms’. Principally, a large percentage of entrepreneurs recounted that one of their overriding motivations in transitioning from paid to self-employment, was the desire for a more balanced lifestyle for them and their family.

They note that WFI research has been noticeably absent within the body of entrepreneurial research despite the demonstrable importance to entrepreneurs. The authors argue that there are strong grounds for integrating the body of WFI research literature with entrepreneurship research.

Table 14 : WFI Strategies and their Effects on EP
Jennings and McDougald (2007)

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The table uses data which can be accessed at

Jennings J. and McDougald M. (2007) *Work-Family Interface Experiences and Coping Strategies: Implications for Entrepreneurship Research and Practice,* Academy of Management Review, Vol. 32, No. 3, pp. 747–760.

They elaborate two perspectives in WFI theory; the conflict perspective and the enhancement perspective. The former sees the work-family interface as inherently problematic with work and family commitments being mutually incompatible. In contrast, the enhancement perspective views work in both domains as being mutually supportive. Others argue that the reality is a combination of the two perspectives with work-family interaction being sometimes positive and T other times negative. One strategy for dealing with and managing work and family commitments is ‘segmentation’ of the two roles, switching ‘off’ and ‘on’ when moving between the two domains. Another is ‘compensation’ where individuals become disproportionately involved in one domain in order to compensate for a lack of satisfaction in the other.

A strategy of ‘accommodation’ is one where individuals consciously limit their involvement in one domain in order to fully satisfy the demands in the other. Others are seen to make efforts to programme and manage the interface between work and family in order to create harmony between the two domains, to the greatest extent possible. In

addition to the adoption of individual strategies, couples are also seen to adopt joint strategies for coping with the WFI as categorised in Table 15.

Table 15 : Couples' Strategies to Deal with WFI
Jennings and McDougald (2007)

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The table uses data which can be accessed at

Jennings J. and McDougald M. (2007) *Work-Family Interface Experiences and Coping Strategies: Implications for Entrepreneurship Research and Practice,* Academy of Management Review, Vol. 32, No. 3, pp. 747–760.

They make an assumption that retail and service industries have greater inflexibility in working hours, and since there is a concentration of females within these industry-types, then this negatively impacts upon their work domain and presents conflicts in their family domain. In addition, they refer to a body of evidence that females invest a greater number of hours than males in the household domain, thereby exacerbating the conflict they face between work and family responsibilities. They therefore proposed that the demands on time in the family domain have a differentially greater effect upon females than males.

The logic is that female entrepreneurs have greater household time demands and operate in a work domain with less autonomy in work scheduling, and family responsibility therefore exacerbates their levels of work-family conflict. To the extent that this is at a relatively low level then WFI strategies can be adopted that facilitate enterprise growth. If the level of work family conflict is greater, then this is likely to manifest in development of WFI strategies that will ultimately constrain enterprise

growth. The implication of this model is that females face work family conflicts that differentially constrain their level of operation in the work domain and affect enterprise growth.

Figure 12 : Relationship between WFI and EP
Jennings and McDougald (2007) adaptation

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The figure uses data which can be accessed at

Jennings J. and McDougald M. (2007) *Work-Family Interface Experiences and Coping Strategies: Implications for Entrepreneurship Research and Practice,* Academy of Management Review, Vol. 32, No. 3, pp. 747–760.

The expectation is that entrepreneurs facing higher levels of work family conflict will be more likely to adopt strategies which constrain rather than facilitate enterprise growth. According to the authors' one of the strategies least likely to be adopted by females is 'segmentation', citing evidence that females have a 'low boundary of separation' between work and family.

Verheul *et al.* (2004) also found in their research that females invested less time in their entrepreneurial ventures than males. They hypothesised that a combination of work and family responsibilities tends to be a motivating factor in females' decisions to engage in self-employment, enabling them to have more flexibility in their use of time but that the 'double assignment' of obligations to both family and work domains tends to impose limits on time availability particularly in the work domain.

Morris *et al.* (2006) explored the issue of whether or not females deliberately restrict the growth of their enterprises, and if so for what reasons. They found that growth orientation was closely associated with the initial impetus to venture into business; whether opportunity or necessity entrepreneurship. Opportunity entrepreneurs were

more found to be more growth-oriented than necessity entrepreneurs. They found that both groups made deliberate choices as to whether to pursue growth at the cost of other dimensions to their lives or 'throttle back' on their growth aspirations in order to maintain work-family balance.

Longstreth *et al.* (1987) found that "women tend to underestimate the time needed to run a business and have difficulty in balancing the needs of the firm and their families". They speculate that time constraints may directly limit the profitability of the entrepreneurial ventures of women, and may also be the reason that females opt for a choice of enterprise which provides for part-time work commitment and flexibility of work hours. Findings were that self-employed women contributed 34% of the gross household income, and worked an average of 31 hours per week.

When data was disaggregated between full- and part-time entrepreneurial ventures then it was found that full-time entrepreneurs devoted an average of 46 hours per week to their businesses. Family responsibilities consumed another six hours per day of their time. Recreation time amounted to three and a half hours per day and with an additional one hour for organizational participation this left ten hours per day for sleeping and personal care (using the aggregated average figure of 31 hours per week). In contrast, their spouses contributed one and a half hours per day to family responsibilities and children half an hour per day in assisting with household chores.

## 2.12. Work Experience and Performance

Gabrielsson and Politis (2012) point to the extensive body of literature linked to human capital theory that emphasises the value of personal investments in human capital via both education and work experience. They point to both as explanatory factors for performance differentials and entrepreneurial success in general. Lafuente and Rabetino (2011) in their study of human capital and growth among Romanian small firms confirmed their hypothesis that an entrepreneur's previous work experience was a factor explaining entrepreneurship performance.

The findings are supported by Fairlie and Robb (2009) who determined that one of the factors explaining underperformance of female entrepreneurs was less 'business human capital' acquired through prior work experience in a similar business. Cooper *et al.*

(1994) found that entrepreneurs not in the workforce prior to starting their ventures exhibited lower levels of performance in terms of both survival and growth. This finding is supported by Carter *el al.* (1997) for males but not for females, and tentatively by Boden and Nucci (2000) who related female underperformance to both the lower levels of educational attainment and lack of prior exposure to paid work experience. Fasci and Valdez (1998) controlled for enterprise type and educational background in their sample design but still found evidence of female; 46 years of age, college educated, married with two children and operating a service-underperformance, which they partially attributed to differences in work experience.

The underlying logic is that entrepreneurial choices develop from experience and this may include direct experience through work or exposure to business (Krueger, 1993), through friends and relatives; and indirect exposure through contact with people who have experience, referred to here as 'borrowed experience'. Brush and Hisrich (1991) examined the relationship between antecedent influence and enterprise survival among a sample of 191 women entrepreneurs followed over a 6-year period. They provided a typical profile of the woman entrepreneur under investigationoriented business for eight years, with prior work experience in the service area. Start-up capital had been financed through personal assets, or through borrowing from friends and relatives; she had controlling interest in the enterprise and this was typically her first venture. The researchers employed discriminant analysis to determine whether group classification into 'growth' and 'no growth' enterprises could be predicted by the prior experience of each female entrepreneur. Findings from the analysis clearly demonstrated that financial skills and previous experience in the area of the venture made the greatest contributions to venture growth.

## 2.13. Enterprise Diversity (Pluriactivity) and Performance

If it is accepted that enterprise diversification is "*a self-insuring strategy used by farmers to protect against risk*" (Mishra *et al.*, 2004) then the degree of diversification of enterprises provides a plausible proxy measure for the level of risk mitigation being adopted by the entrepreneur. It is hypothesised that the higher the level of risk aversion of an entrepreneur the greater the diversity of the enterprise-mix. Kiggundu (2002) relates this to the African context in his notion of the '*octopus organisation'* whereby the

entrepreneur's risk mitigation strategy involves engaging in several unrelated business types concurrently, instead of focusing on and investing in a single enterprise. In the event that the external environment for one enterprise becomes unfavourable affecting performance, others will be there to make up the shortfall and since they are unrelated, the hope is that whatever is impairing the declining enterprise will not affect the others in the same way. Block and Webb (2001) in their analysis of enterprise diversification strategies in Ethiopia found suggestive evidence that perceptions of risk factors influenced subsequent diversification decisions.

Chirwa (2008) in his analysis of Malawian micro and small enterprises found that the lower performing entrepreneurs (in terms of profitability) had more enterprises. He speculated that inefficiency in time allocation among the various enterprises might be leading to higher levels of managerial inefficiency. Nicholson *et al.* (2002) in their study of household level impacts of smallholder dairy ownership in coastal Kenya found that non-farm income decreased when farmers ventured into smallholder dairy, indicating a substitution effect. In contrast, Kodithuwakku and Rosa (2002) in their longitudinal study of Sri Lankan farmers found that those entrepreneurs who had emerged as the most successful had diversified into other ventures and had an average of 3.7 enterprises per household. There is some support for this positive relationship between enterprise diversity and performance from Block and Webb (2001) from their work in Ethiopia.

Kiggundu (2002) provided a broad sweep of entrepreneurship in the African context bringing into consideration many societal issues and strategies that may be considered to be peculiar to entrepreneurship in underdeveloped markets as often characterised by those in Africa. One of these is what is termed the strategy of the '*octopus organisation'* whereby the entrepreneur adopts a risk mitigation strategy in response to what are termed environmental market imperfections. The strategy involves engaging in several unrelated business types concurrently, instead of focusing on and investing in a single enterprise. The business entity then develops into a '*cluster of disparate enterprises linked only by the owner and family members'*.

Since there are limited opportunities to liquidate assets the enterprise strategy becomes one of 'musical chairs' concentrating on the enterprises which appear to be providing the better return under current market conditions, with other enterprises on hold, but

always with the option of being reactivated should market conditions change in their favour. Entrepreneurs with large families open more businesses, and enterprises may be maintained at a certain limited scale of operation in order to retain a low profile, ‘under the radar’ of government regulation and particularly taxation.

Kiggundu produced a matrix of what he considered key correlates of entrepreneurial success and failure in Africa (Table 16). He contended that most researchers have tended to look at aspects identified in the matrix in isolation, and have not taken a sufficiently holistic view of entrepreneurship embracing the multiple dimensions of: entrepreneur; entrepreneurial organisation and external environment. He pointed to the need for more carefully designed research, with more controlled experimental and field studies.

Table 16 : Correlates of Entrepreneurial Success in Africa
Kiggundu (2002)

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The figure uses data which can be accessed at

Kiggundu, M. (2002*) Entrepreneurs and Entrepreneurship in Africa: What is Known and What Needs to be Done,* Journal of Development Entrepreneurship, Vol. 7, No. 3

## 2.14. Risk Propensity and Performance

A useful working definition of risk propensity is the perceived probability of receiving the rewards associated with success of a proposed situation, which are required by an individual before s/he will subject him/herself to the consequences associated with the failure (Brockhaus, 1980). Some researchers have provided evidence that women tend to experience higher rates of risk aversion than men (Fossen, 2012; Wagner, 2007; Watson & McNaughton, 2007, Mueller, 2004). Analysis of gender differences, in response to the GEM adult population survey statement, "*Q1J. Fear of failure would prevent you from starting a business*" provides a proxy measure of risk propensity, with those stating that fear of failure would prevent them from starting a business considered risk averse. Table 17 shows that among the general adult population, and among countries considered to be developing (LDCs) a higher proportion of females than males express fear of failure as a deterrent to starting an enterprise.

Table 17 : Gender Differentials in Fear of Failure among LDCs
(Proxy measure for risk aversion)
GEM consolidated dataset – Females relative to males

Content removed for copyright reasons

The table uses data which can be accessed at

http://www.gemconsortium.org/docs/2192/gem-2001-2008-aps-global-individual-level-data

As noted by Bardasi *et al.* (2010) these differences could have important implications for business performance, if higher risk aversion leads women to restrict investment in their business ventures. Hai and Foo (2000) provide some evidence that entrepreneurs with higher risk-taking propensity achieve higher levels of entrepreneurial performance. Masters and Meier (1988) state that both '*The entrepreneur's and manager's roles have always involved risk taking'*. They expanded Brockhaus' early work by taking female and male entrepreneurs and female and male managers in the mid-West as their sample-frame. They found no significant differences between entrepreneurs and managers or between female and male entrepreneurs. Sonfield *et al.* (2001) used a construct entitled the 'Entrepreneurial Strategy Mix' to test whether there were significant gender differences in strategic decision-making. The mix is one of low and high levels of innovation and low and high levels of risk, together forming a 2 x 2 matrix of high innovation/low risk; high innovation/high risk; low innovation/low risk; and low innovation/high risk. The instrument used involved some element of 'role playing' and as such may have been viewed by the respondents as hypothetical. All of the respondents were already engaged in business, and the conclusion from their work might therefore be that while there may be significant gender differences in risk propensity among the general population, there are no differences between females and males already involved in business.

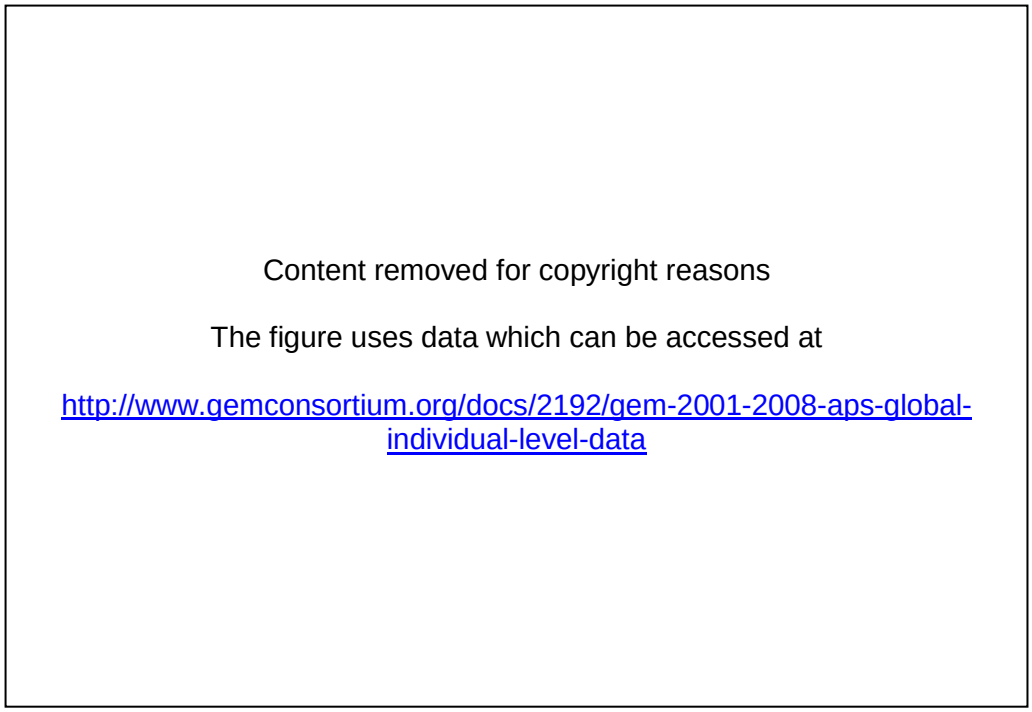
Hudgens and Fatkin (1985) conducted two experiments at the U.S. Army Human Engineering Laboratory, using computer simulations of risk situations. Their experimental design was both rigorous and innovative which adds considerable weight to their finding that there are significant differences between females and males in risk taking in a variety of situations. Zinkhan and Karande (1991) explore both gender and cultural differences in their study of the risk propensities of two groups of MBA students. The CDQ instrument was used as in the Masters and Meier study, but with different results. The findings of the study led the authors to assert that females are more conservative than males when faced with a situation of uncertainty.

Analysis of secondary data does point to differences in risk propensity, both among the general populace, and for those individuals already engaged in entrepreneurship. The results of the question posed in the GEM survey "*would fear of failure prevent you from starting a business?"* for the consolidated data set of 2001-06 provide a consistent

pattern across the countries surveyed. A higher proportion of females in the majority of countries report that fear of failure would prevent them starting a new business. When age is factored into the analysis (Figure 13 and Figure 14) the pattern remains consistent across the age ranges.

For the general populace the relationship with age is curvilinear, with fear of failure peaking in the middle years and declining after 54 years. For all age ranges a higher proportion of females' exhibit fear of failure within each age cohort, while maintaining the same curvilinear pattern as males as age progresses. For those involved in entrepreneurship the pattern in relation to age changes markedly with a linear relationship and the prevalence of fear of failure reducing as age progresses.

Figure 13 : % of Individuals* Reporting Fear of Failure by Gender and Age
GEM consolidated data set




For example, among the 18-24s 23% of males report fear of failure in contrast to 32% of females. These percentages fall to 19% for males and 23% for females at age sixty five. Nevertheless, there are notable differences between the proportion of females and males within their respective gender categories and age cohorts throughout the age range, with females consistently reporting higher rates than males.

The balance of findings in the literature further points to a difference (in the gender differences!) between the general population and those who are already engaged in business (Figure 14). The results do suggest that those in business have a lower fear of failure overall and more pertinently that the difference between females and males reduces when considering only those individuals who are involved in business at the time of investigation.

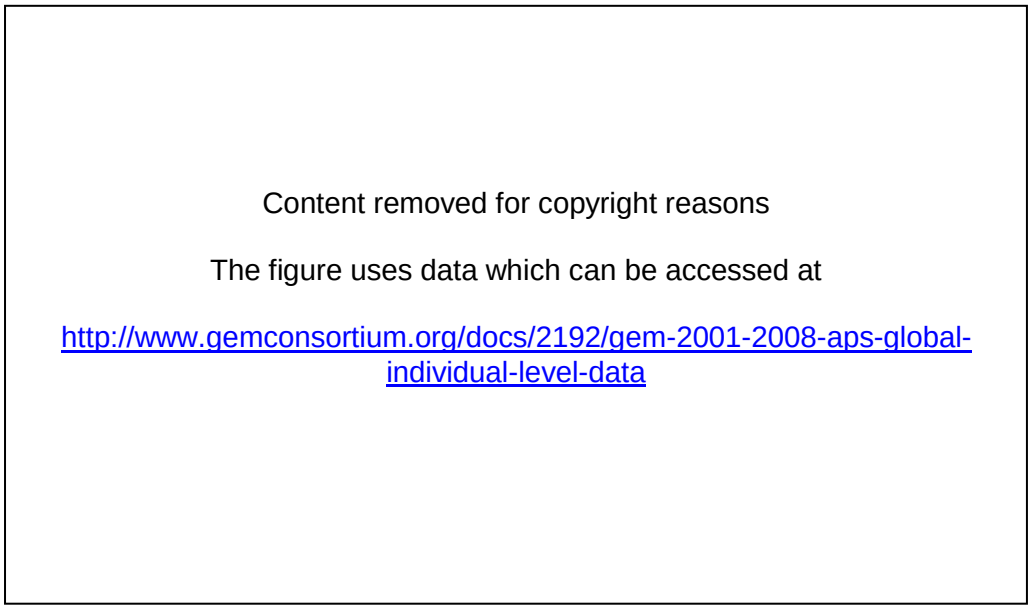
Figure 14 : % of Entrepreneurs Reporting Fear of Failure by Gender and Age
GEM consolidated data set


The notion of using fear of failure as a proxy for risk aversity is that those fearing failure in a business venture are likely to be risk averse and take risk mitigation measures. Possible risk mitigation measures include: not entering into the business venture at all; not giving up existing income-generating activities but hedging against failure by maintaining a diverse portfolio of enterprises as a risk mitigation strategy, even though this may mean diluting the intensity of effort in any one enterprise.

Figure 15 : Risk Propensity by Gender and Business Exposure
% Reporting Fear of Failure
GEM consolidated data set


One working hypothesis is that fear of failure is related to the level of experience that individuals have with entrepreneurship. This would suggest that fear of failure would disappear when filtering out those who have direct experience of entrepreneurship. Figure 16 indicates a declining trend over time in the percentage of individuals reporting fear of failure in South Africa and this may be that effect at work, despite the gender differential remaining.

Figure 16 : Trend in % Reporting Fear of Failure in South Africa (GEM)



Johnson and Powell (1994) in reviewing the evidence for and against gender differences in risk propensity point out that much of the research has been conducted among subjects in the general population. They therefore set out to investigate gender differences in risk taking in both the general population and within a sub-group of trained managers. Their proxy for the general populace came from bets placed by males and females in fifty Ladbrokes betting offices throughout the U.K. This sample, randomly drawn, is taken to represent the 'non-managerial' population.

The authors go to some lengths to compare the socio-economic characteristics of the betting shop customers with those of the general population. For example, quoting from the British Market Research Bureau, while 18% of the general population are classified as 'managerial and professional', 11% of those betting fall into this category. Although the authors label the proxy group of betters as 'non-managerial' in reality some 300 or so of the sample of bets made from each gender group are likely to originate from individuals with some management training.

The authors emphasise the advantage of a 'real life' situation of risk as opposed to simulations, and further that those involved in the 'experiment' are completely unaware of their participation, avoiding any non-sampling bias that might be associated with any knowledge of being monitored. Cashiers were instructed to discretely mark all bets placed by females over a one week period from 23rd to 30th April 1991. A systematic random sample of all bets was drawn using the time-dependent code numbers on each betting slip, stratified by gender.

The data enabled measurement and analysis of the propensity to bet on certain types of high/low risk bets. In the second phase of their experiment, the researchers defined their 'managerial population' as those that had received at least three years of formal management training. Their principal findings were that among the 'non-managerial' population females have significantly lower risk propensities than males, manifested by their betting behaviour and strategies. In contrast, no significant differences were found between business-trained females and males with respect to quality of decision-making or attitudes towards risk.

This implies that increased propensity for risk taking may be a factor of acquired knowledge and experience in addressing situations of risk. The differing ways that

females and males acquire this knowledge and experience may translate into the perceived differences between males and females in attitude to risk taking. If males in the general population have had greater exposure to risk in their everyday life situations then this 'experiential training' may result in perceived differences in risk propensity and not some inherent trait relating to the gender of an individual. If this is true then differences in risk propensity between females and males may then disappear once levels of exposure to risk become equalised, through experience or training (or both). There is partial support to tentative prescriptive analysis by other researchers (Schubert *et al.* 2000; Gysler *et al.*, 2002).

Watson and McNaughton (2007) investigated gender differences in retirement fund risk preferences of staff in the Australian university sector. Their study involved the analysis of the investment strategies of those university staff members who were in a position to make choices between different levels of investment risk, those selecting higher risk investments in the expectation of higher returns as a reward. While the researchers considered that differences in levels of business knowledge and marital status of individuals should be controlled for in the study, the information was not part of the member database and they were unable to control for these factors. The results provided an indication that women tended to be more risk averse in their superannuation investment choices than men did did, even after income, age, and potential educational differences are controlled for.

Propensity to access formal credit may provide a useful proxy measure of risk aversion. There is evidence in the academic literature to suggest that females have a lower propensity to access formal credit, with a great reliance upon family, friends and their own savings to generate finance for venture start-up (Hill *et al.* 2006; Coleman,1993). Davar and Gill (2007) provide empirical evidence to suggest that female investors are more cautious in investment decision making than males. Devrie *et al.* (2001) found that women were less likely to borrow start-up capital.

## 2.15. Industry Type and Performance

Swinney *et al.* (2006) supported Fasci and Valdez (1998) in recommending that research on gender differentials should be conducted industry by industry due to differences in economic and business environments between industries. There is macro evidence to suggest that females tend to select service and customer retail enterprises over manufacturing (Anna *et* al., 2000; Buttner, 1993, Ahwireng-Obeng, 1993). Reasons for this may be related to antecedent influence. The literature suggests that experience in employment and through networking with others are major influences on the type of enterprise that prospective entrepreneurs select as start-ups. In addition, barriers to entry in terms of level of start-up capital required to enter into a particular business are likely to influence the type of business that females venture into.

Service and retail trade enterprise types typically face higher levels of competition and experience higher rates of discontinuance relative to other industry types (Kalleberg and Leicht, 1991). Since females are typically over-represented in these industry types (Shim and Eastlick, 1998) then differential performance in industry types may be incorrectly interpreted as female under-performance irrespective of the enterprise of choice.

Failure to control for the confounding influence of industry type in an analysis of gender differentials in entrepreneurial performance may lead to a hypothesis of female underperformance being erroneously confirmed (Singh *et al*., 2001). It is therefore important to control for industry-type thereby establishing a framework of analysis that moves further to a condition of *ceteris paribus* (all other things being equal) in making performance comparisons.

## 2.16. Motivation and Life Strategy and Performance

Evidence from the literature suggesting that females are differentially motivated in their pursuit of entrepreneurship is mixed. Mulira *et al.* (2012) in their comparison of female entrepreneurs across a range of LDCs, including Uganda, assert that motivational factors are one of the essential components towards entrepreneurial intentions. Verheul *et al.* (2012, p.325) show that women's lower preference for entrepreneurship *"plays an important role in explaining their lower involvement"*. Buttner (1993) contends that

female and male motivation in initiating a venture is similar. This view is supported by other researchers including Birley (1989) and Chaganti (1986). This position is challenged by researchers such as Boden (1999) and Buttner and Moore (1997 page 34) who assert that "*women's most important entrepreneurial motivations are the desire for challenge and self-determination and .... to balance family and work responsibilities*." They contend that women measure success in terms of self-fulfilment and goal achievement and that level of profit or rate of growth in their enterprises were for them secondary measures of operating a successful business. They argue that traditional measures of entrepreneurial performance including growth in sales and employment are not relevant to female enterprises. This view is supported by Bird and Brush (2002 p.53) who state that "...*values might be more existential than driven toward definable goals, reflective of the personal values of the founder and oriented toward well-being, cooperation and caring, self-determination, and preservation of relationships*".

This raises fundamental questions not only about gender differentials in motivation but also about gender differentials in performance measurement and achievement. DeMartino and Barbato (2003) address the issue in reporting that women are using entrepreneurship as a career choice to enable them to achieve flexibility in their working life in order to better manage family obligations.

Their study found that even for women who were not yet married, the flexibility of an entrepreneurial career was an important motivation, and that this became more important once women married and had children. In their study they were able to control for educational levels, level of business education and prior work experience by virtue of their choice of sample frame which was a comparable group of similarly educated and experienced entrepreneurs. Their principal findings were that a greater motivation for women to become entrepreneurs related to family and lifestyle issues, and that they were relatively less motivated by wealth creation and advancement in their pursuit of entrepreneurship. Figure 17 illustrates these differences.

Figure 17 : Gender Differences in Motivation and Preferences
DeMartino and Barbato (2003)

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The figure uses data which can be accessed from
DeMartino R. and Barbato R. (2003) *Gender Differences Among MBA Entrepreneurs,* Journal of Business Venturing, Vol. 18, Issue 6, November 2003, pp. 815-832.

Lerner *et al.* (1997) found a strong relationship between motivation and performance, the former being categorised into achievement, independence and economic necessity and the latter being measured by the traditional measures of enterprise performance, sales and employment growth and level of profitability. The findings once again suggested need to apply a different set or a different mix of measures to entrepreneurial performance assessment than those traditionally used by researchers

## 2.17. Networking and Performance

Watson (2007) was able to establish a positive relationship between networking and performance as measured by business survival. He controlled for age, industry and size of enterprise in his analysis. He found that network intensity was more important than network range in enterprise survival. Some evidence has been put forward to suggest that females exhibit lower levels of networking with males in their earlier stages of entrepreneurship but that networks increase as their enterprises age, such that gender differences disappear over time (Klyver and Terjesen, 2007). There is evidence in the academic literature of lower levels of same-sex networking among female entrepreneurs (Birley *et al.*, 1987; Buttner, 1993).

Smeltzer and Fann (1989) discuss the importance of external networks as a means of obtaining valuable information. They found that female entrepreneurs would make special effort to network with other females, and that they obtained both social and instrumental support from the women in their network. Godwin *et al.* (2006) argued that women entrepreneurs within a male-dominated industry may strategically partner with a male entrepreneur in order to overcome traditional barriers to entrepreneurship including access to business networks when starting a new venture.

The GEM Adult Population Survey (APS) has a statement Q1G "*You know someone personally who started a business in the past 2 years*" which provides a proxy indicator of the potential for entrepreneurial networking. Table 18 presents an analysis of responses to statement 1e of the APS *"You are, alone or with others, expecting to start a new business, including any type of self-employment, within the next three years"* for LDCs within the global dataset,

Table 18 : Evidence of Gender Differentials in Networking
Knowledge of an Entrepreneur as a Proxy Measure
GEM LDCs Consolidated Dataset

Content removed for copyright reasons

The table uses data which can be accessed at

http://www.gemconsortium.org/docs/2192/gem-2001-2008-aps-global-individual-level-data

The results demonstrate a clear pattern across the range of developing countries with females exhibiting lower levels of knowledge of an entrepreneur whether in the general population, among the group of *de facto* entrepreneurs, or within the category of those people who were considering starting up an enterprise in the next six months. The only exception in this group is the Philippines, which appears to be exceptional in other respects compared with the family of countries surveyed over the years.

### 2.18. Self-Efficacy and Performance

According to Brown and Denny (2009 p.685) "*Self-efficacy research has produced consistent findings*", including work-related performance. Self-efficacy is defined by Chowdury and Endres (2005 p.1) as '*confidence in performing a specific task'*. The academic literature suggests that there may be a positive relationship between an individual's level of self-efficacy and their entrepreneurial performance (Baum and Locke, 2004; Bandura and Locke, 2003; Boyd and Vozikis, 1994, Chandler and Jansen, 1992). The GEM Adult Population Survey (APS) includes a statement Q1H, *"In the next six months there will be good opportunities for starting a business in the area where you live"* and this serves as a proxy measure of self-efficacy.

A second proxy measure of self-efficacy is found in Q1I, "You have the knowledge, skill and experience required to start a new business." provides an analysis of the percentage of females and males within their categories responding in the affirmative. A further analysis of this proxy indicator of self-efficacy is undertaken for those individuals with entrepreneurial intentions in the medium-term, by filtering those who responded positively to Q1E, "*You are, alone or with others, expecting to start a new business, including any type of self-employment, within the next three years*."

The results of this analysis for HDI low and medium category countries are presented in Table 19 with the UK added for comparison and to represent those countries in the category of high income. The Philippines stands out as an exceptional country and this is true not only among the low and middle-income countries but across all the countries surveyed.

Table 19 : Evidence of Gender Differentials in Self Efficacy Perception of Opportunity and K/S/E as a Proxy Measure

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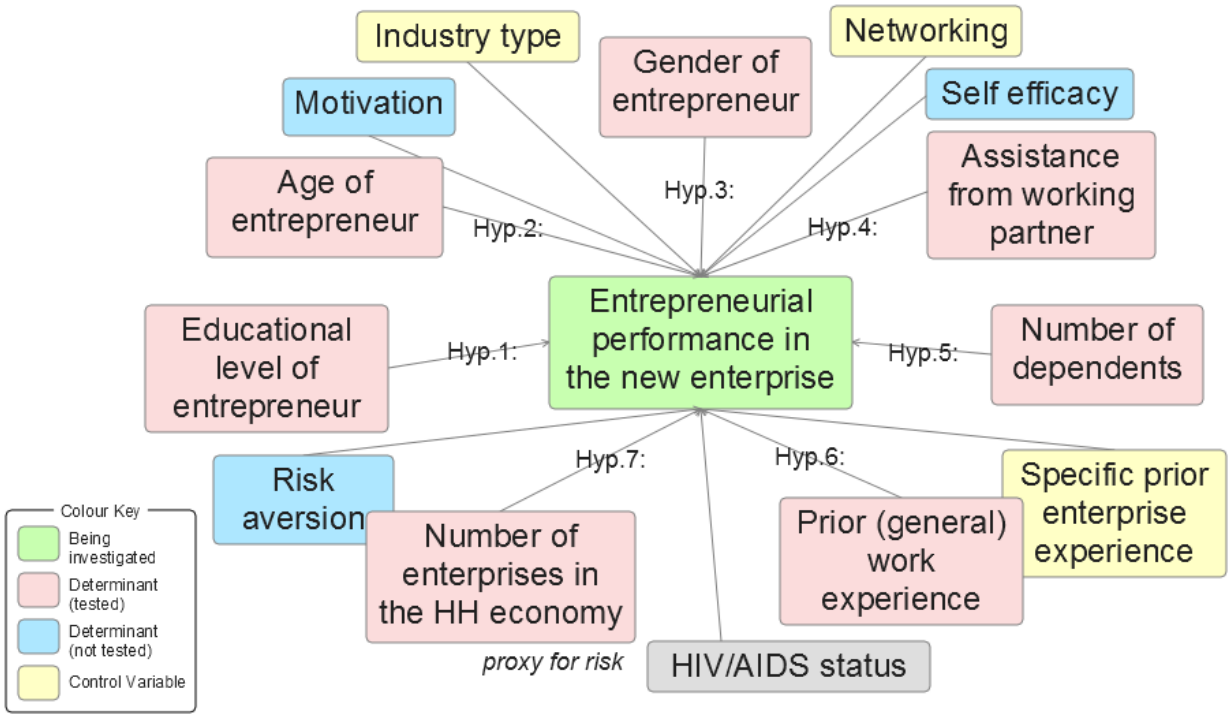
The table uses data which can be accessed at

http://www.gemconsortium.org/docs/2192/gem-2001-2008-aps-global-individual-level-data

## 2.19. Conceptual Model of Determinants of Entrepreneurial Performance

A critical review of the existing body of research on female entrepreneurship led to the construction of a conceptual model of potential determinants of entrepreneurial performance in the new enterprise, as shown in Figure 18 below. Of these, industry type is controlled for in the study with the focus on one particular enterprise, as is networking, at least in relation to the enterprise and the same for specific prior enterprise experience since the criterion for participation in the enterprise was that there is no prior experience of operating a dairy enterprise.

Figure 18 : Conceptual Model of Determinants of Entrepreneurial Performance




## 2.20. Research Questions arising from the Literature Review

The questions arising from the review of the literature and addressed in the research study include:

Q1. Are there gender differences in entrepreneurial performance even when considering entrepreneurs operating within the same industry and controlling for size of enterprise and provision of technical and business support?

Q2. If there are gender differences in entrepreneurial performance can these be explained by gender differences in attributes such as education, age and level of prior work experience?

Q3. Are females relatively more risk averse? If so, do gender differences in level of risk aversion influence entrepreneurial performance?

Q4. Are female entrepreneurs constraint-driven or preference-driven (Bardasi *et al.,* 2011) or both? If so, do either or both constraints explain differentials in EP?

Q5. Are findings concerning gender differentials in entrepreneurial performance affected by the choice of entrepreneurial performance measure(s)?

Question one relates to gender differentials in entrepreneurial performance specific to the case study. The *a priori* belief of technical experts and the researcher was that females exhibited higher levels of performance in zero-grazed commercial smallholder dairy entrepreneurship. The rationale for this belief is provided in section 4.2 on page 145, and the question relates to the aims and objectives in section 1.6 on page 33.

Question two asks whether gender differentials in performance, if uncovered, might actually be masking other more important determinants which are closely related to gender, such as educational level, age (Quisumbing and Pandolfelli, 2009), or prior work experience. If age, education or levels of work experience are related to entrepreneurial performance then the true explanatory factor may not be gender at all but one of more of these factors.

Question three explores the issue of risk aversity in females and queries whether there is any evidence from the case study research that females exhibit higher levels of risk aversion than males. If they do, then the follow-up question is whether higher levels of risk aversion in females might relate to differential rates of entrepreneurial performance.

Question four explores the questions raised by Bardasi *et al.* (2011) and earlier works such as Carter *et al.* (1997) in the academic literature concerning female constraints and preferences. If females do experience different constraints or have different preferences do these have an effect on entrepreneurial performance?

Question five is a fundamental and overarching question which cuts across all of the studies of entrepreneurial performance and investigation of gender differentials in entrepreneurial performance in particular. If the choice of entrepreneurial performance measures is primarily based on convenience of utilising existing data sets and content, and if those measures are inherently biased towards a set of performance standards which favour male entrepreneurs, then findings of gender differentials may be erroneously construed and illusory.

## 2.21. Research Hypotheses for the Case Study

Table 20 presents the hypotheses, which respond to the questions posed and underlie the conceptual model in Figure 18 on page 98.

Table 20 : Research Hypotheses in the Case Study

| H[x] | Research Hypotheses | Question |
|---|---|---|
| 1 | Entrepreneurial performance is higher with increased levels of education | Q2. |
| 2 | Entrepreneurial performance is higher the younger the entrepreneur operating the enterprise | Q2. |
| 3 | When industry type and provision of support services and inputs are controlled for, there is no difference in entrepreneurial performance between males and females | Q1. |
| 4 | Entrepreneurial performance is higher for ventures operated together with a working partner | Q4. |
| 5 | Entrepreneurial performance is higher for entrepreneurs with fewer dependents | Q4. |
| 6 | Entrepreneurial performance is higher for ventures operated by individuals with prior work experience | Q2. |
| 7 | Entrepreneurial performance is higher for those entrepreneurs who have reduced their number of enterprises following the incorporation of the dairy enterprise | Q3. |
| 8 | The choice of entrepreneurial performance measure(s) selected will affect the findings concerning gender differentials in EP | Q5. |

$Hyp_0$1, $Hyp_0$2 and $Hyp_0$6 relate to Question two, in exploring whether educational levels, age or prior general work experience relate to entrepreneurial performance. $Hyp_0$3 queries the information in the case study as to whether there are gender differentials in entrepreneurial performance and this relates directly to Question one. $Hyp_0$7 explores the relationship between number of enterprises operated by the household and entrepreneurial performance assuming that enterprise-mix is an adequate proxy measure of risk aversion and this relates to Question three. $Hyp_0$4 and $Hyp_0$5 address the relationship between presence of a working partner and number of dependents and entrepreneurial performance as a contribution to the response to Question four. $Hyp_0$8 relates to Question five in testing whether the choice of entrepreneurial performance measure may affect the assessment of entrepreneurial performance.

## 2.22. Factors Controlled for in the Case Study

Like the study of Kodithuwakku and Rosa (2002) in Sri Lanka a number of controls that were present fortuitously (Table 21). Entrepreneurs had (with the exception of one individual) no previous experience of commercial dairy prior to start-up. They received one animal on loan as a starter enterprise, and all had equal access to technical and business advisory services through the Malawi Dairy Enterprise Development Programme (MDEDP). Their level of networking at least in relation to the dairy enterprise was controlled by their involvement in the Milk Bulking Group (MBG) and organised trainings and visits to other entrepreneurs on the part of the MDEDP.

Table 21 : Factors Controlled for in the Case Study

| Variable | Control measure |
|---|---|
| C1: Use of professional advisors for dairy technical and business support | All entrepreneurs have access to the same professional advisers |
| C2: Ventures operated by entrepreneurs with specific prior experience of operation of that enterprise | All entrepreneurs (with the exception of one) had no prior work experience with the dairy enterprise |
| C3: Industry type (with some industry types having greater probability of success) | All entrepreneurs are engaged in the same principal enterprise |
| C4: Networking | Entrepreneurs are networking together in the Milk Bulking Group and are brought together periodically to network with others |
| C5: Size of enterprise | All entrepreneurs started with one high-performance dairy animal with animals being randomly assigned to individuals |

Chapter Two in defining entrepreneurial performance and critically reviewing the literature in relation to potential determinants has led to the articulation of research questions and research hypotheses. Chapter Three now follows this by considering the methodological approaches available and the research philosophy and approach adopted. The research instruments used are detailed and constraints and limitations of the study are discussed together with strategies to mitigate.

# Chapter Three – Methodology

# 3 Methodology

## 3.1. Introduction and Overview of the Methodological Approach

This Chapter describes the methodology used in the study, beginning with an overview of the methodological approach of the research within the framework developed by Saunders *et al*. (2009). This is followed by a discussion of the research topics and their derivation and the stages of critical literature review pre- and post-primary research, following on from Chapter One. The research philosophy and approach are then elaborated, together with some consideration of the place of the researcher within the research, accepting the notion of Golafshani (2003) that the researcher is as much the instrument as the instruments that are constructed to aid in understanding a phenomenon.

This is followed by elaboration of the research design, including consideration of the performance framework developed, and the weightings used in the performance ranking tables, which form the core of the analysis. Issues concerning negotiating access and the research methods used are then discussed. The sample selection is then detailed. Discussion of negotiating access and the research methods used follows with sample selection and discussion of the various instruments used for information gathering. These include utilisation of, interviews; independent technical assessment; key informant interviews; direct observation; use of the circle and stones (proportional piling) participatory investigation of the enterprise mix; focus group discussions, and secondary data collation on milk sales and purchases of inputs from Milk Bulking Group (MBG) financial records.

The chapter continues with a consideration of the use of secondary data to support and triangulate with the primary data findings to increase the trustworthiness, rigour and quality of the findings (Golafshani, 2003). This includes repeated iterations to triangulate the case study findings with those of the academic literature. Finally, constraints and limitations of the research are discussed together with strategies that were developed to mitigate them.

An overview of the methodological approach is provided in the figure below:

Figure 19 : Methodological Approach adopted – based on Saunders (2009 pg. xviiii)

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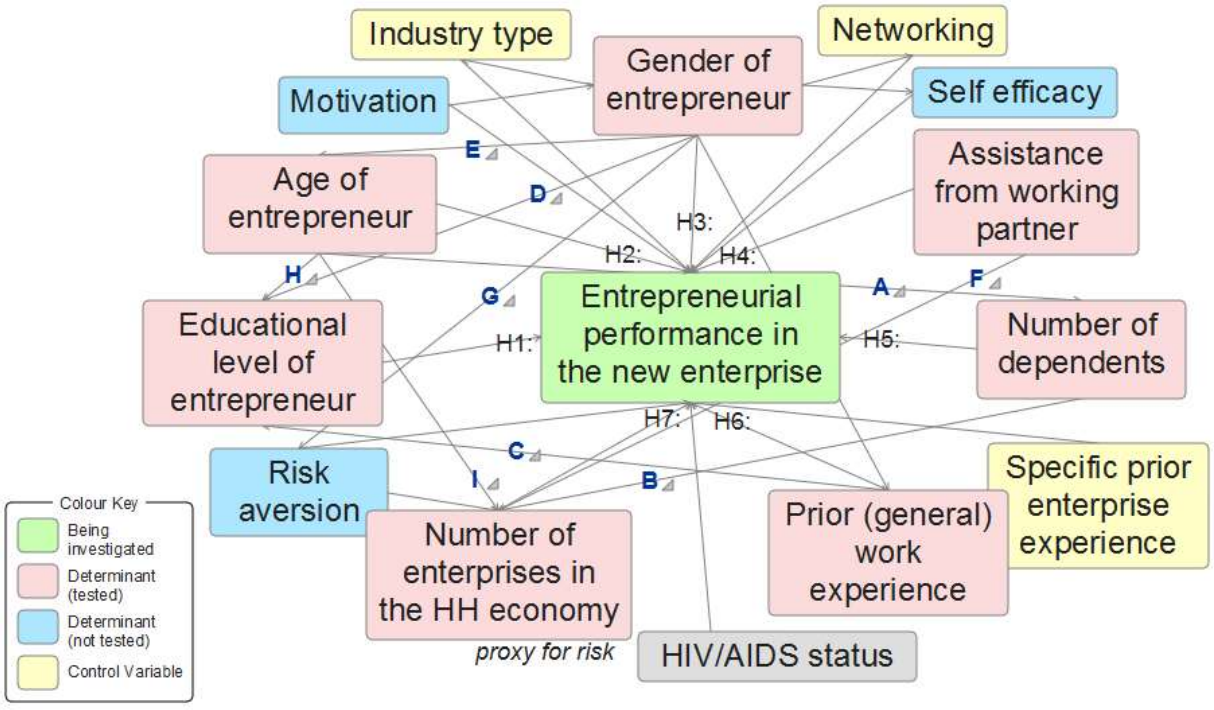
The figure uses data which can be accessed at

Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research Methods for Business Students,* Prentice Hall, 5th edition

### 3.2. Formulation and clarification of the research topics

The research topics were developed during the course of the critical literature review and led to the formulation of hypotheses detailed in Chapter Two. Figure 20 illustrates not only the exploration of the linkages between the potential determinants of entrepreneurial performance and actual performance but also the myriad possible relationships between the determinants (refer APPENDIX XV: Relationships between Determinants on page 338).

Figure 20 : Research topics – hypothesised determinants and cross-relationships




In addition to examining the relationship of each potential determinant with entrepreneurial performance, the possible relationships between determinants are explored. Findings are detailed in APPENDIX XV: Relationships between Determinants on page 338. The letters denote the relationships tested in the course of the primary research and these are detailed in Table 22.

Table 22 : Potential Relationships between EP Determinants in the Model

| Id. | Hypothesised relationship |
|---|---|
| A | Relationship between age and number of child and adult dependents |
| B | More dependents more enterprises |
| C | Those who have work experience are the more educated |
| D | Female entrepreneurs are less well educated |
| E | Female entrepreneurs are older |
| F | Assistance from a working partner enables more enterprises to be operated in the HH economy |
| G | Female entrepreneurs are more risk averse |
| H | Younger entrepreneurs are more educated |
| I | Older entrepreneurs have a greater range of enterprises |

### 3.3. Critical Literature Review Pre- and Post- Primary Research

An initial critical literature review informed the research and led to the establishment of research questions and hypotheses to bring to the case study. Following the field research, the academic literature has been re-visited and updated and findings from the research triangulated with findings from the academic literature as detailed in Table 58 on page 203.

### 3.4. Research Philosophy

According to Patton (2002 p.569), *"every researcher brings [with them] preconceptions and interpretations of the problem being studied, regardless of methods used".* In support of this position, Creswell (2009, p.5) states, "*philosophical ideas remain largely hidden in research.....[but] still influence the practice of research and [therefore] need to be identified*". Both argue that every researcher brings with them a philosophical position, or 'philosophical baggage' in a variant of the popular lexicon. It is therefore critical that the philosophical stance of the researcher should be made explicit in any research endeavour.

Creswell chooses the term *'worldview'* as approximately equivalent to other terms currently in use such as paradigm, epistemology and ontology, and research methodology in its broadest sense. Worldviews are shaped by some combination of the researcher's primary discipline area, the beliefs of advisers and past research experiences. Figure 21 illustrates the interconnection of philosophical stance with

strategies of inquiry and research methods selected to further the inquiry. While Creswell articulates four philosophical positions, postpostivism, social constructivism, advocacy/participatory and pragmatism, Saunders *et al.* (2009) offer four differing classifications, positivism, realism, interpretivism and pragmatism. Each of these ontological labels is elaborated and briefly discussed below:

Figure 21 : A Framework for Research Design*

Content removed for copyright reasons

The figure uses data which can be accessed at

Creswell, J. (2009) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, Sage Publications 3rd Edition

* from Creswell (2009, p.5) with minor adaptations

**Positivists and Postpositivists:** The foundations of positivism lie in the natural sciences (Saunders *et al.* 2009). Moore (2010, p.137) traces the history of philosophical thought and debate surrounding positivism throughout the 19th and 20th centuries. Auguste Comte (1798–1857) is credited as the founder of positivism, which *"assumes that scientific knowledge is the highest form of knowledge [derived] from studying directly observable and measurable events".* Positivism evolved or branched out into logical positivism, one of the central tenets of which was that all all sciences could be unified in terms of a 'hypothetico-deductive method'. The method involves the researcher putting forward *"a new, tentative idea stated in clear, simple language that can be tested and potentially falsified by means of experiments and observations"* (*Lomolino et al*., 2006, p.7).

Patton (2002, p.92) states that, *"such severe, narrow, and rigorous requirements turned out to severely limit what could pass for knowledge and to demand more certainty than the complex world of social reality could yield."* According to Patton, postpositivism as well as logical empiricism have replaced the more rigid logical positivism in contemporary social science research. While logical empiricism asserts that there are no fundamental methodological differences between the natural and social sciences, postpositivist research is "*a fallible enterprise that attempts to construct viable warrants or chains of argument that draw upon diverse bodies of evidence and that support any assertions that are being made" (*Phillips, 2006, p.17).

As Creswell (2009, p.7) states, *"Postpositivists hold a deterministic philosophy in which causes probably determine effects or outcomes. Thus the problems studied by postpositivists reflect the need to identify and assess the causes that influence outcomes, such as found in experiments. [Postpositivism] is also reductionist in that the intent is to reduce the ideas into a small discrete set of ideas to test, such as the variables that comprise hypotheses and research questions"*

**Critical realists:** the philosophy of realism is that there is *"a reality quite independent of the mind".* Critical realists take the position that rather than observing real-world events, what we actually experience are sensations and images of these events. There are two stages in experiencing the world. The first is the event or object in of itself, and the sensations it conveys. Once the sensation meets our senses the second stage is the mental processing of those senses (Saunders *et al.,* 2009, p.114).

**Social constructivists:** the tenets of social constructivism appear to run contrary to those of the (post)positivists. Social constructivist researchers develop subjective meanings of their experiences, which are both varied and multiple, and recognise that their own backgrounds shape their understanding and interpretation of their interaction with participants in their study (Creswell, 2009). As Patton (2002, p.97) states, *"constructivist philosophy is built on the thesis of ontological relativity, which holds that all tenable statements about existence depend on a worldview, and no worldview is uniquely determined by empirical or sense data about the world".* Constructivism runs counter to the claim that cognition reflects objective reality but rather *"knowledge*

*organises experiences that first permit cognition of the world beyond the experiencing subject or organism"* (Flick *et al.,* 2004, p.90).

According to Trochim (2006) both critical realism and social constructivism are variants of postpositivism. To the extent that Postpositivists departed from logical positivism in acknowledging that *"all observation is fallible and has error and that all theory is revisable*" then there is convergence with the tenets of critical realism. Likewise, if all perception and observation is fallible *(*Phillips, 2006) then all of the researcher's constructions must by extension be imperfect. The response to the inherent fallibility of the researcher view of the world is to *"triangulate across multiple fallible perspectives".* Trochim illustrates this with the example of peer-review of academic works, whereby multiple individuals are attempting to triangulate their individual perspectives to counteract individual biases, and in this way achieve a collective best approximation of objectivity, imperfect as it may be.

**Interpretivists:** those researchers who are critical of the reductionist element of the (post)positivists argue that *"rich insights into this complex world are lost if such complexity is reduced entirely to a series of law-like generalisations"* (Saunders et al., 2009 p.116). Interpretivists draw out the distinction between researching objects and people, and the importance of adopting an *"empathetic stance"* in conducting research among and about people. Phenomenology is part of the interpretivist tradition, and its practical application is seen in the research of Kodithuwakku and Rosa (2002) in Sri Lanka. Some see interpretivism as the antithesis of positivism to the extent that it is sometimes termed 'antipositivism' or at least situated in the antipositivist school of thought (Wicks and Freeman, 1998).

**Advocacy/participatory proponents**: according to Creswell (2009, p.9) this philosophical worldview *"focuses on the needs of groups and individuals in our society that may be marginalised or disenfranchised."* While proponents tend to be typically associated with qualitative participatory forms of inquiry they also see merit in quantitative research, and the emphasis is not on choice of methodological instruments but on inclusion and empowerment of participants in the research process:

*"Participatory approaches and methods can generate data and numbers on numerous topics similar to outputs from questionnaires. They can also form the basis for a systematic and strategic process of participatory consultation and analysis of the findings, practical implications and support implementation of recommendations."* (Mayoux and Chambers, 2005, p.11)

**Pragmatists:** as Creswell (2009, p.10) asserts, *"pragmatism is not committed to any one system of philosophy and reality"* but rather is problem-based with researchers being *"free to choose the methods, techniques, and procedures of research that best meet their needs and purposes".* While Patton (2002, p.72) considers, *"The importance of understanding alternative research paradigms is to sensitise researchers …to the ways in which their methodological prejudices, derived from their disciplinary socialisation experiences, may reduce their methodological flexibility and adaptability",* he emphasizes the need to, *"do what makes sense".* As Flick *et al.* (2004, p.17) state, *"it is ultimately the material that drives the research process, and the creativity of the investigator that reveals the structuredness of the material".*

### 3.4.1. Philosophical Stance of the Researcher

The philosophical stance of the researcher is set out in Table 23 on page 111, and discussed in terms of ontology, epistemology and axiology in the following sections.

### 3.4.2. Ontological Proclivities

The researcher's academic training in agricultural economics (BSc, MSc) and immediate post-university work in Malawi within the agro-economic survey of the Ministry of Agriculture, inculcated in him a postpositivist worldview. Empiricism, objectivity, social science as a variant of natural science, were the tenets of both his academic and professional training. Later work as a monitoring and evaluation specialist across all disciplines has also placed greater emphasis on empirical analysis and less on qualitative inquiry and assessment. These proclivities inevitably represent 'philosophical baggage' that has been brought to this study.

As Modiasaemang (2012, p.21) writes, *"[Post]positivism employs methods that are objective and highly structured in approach"* and this certainly characterises this research. There is a greater reliance upon objectively verifiable information, which

characterises a postpositive philosophy. Despite these leanings towards a postpositivist philosophical stance, for more than half his professional career, the researcher has been involved in applied research studies involving either a mixed methods approach or in some instances an exclusively qualitative approach, as in a study of agricultural inputs voucher targeting in Afghanistan (Thompson, 2009). This suggests some movement from the philosophical standpoint of the positivist towards that of the pragmatist. While maintaining a position which is *"external, objective and independent of social actors"* certainly has appeal the need for an *"external, multiple, view chosen to best enable answering of the research question" is overriding* (Table 23).

Table 23 : Philosophical Stance of this Researcher Explored*

| Category | Pragmatist | Positivist/Postpositivist | Critical Realist |
|---|---|---|---|
| Ontology *Researcher's view of the nature of reality* | External, multiple, view chosen to best enable answering of the research question | External, objective and independent of social actors | Apprehendable reality interpreted through social conditioning |
| Epistemology *Relationship between the researcher and the participant; what constitutes acceptable knowledge* | Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data. | Only observable phenomena can provide credible information | Phenomena created sensations which are open to misinterpretation. Interactive and proactive researcher role seeking transformation and emancipation |
| | | Focus on causality and law like generalisations, reducing phenomena to simplest elements. | |
| | | Researcher and participant are independent of one another; detached and objective researcher role | |
| Axiology *Researcher's view of the role of values in the research process* | Values play a large role in interpreting results, the research adopting both objective and subjective points of view | Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance | Researcher is biased by world views, cultural experiences and upbringing. |
| Method *Process and procedures of research* | Mixed or multiple methods designs, quantitative and qualitative | Experimental and quasi-experimental, field research, mostly quantitative methods | Naturalistic, highly interactive, creating transformation |

*= good fit with this researcher's stance or proclivities*
*= not a good fit .. .. ..*

*adapted from Saunders (2009), Creswell (2009) and Patton (2002)

### 3.4.3. Epistemological Leanings

The epistemological leanings of the researcher are pragmatic with a focus on *"practical applied research which integrates different perspectives to help interpret the data"* (Saunders *et al*., 2009, p.119). The notion that "*Only observable phenomena can provide credible informa*tion", (Table 23) is unequivocally rejected. So too is any belief that the researcher and participant are independent of one another, and that there is a completely detached and objective researcher role. The researcher initiated the sub-project that brought the enterprises to the participants, and is certainly an integral part of the initiative. He is certainly passionate about the initiative and an advocate of those who are engaged in it, and so there is no question of a detached and impersonal role. There is definitely a belief that *"either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question"* which is a trait of the pragmatist. At the same time, there is no doubt that the researcher is employing elements of reductionism in the research, *"reducing [complex] phenomena to simplest elements".* The best self-characterisation epistemologically is a postpositivist by training but a pragmatist by practice and the aspiration of the researcher is to be a pragmatist first and foremost albeit with acknowledged postpositivist proclivities.

### 3.4.4. Axiological Perspective

The researcher acknowledges that he is *"biased by world views, cultural experiences and upbringing"* and is therefore sympathetic to the axiological perspective of the critical realist (Table 23). He rejects the postpositivist axiological perspective that "research is undertaken in a value-free way" or that, *"the researcher is independent of the data and maintains an objective stance".* There are undoubted postpositivist leanings, with a proclivity towards quantitative methods, but there is an appreciation that values do play an important role in interpreting results, and that a mix of both quantitative and qualitative methods provides for a greatly enriched and more appreciative investigation of any phenomenon (Creswell and Plano Clark, 2007).

In the case study the researcher utilises both objective and subjective data gathering instruments and integrates and triangulates these in interpreting the information gathered. The choice of research methodologies reflects the philosophical stance of the

pragmatist in the utilisation of a mixed methods design and choice of quantitative and qualitative techniques, depending upon the research questions to be addressed. The genesis of interest for the researcher (refer section 1.3 on page 21) involved discernment of pattern, and this also reflects a postpositivist predilection, as described by Lomolino *et al.* (2006, p.7).:

> *"In essence, scientists proceed by investigating the relationships between pattern and process. Pattern can be defined as nonrandom, repetitive organisation. The occurrence of pattern in the natural world implies causation by some general process or processes."*

Finally, Patton (2002, p.570) underlines the challenges and the opportunities of qualitative investigation, and encapsulates the researcher's personal ethos of the research endeavour:

> *"The thread that runs through [any] discussion of credibility [of research] is the importance of intellectual rigour, professional integrity, and methodological competence. There are no simple formulas or clear-cut rules about how to do a credible, high-quality analysis. The task is to do one's best to make sense of things. A qualitative analyst returns to the data over and over again to see if the constructs, categories, explanations, and interpretations make sense, if they really reflect the nature of the phenomena. Creativity, intellectual rigour, perseverance, insight – these are the intangibles that go beyond the routine application of scientific procedures."*

## 3.5. Research Approach

The research approach has been both inductive and deductive. While there has been a search to explain causal relationships between variables, and to develop generalisations about those relationships, the approach was initially inductive in that it drew upon elements from the literature review to develop a conceptual model and derive working hypotheses. The research employed a variety of methods and attempted to establish different views of phenomena, which is a hallmark of an inductive approach (refer APPENDIX XIII: The Research 'Onion' Proclivities on page 333).

## 3.6. Research Design

Marshall and Rossman (2011, pp. 91-92) in discussing various strategies for justifying qualitative research consider one excellent strategy is to critique and demonstrate the limitations of quantitative positivist approaches. The experimental approach they argue leads to the use of research techniques that affect the findings of the research, as the laboratory setting and the instruments invariably become artefacts of the researcher. While quantitative research might be labelled as the 'traditional paradigm' Shadish (1995, p.73) argued that qualitative methods of inquiry were not new and had been utilised at least in evaluation studies for as long as quantitative methods:

> *"…to juxtapose qualitative methods against the 'traditional paradigm' is to make one more mistake..If we are to date the introduction of qualitative and quantitative methods into evaluation by some of the earliest published advocacies of them, qualitative methods have been around nearly as long as quantitative methods."*

The researcher, from experience in using mixed qualitative and quantitative methods in evaluation work, does not see the two approaches as dichotomous. Rather they are different lenses to view the same phenomenon. The combination of quantitative and qualitative approaches provides a better understanding of research problems than either approach alone. Qualitative techniques can be used in combination with quantitative instruments to achieve "*the best of both worlds*" (Barahona and Levy, 2003, p.14). Molina-Azorín *et al.* (2012, p.443) supports this position:

> *"Studies in the entrepreneurship field should pay particular attention to the context of their research and account for its complexity, uniqueness and richness. In this regard, mixed methods studies may help in contextualizing entrepreneurship research."*

Creswell and Plano Clark (2007) categorise six mixed methods designs differing in their matching and sequencing of qualitative and quantitative methods of investigation:

a. **Convergent parallel**: Concurrent quantitative and qualitative data collection, separate quantitative and qualitative analyses, and the merging of the two data sets

b. **Explanatory sequential**: Methods implemented sequentially, starting with quantitative data collection and analysis in Phase 1 followed by qualitative data collection and analysis in Phase 2 which builds on Phase 1

c. **Exploratory sequential**: Methods implemented sequentially, starting with qualitative data collection and analysis in Phase 1 followed by quantitative data collection and analysis in Phase 2, which builds on Phase 1

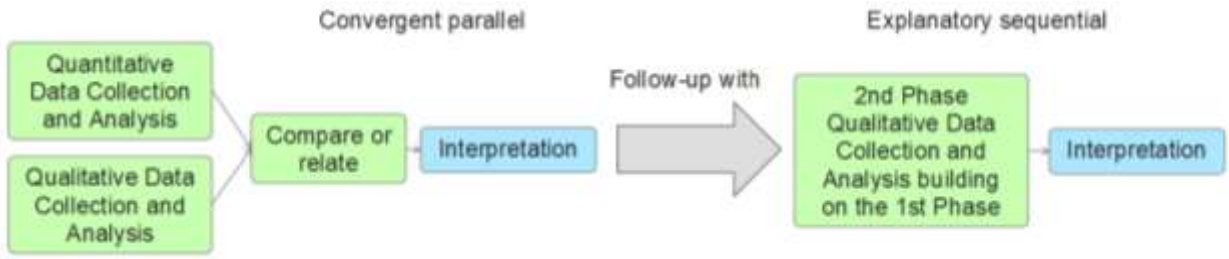
d. **Embedded design**: Either the concurrent or sequential collection of supporting data with separate data analysis and the use of the supporting data before, during, or after the major data collection procedures

e. **Transformative**: Framing the concurrent or sequential collection and analysis of quantitative and qualitative data sets within a transformative, theoretical framework that guides the methods decisions

f. **Multiphase**: Combining the concurrent and sequential collection of quantitative and qualitative data sets over multiple phases of a program of study

The research design employed elements of both the convergent parallel and explanatory sequential designs of Creswell and Plano Clark (2007). Both qualitative and quantitative methodologies were used concurrently in the initial investigation and then this was followed by a second phase of qualitative data collection and analysis which built upon the mixed methods findings of the first phase (Figure 22).

Figure 22 : Type of Mixed Methods Design Adopted in the Research based on Creswell and Plano Clark (2007 pp.69-72)



## 3.7. Control Factors in the Study

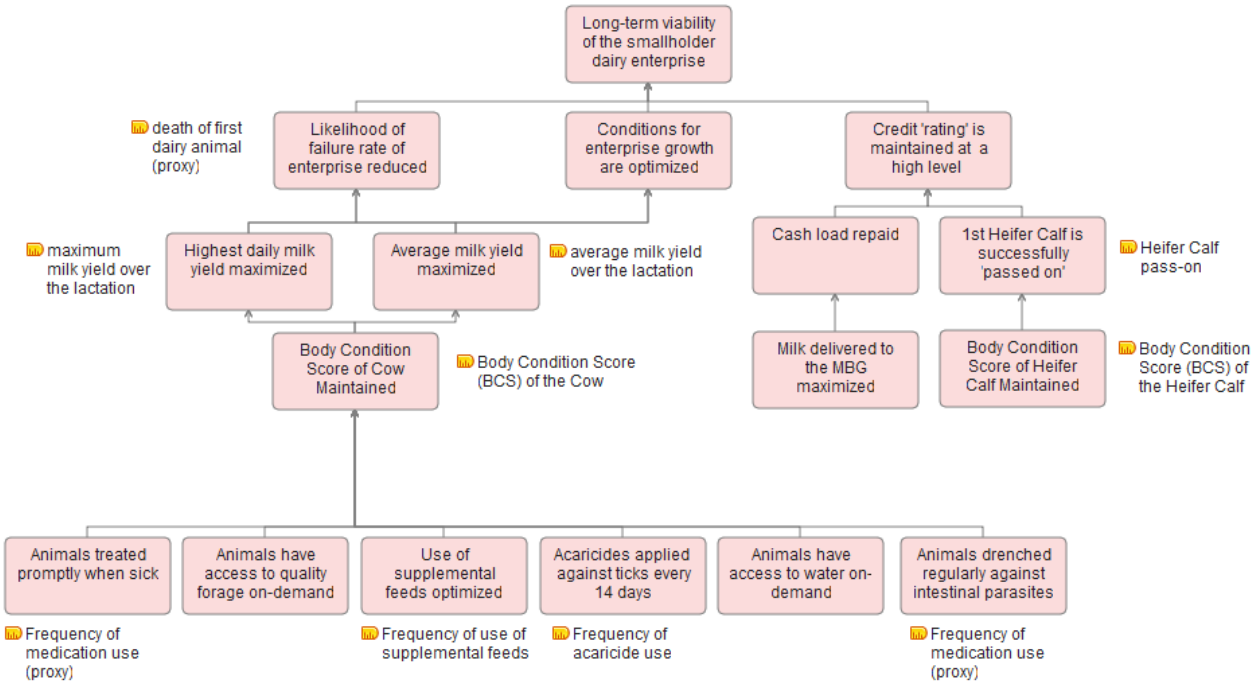
Table 21 on page 101 details the factors that were controlled for in the primary research design, by virtue of the selection of the study area which was part of the Malawi Dairy Enterprise Development Programme (MDEDP). All Milk Bulking Groups (MBGs) within the Central and Northern regions of the country were provided with enterprise support, through provision of commercial (pure or near-pure breed) dairy animals, institutional support to establish revolving funds, and technical support with resident or nearby dairy extension officers who were also trained paravets. All entrepreneurs received one dairy animal on loan and so entrepreneurs commenced at around the same time, with the same level of resources and level of support.

## 3.8. Causal Logic and the Performance Framework

Figure 23 outlines the causal logic for achieving an outcome of *"long-term viability of the smallholder dairy enterprise."* The performance framework was developed based on the following causal logic:

The long-term viability of each smallholder dairy enterprise is dependent upon reducing the likelihood of the enterprise failing through loss of the dairy animal, and my maximising the milk that the animal produces over each lactation period. In order to maximise milk yield the animal must maintain good health and must be treated promptly when sick so that its body remains in good condition. One serious threat to survival is East Coast Fever (ECF), which is a silent and deadly killer, and in order to safeguard the animal it must be sprayed against tick infestation. The incubation period for East Coast fever is 7-25 days and so spraying with an effective acaricide every 14 days to break this cycle is of critical importance (Homewood *et al.*, 2006).

Figure 23 : Performance Framework and Measures for Dairy Entrepreneurship*




*For a full-page version, see Figure A.16 on pg. 323*

Additionally animals must be drenched regularly against intestinal parasites in order to stay healthy. Farmers are sometimes reluctant to treat sick animals with antibiotics; since they are then restricted from selling the milk to the Milk Bulking Group (MBG), but this is essential in order to keep the animal healthy. Antibiotics are also expensive but failure to properly treat a sick animal risks death and discontinuance of the enterprise.

Good nutrition is the key to high levels of milk production and in order to achieve this, the animal must have a constant supply of basic and good quality forage (Kavana and Msangi, 2005). Although basic forage is the staple of the dairy animal and an essential part of the animal's diet, feeding only forage will result in a basic minimum level of milk production, typically only around 7-9 litres per day. In order to produce commercially viable quantities of milk, the animal must be fed with supplemental feeds containing high energy ingredients and essential minerals and vitamins. These feeds can be prepared on the farm but invariably will still require some purchased ingredients, including maize bran, soya, molasses, oilseed cake and trace minerals and vitamins. In most cases farmers will need to purchase supplemental feeds and the MBG facilitates this through a feeds revolving fund, whereby feeds are purchased on credit and distributed to farmers with the payment recovered as a deduction from the monthly milk payment.

In order to fulfill the obligations of the loan agreement, the entrepreneur must repay the initial loan of an in-calf heifer though both cash and in-kind payments. The cash element of the repayment is made from a deduction made by the MBG from the monthly milk revenue and in order to ensure that the loan is successfully repaid the volumes of milk delivered to the MBG must be maximised. Entrepreneurs will sometimes sell milk opportunistically within the locality but this is considered 'illegal' in terms of both the loan agreement and the cooperative agreement between members of the MBG, although in reality it is widely practiced in order to obtain daily cash income.

The in-kind component of loan repayment is the 'pass-on' of the first heifer (female) calf to the next entrepreneur on the waiting list within the MBG. This is ideally at the stage when the calf has been grown and is in the advanced stage of pregnancy so that the recipient will receive an in-calf heifer with milk revenues only a matter of a few months away.

### 3.9. Justification for Weighting used in the EP Ranking tables

Death of first dairy animal in this venture would normally mean discontinuance of the enterprise if it were not for the intervention of the MDEDP, which replaces the animal in all instances with the exception of death through outright negligence of the animal and therefore receives the highest weighting of 0.20. Frequency of use of acaricides is critical to keeping the animal alive, particularly to ward off the deadly East Coast Fever (ECF) and therefore receives the second highest weighting of 0.10. Other medications to keep the animals healthy including antibiotics to combat bacterial infections and drenches to rid the animals of intestinal parasites also receive a combined weighting of 0.10. Ready availability of water and basic forage were assessed through observation at the time of visiting the *khola* and the animals. While important these were not formally factored into the analysis, since there was the possibility that the researcher and assistant may have been there at a time where water and forage were in the process of being collected, and so they were not assigned a weighting in the field performance rating (FPR).

Table 24 : Weighting of Outcomes and Measures defining EP in the Case Study

| Group | Outcome | Measure of Achievement | Weight |
|---|---|---|---|
| Discontinuance | Likelihood of failure rate of enterprise reduced | Death of first dairy animal | .20 |
| Health | Acaricides applied against ticks every 14 days | Recall re. frequency of use | .10 |
| | Animals treated promptly when sick | Medications purchased through the MBG | .05 |
| | Animals drenched regularly against intestinal parasites | Recall re. Frequency of use | .05 |
| Health and Nutrition | Animals have access to water on-demand | Observation of water availability for the animals | .00 |
| Nutrition | Body Condition Score of Cow Maintained | BCS of cow by independent technical specialist | .10 |
| | Animals have access to quality forage on-demand | Observation of forage availability for the animals | .00 |
| | Use of supplemental feeds optimised | Purchase of supplemental feeds through the MBG | .05 |
| | | Respondent recall re. frequency of use | .05 |
| Nutrition and repayment | Body Condition Score of Heifer Calf Maintained | BCS of heifer calf by independent technical specialist | .05 |
| Repayment | 1st Heifer Calf is successfully 'passed on' | Heifer-calf passed on Yes/No | .10 |
| | Cash load repaid | Cash loan repaid in full Yes/No | .05 |
| Production | Average milk yield maximised | Recall re. Average milk production | .05 |
| | Highest daily milk yield maximised | Respondent recall re. Maximum milk production | .05 |
| | Milk delivered to the MBG maximised | MBG records of milk delivery by month 2008 | .10 |
| Overall | | | 1.00 |

Body condition of the principal animal and the heifer calf are important indicators of the health of the animals, and jointly received a weighting of 0.15. Use of supplemental feeds is important for the animal's health during lactation. With the levels of milk production typical of high-performance pure-breed animals, failure to provide sufficient quantities of supplementary feeds would result in the animal becoming stressed and susceptible to opportunistic infections. Fulfilling repayment obligations to the MBG was critical to the revolving scheme, which was planned so that the initial investment would have a multiplier effect, benefiting not only the first recipients but also those waiting and future generations.

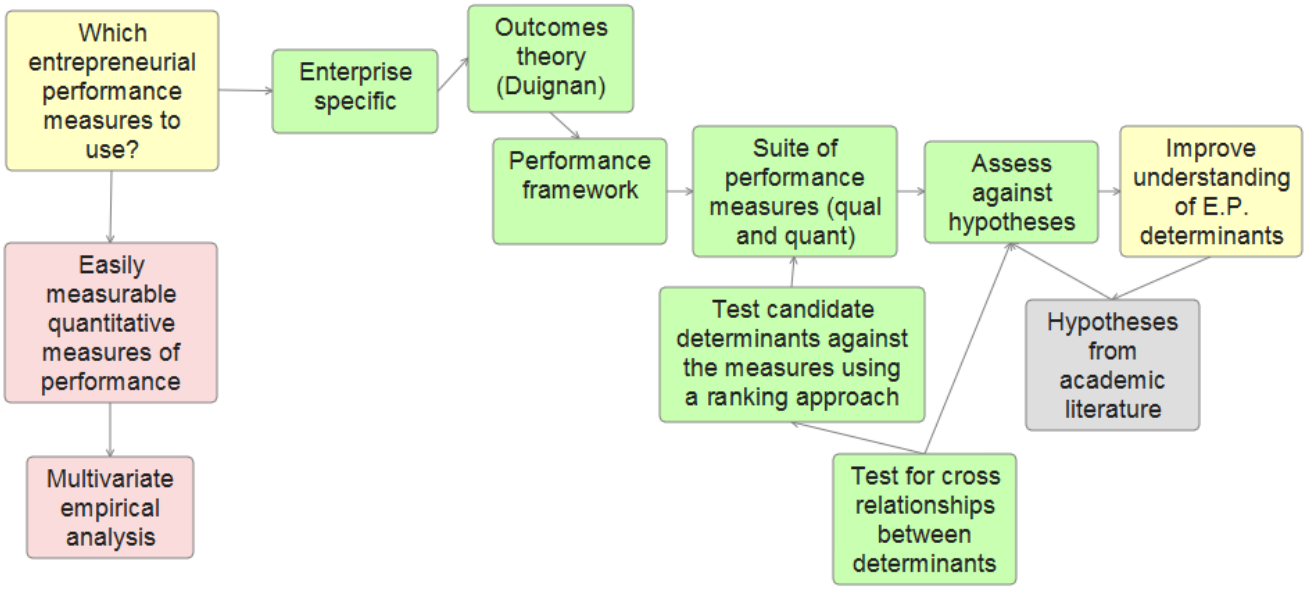
Failure to make the repayments would threaten the animal being repossessed and passed to another entrepreneur-in-waiting, and for this reason the cash and in-kind repayments have a combined weighting of 0.15. Milk production is revenue and maintaining a higher level of milk production and delivery to the MBG ensures that loans

are serviced and the enterprise sustains, and the combined measures for milk production therefore receive the highest weighting of 0.20 equal in magnitude to the death of the animal.

### 3.10. Approach in Establishing EP Measures and testing Hypotheses

The approach in establishing entrepreneurial performance measures and testing hypotheses is illustrated in Figure 24. The choice of EP measures is enterprise- specific and builds upon the performance framework described in section 3.8 on page 116, based on the outcomes theory of Duignan (2005-12). The performance framework represents a hierarchy of intermediate outcomes linking to an outcome of "*long-term viability of the smallholder dairy enterprise*". Performance measures are developed for the outcomes and these constitute a suite of measures, which are both qualitative and quantitative in nature. Each candidate determinant of EP is then tested against each performance measure using a ranking approach.

Figure 24 : Approach in Establishing EP Measures and testing Hypotheses




The values are also computed into a single overall performance rating (OPR) which is then used together with the field performance rating (FPR) to further establish the relationship between determinants and entrepreneurial performance (APPENDIX XI: Measures Scales and Coefficients for OPR Computation on page 326. Additionally, cross-relationships are tested between determinants and a final assessment of the

findings in relation to each null hypothesis is made. The case study information is triangulated with findings from the academic literature and this feeds back to the case study hypotheses to situate them in relation to the academic literature.

### 3.11. Placing the methodology and analytical approach within the academic body

The methodology and analytical approach employed in the research builds upon the work of researchers critically reviewed in Chapter Two. Fine *et al.* (2012) used both 'auditor' (external) appraisers of entrepreneurs as well as self-appraisal and multiple criteria which were aggregated into a single overall appraisal score. Swinney *et al.* (2006) utilised self-reported performance. The methodology employed in this study includes interviewing entrepreneurs and asking them to rate their level of performance for key outcomes, and this self-appraisal is triangulated with institutional information. For example, the entrepreneur's self-reported frequency of use of supplementary feeds is compared with feeds purchased from the MBG by the same individual.

Kepler and Shane (2007) and Boden and Nucci (2000) used discontinuance as their performance measure and discontinuance, or its proxy of replacement of the first animal, figures prominently in the methodology and analysis of this research. Peterman *et al.* (2011), Quisumbing and Pandolfelli (2009) and Horrell and Khrishnan (2007) used agricultural productivity measures as their primary measures of performance and the current study also used productivity of milk production as one of the key elements of performance for deriving both the field performance rating and the overall performance rating in the methodology and analysis.

While Chirwa (2008) analysed secondary data from a large secondary dataset of his principal explanatory variables included a vector of entrepreneur characteristics, including age, education, entrepreneurial skills training and business experience in addition to gender as a separate explanatory variable, and this study also seeks to explore the effects of age, education, gender and to a lesser extent antecedent influence (since this is controlled for by the nature of the project intervention in the study). This was also true for Okurut (2008) who explored internal factors influencing the performance of the firm including education level, business experience, age, and gender of the enterprise owner.

Hietalahtil and Linden (2006) employed semi-structured interview guides using both closed questions and open-ended narrative sections and this was also a feature of the present study. Watson and Robinson (2003) incorporated risk into their analysis of performance in their methodology and analytical approach, and the present study incorporated risk mitigation as a potential explanatory factor influencing performance. and included this in the methodology and analysis (refer to Figure 66 on page 218).

Many of the authors employed a mixed methods approach in their studies and combined these in their methodology and data analysis. This a feature of a convergent parallel methodological design utilised by this study (refer to Figure 22 on page 115) Kodithuwakku and Rosa (2002) selected a case study which provided a fortuitous set of control variables and this was also true for this study (refer to Table 7 on page 52 and Table 21 on page 101).

Table 25 : Authors of Influence in the Study Methodology and Analysis*

| Author(s) | Year | Geog. focus | Performance Measures |
|---|---|---|---|
| Fine *et al.* | 2012 | China | External and self-appraisal multiple criteria |
| Peterman *et al.* | 2011 | Nigeria, Uganda | Agricultural productivity (value/area) |
| Quisumbing and Pandolfelli | 2009 | Includes SSA | Agricultural productivity |
| Okurut | 2008 | Uganda | Sales Revenue |
| Chirwa | 2008 | Malawi | Profit margin and growth in employment |
| Hietalahtil and Linden | 2006 | South Africa | Protection against vulnerability |
| Swinney *et al.* | 2006 | USA | Owner self-reported performance |
| Horrell and Khrishnan | 2007 | Zimbabwe | Agricultural productivity and profitability |
| Kepler and Shane | 2007 | USA | Discontinuance, Employees, SPR |
| Watson and Robinson | 2003 | Australia | Profit (average), Variability in Profit |
| Kodithuwakku and Rosa | 2002 | Sri Lanka | Context specific multiple criteria |
| Boden and Nucci | 2000 | USA | Survival (discontinuance) |

* *table adapted from Table 2 on page 44*

## 3.12. Negotiating Access

The Central Region Milk Producers Association (CREMPA) was contacted with a request for permission to carry out the research (see Annex page 313). The letter included an outline of the research plan in which issues of time and confidentiality were specifically addressed. Anonymity was assured, and the organisation was assured that the survey would comply with all local laws relating to primary data collection exercises, including the Statistical Act of the country (http://www.nso.malawi.net/). It was stated in the request letter (refer APPENDIX V: Request for Permission to Carry out Primary Research on page 313) that the participants would be given the opportunity to see and discuss the overall findings of the study in a facilitated workshop (refer APPENDIX IX: Summary of Focus Group Discussions on page 320).

## 3.13. Sample Frame

The two Milk Bulking Groups (MBGs) selected for study were located in the Central Region, the others being the Northern and Southern regions of the country. Lumbadzi MBG is situated close to the Lilongwe International Airport, some 40 kms north of Lilongwe, the capital city of Malaŵi, with dairy entrepreneurs situated on both sides of the M1 road, the principal communication artery for Malawi running from Chitipa in the far north to Ngabu in the far south, spanning the entire length of the country. The area has an average altitude of 1,230 metres (4,000 feet). Chimbia MBG, also known as Chitsanzo, is located approximately 70kms southeast of the capital around 20kms north-west of Dedza town.

The Chimbia area is at around 1,350 metres (4,400 feet). Both locations are within the 'highlands' of Malaŵi, with the elevations moderating the temperatures in a country which already enjoys a relatively moderate sub-tropical climate. There are three distinct seasons throughout the country; a warm and wet season from November to April; followed by a cool and dry season from May to August, where temperatures can drop to as low as 4 degrees Celsius, with frost occurring in some areas in June and July. From September to October temperatures gradually increase, with averages temperatures ranging between 25 and 37 degrees Celsius. There is considerable variation in altitude, which affects overall temperatures in given localities and rainfall patterns. Almost all of

the annual precipitation falls within the Nov-Apr period. Lumbadzi has a drier climate than Chimbia with between 800–1,000mm per year compared to Chimbia, which typically receives over 1,000mm annually.

The CREMPA database shows that 254 animals were distributed to farmers in the Central Region (Table 26). Five animals were not distributed owing to problems with these animals. The gender distribution of recipients was 48% to females and 52% to males. Animals were assigned to each MBG sequentially with the first 40 animals being distributed to Chimbia MBG after spending the mandatory 30-day period in a quarantine facility in Lilongwe. There followed distribution of animals to Namwili, Magomero, Lumbadzi, and a second distribution of 39 animals to Chimbia (Chitsanzo MBG). Animals were assigned to Dzaonewekha later.

Table 26 : Animals Distributed in 2004/5 by Gender of Farmer and MBG

CREMPA database

| MBG | SF* | Female | Male | Not Dist | All |
|---|---|---|---|---|---|
| Chimbia | √ | 42 | 37 | | 79 |
| Dzaonewekha | | 17 | 23 | | 40 |
| Lumbadzi | √ | 16 | 27 | | 43 |
| Magomero | | 17 | 25 | | 42 |
| Namwili** | | 30 | 15 | 5 | 50 |
| All | | 122 | 127 | 5 | 254 |

* *MBGs selected to provide the sample frame for the research*

*** Namwili was also a holding centre as well as an MBG*

Assignment of animals to individuals within an MBG was made randomly. The tag numbers for each animal were written on separate small papers and these were then folded and placed in a container. Each farmer scheduled to receive an animal from that batch would come forward and blindly pick a paper from the container (as illustrated in Photograph 4). There were only three exceptions to this random assignment. The first was in Namwili where a lady who had recently lost her husband was given the first choice of animal at the discretion of the group. The other two were farmers at Chimbia (one MHH and one FHH) who had lost their first animals and were given the opportunity to select a replacement animal directly from the Quarantine.

**Photograph 3: Random assignment of animals**

One indicator of animal health used by vets and paravets is body condition scoring (BCS). Paravets are trained to body condition score on a scale from 0.1 to 5.0 based upon a series of measures in relation to the animals profile at the rear (refer APPENDIX VI: Description of BCS for Dairy – Neary and Yager (2002) on page 315). Calibration of BCS is made during training to ensure that individual scoring is as uniform as possible. The business start-up in the case of farmers participating in the scheme was on receipt of one dairy animal. After 4 years it would be anticipated that the more successful farmers would have established dairy enterprises with at least two dairy animals.

Body condition score is being used as one (proxy) measure of entrepreneurial performance. Average body condition scores (BCSs) of the 147 animals assessed demonstrate that at the time of assessment there was little difference between the body

conditions of the animals in terms of ownership according to gender (Table 27). This would be expected given the random assignment of animals to farmers irrespective of gender.

Table 27 : Average Body Condition Scores by MBG* in 2004
MDEDPIII Project Database

| | Body Condition Score | | | No. of animals assessed | | |
|---|---|---|---|---|---|---|
| MBG | Female | Male | All | Female | Male | All |
| Chimbia | 2.5 | 2.5 | 2.5 | 34 | 31 | 65 |
| Lumbadzi | 2.7 | 2.8 | 2.7 | 15 | 26 | 41 |
| Namwili | 2.9 | 2.8 | 2.9 | 28 | 13 | 41 |
| All | 2.7 | 2.7 | 2.7 | 77 | 70 | 147 |

** where assessments were undertaken*

Table 28 gives an outline of the sample frame for the four Milk Bulking Groups with participants in the Heifer Loan Scheme, excluding Namwili MBG. The CREMPA database available for construction of the sample frame made no distinction between female household heads (FHH) and females with resident partners (FWRP). This is considered to be an important distinction in the African context, since FHHs by definition have no resident partner to provide support in management of the business (Horrel and Khrishnan, 2007).

The sampling frame was further refined prior to actual sampling by sub-dividing females into the two categories of Female-Headed Households (FHHs), 'females with resident partners' (FWRP) and Male Headed Households (MHHs). All households are well known by the MBG committee and key informants had no difficulty in breaking out the category of females into FHH and FWRP. The sampling strategy was originally 20:20:20, with numbers sampled within each MBG based on probability proportional to size (PPS), while maintaining an equal number of farmers interviewed in each category for each MBG.

Table 28 : Sample Frame and Sample for Participants in Heifer Loan Scheme*
MDEDPIII Project Database

| | Sample Frame | | | Sampled | | | |
|---|---|---|---|---|---|---|---|
| MBG | Females | Males | All | FHH | FWRP | MHH | All |
| Chitsanzo | 42 | 37 | 79 | 12 | 10 | 26 | 48 |
| Lumbadzi | 16 | 27 | 43 | 3 | 5 | 4 | 12 |
| Total | 58 | 64 | 122 | 15 | 15 | 30 | 60 |

** received Friesians/Holsteins in the first round of the Heifer Loan Scheme*

This sampling strategy was modified after the first round of field work in Lumbadzi following preliminary analysis of the survey results, to 15:15:30 in relation to FHH:FWRP:MHH. This is characteristic of an "emergent design" whereby "*the initial plan for research cannot be tightly described, and all the phases of the process may change or shift after the researcher enters the field and begins to collect data*" (Creswell, 2009, p.175).

One former Land O'Lakes programme field officer, Macmillan Masache assisted with Chichewa translation during the household interview, assessment of Body Condition Score (BCS) and assigning the field performance rating for the entrepreneur (FPR). He was only available for a limited period in Malawi as he was then resident in South Africa. It was considered essential for consistency of scoring that one person make the BCS and field performance rating (FPR). Given the time taken to establish the sample frame in each MBG, and the limited time available for interviewing, it was decided during the course of the fieldwork to limit the MBG farmers surveyed to Lumbadzi and Chimbia.

### 3.14. Sample Size Determination

Sample size determination for the primary research work in the Lilongwe milk-shed was pragmatic and to a large extent was dependent upon a number of management and organisational factors, principally the time available on the part of both the researcher and his research assistant, who both had work commitments outside the country. Additionally, individual interviews were intensive and involved travel to the residence of each household to observe the operation of the dairy enterprise, assess the condition of the dairy animals, and conduct a series of discussions and a number of interactive exercises with participants (using the circle and stones instrument). This limited the number of interviews that could be undertaken in each day and posed a logistical challenge in ensuring that appointments were made with individuals and these times were strictly followed, so as to respect their time and not to unduly inconvenience these busy people.

The Chimbia and Lumbadzi samples were drawn randomly among the three household groups: FHH; FWRP; and MHH with the sample number adjusted in order to move from a F:M ratio of 40:20 to a ratio of 30:30 after further consideration concerning equal representation of males and females in the sampling and the need for a demarcation

between females with resident partners and those without.

Sample size determination is made according to the following formula:

$$ss = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

Z = the Z value which is 1.96 for a confidence level of 95%
p = % picking a choice, expressed as a decimal (0.5 used for sample size calculation
c = confidence interval, expressed as a decimal (0.05 = 5%)

Where there is a finite population, which is the case here, then the additional sample size computation is made:

$$ss_{fp} = \frac{ss}{1 + \frac{ss - 1}{pop}}$$

Where:

$ss_{fp}$ = the adjusted sample size for a finite population
pop = population size

This results in the sample size requirements, which are detailed in Table 29 for a confidence level of 95% and a confidence of interval of ±5%. With the less than required sample size the confidence intervals increase overall to ±9%.

Table 29 : Determination of Sample Size with C.L. = 95% and C.I. = 5%

| MBG | Sample Frame | Required Sample | Actual Sample | Actual C.I. ± |
|---|---|---|---|---|
| Chimbia | 79 | 66 | 48 | 9 |
| Lumbadzi | 43 | 39 | 12 | 24 |
| Both | 122 | 93 | 60 | 9 |

*http://www.surveysystem.com/sscalc.htm*

The confidence intervals are higher if we treat each gender grouping as a separate sample as indicated in Table 30 increasing to ±13%.

Table 30 : Calculation of Confidence Intervals by Gender and MBG

| MBG | S.F. Fems | Fems n | C.I. ± | S.F. Males | Males n | C.I. ± | S.F. All | Samp All | C.I. ± |
|---|---|---|---|---|---|---|---|---|---|
| Chitsanzo | 42 | 22 | 15 | 37 | 26 | 11 | 79 | 48 | 9 |
| Lumbadzi | 16 | 8 | 25 | 27 | 4 | 46 | 43 | 12 | 24 |
| Total | 58 | 30 | 13 | 64 | 30 | 13 | 122 | 60 | 9 |

S.F. = sample frame
C.I. = confidence interval
n = sample number

The overall conclusion is that the results from the actual sample drawn are sound but need to be treated with caution from the perspective of statistical testing of the hypotheses. The quantitative analysis needed to be bolstered with other techniques of evidential inquiry, and these are explored in the analysis. At the request of the examiners (see APPENDIX XVIII: Examiners' Guidance and Candidate Response on page 355) tests of statistical significance have been included in the analysis and are presented in APPENDIX XVII: Statistical Tests of Significance for OPR and FRP on page 345.

### 3.15. Response Rate

The response rate was 98%, with only one entrepreneur being unavailable for interview at the time of visiting, necessitating substitution from a contingency list which was also drawn randomly from the population under investigation. The researcher and assistant were both known to the respondents as former employees of Land O'Lakes Inc. which was the implementing partner of the USAID programme for dairy enterprise development providing the dairy animals on a loan scheme to participants. The researcher was then the manager of the scheme and his assistant a veterinary extension officer working in an adjacent MBG (Namwili). This allowed for an easy introduction and instant rapport with the respondents. In addition, for some of the visits, the two were accompanied by the MBG extension officer, which further assisted the respondents to be at ease with the researcher and the spirit of the exercise.

### 3.16. Instruments Used in Data Gathering

Table 31 outlines the topics covered and research instruments employed:

Table 31 : Outline of Topics and Research Methods in the Case Study

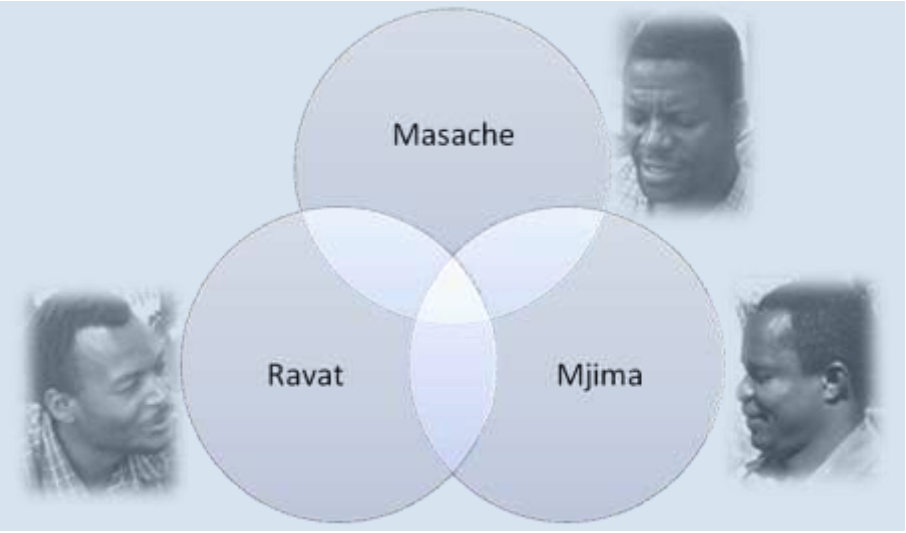
| Topic | Information being collected | Research Instrument |
|---|---|---|
| EP | ▪ Death of first animal | ▪ Interview |
| | ▪ Average milk yield over the lactation | ▪ Interview+MBG records |
| | ▪ Heifer calf pass-on | ▪ Interview |
| | ▪ Body Condition Score of animal(s) | ▪ Interview |
| | ▪ Frequency of medication use | ▪ Interview |
| | ▪ Frequency of supplemental feeds | ▪ Interview |
| | ▪ Frequency of acaricides use | ▪ Interview |
| | ▪ Litres of milk delivered to MBG in 2008 | ▪ MBG records |
| | ▪ MK value of milk delivered to MBG in 2008 | ▪ MBG records |
| | ▪ MK value of feeds on credit in 2008 | ▪ MBG records |
| | ▪ MK value of medicines on credit in 2008 | ▪ MBG records |
| | ▪ MK value of acaricides on credit in 2008 | ▪ MBG records |
| Risk Propensity | ▪ Risk management strategies | ▪ Circle and stones tool |
| | ▪ Level of technology being adopted | ▪ Observation |
| | ▪ low or high input/output | ▪ Interview+ MBG records |
| Antecedent Influence | ▪ Work or enterprise experience relating to the decision to embark upon dairy | ▪ Interview guide |
| Networking | ▪ Exploring the range of networking with other entrepreneurs in dairy and in other enterprises | ▪ Interview guide |
| Borrowing | ▪ Interest in borrowing to expand the enterprise | ▪ Semi-structured interview guide |

### 3.15.1. Field Performance Rating and Inter-rater Reliability

The strategy for measuring entrepreneurial performance involved a mix of objective measures and subjective performance assessments by two independent technical specialists, and one lead farmer. One technical specialist (Mr Mjima) had worked in the MBG for some four years and had in-depth knowledge of each entrepreneur. The other specialist (Mr Masache) had not worked in the MBG previously except in the capacity of technical trainer some four years previously at the start-up of the enterprises. The lead farmer, Mr Ravat, was himself both a member of and elected official (Treasurer) within the MBG, and also had in-depth knowledge of each dairy entrepreneur within the MBG. While the technical specialist had more than three years of experience of working with each individual entrepreneur as their paravet and dairy extension specialist, the treasurer was a life-long member of the community (Figure 25).

The Treasurer and resident technical specialist were asked to rank all entrepreneurs within the MBG from a tabular listing prepared by the researcher. The table did not include details of the status of entrepreneurs in terms of household headship (FHH, FWRP and MMH). This was done deliberately so as not to prompt them with any characteristics of the individuals which might lead them to a particular assessment. The task provided to them was to rate the entrepreneurs based upon their assessment of entrepreneurial performance over their years of dairy enterprise operation.

Figure 25 : Assessing the Inter-rater Reliability of Field Performance Raters




No specifics were given in terms of criteria to be used and so the assessment was something of a 'black box' activity. In an assessment of the reliability and validity of household welfare rankings in Malawi using a 'black box' key informant group rating method Calogero *et al.* (2001) found that the reliability of the method was no more than fair to moderate when compared to indicators from a quantitative household survey. As Trochim (2006) states "*People are notorious for their inconsistency*" and this points to a need to diligently check on consistency of the raters.

Mr Masache did not have in-depth knowledge of entrepreneurs within the MBG but was able to assess them during the interviews within their household locations. Comparison of rating for consistency using the Cronbach's Alpha coefficient was made for all entrepreneurs in a comparison of the two raters, and for the subset of interviewed entrepreneurs for an assessment of reliability for all three raters. A comparison of rating between Mjima and Ravat for the entire population of 112 entrepreneurs yields a

Cronbach's alpha coefficient of 0.619. Cronbach's Alpha for performance ratings on the subset of sampled and interviewed farmers indicates a coefficient of 0.674, suggesting that for the sampled entrepreneurs the level of inter-rater reliability was higher than for the population with the introduction of the third assessor Masache. The difference in the Cronbach's alpha coefficient for the sample entrepreneurs with the exclusion of each of the assessors is provided in Table 32.

Table 32 : Cronbach's Alpha Coefficient by Exclusion of Assessor

| Assessor | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Ravat | 4.13 | 1.984 | .505 | .256 | .607 |
| Mjima | 3.27 | 1.308 | .500 | .252 | .577 |
| Masache | 3.60 | 1.393 | .515 | .272 | .542 |

This suggests that the exclusion of Ravat would reduce the inter-rater reliability the least. In contrast, the exclusion of Masache's performance rating would have the largest negative effect on the Cronbach's alpha coefficient reducing it from 0.674 to 0.542. According to DeVellis (1991) an alpha coefficient of 0.65 – 0.70 is 'marginally acceptable', between 0.60 – 0.65 'undesirable' and a value below 0.60 'unacceptable'. An alpha coefficient of 0.674 roughly corresponds to the assessment of inter-rater reliability of Calogero *et al.* (2001) of 'fair to moderate'. The alpha coefficient was developed by Lee Cronbach in 1951 and in his writings some fifty years later presented posthumously in Cronbach and Shavelson (2004 page 4) reviewed it's wide application and stated that *"Coefficients are a crude device that do not bring to the surface many subtleties implied by variance components."*

Masache's field performance rating (FPR) was based on an assessment immediately following in-depth interviews with the entrepreneur at his residence and after making direct observation of the conditions of the dairy animals, and based on this and the formal calculations above, the rating of Masache is considered to be the best of the field performance ratings. However, it is not considered sufficient as a stand-alone rating of entrepreneurial performance for the purposes of the study. The overall performance rating (OPR) derived from the performance framework and measures (refer Figure 23 on page 117) provides a complementary measure for triangulation with the FPR of Masache and forms the basis for a comprehensive analysis of performance.

### 3.15.2. Interviews at Household locations

Appointments were made with individuals through the MBG Treasurer and resident extension officer and every attempt was made to keep to the times agreed upon. The researcher together with the independent technical assessor, Mr Masache, travelled from household to household visiting with individuals and in many instances engaging with not only the entrepreneur but also with spouses and sometimes the entire family, particularly during the circle and stones participatory exercise. This often engaged the whole family in discussion not only with the researcher and assistant but also with each other. The interview guide was designed to be as efficient of time as possible, so as to maximise the attention of the entrepreneur and to cause minimal disruption to on-going activities. Folding chairs were carried to the households by the research team so as to ensure that both the interviewer and entrepreneur were comfortable and every effort was made to ensure that the discussions took place in a casual and collegial atmosphere with open and frank discussion involving all parties. A copy of the semi-structured interview guide is provided in APPENDIX III: Case Study Interview Guide on page 300.

### 3.15.3. Direct observation

Following discussions with the entrepreneur and the circle and stones participatory exercise with the family members, all participants went to the *khola* and direct observations of the animals, including the body condition scoring of the principal animal and the heifer calf (f present) were made (refer APPENDIX VI: Description of BCS for Dairy – Neary and Yager (2002) on page 315). Further discussions followed concerning aspects of management of the animals, and the availability of basic forage, water and supplementary feeds, based on observations made. The technical specialist then made the field performance rating (FPR) after completing the visit and just prior to departing the household.

### 3.15.4. Key informant interviews

Key informants included the past and present officials of the MBG and past and present extension support personnel who had been closely involved with the entrepreneurs over a number of years and who knew them all individually. In addition, a number of individual entrepreneurs were selected from within the group to discuss more general issues arising from the analysis of household interviews and following the focus group discussions (refer Table 50 on page 178).

### 3.15.5. Circle and Stones Participatory Investigation of the Enterprise Mix

The methodology for estimating the past, present and projected future enterprise mix involved an adaptation of a visual participatory instrument known as 'proportional piling' (PP). Use of the instrument builds upon the body of applied research work in participatory techniques in general (Mayoux and Chambers, 2005, Chambers, 1994) and in the utilisation of proportional piling in particular (Bobokhonov *et al.*, 2006; Sharp, 2007, Catley *et al*., 2004, Catley and Mariner, 2002). The technique was adapted in this study to provide not only a 'snapshot' picture of the enterprise mix at the time of investigation, but also to simulate a time-series of changes in the household enterprise mix over the period 2003-13.

Catley *et al.*, 2004 tested the validity of the proportional piling instrument in their veterinary epidemiological study of the association between heat-intolerance syndrome and foot-and-mouth disease among cattle in Tanzania. They used both conventional research methods and the proportional piling instrument to explore the validity of the PP instrument in determining the association. Key informants were Masaai pastoralists in the Morogoro Region and Sukuma agropastoralists in the Mwanza and Shinyanga Regions of Tanzania.

Their results indicated that the proportional piling technique successfully demonstrated association between heat tolerance syndrome and food and mouth disease in both groups, against the benchmark of clinical examination of cattle by veterinarians. The authors used another participatory instrument, matrix scoring, which involved group discussion and scoring. They concluded that when the incidence of a disease is low, methods used with groups of informants (in this case matrix scoring) may not reveal

knowledge held by a few individuals, and in such situations, methods focussing on individual informants, referring specifically to the PP instrument, were preferred.

Rufael *et al.* (2008) in their work in southern Ethiopia compared participatory epidemiological techniques to conventional foot and mouth disease surveillance techniques. The proportional piling instrument was used to estimate the age-specific incidence and mortality of acute foot and mouth disease in fifty herds on the Borana plateau. The validity of perceptions of proportions of animals affected by foot and mouth disease were compared to the results from modern laboratory diagnosis. There was a high level of correspondence between the results of the PP exercise undertaken with the Borana pastoralists and the clinical diagnosis of foot and mouth disease. The findings of the study enabled the authors to conclude that standardised participatory tools were capable of producing quantitative as well as qualitative data that could be used to formulate appropriate global foot and mouth disease control strategies.

The International Federation of Red Cross and Red Crescent Societies endorses the use of the PP instrument in estimating quantities and proportions including sources of family income and expenditure and food consumption patterns. They consider proportional piling to have additional benefits as a facilitation tool, breaking down barriers and acting as a focus for discussion (IFRC, 2006).

In the case study participants were asked to describe the mix of household income sources five years prior to the interview by using a circle and 25 bottle tops. Initially participants were asked to place one bottle top around the circle to represent each source of income. These were then marked with a letter to distinguish each enterprise such as C=*Chimanga* (maize); S=soya; N=*N'gombe* (cow=dairy) etc. Then people were asked to distribute the bottle tops in such a way as to represent the relative amounts of income derived from each particular enterprise (Photograph 4 on page 136 illustrates this). The enterprises were recorded and the count for each, and then the exercise was repeated for the mix of enterprises at the time of interview. Respondents were then asked to visualise their household enterprise mix in five years' time.

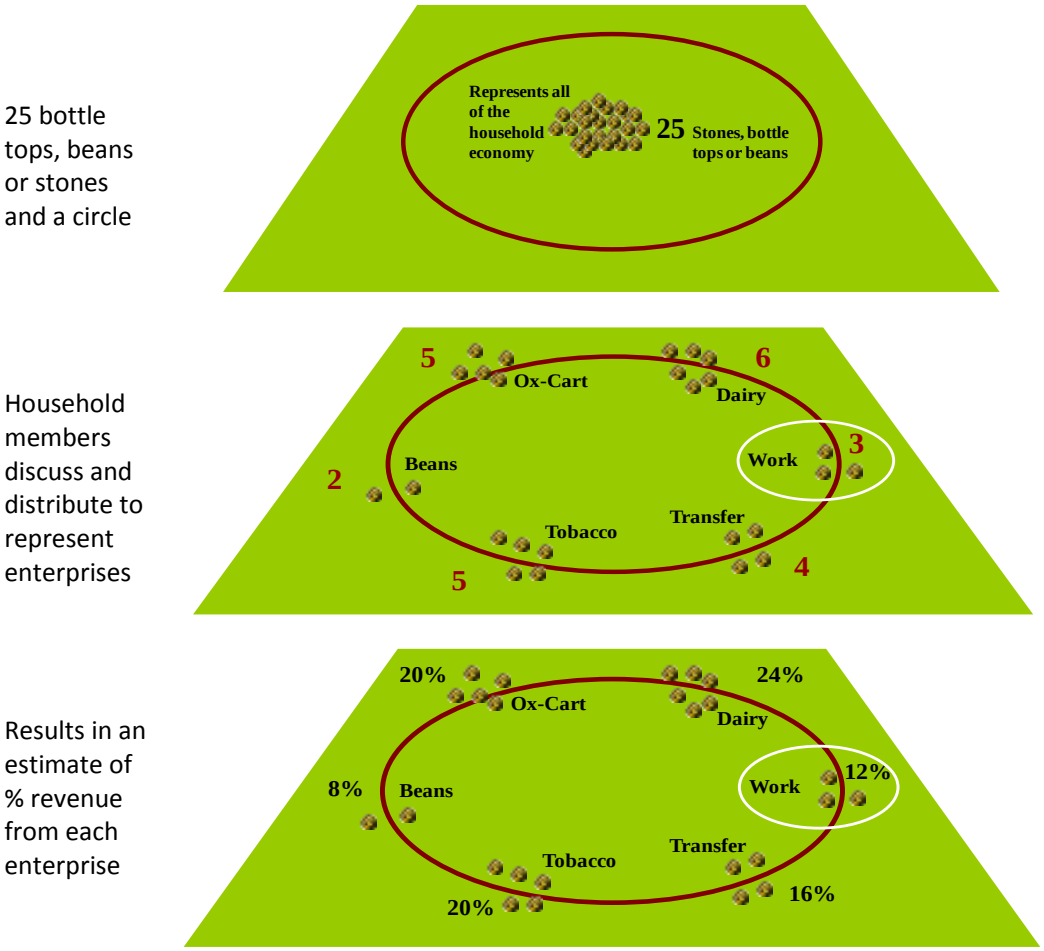
The premise is that increased levels of diversification of enterprises or no change in the enterprise mix equates to a risk mitigation strategy, and that the maintenance of enterprise diversity may have an effect on the level of effort invested in the dairy enterprise, which may in turn adversely affect the overall performance of the dairy enterprise.

Photograph 4: Circle and Stones in Operation

The researcher first employed the circles and stones instrument in a farmer survey of existing dairy entrepreneurs in 2002 while working for Land O'Lakes Malawi, and in the survey used a combination of a traditional 'tick box' questionnaire survey with some mix or variant of 'participatory techniques' including the circle and stones instrument. In addition to assessing the range of enterprises and the relative magnitude of income from each enterprise, an attempt was also made to estimate the absolute level of household income by asking the entrepreneur to estimate the total income derived from one of the less significant enterprises. The rationale for this was that information on the largest income source might be considered by the entrepreneur to be 'sensitive' and an estimate derived from the least significant sources might be subject to greater error in estimating the total income for the household.

This instrument had been utilised by the researcher in a number of previous investigative studies in different countries including Malawi, Ethiopia and Tajikistan. Figure 26 illustrates the methodology.

Figure 26 : Illustration of the Circle and Stones Participatory Instrument




The estimate of total household income from the circle and stones instrument was then correlated with a subjective assessment of wealth ranking made by the interviewer immediately following the household interview. The finding was that there was a strong correlation between the two measures. A range of selected household assets known to be closely related to household income status were also used as a proxy measure of income and these were also correlated with both the wealth ranking and income estimate from the PP instrument, with the result that all measures were found to be closely correlated.

The conclusion from the study was that household income sources and approximate household income values could be measured from a single-visit survey with sufficient reliability to enable performance monitoring to be undertaken. The assessment of validity and reliability of the PP instrument resulted in its incorporation into the Performance Monitoring Plan (PMP) of the MDEDP for USAID/Malawi.

### 3.15.6. Focus Group discussions

Focus group discussions were held following the collation and preliminary analysis of results from the household interviews. Eight focus groups were formed involving: two comprising female-headed households; two for females with resident partners; and four for male headed households. The broad discussion topics introduced to the groups for discussion within each group were:

- What does a dairy farmer need to be successful?
- What problems do you encounter in farming?
- What solutions do you have to the problems?
- How do you see the future of dairy farming and why?
- If you were offered an OIBM loan at 22% would you take the loan?
- How much credit would you take?
- Are men or women better farmers?

The themes that emerged from the focus group discussions are summarised in APPENDIX IX: Summary of Focus Group Discussions on page 320.

### 3.15.7. Secondary data from the Milk Bulking Group

Physical and financial records for Chimbia for the calendar year of 2008 were provided to the researcher by CREMPA. These included information on the volume and value of milk sales made through the MBG by individual entrepreneurs. In addition, the value of purchases of medications and supplementary feeds purchased by individuals using the revolving funds of the MBG was collated from the financial records.

## 3.17. Using external secondary data to support the academic literature

In addition to the findings of authors in the academic literature, the researcher has also undertaken analysis of the Global Entrepreneurship Monitor (GEM) consolidated data set of 55 countries from 2001-06. While the researcher analysed information from all countries in the dataset, there has been a particular focus on the lesser developed countries (LDCs) using the United Nations human development index (HDI) categories of low, medium and high 'income' countries. This consolidated data set includes only two countries in Africa, Uganda and South Africa. There are now many more African countries in Africa that have joined the GEM consortium of-late including Malawi

(participating in the 2012 surveys). The data release policy of the GEM consortium typically allows release of the datasets after four or five years and so the information for most African countries will only be available to those participating in the country studies and released into the public domain around 2016 or 2017.

Comparative tables have been produced for the low and medium category HDI countries which comprise: China, Colombia, India, Indonesia, Jamaica, Jordan, Peru, Philippines, South Africa, Thailand, Turkey, and Uganda. This analysis is used along with consideration of the academic literature to provide the conceptual framework for the primary research study.

### 3.18. Internal Triangulation of Primary Research Findings

According to Saunders *et al.* (2009 pgs. 146 and 602) triangulation *'refers to the use of two or more independent sources of data or data-collection methods within one study in order to help ensure that the data are telling you what* you think they are telling you'.

Examples of internal triangulation within the case study are provided in Table 33.

Table 33 **:** Examples of Internal Triangulation of Research Findings

| Performance measure | First measure | Triangulated measure |
|---|---|---|
| Entrepreneurial performance rating (FPR and OPR) | Independent technical expert field performance rating (FPR) | MBG extension officer and key informant (MBG treasurer) FPR |
| | Independent technical expert FPR | Overall performance rating derived from the performance framework (OPR) |
| Death of first dairy animal | Farmer response | Extension officer |
| Milk production | Farmer estimate | MBG records |
| Heifer calf pass-on | Farmer response | MBG Extension officer |
| Body condition score (BCS) of the cow | Independent technical expert | MBG Extension officer |
| Body condition score of the heifer calf | Independent technical expert | MBG Extension officer |
| Frequency of medications and supplemental feeds | Farmer estimate | MBG records |
| Animals have access to quality forage on demand | Observation | Body Condition Scoring |
| Various | Farmer response at interview | Focus group discussions of findings |

### 3.19. Re-visiting the literature during the Thesis-writing process

During the writing-up process of the research project, the academic literature has been re-visited and new articles consulted, with the findings of recent works triangulated with those of earlier articles. There were several re-iterations involving analysis then recourse to the academic literature.

### 3.20. Ethical Considerations

Permission to conduct a survey exercise was provided by the Central Region Milk Producers Association (CREMPA), the body that represents the interests of all dairy entrepreneurs within the region. Representatives of the two Milk Bulking Groups were approached and the objective of the research was explained to them and their consent obtained.

The principle employed was that everyone participating in the research should do so willingly. All participants were guaranteed the following rights:

- Choose whether or not to participate without penalties
- Withdraw from the interview at any time, even if they had previously given consent
- Refuse to complete any part of the data collection instrument

In line with the University ethics policy each person interviewed was given the opportunity to decline to be interviewed or to answer specific questions in the course of the discussion with him or her. Respondents were assured of their anonymity and the researcher has kept the completed questionnaires and only summary information has been shared with the association members or other parties; no individual information has been presented publicly.

All primary research information has been kept confidential. The researcher has taken pains to ensure that a particular respondent's identification has not been released through data presentation and discussion in the thesis. To ensure confidentiality:

- Data was collected with maximum privacy and convenience for the respondents in places where interviews were held privately, where this was appropriate

- Information sharing about individual participants with other people was proscribed
- Completed surveys and interviews have been kept in a secure location where they cannot be seen by other people
- Completed material will be securely disposed of when no longer needed

Throughout the research process the following principles have been applied:

- Utility: the research addresses important questions, provides clear and understandable results, and includes meaningful recommendations
- Feasibility: the research is kept realistic and practical, and the respondents are not overburdened in terms of questions and time (refer section 3.15.2 on page 133)
- Propriety: the research is legal and ethical
- Accuracy: Information is collected, analysed, reported, and interpreted correctly, truly and impartially

### 3.21. Constraints and Limitations of the Research

The primary research was entirely self-funded and constraints in funding limited the scope of the investigation. Additionally, the research assistant who accompanied the researcher throughout the course of the household visits, who was both a technical specialist in dairy and a native speaker of Chichewa, the principal language of discussion with participants, was only available for a limited period, since he was at that time working and resident in South Africa.

These two factors both worked to constrain the number of respondents as well as the number of MBGs that could be included in the sample. The sample size was also limited as a result of of the intensity of one-on-one discussion at each respondents dwelling in relation to the time available for the fieldwork and the financial limitations of a self-funded study. This affected the levels of statistical significance in making a quantitative analysis of the determinants of entrepreneurship and comparative analysis by gender.

Another possible limitation in the primary research is the existence of ‘left censoring’ (Kalleberg and Leicht, 1991). Some of the initial participants had already discontinued operation at the time of the interviews, some four years after the enterprise start-up. One of the respondents interviewed in Lumbadzi at the start of the survey had actually

lost her animal, without replacement, but was included in the sample, with some comparative information therefore being unavailable in the overall analysis. The practical problem was that further inclusion of those who had discontinued in Chimbia MBG would have created additional difficulties in assessing entrepreneurial performance using some of the measures in the performance framework, which required assessment of an existing enterprise. Fortunately, owing to the nature of enterprise support in Chimbia, which included replacement of animals lost, very few entrepreneurs had discontinued operation, and all sampled had existing operational enterprises. Exceptions were the very few cases where animals had been removed from entrepreneurs owing to negligence and to protect the animals (comprising two male-headed households and one female-headed household). These individuals were excluded from the sample frame for Chimbia MBG.

There is the possible limitation of 'right censoring' in the research design in that entrepreneurs were being studied at a fixed time after the start of the enterprise. Further changes in performance of those enterprises may have occurred following the field investigation. A continuing round of follow-up studies to monitor the on-going changes as the enterprises and the entrepreneurs mature will eventually mitigate this potential bias.

### 3.22. Overcoming the Constraints and Limitations

Despite the limited sample size the use of complementary data, where available, from the entire population from which the sample was drawn allowed for testing of the veracity of the sample in making inferences about the entire group. In addition, triangulation with data from key informant knowledge of all entrepreneurs in the MBGs and the supporting financial data from Chimbia MBG for 2008 has ensured that findings and conclusions drawn from the study are robust.

This chapter has discussed the philosophical stance of the researcher and detailed the methodological approach and stages adopted. The control factors in the study were explained, and the causal logic of the performance framework detailed. The stages in developing the performance framework to derive context-specific measures of entrepreneurial performance were elaborated. Entrepreneurial performance measures derived from the outcomes performance framework were discussed together with justification of their weightings. The data gathering instruments were detailed, and examples of internal triangulation of the findings were provided. Finally, constraints and limitations of the study were explored, with measures take to mitigate their impact on the study presented.

Chapter Four details the results of the analysis beginning with *a priori* expectations and the rationale for them. This is followed by a presentation of the demographic characteristics of the participants and comparison with the national and regional populations. This is followed by analysis of subjective measures of entrepreneurial performance on the part of, the entrepreneurs themselves, the technical experts and a key informant. Thereafter, findings of the household interviews are detailed, together with those from focus group discussions and key informant interviews.

# Chapter Four – Analysis and Findings

# 4 Analysis and Findings

## 4.1. Introduction

The chapter presents the analysis of the information gathered through household interviews, focus group discussions and key informant interviews. This primary information is supported by financial data collated from Chimbia MBG physical and financial records of inputs purchased and milk sold to the processor. The chapter presents findings that develop from the analysis, and finally triangulates the overall performance ratings (OPRs) computed from the weighted performance measures with field performance ratings (FPRs) from the household interviews and observations.

## 4.2. A Priori Expectations and the Rationale for them

A large body of academic literature regarding gender differentials in entrepreneurial performance indicates that, provided that industry-type is controlled for and females and males receive equal exposure through either or both experiential learning or formal business training, there will be no significant difference in performance between females and males (Bardasi *et al.*, 2011; Khanka, 2009; Kepler and Shane, 2007). This was the expectation of the researcher at the very least, and given his prior survey work of dairy farmers in the same region in 2002 and 2003 prior to the heifer sub-project, if there were to be any differences in entrepreneurial performance then the *a priori* expectation would be that females would outperform males.

Key informants, including those who provided their individual assessments, which make up part of the primary research, supported the notion that females were better smallholder dairy entrepreneurs than males under conditions of high management, with zero-grazing and using commercially purchased feeds and medicines. Females were perceived to be superior caregivers in this context, and therefore on balance better managers.

## 4.3. Demographic Characteristics of Respondents

The typical profile for commercial dairy entrepreneurs in the study area is an average age of almost 50 years, six dependents including five children in the household (Table 34). Almost 90% of the respondents had completed at least some primary education and just over one quarter had received some sort of vocational training. Thirty percent of the dairy entrepreneurs had been formally employed in a wide range of occupations from civil servant to bricklayer; buyer to steel fixer. Only one of the respondents had previous experience in dairy husbandry, having worked as a dairy attendant on a nearby estate.

Table 34 : Demographic Characteristics of Respondents by HH Group

| HH Group | Age | % Married | No. of Children | No. of Dependents | % Primary Educ.+ | % Vocational Training | % Emp. experience |
|---|---|---|---|---|---|---|---|
| FHHs | 51 | 0% | 3.7 | 5.6 | 87% | 20% | 20% |
| FWRPs | 50 | 100% | 4.4 | 5.4 | 80% | 27% | 13% |
| MHHs | 46 | 100% | 5.6 | 6.2 | 93% | 33% | 43% |
| All | 48 | 75% | 4.8 | 5.8 | 88% | 28% | 30% |

According to the 2008 Population Census of the National Statistical Office (NSO) of the Government of Malawi 30% of females of 45 years and over have been widowed and 11% divorced or separated nationally. Average household size is 4.6 persons countrywide, and in the Central Region the figure is 4.7 persons, suggesting that the households surveyed have higher than average household sizes.

Table 35 compares the marital status of the female respondents participating in the study with NSO statistics for females of 45 years and over nationally and within the Central Region. The comparison suggests that while the percentage of widowed females closely mirrors regional and national distributions, the percentage of divorced and separated females is relatively higher and the percentage of married lower. This is possibly due to the sample design of equal numbers of female-headed households (FHH) and females with resident partners (FWRP) selected, although the sample of 25% of FHHs from within the overall sample mirrors the percentage of FHHs within the overall population which is just under 25%.

Table 35 : Comparison of Marital Status of Females against National Statistics

| Marital Status | Female Respondents | Females 45+ years Central Region | Females 45+ years Nationally |
|---|---|---|---|
| Never married | 3% | 1% | 1% |
| Married | 50% | 61% | 58% |
| Divorced/Separated | 17% | 10% | 11% |
| Widowed | 30% | 28% | 30% |
| Total | 100% | 100% | 100% |

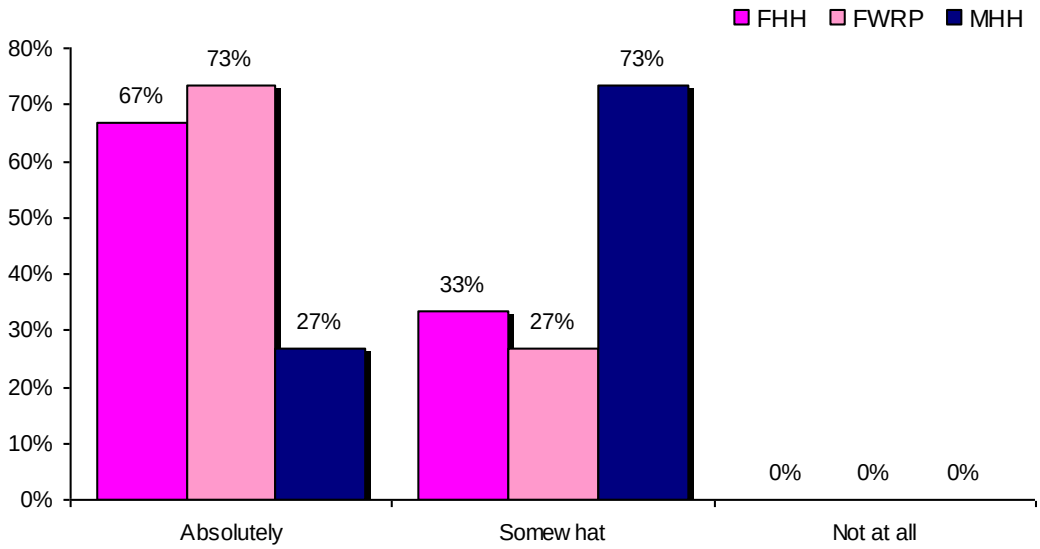
The total fertility rate (TFR) from the 2008 Census is 5.2 children per woman nationally and this falls within the range of 3.7 to 5.6 among the study participants (Table 34). The larger numbers of adult dependents than children reflects the still-remaining extended family structure of Malaŵi society.

### 4.4. Entrepreneurs' Perception of Performance

Participants' perceptions of gender differentials in performance suggest that females have a strong sense that they are superior performers to males as dairy entrepreneurs, with a minority expressing the belief that both females and males bring different skills to dairy entrepreneurship and are equal performers. There is an implicit division of labour between the sexes in dairy enterprise, with males being responsible for: building and maintaining the *khola* (animal house including feed store); collecting grass from locations external to the farm, often using bicycles for transportation of grass; transportation of milk to point of sale (either the MBG or local buyers). Females take on the role of provision of care for the animal; milking; feeding; provision of water (refer Table 51 on page 180). This gender division in roles is likely to influence perceptions of suitability to manage the dairy enterprise.

Figure 27 : Female Participants' Perceptions of Gender Differentials in EP

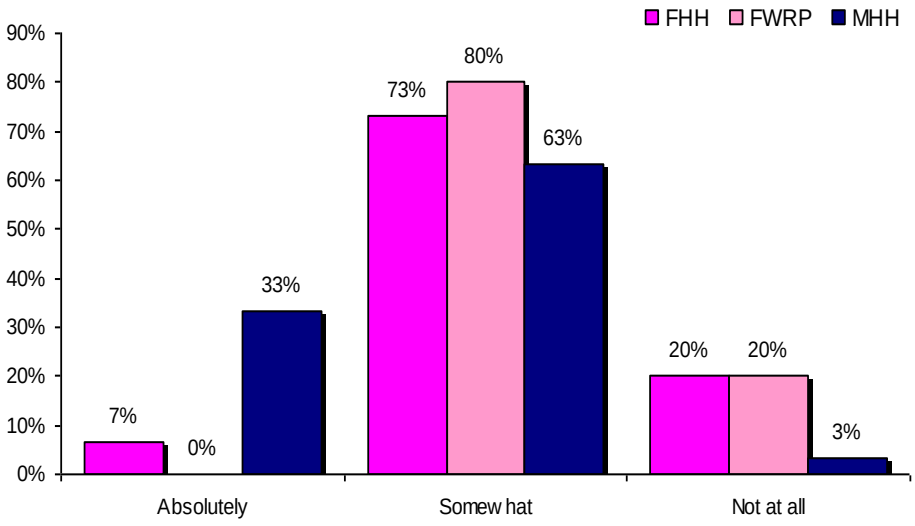
"Do you think that females make better business people?"




Males are more divided in their perception of enterprise performance by gender, with 27% expressing the view that females are absolutely the better dairy entrepreneurs, but also with 33% believing that males are absolutely the better performers. The majority of males believe in the dual roles and attributes of females and males in dairy entrepreneurship, whereas this view is held by a minority of females, irrespective of whether they are females with or without resident partners. All males are with resident partners and therefore the better term for MHH is 'MWRP' analogous to FWRP (females with resident partners).

Figure 28 : Male Participants' Perceptions of Gender Differentials in EP

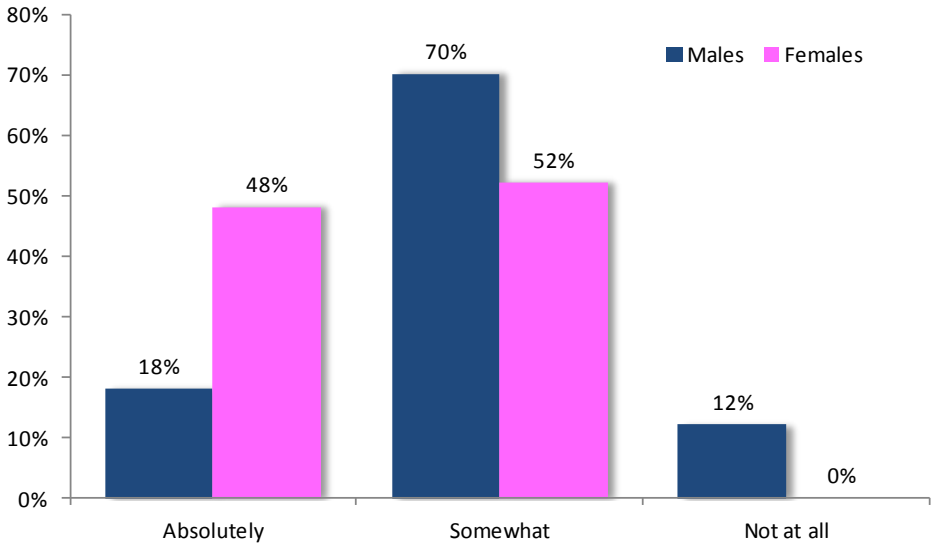
"Do you think that females make better business people?"



The overall perception when combining the views of all entrepreneurs taken together is that females are the better dairy entrepreneurs as shown in Figure 29.

Figure 29 : Overall Participants' Perceptions of Gender Differentials in EP

"Do you think that males/females make better business people?"




## 4.5. Subjective Assessment Ratings

The raters were asked to assess entrepreneurial performance of individual dairy entrepreneurs by ranking each into one of three categories, 'high', 'medium', and 'low'. The correspondence between the field performance ratings (FPRs) for Mjima and Ravat is shown in Table 36.

Table 36 : Inter-rater Correlation of FPRs

Chimbia Entrepreneurs (n = 112)

| Performance Score | | Mjima | | | |
|---|---|---|---|---|---|
| | | High | Medium | Low | All |
| Ravat | High | 25% | 17% | 19% | 61% |
| | Medium | 2% | 7% | 21% | 30% |
| | Low | 0% | 1% | 8% | 9% |
| | All | 27% | 25% | 48% | 100% |

The table indicates that the range of subjective assessment rating of Ravat (MBG Treasurer) differed markedly from that of Mjima (resident technical specialist). Only 40% of their ratings intersect across the three performance categories. However, in the 'high' category there is a close correspondence of Ravat with Mjima (Table 37) if not vice versa (Table 38).

Table 37 : FPR Correspondence of Ravat with Mjima

| Performance Score | | Mjima High | Mjima Medium | Mjima Low |
|---|---|---|---|---|
| Ravat | High | 93% | | |
| | Medium | | 29% | |
| | Low | | | 17% |

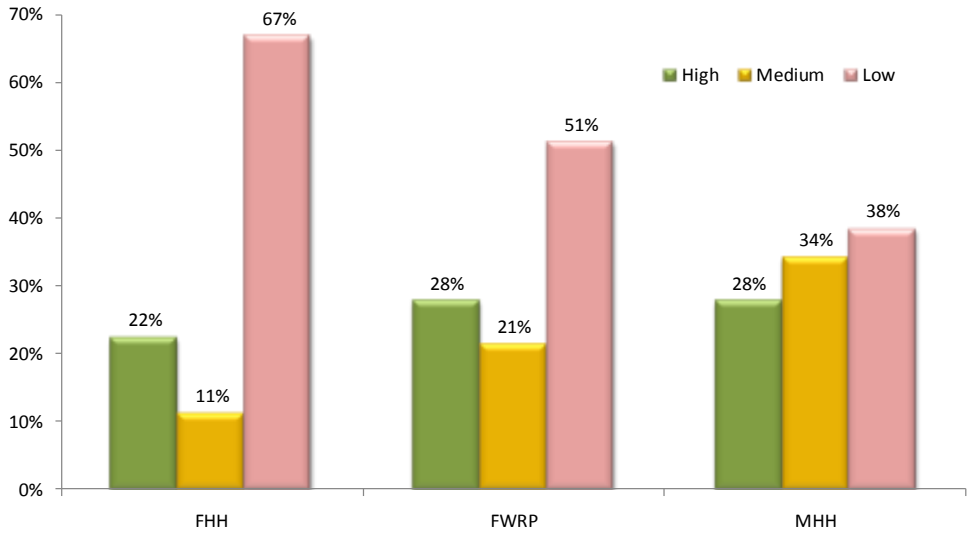
Mjima's rating overall could be described as more stringent. Overall their subjective assessment ratings in relation to household headship demonstrate a broadly consistent pattern.

Table 38 : FPR Correspondence of Mjima with Ravat

| Performance Score | | Mjima High | Mjima Medium | Mjima Low |
|---|---|---|---|---|
| Ravat | High | 41% | | |
| | Medium | | 24% | |
| | Low | | | 90% |

Mjima's performance ratings by household headship are shown in Figure 30. The group with the highest percentage of low performers is that of the Female-headed households (FHHs) with two thirds having a low performance rating, compared to 51% of FWRPs and 38% of MHHs.

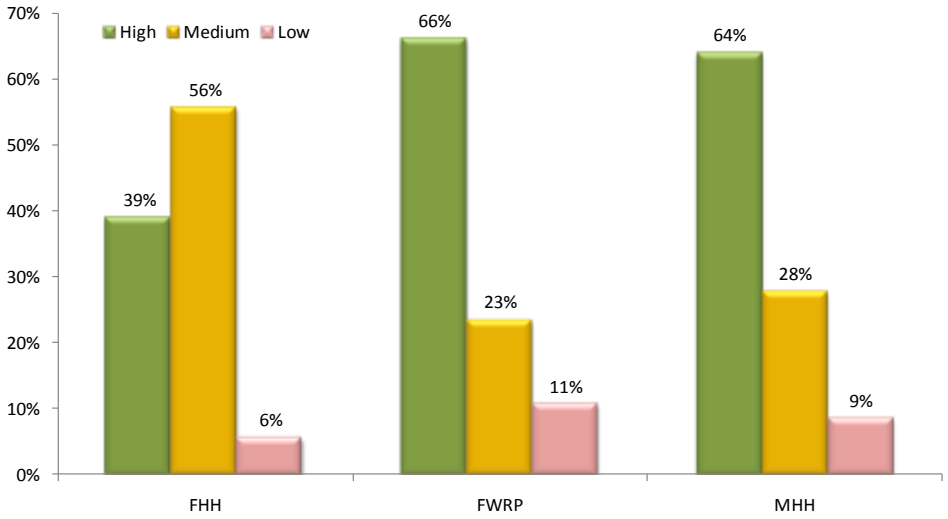
Figure 30 : FPRs by Household Headship – Mjima




While Ravat rates a smaller percentage of entrepreneurs in the low performing category and a higher percentage in the high performing category across all household

headships, he rates the percentage of high performers roughly equally for FWRPs and MHHs with two thirds rated as high performers (Figure 31).

Figure 31 : FPRs by Household Headship – Ravat




The performance ratings of the two 'key informants' for the entire population of Chimbia entrepreneurs are further compared with those entrepreneurs that were sampled for in-depth interview and observation by the second technical specialist, MacMillan Masache. The sample and population ratings are compared in Table 39.

Table 39 : FPR Correspondence of Chimbia Sample vs. Population

| Key informant | HH Group | Pop | High Sam | P-S | Medium P2 | Medium S2 | Medium P-S | Low P3 | Low S3 | Low P-S |
|---|---|---|---|---|---|---|---|---|---|---|
| Mjima | FHH | 22 | 25 | -3 | 11 | 17 | -6 | 67 | 58 | +9 |
| | FWRP | 28 | 27 | -1 | 21 | 18 | +3 | 51 | 55 | -4 |
| | MHH | 28 | 28 | 0 | 34 | 28 | +6 | 38 | 44 | -6 |
| Ravat | FHH | 39 | 50 | -11 | 56 | 50 | +6 | 6 | 0 | +6 |
| | FWRP | 66 | 73 | -7 | 23 | 27 | -4 | 11 | 0 | +11 |
| | MHH | 64 | 72 | -8 | 28 | 24 | +4 | 9 | 4 | +5 |

The distribution of subjective performance ratings for the sampled entrepreneurs appears to represent a reasonable approximation of the population distribution; the relative differences being lower for Mjima than for Ravat. Information concerning inter-rater reliability between Mjima and Masache is presented in Table 40.

Table 40 : Inter-rater Correlation of FPRs

| Performance Score | | Masache High | Masache Medium | Masache Low |
|---|---|---|---|---|
| Mjima | High | 19% | 6% | 2% |
| | Medium | 8% | 10% | 4% |
| | Low | 10% | 19% | 21% |

The intersection of ratings across the three performance categories sums to a total of 50% of entrepreneurs rated.

Table 41 : FPR Correspondence of Mjima with Masache

| Performance Score | | Masache High | Masache Medium | Masache Low |
|---|---|---|---|---|
| Mjima | High | 50% | | |
| | Medium | | 29% | |
| | Low | | | 77% |

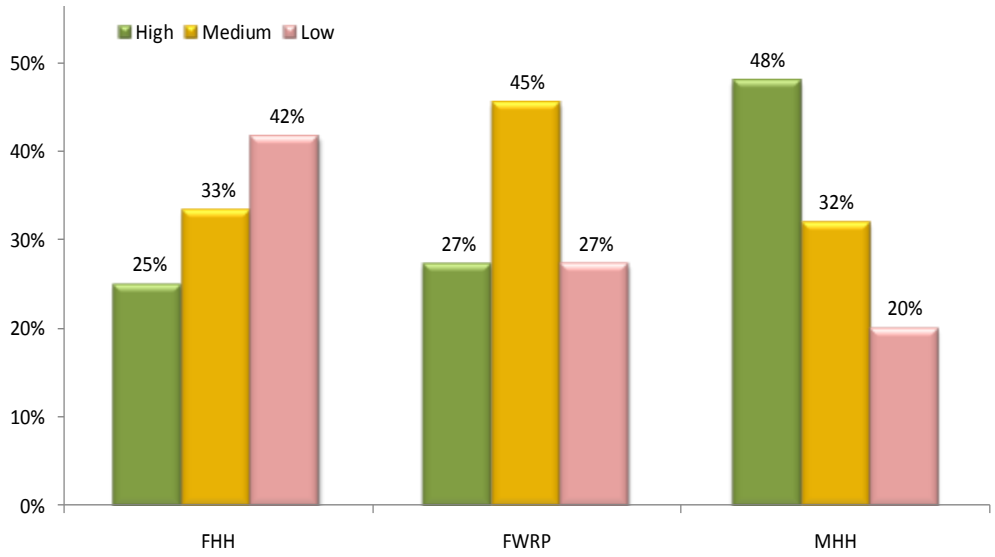
Mjima has a higher correspondence with Masache in relation to the entrepreneurs rated by the latter as low performers (Table 41). In contrast, Masache has a higher correspondence with Mjima in his rating of high performers (Table 42).

Table 42 : FPR Correspondence of Masache with Mjima

| Performance Score | | Masache High | Masache Medium | Masache Low |
|---|---|---|---|---|
| Mjima | High | 69% | | |
| | Medium | | 45% | |
| | Low | | | 42% |

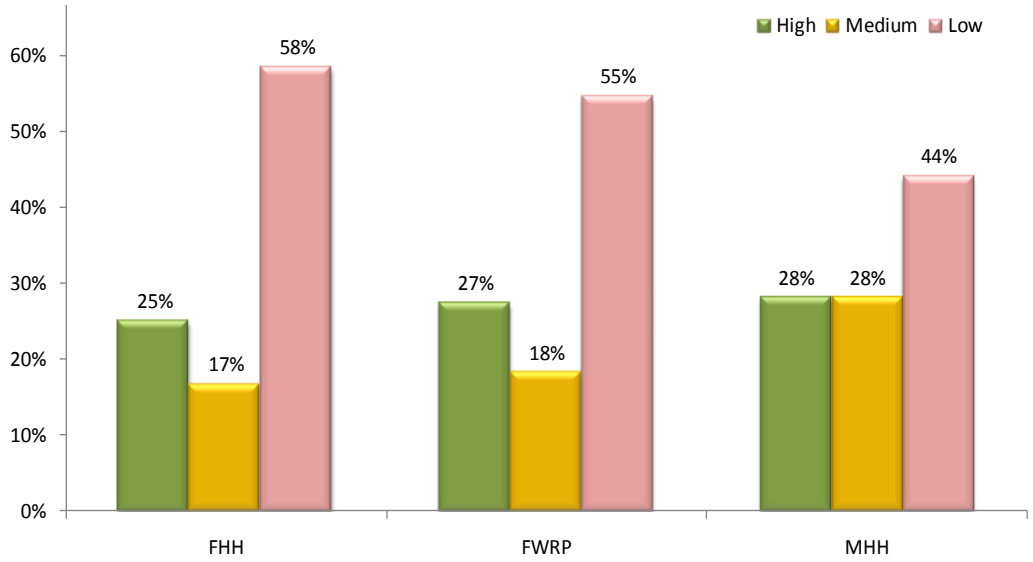
Masache's overall assessment of performance by household headship suggests that MHHs have a relatively higher percentage of high performers than either FWRPs or FHHs and equally that FHHs have a markedly higher percentage of low performers.

Figure 32 : FPRs by Household Headship – Masache
Sampled entrepreneurs in Chimbia



Mjima's FPRs do not suggest the same level of marked differences between the household headship groups as Masache. While his assessment does effectively rank MHHs as the higher performers, overall (with 56% of entrepreneurs rated as high or medium performers compared to 45% of FWRPs and 42% of FHHs) there is not the same dichotomy. Masache's assessment was made immediately after in-depth discussions with the entrepreneur and direct observation of the enterprise. Mjima's assessment was made more remotely from a review of the entire population of entrepreneurs operating in Chimbia at that time, but with a greater depth of knowledge concerning the 'evolution' of the enterprises.

Figure 33 : FPRs by Household Headship for sampled entrepreneurs – Mjima




Despite the differences between raters' performance assessments there remains a general theme running through the field performance rating (FPR) exercise, and this is that contrary to *a priori* expectations FHHs have a higher percentage of entrepreneurs assessed as relatively low performers, while MHHs have a higher percentage of high-rated performers, with FWRPs falling somewhere in the middle.

## 4.6. Body Condition Score as a Proxy Indicator of Performance

Body condition scoring (BCS) is a technique for assessing the condition of an animal based on a visual examination by a trained evaluator. According to Neary and Yager (2002) while body condition scoring is a subjective practice "it is usually quite accurate when performed by trained evaluators". Dairy animals are scored from 1 to 5, the lower the number the thinner the animal. More detail is provided in APPENDIX VI: Description of BCS for Dairy – Neary and Yager (2002) on page 315.

The Body Condition Score (BCS) of the animal provides a proxy indicator of the 'health' of the enterprise for the following reasons:

- BCS reflects adequate nutrition which is a prerequisite for a high level of total production throughout the cycle of milk production

- BCS reflects the overall health of the animal and general health is considered important in reducing the risk of the animal succumbing to opportunistic infections which would result in discontinuance of the enterprise, or at minimum a major setback in the development of the enterprise. Without the intervention of the MDEDP the loss of the principal animal would mean the discontinuance of the enterprise

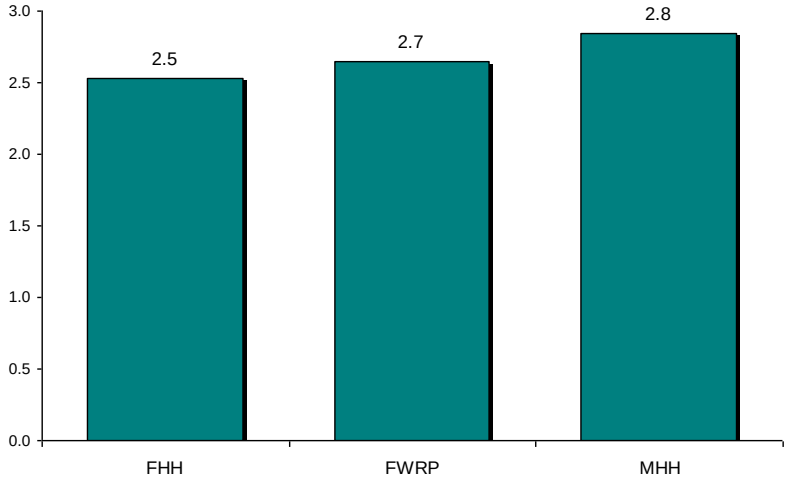
- BCS reflects at least partially on the general management of the enterprise by the owner and manager

Caveats to the use of BCS as an entrepreneurial performance measure are that it does vary depending upon the stage of lactation and particularly of pregnancy of the animal. Sickness may also reduce the BCS of the animal temporarily. These other confounding influences can only be controlled for by triangulation with other evidence of enterprise performance and therefore BCS would not be used as a sole indicator of performance but rather as one measure to accompany a suite of others, as is the case in this analysis.

## 4.7. Body Condition Score of the Principal Dairy Animal

The principal asset of the enterprise is the first or replacement dairy animal, since she provides both the productive asset and the opportunity for both repayment of the loan and increasing capital formation of the enterprise. The body condition score (BCS) of the principal animal in each enterprise is averaged across the household grouping and the findings (Figure 34) indicate that there are relatively minor differences in the BCS between the groups but with male headed households having animals with the highest body condition score overall. This suggests that this proxy indicator of performance favours male-headed households relative to females with resident partners and female-headed households.

**Figure 34 : BCS of Principal Animal by HH Head**




An indicative comparison of the body condition score of animals in 2004 with 2008/9 is provided in Table 43. The comparison is tentative at best for a number of reasons; the first being that scoring has an element of subjectivity inherent in the measurement and measures made by different individuals particularly at different times in the year cannot afford direct comparison of $t_0$ against $t_1$. One individual undertook the scores on each occasion across the entire group of entrepreneurs and this affords at least some element of internal consistency in the measurement.

Table 43 : Comparison of Chimbia Body Condition Scoring 2008/9 with 2004

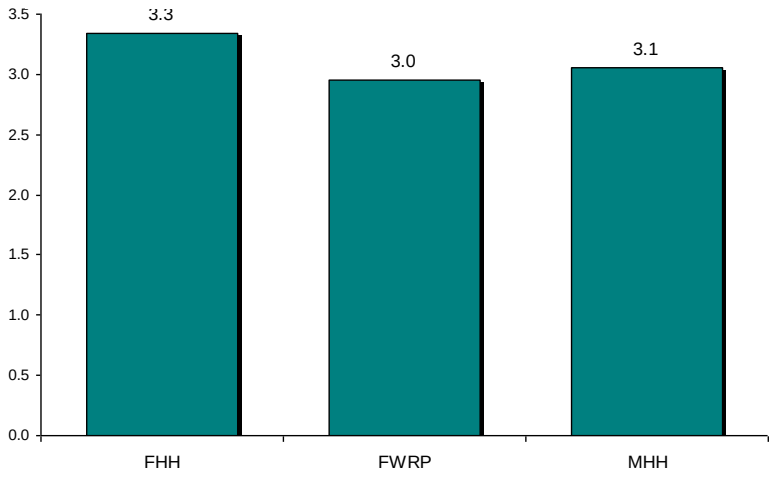
| | Body Condition Score | | | No. of animals assessed | | |
|---|---|---|---|---|---|---|
| Year | Fem | Male | All | Fem | Male | All |
| 2004 | 2.5 | 2.5 | 2.5 | 34 | 31 | 65 |
| 2008 | 2.5 | 2.8 | 2.7 | 22 | 26 | 48 |

What is evident from the comparison between females and males is that in the base year of 2004 there was no difference in the average of BCS scores but some difference is evident at the end of 2008.

## 4.8. Body Condition Score of the Female Calf

The body condition score (BCS) of the female calf if present is distinguished from any male (bull calf) as females tend to be better cared for as a future capital investment in the dairy enterprise, and the in-kind loan obligation. Male calves will be sold to provide additional revenue to the household.

**Figure 35 : BCS of Female Calf by HH Head**




The finding runs in Figure 35 contrary to the Body Condition Score of the principal animal by household grouping, in that heifer calves belonging to FHHs as a group have the highest BCS scoring.

## 4.9. Independent Technical Specialist Field Performance Rating

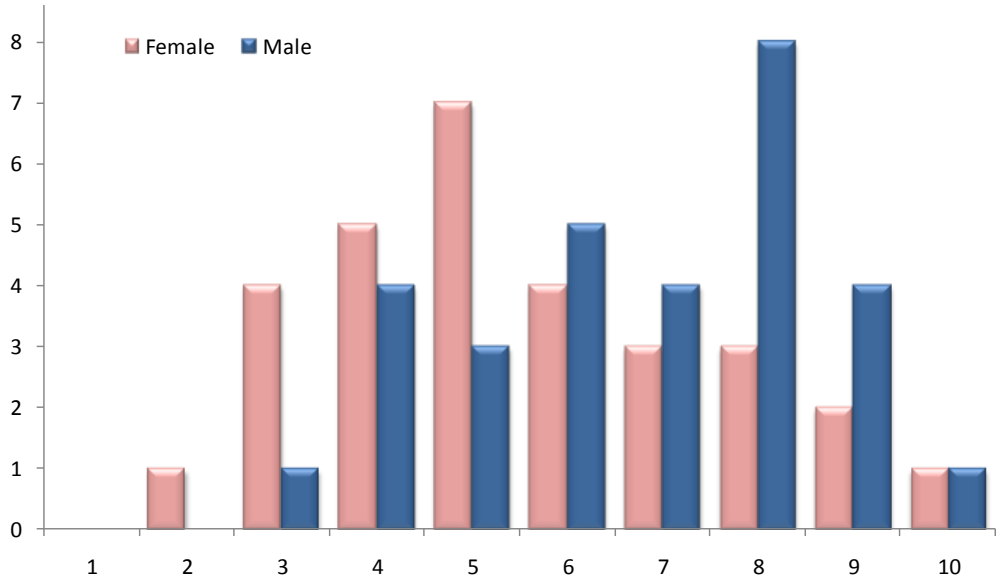
The principal field performance rating (FPR) was undertaken by Macmillan Masache, research assistant, who was formerly a paravet and extension officer on the Dairy Enterprise Development Programme (MDEDP) during the period of distribution of the first animals to entrepreneurs in both the Central and Northern regions. He made the individual performance ratings independently of the researcher and the resident extension office Mr Mjima, using the guideline weighting at the end of the interview guide (refer APPENDIX III: Case Study Interview Guide on page 300) reproduced below in Table 44). The assessment was made immediately after observation of the household's enterprise and discussion with the entrepreneur and the circle and stones exercise.

Table 44 : Guideline Criteria and Weighting for Field Performance Assessment

| Guidelines for the Management Performance Index | Max Score |
|---|---|
| BCS of animal | .15 |
| BCS of any calf present | .05 |
| Whether pass-on or not | .25 |
| Paid off the loan (dead cow fund) | .20 |
| Improvement of premises or assets accumulated | .10 |
| Using supplementary feeds currently | .10 |
| Dipping of animal | .05 |
| Drenching of animal | .05 |
| Response of farmer – attitude towards enterprise | .05 |
| Total | 1.0 |

The final score was multiplied by 10 to provide an overall field performance rating (FPR) on a scale of 1 to 10, from lowest to highest rating. Figure 36 shows the distribution of ratings according to gender. Visually the distributions of FPRs for male and female controlled enterprises are distinct with females having a distribution shifted to the left of males, even if the group of MHHs with performance rating of 8 were to be excluded.

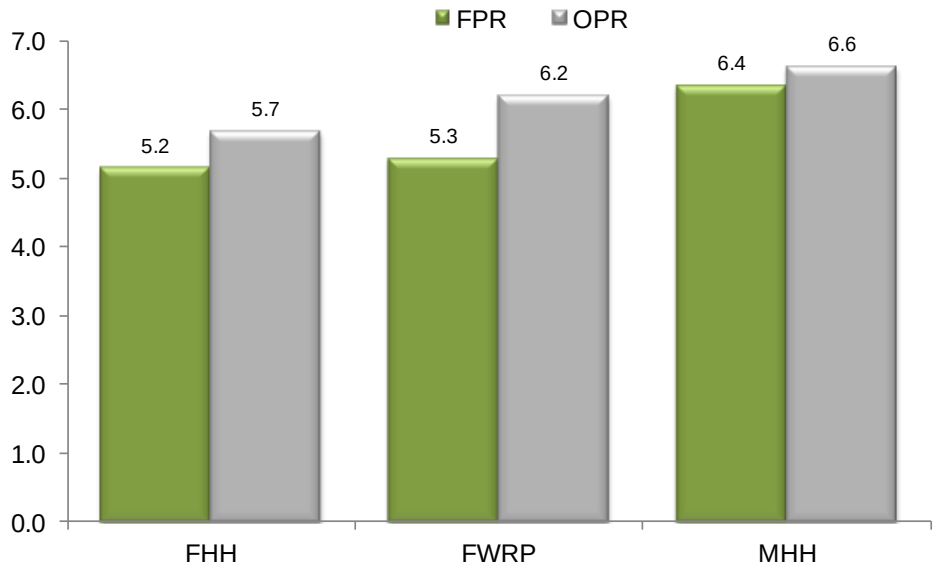
Figure 36 : Technical Specialist Field Performance Rating by Gender




The average performance rating by household group is shown in Figure 37 with male-headed households having an average rating of 6.4; females with resident partners an average rating of 5.3 and FHHs a rating of 5.2. The ratings of the other two assessors Mjima and Ravat demonstrate a consistent pattern with the ratings of Masache (the FPR in the figure). The overall performance rating (OPR), computed from the suite of

measures in the performance framework (refer APPENDIX XI: Measures Scales and Coefficients for OPR Computation on page 326) also provides a consistent pattern with the FPR as shown in the figure.

Figure 37 : Field Performance Rating by HH Head




## 4.10. Key Informant Performance Scoring of All Chimbia Entrepreneurs

Robert Mjima was at the time of the field research the dairy extension officer directly employed by the Chimbia Milk Bulking Group. At the time of the field research he had worked for four years as the paravet servicing the extension and veterinary needs of the dairy entrepreneurs in the MBG. As such he had an intimate knowledge of all dairy entrepreneurs in the MBG. His individual performance assessment of all dairy entrepreneurs (n=112) in the association is provided together with a comparison of values obtained from the sampled entrepreneurs and the population of all entrepreneurs in the association. There is a close correspondence between the ratings of highest and lowest performers by category in both the sample and the population particularly in the assessment of the highest performers. This provides at least an indication that the sample provides a good representation of the status of all of the entrepreneurs in the MBG at the time of the investigation.

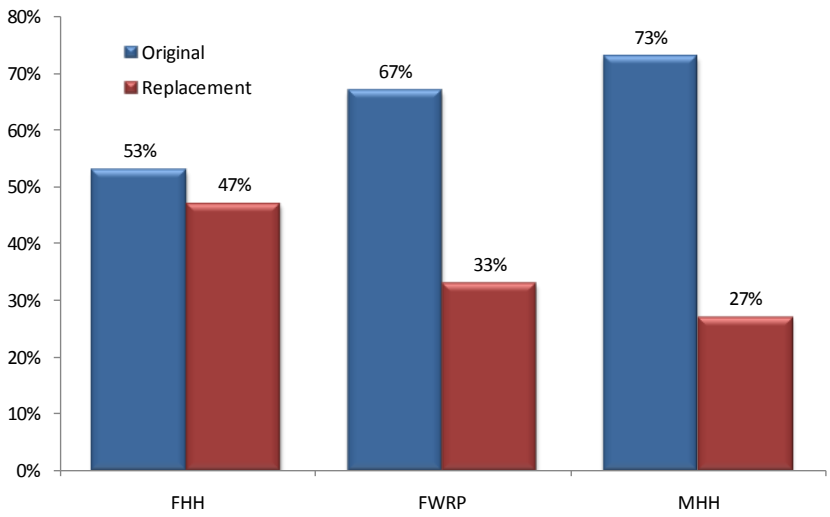
Table 45 : Mjima Performance Assessment of All Chimbia Entrepreneurs
% of Entrepreneurs by Household Group

| Rating Category | Item | Sample | Population | Difference |
|---|---|---|---|---|
| Highest | Females | 26% | 26% | 0% |
| | Males | 28% | 28% | 0% |
| | FHHs | 25% | 22% | -3% |
| | FWRPs | 27% | 28% | +1% |
| | MHHs | 28% | 28% | 0% |
| Lowest | Females | 57% | 55% | -2% |
| | Males | 54% | 38% | -6% |
| | FHHs | 58% | 67% | +9% |
| | FWRPs | 55% | 51% | -4% |
| | MHHs | 44% | 38% | -6% |
| *No. of Entrepreneurs* | | *48* | *112* | |

## 4.11. Survival Rate of First Enterprise as a Proxy for Performance

First cow mortality with replacement of the animal may be considered synonymous with failure rate of the enterprise. There are caveats to this as not all mortality is directly attributable to a failure on the part of the dairy entrepreneur. The reasons for mortality can range from external factors such as animals being poisoned to such opportunistic problems as accidents or the animal ingesting a foreign body (such as in hard wire disease). The overall replacement rate among the sampled entrepreneurs has been high at 33%, with a mortality rate far exceeding the anticipated level of 5% per annum over the four-year period since inception of the enterprises. The heifer scheme operates a 'dead cow' insurance fund. If the animal dies for any reason other than negligence of the entrepreneur, she will be replaced using the fund. The higher than anticipated mortality rates have meant that replacement of animals has been made possible by other means including the Land O'Lakes private foundation 'Prosperity Worldwide'.

**Figure 38 : Cow Replacement by HH Head**



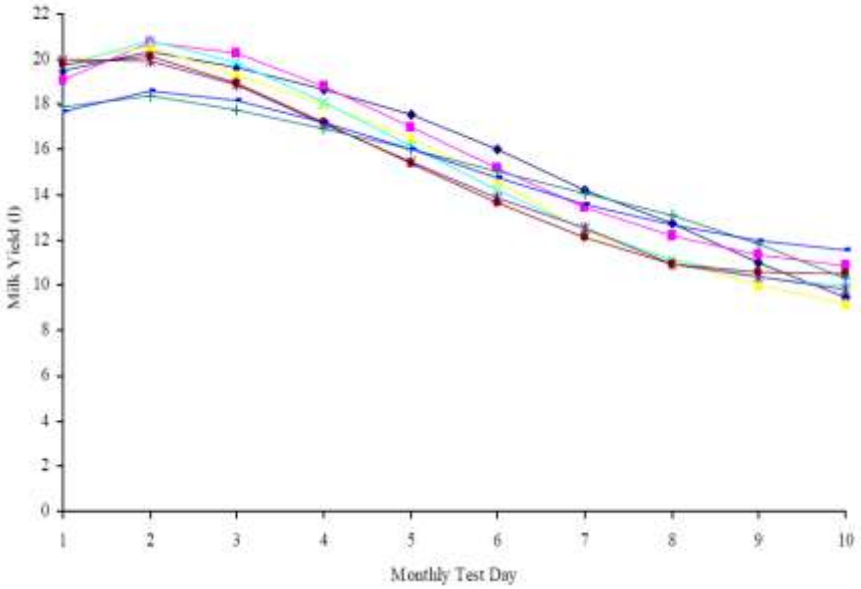
Despite the caveats, Figure 38 indicates an association between household grouping and replacement rate with 47% of female-headed households losing their first animal against 27% of male-headed households. Those females with resident partners have an average loss of 33%. The findings indicate that performance in relation to the proxy indicator of failure rate of the first enterprise suggests that female-headed households are underperforming in relation to FWRPs and MHHs.

This finding is further supported by an analysis of the entire population of Chimbia entrepreneurs receiving animals, excluding those that have received 'pass-on' animals from the original recipients. The information on cow replacement would indicate that MHHs are the least likely to lose their first animal followed by FWRPs and with FHHs experiencing the highest rate of mortality.

### 4.12. Farmer Reported Maximum Milk Yields as a Proxy for Performance

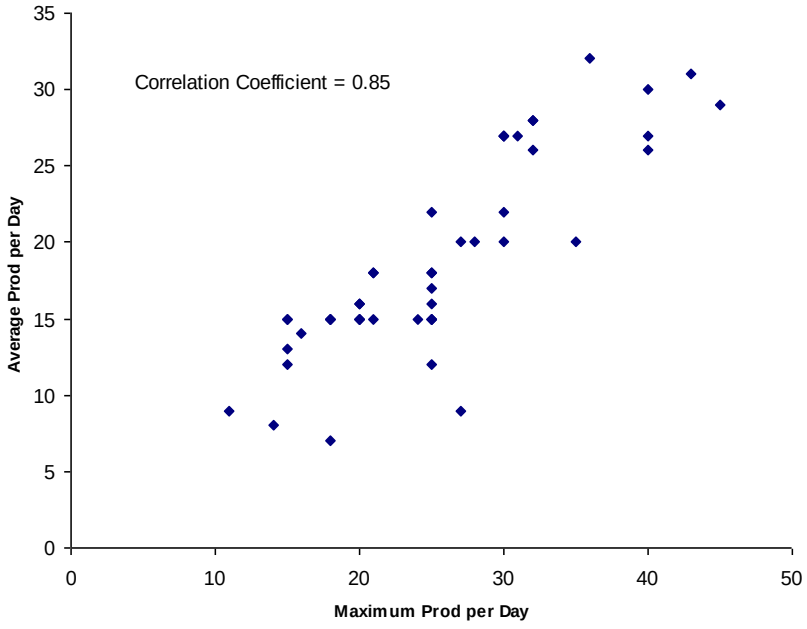
The typical lactation curve of a dairy animal lasts for 305 days with a typical curve as illustrated in Figure 39. Daily milk production increases from the start of the lactation to achieve a maximum after two to three months from the start. From this period on production per day degrades until the tenth month when the animal is normally dried off and rested in readiness for the next delivery and lactation. The true average would be calculated by summing the milk production over the entire lactation period and dividing it by the number of days of the lactation. Farmers are in the main not keeping detailed milk production records, and the only objectively recorded data is captured at the Milk Bulking Group (MBG) cooling centre, representing milk delivered for sale to the processor.

Figure 39 : Typical Lactation Curve Illustration (Litres per day)




Farmers were asked to report on the maximum daily milk production obtained from the animal and also their estimate of the average milk production per day. The two paired data sets are shown in a scatter graph in Figure 40. A correlation coefficient [R] of 0.85 was calculated demonstrating the relatively close association between the two reported values.

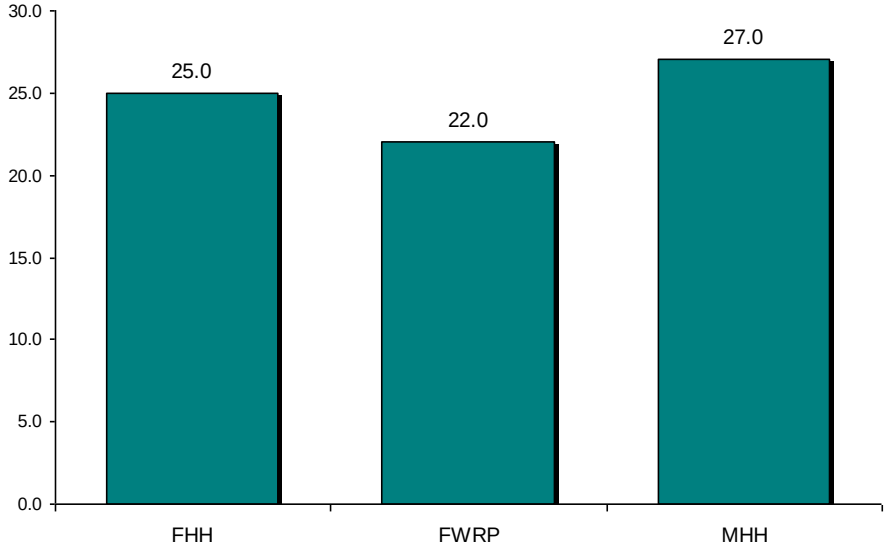
**Figure 40 : Correlation of Ave and Max Litres**




The maximum daily production obtained provides an indicative measure of total production to be obtained over the lactation, with a higher maximum production correlating with a higher level of total production over the entire lactation. The results in Figure 41 indicate that male dairy entrepreneurs are achieving a higher maximum level of milk production per day, and this implies that they are obtaining a higher level of total production over the entire lactation period.

This information from the entrepreneurs is triangulated with records of milk delivery to the MBG over the period January to December 2008, with the proviso that milk delivery to the milk bulking group cooling tank and onwards to the dairy processor represents only a proportion of the milk production of the entrepreneur, the remainder going to home-consumption, the calf, and likely sale in the locality to local customers.

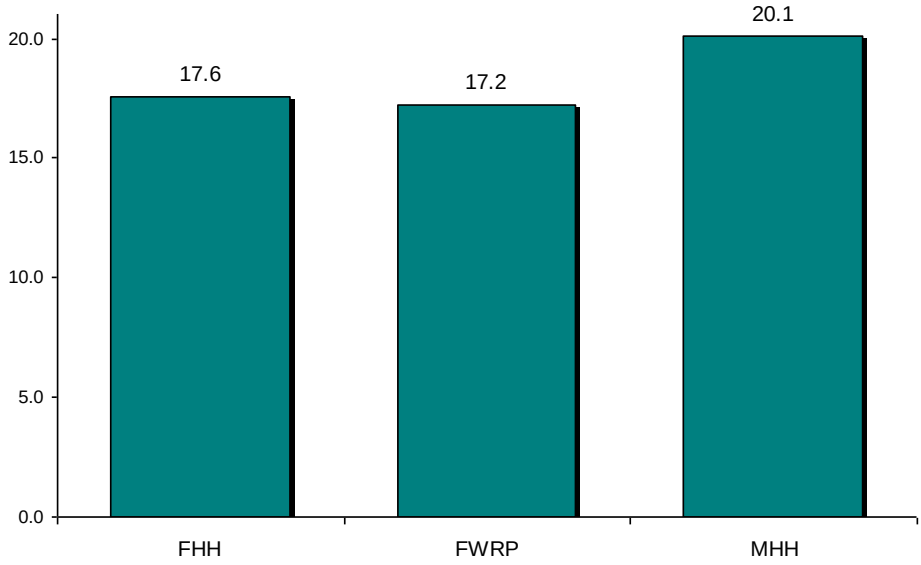
**Figure 41 : Reported Max Daily Milk Yield (l/d)**




## 4.13. Farmer Reported Average Milk Yields as a Proxy for Performance

The pattern of average milk production per day as reported by farmers supports the findings of maximum production with dairy enterprises operated by male headed households achieving the highest levels of average milk production followed by female headed households (females without resident partners) and females with resident partners. Again this information is triangulated with information provided from the MBG records over the period of January to December 2008, for both the corresponding sample as well as the population of those entrepreneurs with dairy animals in milk over the 2008 period MBG records were collated.

Figure 42 : 1st Lactation Average Daily Milk Yield Reported by Farmer (Litres per day)

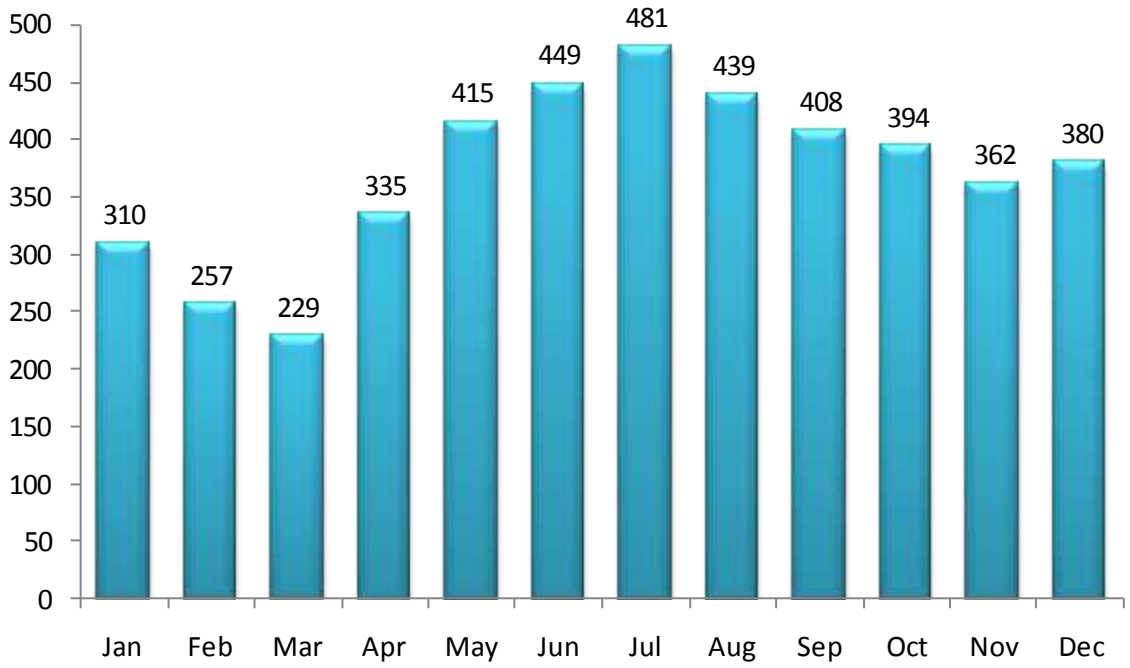



## 4.14. Milk delivered to the MBGs as a Proxy for Performance

This is objectively recorded data from MBG records maintained by paid employees at the Cooling Centre, managed by the farmers' association at the Milk Bulking Group (MBG). Milk volumes recorded represent money paid by the Milk Processor, Lilongwe Dairy to the MBG at the end of each month, with revenues apportioned by the MBG Treasurer to the producers according to the milk delivered to the MBG in that month. Milk delivery is a complementary and objective measure of milk production by each entrepreneur, and a proxy measure of enterprise performance.

The average number of litres of milk delivered per farmer to Chimbia MBG for each month of calendar year 2008 is shown in Figure 43. Volumes of milk delivered parallels the cycle of production, with the lowest production typically in March where animals have been 'dried off', and then after calving with production increasing over a period of three to four months to peak and then degrade following the normal lactation curve of the dairy animal (refer Figure 39 on page 161).

Figure 43 : Average Litres of Milk Delivered per Person to Chimbia MBG in 2008



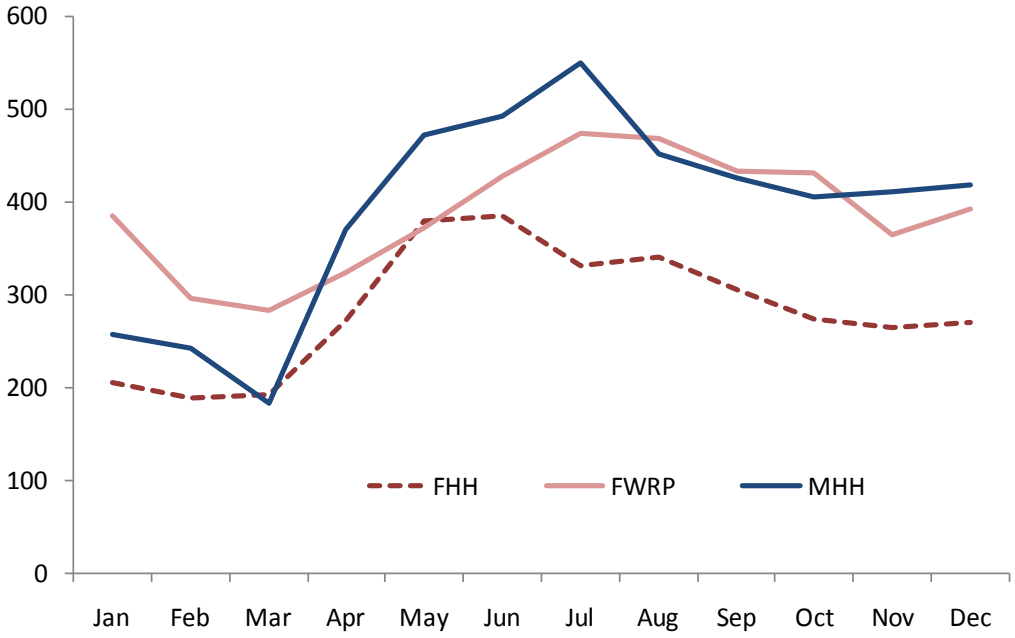

The principal caveat to this measurement relates to the relationship between the milk produced daily and the proportion of that milk that reaches the MBG. The disposal of milk comprises:

- Milk consumed by the calf (typically around 2 litres per day)
- Milk consumed by the households (typically around 1.5 litres per day)
- Milk sold ('vended') to local clientele such as tea rooms, cafes and neighbouring households
- Milk delivered to the MBG which is not accepted as it is sour
- Milk delivered to the MBG which is not accepted as it is contaminated with water
- Milk delivered to and accepted by the MBG for cooling and for collection by the milk processor

Malawi dairy producers are fortunate in that milk is scarce and demand exceeds supply, such that processors have taken on the responsibility of collecting the milk in refrigerated vehicles from each cooling centre. This is not the case in other countries around the region such as Uganda, Kenya, Tanzania, and Zambia, where in the majority of cases producers have to deliver to the processor. Milk 'vending' refers to entrepreneurs diverting some of their milk production for daily sale to neighbours or local commercial outlets (such as tearooms and cafes) and although this practice is 'frowned upon' at best by MBG members and deemed illicit at worst, it is in actuality a widespread occurrence.

Figure 44 provides the trend in average milk delivery to Chimbia MBG by household headship over the period January to December 2008. All three groups display the pattern expected, except the time series for litres delivered by male-headed households over the year, which has an atypical drop off over the second half of the year. In addition, given that production is seasonal and cyclical, January volumes delivered would expect to follow-on from December volumes, which they noticeably do not in the case of MHHs. While there is only an average drop-off in volumes delivered from December 2008 to January 2008 (proxy for January 2009) of 7 litres for FWRPs and 64 litres for FHHs, milk delivered from MHHs declines by 162 litres.

Figure 44 : Ave. Litres delivered to Chimbia MBG by HHH in 2008




The rationale for this may be related to the extent of vending from month-to-month, and this in turn may be related to the contract price offered by the Processor over the period. In January 2008 the contract milk price for milk delivered to the MBG was MK44 per litre, and the price was negotiated steadily upwards during the year, changing to MK51/litre in May and then MK56/litre in August and September; MK63/litre in October and then finally MK68/litre in November and December.

The analysis is therefore qualified in that milk delivery does always correlate to milk production, and the extent of local vending of milk in any one month cannot be determined. In theory, market forces are likely to limit the prevalence of local vending. If

more milk is sold within the locality then the local market price is likely to fall, to a level where the fixed negotiated buying price of the processor through the MBG will become equally attractive.

The farmers themselves, when discussing the issue 'off camera' will (i) acknowledge that vending is widespread despite the collective disapproval of the practice (ii) it is tacitly accepted by each individual in the group, and (iii) by many it is viewed as complementary to sale through the MBG, in terms of cash flow and income earning. People can satisfy their daily financial needs through daily sale of some of their milk. Sale to the MBG provides a 'monthly savings plan' allowing the dairy entrepreneur the opportunity to budget for both revenue and expenditure in the medium-term.

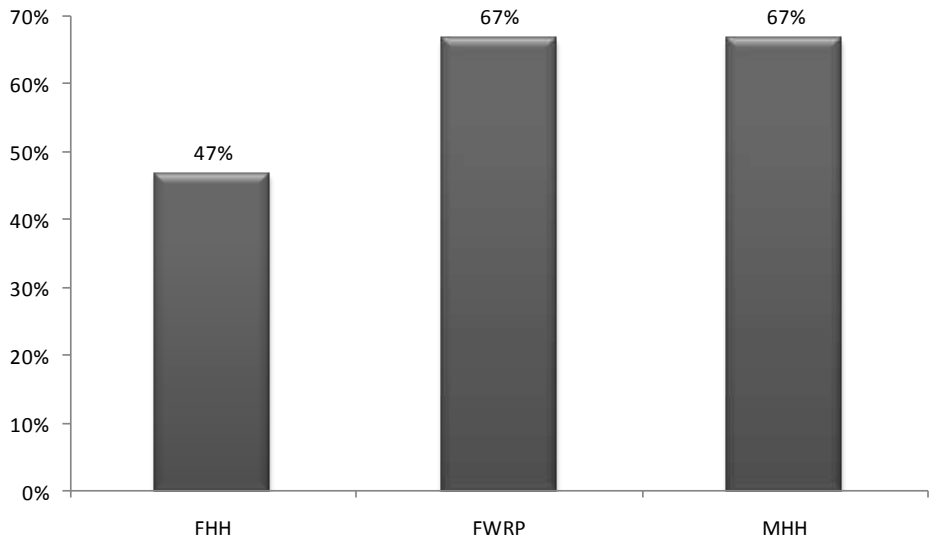
### 4.15. Heifer Pass-On (In-kind loan repayment) as a Proxy for Performance

The entrepreneurs who received dairy animals at the start-up of their dairy enterprise were contractually obligated to repay the equivalent of the value of the animal over a period of two years, and in two parts. The first was a cash repayment, and this was deducted from milk revenues through the MBG accounting system, thus ensuring that if cows were in lactation over at least two lactations the cash element of the loan would be repaid. The second part of the loan repayment was in-kind with the 'passing on' of the first female (heifer) calf to another 'entrepreneur-in-waiting'.

In this way the 'seed capital' of the initial investment in dairy animals for the programme would have a 'multiplier effect' resulting in an exponential increase in the number of dairy entrepreneurs as time progressed. The initial injection of capital and 'dairy stock' would flowing on in perpetuity, with leakages in the flow arising from death of the animals and failure to pass-on the off-spring to others.

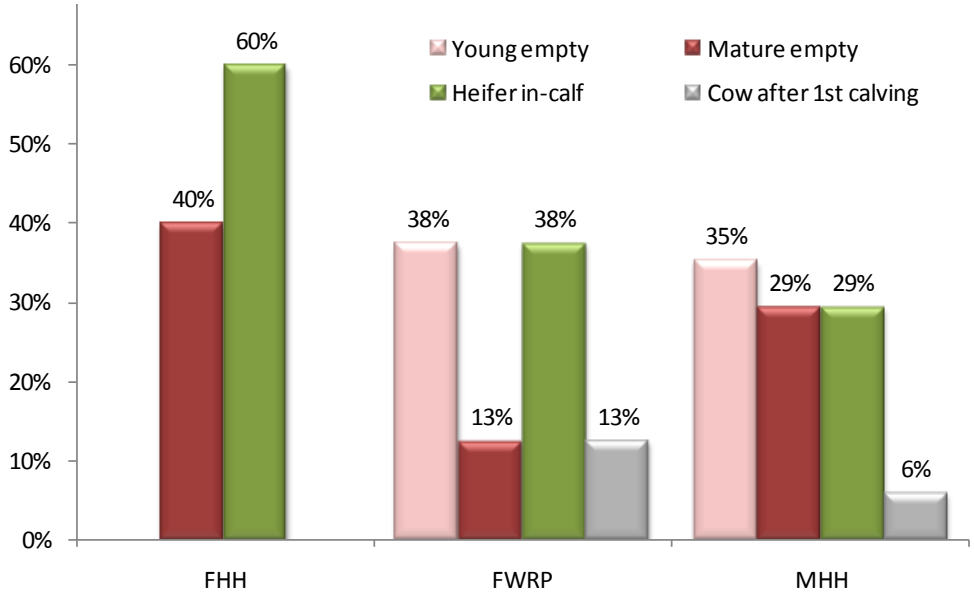
Figure 45 provides the status of pass-on heifer calves among the initial group of recipients of dairy animals in 2004. The chart shows that two-thirds of male-headed households and females with resident partners had successfully passed on a heifer calf to another entrepreneur, thereby launching another dairy enterprise. In contrast, less than one-half of female-headed households had passed on a heifer calf. This represents a significant level of underperformance in one of the key performance areas of the MDEDP institutionally.

Figure 45 : Percentage of Households Passing-On a Heifer Calf – Chimbia




The original plans and the ideal situation for the 'pass-on' is one where heifer calves at the time of being passed on are grown to become heifers' in-calf such that those receiving would be starting their dairy enterprise at the same level as those who received the first animals. The interview guide (refer APPENDIX III: Case Study Interview Guide on page 300) did not include a question on the pregnancy status of heifers passed on to waiting farmers, but in the course of the actual interviews with the household the question was asked and the responses provided Figure 46.

Figure 46 : Age and Status of Animals Passed-on – Chimbia



Analysis of the information provided shows that while a higher proportion of females with resident partners and male-headed households passed-on heifers only 35% of MHHs passed on either heifers' in-calf or animals after they had calved. This contrasts with 50% for FWRPs and 60% for FHHs. MHHs and FWRPs passed on young empty heifers in equal proportions, which suggest a commercial orientation in that the heifers represented a liability to the entrepreneurs up to the point when they were passed on. This also correlates with the information provided on BCS of heifer calves, and suggests that FHHs are taking better care of the heifer calves than the other two household groups.

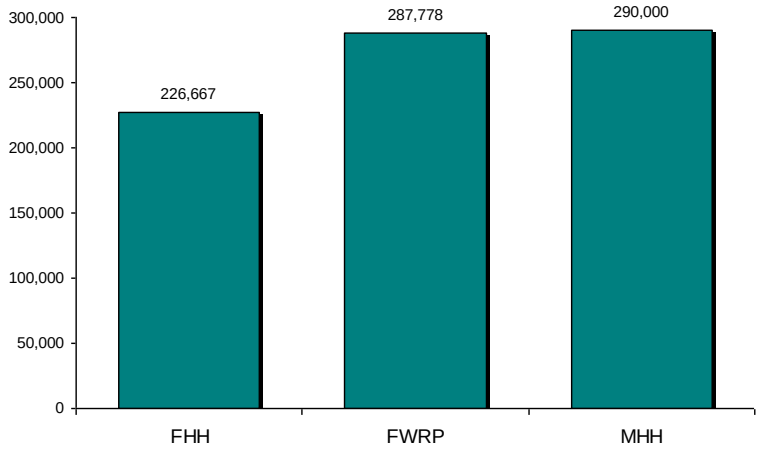
## 4.16. Cash Loan Repayment as a Proxy for Performance

The successful loan repayment of the cash element of the overall credit obligation was dependent upon maintaining at least two lactations over the period since inception, since deductions were made by the MBG Treasurer from the monthly milk receipt. The percentage of entrepreneurs completing this part of their credit obligation by all household headships is over 90% for all household headships, with little or no difference between the households groups. Loan repayments were made from deductions from the monthly milk revenues. Provided there was milk delivery to the MBG then this part of the loan repayment was almost automatic through the workings of the system. Failure to repay the loan was due to loss of the animal, which meant that milk revenues ceased, and it is expected that these entrepreneurs will make the loan repayment from milk receipts from replacement animals.

## 4.17. Propensity to Access Formal Credit as a Proxy for Risk Aversity

Entrepreneurs were asked if they were interested in borrowing money at the market interest rate prevailing of 22% and if the response was affirmative then how much would they be interested in borrowing. The average Malawi Kwacha (MK)

**Figure 47 : Average MK Value Interested in Borrowing**



value resulting is shown in Figure 47. and demonstrates a similarity between MHHs and FWRPs. Female headed households (FHHs) would also be interested in borrowing but a comparably smaller amount. The approximate market value of an additional in-calf heifer at the time of asking was approximately MK230,000 and the response reflected both the desire to purchase an additional dairy animal and in some cases an animal plus additional working capital to increase the scale of enterprise.

### 4.18. Changes in the Enterprise Mix as a Proxy for Risk Mitigation

For all entrepreneurs participating in the dairy enterprise development programme the introduction of the new dairy enterprise had to fit into a mix of existing enterprises. Table 46 shows that ten enterprises accounted for 89% of the enterprise mix in 2003 prior to the introduction of the dairy enterprise. The introduction of the dairy enterprise had a significant effect on the enterprise mix five years later with dairy representing one-half of total household income by 2008.

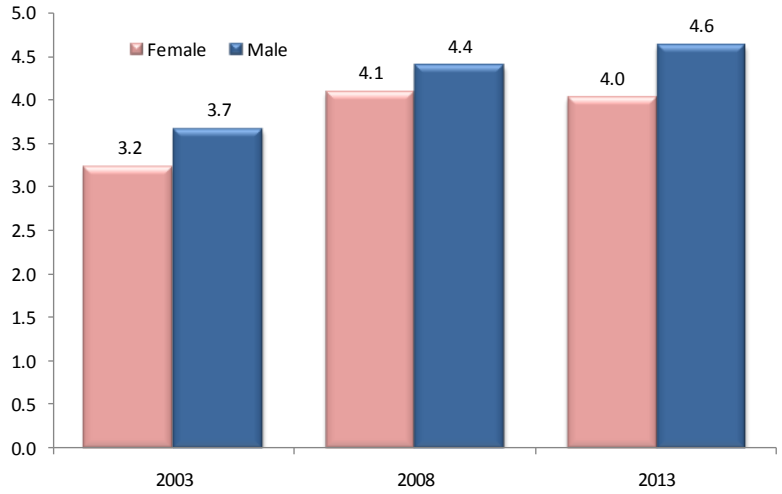
Table 46 : Past Present and Projected % of Income by Enterprise Type

| Enterprise | 2003 | 2008 | 2013 |
|---|---|---|---|
| Dairy | 1% | 49% | 51% |
| Beans | 24% | 12% | 9% |
| Maize | 21% | 12% | 11% |
| Groundnuts | 9% | 7% | 6% |
| Irish Potato | 8% | 6% | 5% |
| Soya | 6% | 6% | 8% |
| Business | 8% | 2% | 1% |
| Cassava | 7% | 1% | 1% |
| Chickens | 2% | 1% | 2% |
| Tobacco | 5% | 0% | 0% |
| Other | 11% | 4% | 6% |
| Total | 100% | 100% | 100% |

All prior enterprises were displaced to some extent with the exception of Soya. While soya was being grown as a cash crop with the introduction of dairy it then switched to becoming an input into the dairy enterprise since soya forms an ingredient in the supplementary feed for the dairy animals. Maize and Beans grown commercially in the area were the most prominent sources of income in 2003, accounting for 45% of household income, and their combined contribution to overall household income was almost halved with the introduction of the dairy enterprise.

Figure 48 compares the average number of enterprises operated in 2003 and 2008 and plans for 2013, split by gender of the entrepreneur. The chart shows that contrary to *a priori* expectation male-headed households are operating more enterprises than females at the time of investigation with an expectation to maintain or expand this number in future.

Figure 48 : Average Number of HH Enterprises by Gender over Time




When female entrepreneurs are disaggregated into FHHs and FWRPs there is a divergence in the trend over time for the two groups (Figure 49). While FWRPs show a modest increase in the average number of enterprises from 2003 to 2008 the increase for FHHs brings the number of enterprises to the same level as MHHs by 2008 and while the future expectations of FWRPs involve a decline in the number of enterprises by 2013 those for FHHs remain at par with MHHs.

Figure 49 : Average Number of HH Enterprises by HH Headship over Time

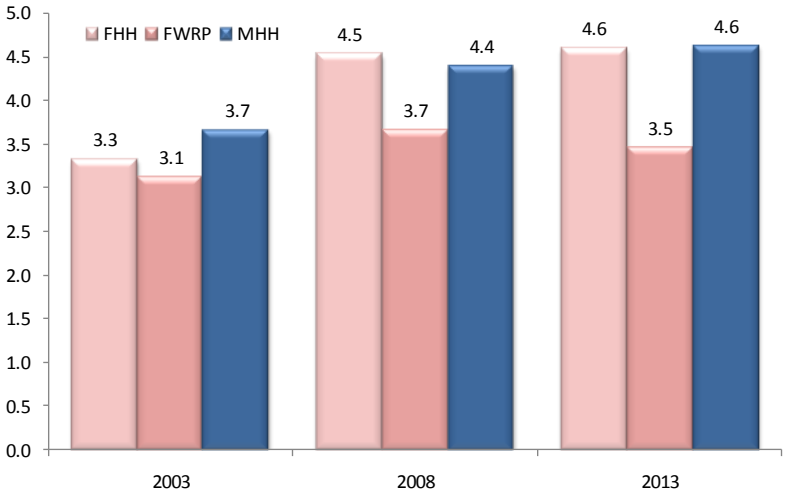
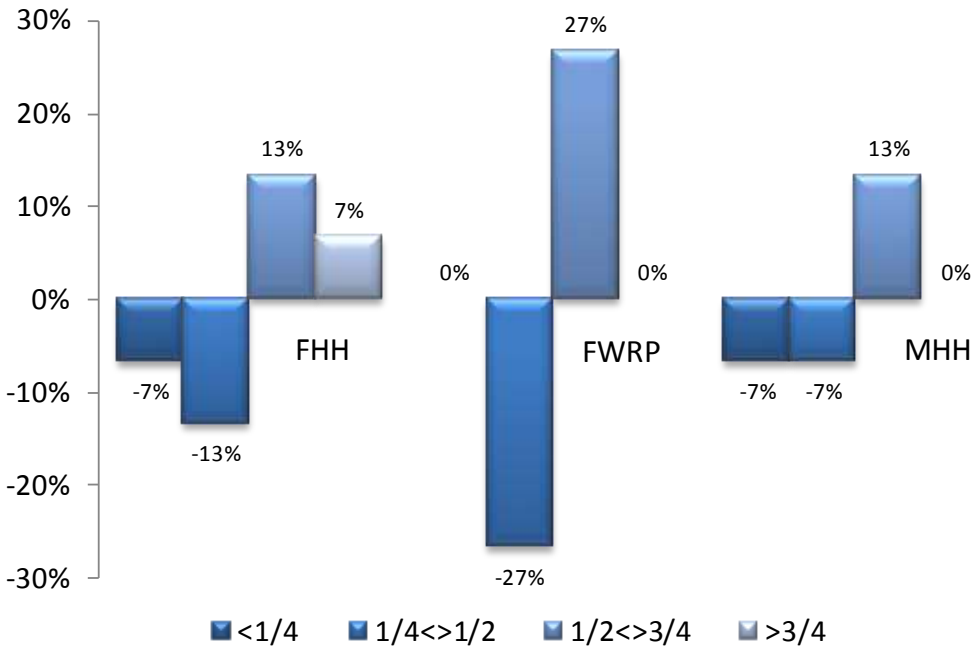


Figure 50 charts the anticipated changed from 2008 to 2013 for the three groups. Clearly, the greatest change comes from FWRPs with a 27% increase in the concentration of dairy in the enterprise mix compared to 20% for FHHs and 13% for MHHs.

Figure 50 : Projected Change in Dairy in the Enterprise Mix 2008 - 2013




This finding runs contrary to the *a priori* expectation that diversity in the enterprise mix was likely to be maintained by female and not male entrepreneurs, as a risk mitigation strategy. The finding is further supported by Figure 63 on page 192 which charts the changes in distribution of the ten most significant enterprises among surveyed entrepreneurs from 2003-2013. The diversity of enterprises reflects the 'octopus organisation' and associated risk mitigation strategy explored by Kiggundu (2002) in the African context, with the exception of the complementary nature of the soya and dairy enterprises.

### 4.19. Use of Purchased Inputs as Proxies for Performance and Risk Mitigation

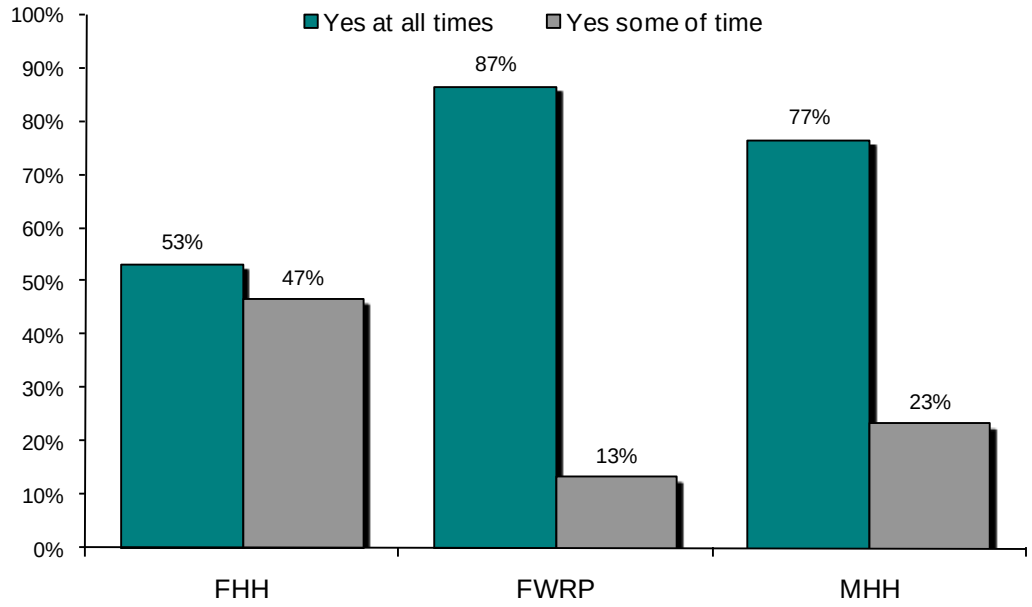
#### 4.19.1. Supplementary Feeds

Supplementary feeds are purchased through a feeds revolving fund with deductions made from the monthly receipt of payment to the entrepreneur by the dairy processor, via the MBG association. There is a direct correlation between the utilisation of supplementary feeds and milk yields obtained; milk revenues and net income for the enterprise. The propensity to purchase supplementary feeds might be related to the availability of cash at any time, but since in this case feed is purchased on credit, the decision to purchase or not must be related to other factors. Evidence from the research suggests that the frequency of purchase of supplementary feeds among female headed households is significantly lower than for both females with resident partners and male headed households. Females with resident partners exhibit the highest proportion of households purchasing supplementary feeds on a regular basis (Figure 51).

**Photograph 5: Supplementary Feed at Chimbia**


The caveat to this analysis is that some entrepreneurs are mixing their own supplementary feeds from locally produced soya and local purchase of *madeya* (maize bran, the by-product of maize milling) with possible inclusion of purchased minerals and vitamins. The question asked was *'Have you been using purchased supplementary feeds for your animal(s)?'* and this therefore excluded homemade supplementary feeds. Despite this caveat response to the question does provide an indicator of each entrepreneur's propensity to extend the enterprise from a more traditional 'low-input low-output' and therefore relatively risk-averse business strategy to a 'high-input high-output' enterprise. This transition to a more commercial operation may be seen to bring with it some level of exposure to higher levels of risk in the event of problems in cash flow, related to sickness or even mortality of the principal animal.

Figure 51 : Frequency of Purchasing Supplementary Feeds




The MBG financial records are summarised in Table 47 using two alternative measures; the first divides the total Malawi Kwacha (MK) value of feeds purchased by those individuals recorded as delivery milk during 2008; the second averages the MK purchase over those who actually purchased feed. Each measure provides information; the first provides an indication of the level of feed for animals in lactation and the second the intensity of use for those who purchased feed.

Table 47 : MK Value of Supplemental Feeds Purchased per Month by HHH in 2008
Chimbia MBG Financial Records

| Measure | FHH | FWRP | MHH |
|---|---|---|---|
| Ave. MK of feeds purchased from those delivering milk | 2,204 | 2,140 | 2,572 |
| Ave. MK value of those purchasing feed | 4,020 | 3,951 | 4,475 |

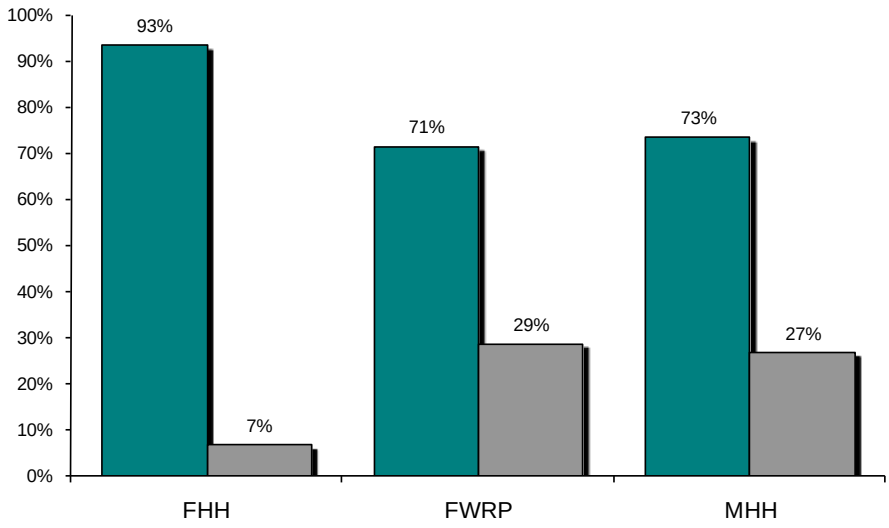
While the MBG records do suggest that MHHs are purchasing more supplemental feeds from the MBG than either FHHs or FWRPs, female entrepreneurs are also purchasing significant amounts of supplemental feeds for their dairy animals from the MBG feeds revolving fund stocks. Supplemental feeds are crucial in obtaining higher levels of milk production but they are only effective when used as an adjunct to a base of adequate basic forage for the dairy animals.

Supplemental feeds will not substitute for inadequate provision of forage and excessive provision of concentrate feeds relative to forage can create problems for dairy animals, necessitating a balance of basic forage and supplemental feeds. Levels of basic forage provision for animals could not be measured in either the household survey or through records but adequate nutrition from both sources is measured indirectly through the body condition score (BCS) of the animal.

### 4.19.2. Acaricides

The consistent use of acaricides is essential to maintain the health of a dairy animal. 'Acaricides' refers to the medication that is either sprayed or dropped onto the spine of the animal every 14 days to prevent it from tick infestation, and particularly against the potential threat from East Coast Fever (ECF). Without their regular and proper use the imported and exotic dairy animals will inevitably succumb to tick infestation which in its extreme form can lead to death. ECF can kill an animal within a matter of days, as experienced by the dairy enterprise project at one quarantine location where there was a breakdown in proper spraying of the animals brought in from a commercial farm just across the border in Chipata, Zambia.

**Figure 52 : Frequency of Use of Acaricides**




It is interesting to see that in the case of frequency of use of acaricides, which is also a purchased (and expensive) input; the relative position of female headed households is reversed (green being frequent use). Almost all of the FHHs are using acaricides on a regular basis, which suggests that they are both more prudent in their management of their enterprise, and mitigating against the risk of mortality which would severely impact upon their cash flow in the medium-term even with a 'dead cow' revolving fund as insurance.

### 4.19.3. Medications

Typically medications include antibiotics to fight opportunistic infection and these can be administered by a paravet and sometimes by the entrepreneur themselves. The association operates a drugs revolving fund and there is a drug box maintained at the MBG cooling centre, which is usually within a maximum of five miles from the farm, and therefore reasonably accessible. As in the case of acaricides a relatively high percentage of female headed households report frequent use of medication, on a par with male headed households and markedly higher than enterprises operated by females with resident partners. The interpretation of this response needs to be treated cautiously as medication is only used when the animal is sick. Frequent use of medication may indicate poor animal husbandry related to other aspects of care for the animal, and cannot therefore be interpreted as a positive aspect of management of the animal and the enterprise without additional supporting (and triangulated) information to make an overall assessment.

**Figure 53 : Frequency of Use of Medications**

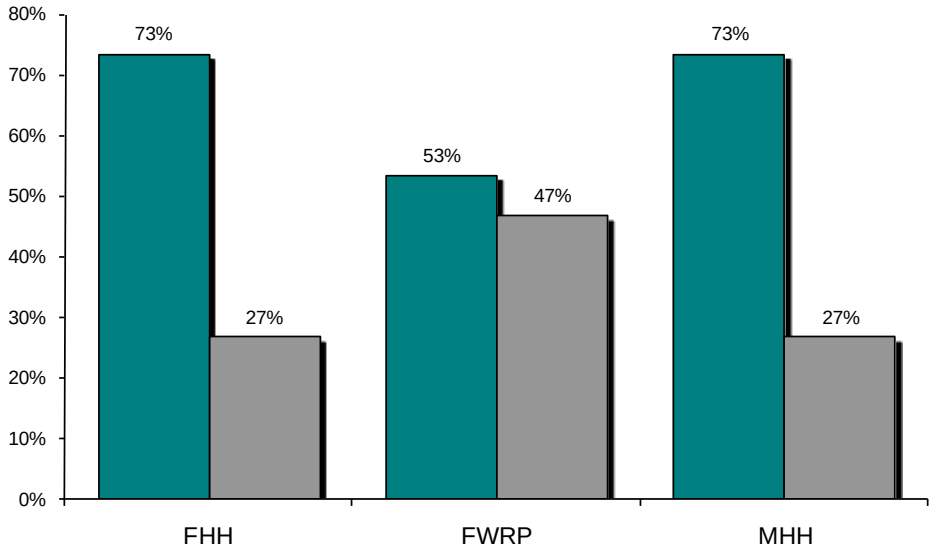



Table 48 shows the average monthly value of medications purchased from the MBG computed in two ways; the first using a denominator of all those entrepreneurs delivering milk; the second by those who actually purchased medications. The data indicates that on average those purchasing medications spent around MK800 per month, with FHHs spending closer to MK700 per month and MHHs closer to MK900.

Table 48 : MK Value of Medications Purchased per Month by HHH in 2008
Chimbia MBG Financial Records

| Measure | FHH | FWRP | MHH |
|---|---|---|---|
| Ave. MK of purchases of those delivering milk | 454 | 515 | 680 |
| Ave. MK value of those purchasing drugs | 705 | 775 | 876 |

## 4.20. Focus Group Discussions among Surveyed Dairy Entrepreneurs

Focus group discussions were held with Chimbia dairy entrepreneurs who were interviewed during the primary research exercise. Eight focus groups comprised four of male-headed households; two of females with resident partners; and two with female-headed households (refer APPENDIX IX: Summary of Focus Group Discussions on page 320). Male focus groups generally regarded males as being the better dairy entrepreneurs, with the exception of one group that considered females to be better entrepreneurs as they spend more time at the household; feed the animals well; and are able to draw upon their inherent skills as carers. This corresponded to the a priori reasoning of key informants and the researcher himself prior to the study (Table 49).

Table 49 : Focus Group Discussion on Difference in Performance by Gender

| FG+No. | Better Performers | Rationale |
|---|---|---|
| MHH1 | Men | Bought other economic resources<br>Paid school fees |
| MHH2 | Women | Spend more time at home<br>Naturally carers<br>Feed the animals well |
| MHH3 | Men | Work harder<br>Do most of the necessary jobs themselves<br>Women easily discouraged |
| MHH3 | Men | Women rely on workers<br>Women do not have tenacity<br>Women have competing demands on time at home |
| FWRP1 | Women | Spend more time at home<br>Natural carers<br>Frequent attention to the needs of animals |
| FWRP2 | Women | More responsible<br>Use the money for the home and school fees |
| FHH1 | Women | Consider the needs of the home<br>Frequent attention to the needs of the animals |
| FHH2 | Women | Can do the work by themselves<br>Consider the needs of the home |

Some of the issues that the male focus groups considered disadvantaged females as dairy entrepreneurs related to their inability to undertake all the work involved Focus group discussions were held with Chimbia dairy entrepreneurs who were interviewed during the primary research exercise. Eight focus groups comprised four of male-headed households; two of females with resident partners; and two with female-headed households. Male focus groups generally regarded males as being the better dairy entrepreneurs, with the exception of one group that considered females to be better entrepreneurs as they spend more time at the household; feed the animals well; and are able to draw upon their inherent skills as carers.

This corresponded to the *a priori* reasoning of key informants and the researcher himself prior to the study including: construction of the khola; riding bicycles to gather and transport foraged grasses from distant locations; and the competing demands of work as carers at home. Female groups considered that females had a greater focus on the welfare of the entire family, reflected in their use of the dairy income; and since they spent more time at home could take better care of the dairy enterprise, which is physically located at the homestead.

### 4.21. Follow-on Information from Key Informant Interviews

Key informants comprised individuals within the community who, by virtue of their support roles, were closely associated with the dairy entrepreneurs. Most were members of the MBG and had been charged with organisational responsibilities that had brought them into close contact with a wide cross-section of entrepreneurs. Thematic analysis of key informant observations and exploration of possible determinants is summarised in Table 50 and interpreted in Figure 54 on page 181.

Table 50 : Thematic Analysis of Key Informant Factors Determining Female EP

| SN | Factors Affecting Female Underperformance | Key infs. |
|---|---|---|
| 1 | 'Time poverty' means females do not have sufficient time to devote to the enterprise in competition with other time demands; made worse by younger children and alleviated with older children assisting | FHH x 2<br>FWRP x2<br>MHH x 2<br>ExtS |
| 2 | Time poverty means that females without partners invariably have to employ a male worker to collect the basic feed and care for the animal thereby relinquishing some degree of hands-on management control over the enterprise for FWRPs they rely upon their partners to do this | FHH x 3<br>FWRP<br>MHH x 2<br>ExtS |
| 3 | Distance to collect feeds: Cattle feed especially during the dry season is distant (over 10km) and difficult for most women to cycle or walk to obtain the feed resulting in inadequate feeding or reliance upon a male partner, older child or children or employee | FHH<br>FWRP<br>MHH<br>ExtS |
| 4 | Insufficient land to grow *Nsenjere* (elephant grass) for basic forage thereby necessitating foraging for grasses in distant locations | MHH |
| 5 | Difficult for women to travel long distances to go and collect the basic forage required every day for the animal | MHH |
| 6 | Females need to hire workers but that is costly and if they do not then feeding of the animal suffers and yields are reduced = a vicious circle. Men can do this work themselves and do not rely upon workers, but may employ them as their enterprise expands | FHH<br>ExtS |
| 7 | Females with resident partners rely upon partners to assist with dairy work, which then means that they share dairy income with partners, and sometimes resulting in the partner taking over control of income; this discourages the female from greater effort in the enterprise | FHH<br>FWRP<br>MHH x 2 |
| 8 | Demands for money for the household may mean that since inputs are expensive and females cannot afford, would rather buy something for the home for immediate use (confirmed by the empirical analysis) | FHH x 2<br>MHH |
| 9 | Single women (FHHs) do not buy dairy mash and they try to make their own to supplement the feed (not confirmed by the empirical analysis) | FHH |
| 10 | Traditional role of males and females in Africa – dairy considered to be a man's job with clearly defined roles | FWRP |
| 11 | More FHHs losing animals (confirmed by the empirical analysis) | MHH |

* ExtS = dairy extension support personnel

Key informants emphasised the multiple roles of females, caring for dependents, having work responsibilities in the household, and earning income for the family. This provides support to the conflict perspective elaborated by Jennings and McDougald (2007) and particularly time-based conflict. Time poverty means that females do not have sufficient time to devote to the dairy enterprise in competition with their other time demands. This situation is exacerbated by the presence of younger children. Conversely, it may be partially alleviated if older aged children are assisting, as in the case of Edina Suntheni (pictured 2$^{nd}$ from left in Photograph 6.

**Photograph 6: Edina Suntheni (FHH) with family members**

Given the absence of land to cultivate forage grasses and the need to collect basic forage from distant locations, a combination of time poverty and lack of family members to assist with the enterprise, forces the FHH entrepreneur to employ a male worker. He takes on the responsibility of collection of basic forage, delivering the milk to the MBG and generally feeding and taking care of the animal. This means that the FHH relinquishes some degree of 'hands-on' control over the enterprise, and the financial burden of taking on an employee places extra strain on the household budget. If she is unable or unwilling to take on paid assistance then she falls back to her own or family labour resources, and if the animal is inadequately cared for then income suffers. Reduced milk production translates to reduced income and insufficient surplus for re-investment into the enterprise and the dairy enterprise falls into a vicious circle resulting in a decline in the operation to either discontinuance or into a state of 'marginal survival' of a low input/low output operation.

Females with resident partners in the absence of assistance from other dependents are forced to rely upon their spouses to assist with the enterprise. This means that FWRPs also relinquish a degree of control over the enterprise and in some cases a total loss of control with partners taking over management and accounting of the enterprise and control of money. The inability to draw a boundary around the enterprise by the FWRP and make it her own is compounded by the traditional demarcation of roles and responsibilities of males and females in Africa. Roles for males in a dairy enterprise typically involve taking responsibility for those activities, which take place distant from the household, collecting basic forage in distant locations and delivering to the MBG or vending at trading centres or in the locality, the latter activity involving daily cash

transactions (Table 51). This results in the female becoming disempowered and being discouraged from greater effort. This supports the working hypothesis of Peterman *et al.* (2011) that relatively lower productivity levels of females may be as a result of a greater domestic work burden in savannah ecologies such as Malawi, and a suggestion of conflict over enterprise control between family members in mixed-ownership enterprises.

Table 51 : Roles and Responsibilities in the Household and in Dairy

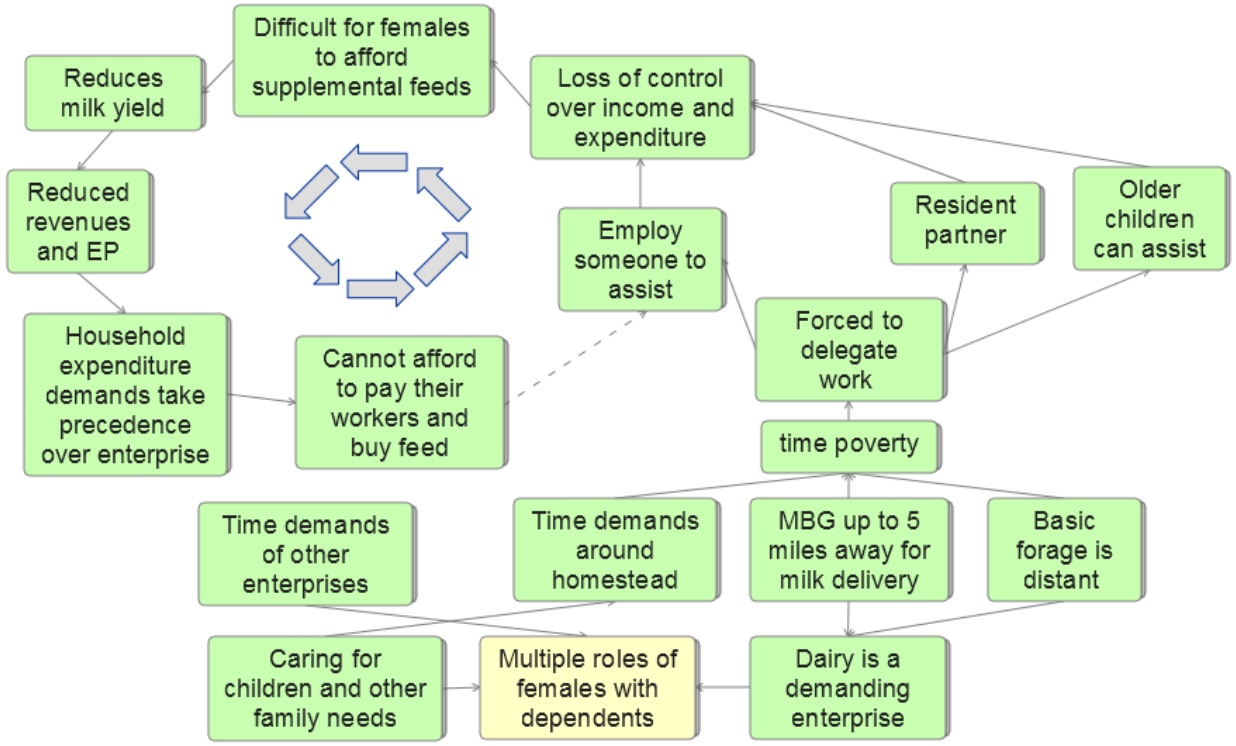
| Resident partner | | No resident partner |
|---|---|---|
| Male role | Female role | Female role |
| Milks the cow | Milks the cow | Milks the cow |
| Sieves the milk | Sieves the milk | Sieves the milk |
| Cleans the khola | Cleans the khola | Cleans the khola |
| Works on garden crops | Works on garden crops | Works on garden crops |
| Feeds the animals | Feeds the animals | Feeds the animals* |
| | Gathers fuel wood | Gathers fuel wood |
| | Provides water | Provides water |
| | Heats up bathing water | Heats up bathing water |
| | Cooks meals | Cooks meals |
| | Looks after children | Looks after children |
| | Cleans the home | Cleans the home |
| | Other household chores | Other household chores |
| Delivers milk to the MBG | | Delivers milk to the MBG* |
| Vends milk in the locality | | Vends milk in the locality* |
| Goes out to get forage | | Goes out to get forage* |
| Cuts the forage grass | | Cuts the forage grass* |
| Maintains/repairs *Khola* | | Maintains/repairs *Khola* ** |

* either does herself or employs a male worker to do it
** pays a male to do it

Household demands for money may mean that females are conflicted between allocation of the enterprise income to the home and back into the enterprise. In the choice of strategy between segmentation and integration (Jennings and McDougald, 2007) the strategy among female dairy smallholder entrepreneurs tends towards integration. Indeed, this is one of the reasons why almost universal *a priori* belief is that females are superior smallholder dairy farmers in a situation where animals are zero-grazed since the enterprise is based at the homestead and integrated into the life of the female and her day-to-day activities.

The belief is encapsulated in the comments of Focus Groups MHH2 and FWRP1 summarised in  in the statements that females spend more time at home and are natural carers (refer APPENDIX IX: Summary of Focus Group Discussions on page 320). FHHs are reluctant to buy purchased supplemental feeds and try to make their own in order to make savings. This key informant belief is supported by the findings of  where FHHs were the lowest ranked in purchase of supplemental feeds and in frequency of purchase (Figure 51). The flow of logic summarising the views of key informants on possible determinants of female underperformance are graphically presented in Figure 54.

Figure 54 : Causal Logic of Factors Affecting EP from Key Informant Interviews




One of the key informants, a former chair of the MBG and a dairy entrepreneur expressed the view that more FHHs were losing animals, as support to his beliefs and arguments. This is confirmed in the empirical analysis (Figure 38 on page 159) and circumstantial evidence links this to inadequate nutritional levels although not to sickness prevention measures through adequate use of acaricides and medicines. In the latter FHHs would appear to excel.

As a follow-up inquiry in Nov. 2010 those entrepreneurs with animals that were currently dry were analysed. A higher percentage of FHHs had animals that were dry at this time

(Figure 55). The percentage of entrepreneurs with animals that are not in milk production ('dry') provides an additional measure of entrepreneurial performance after some years of operation. In Nov. 2010 Bernard Ravat remained as the Treasurer of Chimbia MBG and a key informant since the initial research investigation and discussions held with him in 2008. In the follow-up investigation, he was requested to repeat his initial performance assessment of the 87 farmers delivering milk to the MBG at that time, from the original 112 farmers delivering milk at the end of 2008. He was not shown his initial performance scoring in the follow-up exercise and repeated the exercise he had done in 2008 using the same tabular sheet.

**Figure 55 : % of Entrepreneurs with Dry Animals Nov 2010**

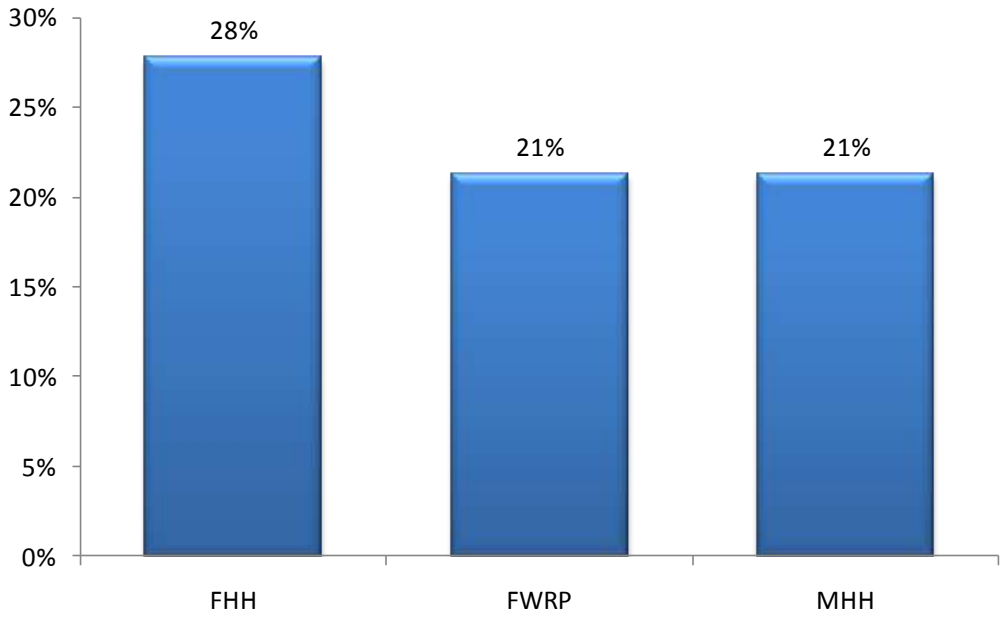
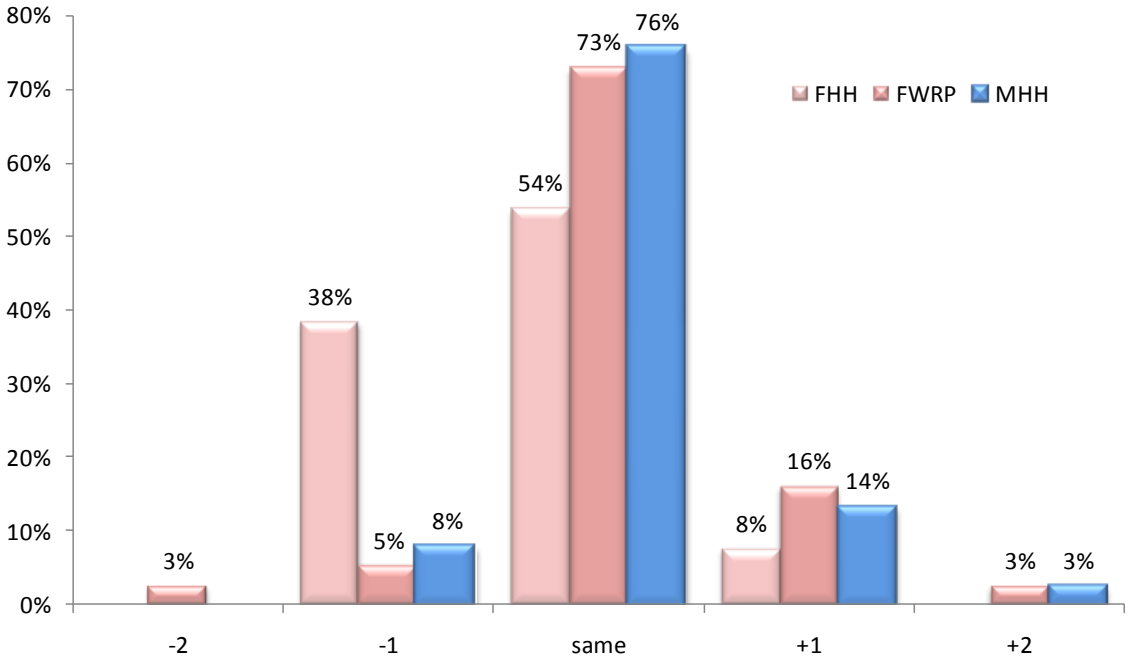



Figure 56 shows the percentage of entrepreneurs in Chimbia MBG that have moved up and down or remained in the same performance category over the intervening period. While three-quarters of entrepreneurs among FWRPs and MHHs have remained in the same performance category, 38% of FHHs have been downgraded by one performance rating on a 3 point-scale. This compares with 5% of FWRPs and 8% of MHHs. In contrast, 11% of FHHs received a higher performance rating compared to 19% of FWRPs and 17% of MHHs. While his 2010 performance assessment showed improvement for some entrepreneurs in all categories of household headship, FHHs were the category where he downgraded the most entrepreneurs in the intervening period.

Figure 56 : Change in Performance Assessment by Ravat 2008-2010 n=87




## 4.22. Consideration of Potentially Confounding Effects of HIV/AIDs

HIV prevalence rates have been very high in Malaŵi in relation to countries globally, as the trend in HIV prevalence among 15-49 year olds in Figure 57 over the period 1980 to 2007 demonstrates (www.gapminder.org). Prevalence rates peaked at almost 14% in 1998, and since then have steadily been declining but remaining at high levels of around 12% by 2007. There are significant differences in prevalence rates between the regions and between urban and rural areas.

Figure 57 : Trend in Malawi HIV Prevalence Rate 1980 – 2009


*Source:* [www.gapminder.org](http://www.gapminder.org)

Dorward *et al.* (2006) explore the direct negative impact of AIDS-affected households' human capital (labour time, strength, and skills/ knowledge) resulting from the morbidity and mortality of infected individuals. Differential HIV rates and more specifically their manifestation into full-blown AIDS may be conjectured to be a contributing factor to underperformance of FHHs relative to FWRPs and MHHs. The rationale is that within an external environment of high HIV prevalence, female-headed households become *de facto* household heads as a result of being widowed. There is a likelihood that a proportion of deaths of their spouses were because of AIDS related illnesses.

Further speculation is that a high proportion of these widows will have themselves been infected by HIV and suffering from AIDS-related illnesses, such as HIV-related tuberculosis, compromising their ability to adequately manage their household enterprises, including the dairy enterprise. There are grounds for this as the article reproduced on page 319 attests to, although the entrepreneur in this article is a FWRP and among the 112 entrepreneurs assessed in 2008, and the benefits of the enterprise in mitigating some of the effects of HIV are emphasised.

It is not possible, on ethical grounds, to enquire as to the HIV status of entrepreneurs or their family members. Amin (2010) in his analysis of World Bank enterprise survey data was able to include variables concerning enterprises being affected by high absenteeism of employees due to sickness of the employee or the employee's family members and friends. He also utilised a question relating to HIV/AID status among employees. This is not ethical in a situation where individuals are being asked directly about their own HIV/AIDs status or the status of members in their family. In the case study, the researcher used a proxy measure of mortality among the population of Chimbia dairy entrepreneurs over the past four years, including spouses. Information was sought from key informants in November 2010 and mortality among the population was recorded over a six and a half year period. Since 2004 there were five deaths among the Chimbia dairy households; two MHHs; one FWRP who lost her partner and became a FHH; and two FHHs.

### 4.23. Educational Level and Performance

There are differences in the educational level of the entrepreneurs and the sample design did not control for this. Figure 58 shows that while the majority of both female and male entrepreneurs had some primary education, the proportion of males and females with some secondary education differed. While 19% of male entrepreneurs received some secondary education, this was true for only 5% of females. Further analysis shows that those with no education have had neither prior work experience nor any vocational training excluding the dairy entrepreneurship training received as part of the dairy enterprise development programme, suggesting that level of general education affects work experience, which in turn affects entrepreneurial performance in the dairy enterprise (Bhattacharjee *et al*., 2008).

There is some evidence in the academic literature that educational level of the entrepreneur is an explanatory variable of performance (refer section 2.7 on page 54) although findings have been mixed. If educational levels are a determinant of entrepreneurial performance then the relatively lower levels of educational attainment of females may provide one explanatory factor in their relative underperformance.

Figure 58 : Highest Educational Level Attained by Gender of Entrepreneur

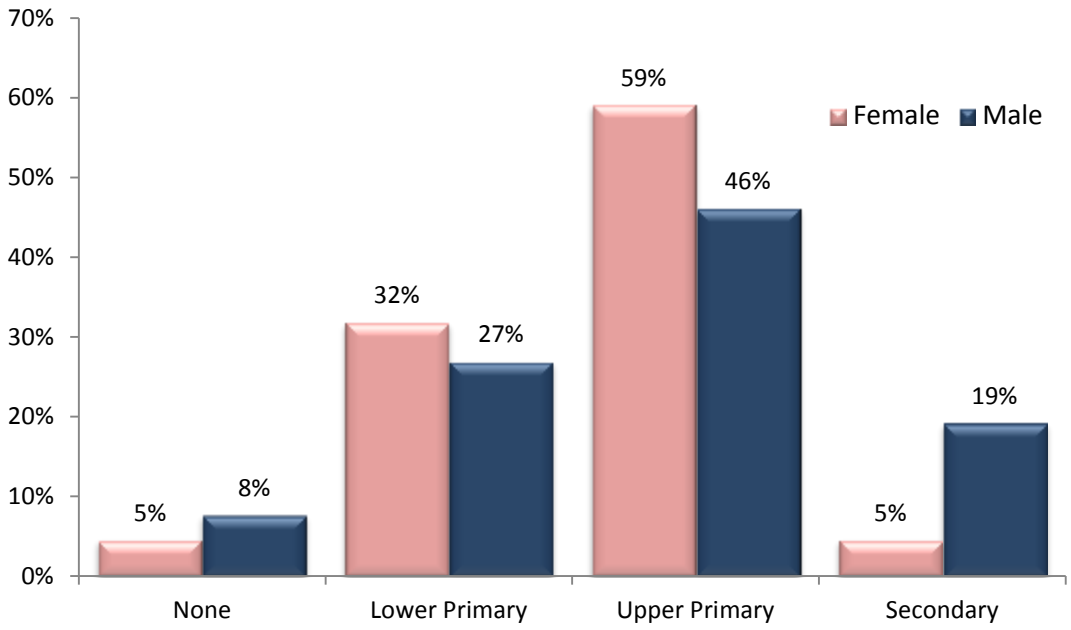



Table A.1 on page 248 explores the linkage between educational level of the entrepreneur and the suite of performance measures developed from the performance framework (refer to Figure A.16 on page 324). Surprisingly, those entrepreneurs with no formal education consistently rank as the highest performers except in their self-reported use of acaricides and medications, and this finding corresponds with Otoo *et al.* (2011) albeit among females entrepreneurs in another enterprise in Niger and Ghana.

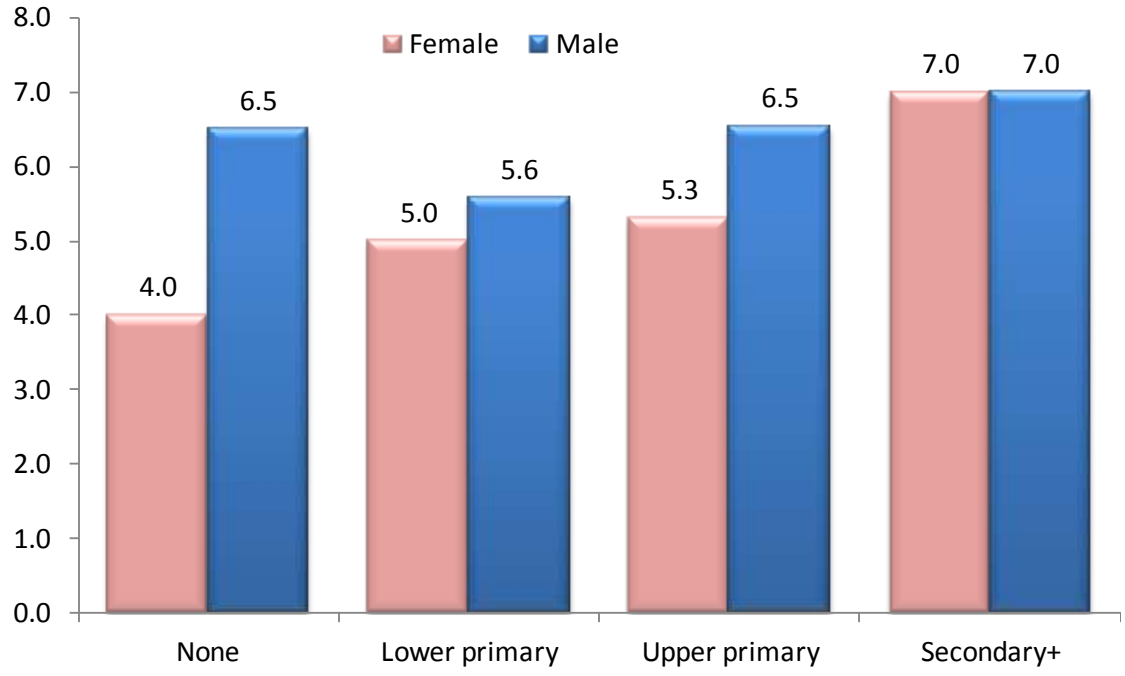
When the analysis focuses only on those receiving some form of formal education (refer to Figure A.2 on page 249) then those entrepreneurs with secondary education demonstrate higher performance ratings than those with either lower or upper primary education. Exceptions to this general finding are for the performance measures of body condition score of the principal animal and value of supplementary feeds purchased through the MBG revolving funds, where those with secondary education were lowest ranked for BCS of the principal animal; and for value of supplementary feeds purchased.

Figure 59 relates educational category and gender with the field performance rating (FPR) of the independent technical assessor. This supports the finding of the overall performance ranking and the hypothesis that there is a relationship between educational level and entrepreneurial performance. This relationship holds true for both males and

females with the exception of male entrepreneurs with no formal education. For the suite of performance measures and in the overall performance rating (OPR) these male entrepreneurs rated highest in terms of performance ranking and this 'aberration' is also seen in the FPR as shown in Figure 59.

If educational level is a predominant influence in the field performance rating (FPR) then care must be exercised in assessing the validity of the performance rating but triangulating this with the overall performance rating measures (Figure A.1 on page 248) provides for broadly the same result and adds to the reliability of the finding.

Figure 59 : FPR by Educational Level and Gender

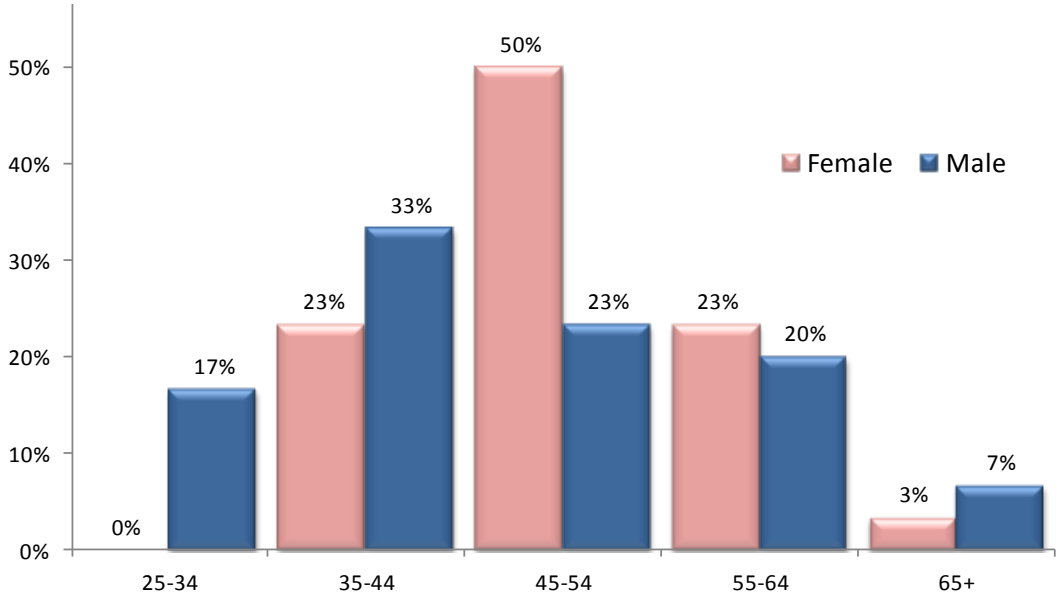



## 4.24. Age of Entrepreneur and Performance

Age was not a controlling factor in the sample selection of dairy entrepreneurs for the primary research. Figure 60 shows the age distribution of dairy entrepreneurs by gender, and there are significant differences between the age distributions of male entrepreneurs relative to females. While half of male entrepreneurs were under 45 years this was true for only 23% of females. The average age of male entrepreneurs in the case study is 46 years compared to 50 years for males. This phenomenon is typical among entrepreneurs worldwide and no different for entrepreneurs in developing

countries such as Uganda and South Africa (GEM 2001-06) with the largest group of entrepreneurs in the 25-34 age range. All demonstrate a marginally older age distribution among female entrepreneurs relative to males.

Figure 60 : Age Distribution of Entrepreneurs by Gender
Case Study

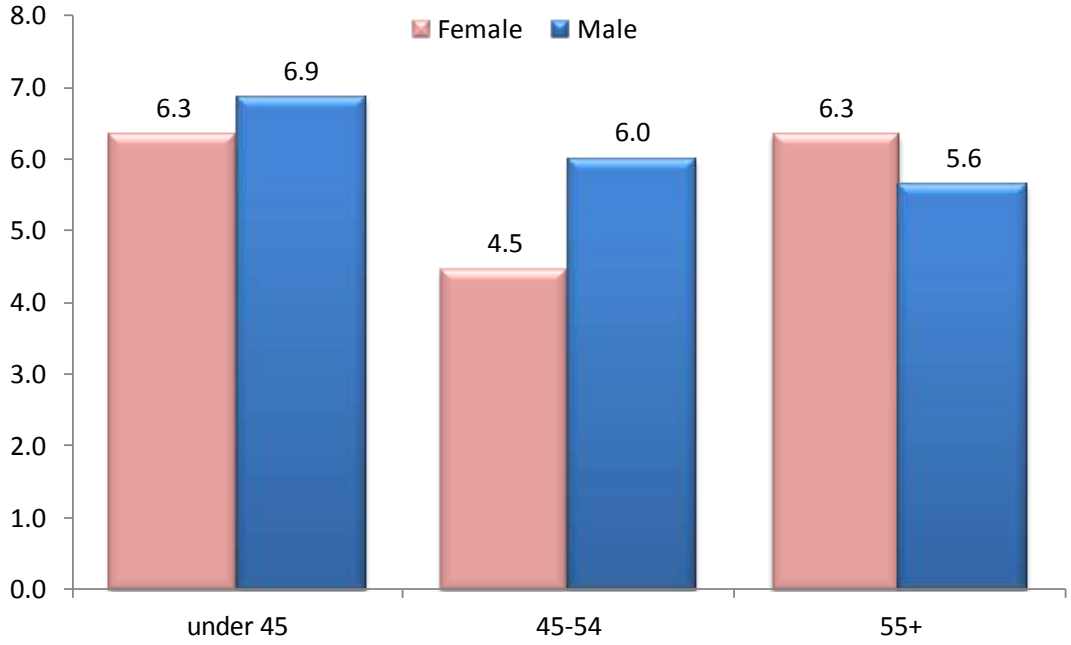



Analysis of secondary data for discontinuance rates by age and gender of entrepreneurs suggests that discontinuance rates decrease as age of entrepreneur increases (Figure 5 on page 57). Females exhibit lower performance rates than males within every age category. To the extent that performance rates are negatively related to age of entrepreneur then the gender differences in age distribution in the case study may be one of the explanatory factors in differential enterprise performance.

Table A.3 on page 250 provides the performance ranking by EP measure and age category of household head, the age categories selected are under 45 years; between 45 and 54 years and 55 years and over. While there is some evidence that the under 45s have the highest performance ranking overall, the findings are mixed with the oldest age having higher repayment rates in cash and kind, having the highest body condition score for both principal animal and heifer calf, and the highest rates of survival of the enterprise.

Figure 61 relates age category and gender with the field performance rating (FPR) of the independent technical assessor. There is a correspondence in rating between the overall performance rating (OPR) and field performance rating (refer Figure A.3 on page 250). The data here suggests that there is a negative relationship between age of entrepreneur for male entrepreneurs but not for female entrepreneurs, but the overall ratings for both FPR and OPR while consistent show no obvious relationship between age and EP. The lower performance rating in the 45-54 age group may be attributable to the high percentage of female entrepreneurs in this age group and their EP discussed in the next section.

Figure 61 : Performance Rating by Age Group and Gender




## 4.25. Gender and Performance

Table A.4 on page 251 provides the performance ranking by EP measure and gender of the entrepreneur. Male entrepreneurs consistently rank higher for EP measures relative to females, for unweighted and weighted measures and excluding possible MCMs and for both FPR and OPR (refer Figure A.4 on page 251). Exceptions to this general finding are in caring for the heifer calf 'pass-on' and in frequency of use of acaricides, particularly important in preventing the animals succumbing to ECF. Despite the self-reported frequent use of acaricides, females still rank lower than males in survival of the enterprise.

Table A.5 provides a summary of the rankings by household headship. Measures are derived from the performance framework (refer to Figure A.16 on page 323) supplemented with financial information on values of milk delivered and inputs purchased for 2008 obtained from Chimbia MBG in a follow-up investigation. The rankings indicate that female-headed households (FHHs) have the lowest or second lowest ranked performance except in the perception of gender differentials in performance by the entrepreneurs themselves, and in the body condition score of the heifer calf, where they rank highest. FHHs also rank the highest in self-reported frequency of use of acaricides and medications. In contrast, in every case where females with resident partners rank highest against a performance measure this is a joint ranking with the exception of frequency of use of supplemental feeds. The rankings suggest that overall female headed households (FHHs) exhibit the lowest EP and this is supported by a comparison of FPR and OPR by household group in Table A.5 on page 252.

### 4.26. Assistance from a Resident Partner and Performance

Table A.6 on page 253 provides rankings for EP by presence of a resident working partner. Females and males who both have resident working partners are compared in Table A.7 on page 254. Table A.8 on page 255 compares EP measures for females with resident partners against those without. The findings do indicate that the presence of a working partner has a positive effect on entrepreneurial performance.

### 4.27. Number of Dependents and Performance

Table 52 indicates that there is a higher overall dependency burden for MHHs but with FHHs having the highest burden of adult dependency.

Table 52 : Average Number of Dependents by Type and HH Headship

| Dependents | FHH | FWRP | MHH | All |
|---|---|---|---|---|
| Children | 3.7 | 4.4 | 5.6 | 4.8 |
| Adults | 1.9 | 1.0 | 0.6 | 1.0 |
| All | 5.6 | 5.4 | 6.2 | 5.8 |

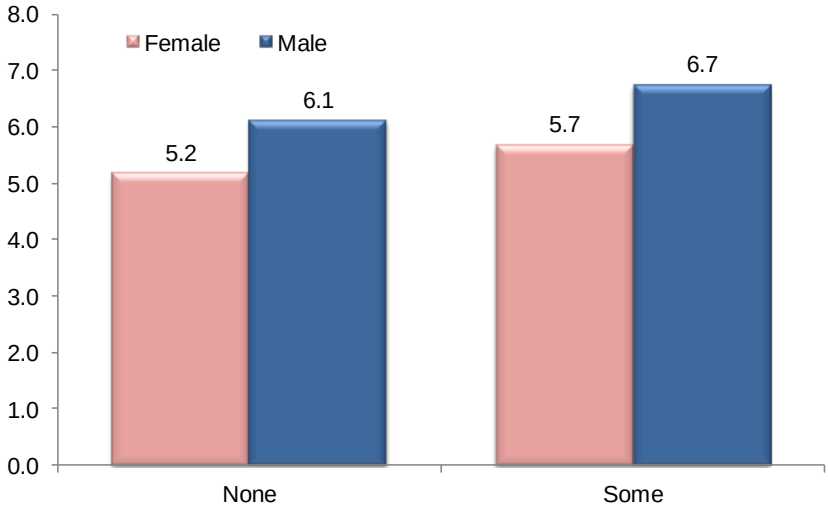
It is possible therefore that the level of adult dependence may be influencing performance for FHHs and to some extent for FWRPs also. While adults may potentially be able to assist (as may children), the fact that respondents registered the adults as dependents suggests that they are elderly or infirmed by definition.

Table A.9 on page 256 provides the EP rankings by category of numbers of dependents, 3 or less, 4-6 and 7 or more. Table A.10 on page 257 provides the rankings for category of number of adult dependents for groupings of none, 1-3 and 4+. Table A.11 on page 258 provides the rankings for number of child dependents with categories as per Table A.9. Taken together the tables suggest that while having four or more adult dependents acts as a detriment to EP, having more child dependents may actually benefit EP, at least according to the OPR. This suggests that some child dependents may be supporting the entrepreneur in the enterprise. Since analysis, using the FPR shows an opposite relationship, the findings are ambiguous, and no definite statement can be made. Although information on ages of child dependents was not considered critical at the time of field interviewing, in hindsight this would have contributed to the analysis.

### 4.28. Work Experience and Performance

A greater proportion of males than females had some employment experience in a wide range of different employment activities but none specifically related to dairy husbandry or even management of animals in general, with the exception of the one individual (MHH) who worked on a large agricultural estate with animals.

**Figure 62 : FPR by Work Experience**




The nature of the assisted start-up of the entrepreneurs in the dairy venture was such that all began at the same level in terms of prior knowledge and experience of the dairy industry. Aside from employment experience in non-related

economic activities, direct vocational experience in terms of training was controlled for in that all entrepreneurs received training by dairy extensions officers prior to and following start-up of the enterprise.

Table A.12 on page 259 groups entrepreneurs into two categories; those who have been involved in paid employment, whatever the nature of that employment, and those who have had no paid employment experience. The two groups are ranked against each performance indicator from the performance framework (Figure 65). The overall performance rankings do not show a significant relationship between work experience and EP. In contrast, the field performance rating (FPR) does indicate a relationship between work experience and enterprise performance (Figure 62) and as such the findings are ambiguous and no definite statement can be made.

### 4.29. Enterprise Mix and Performance

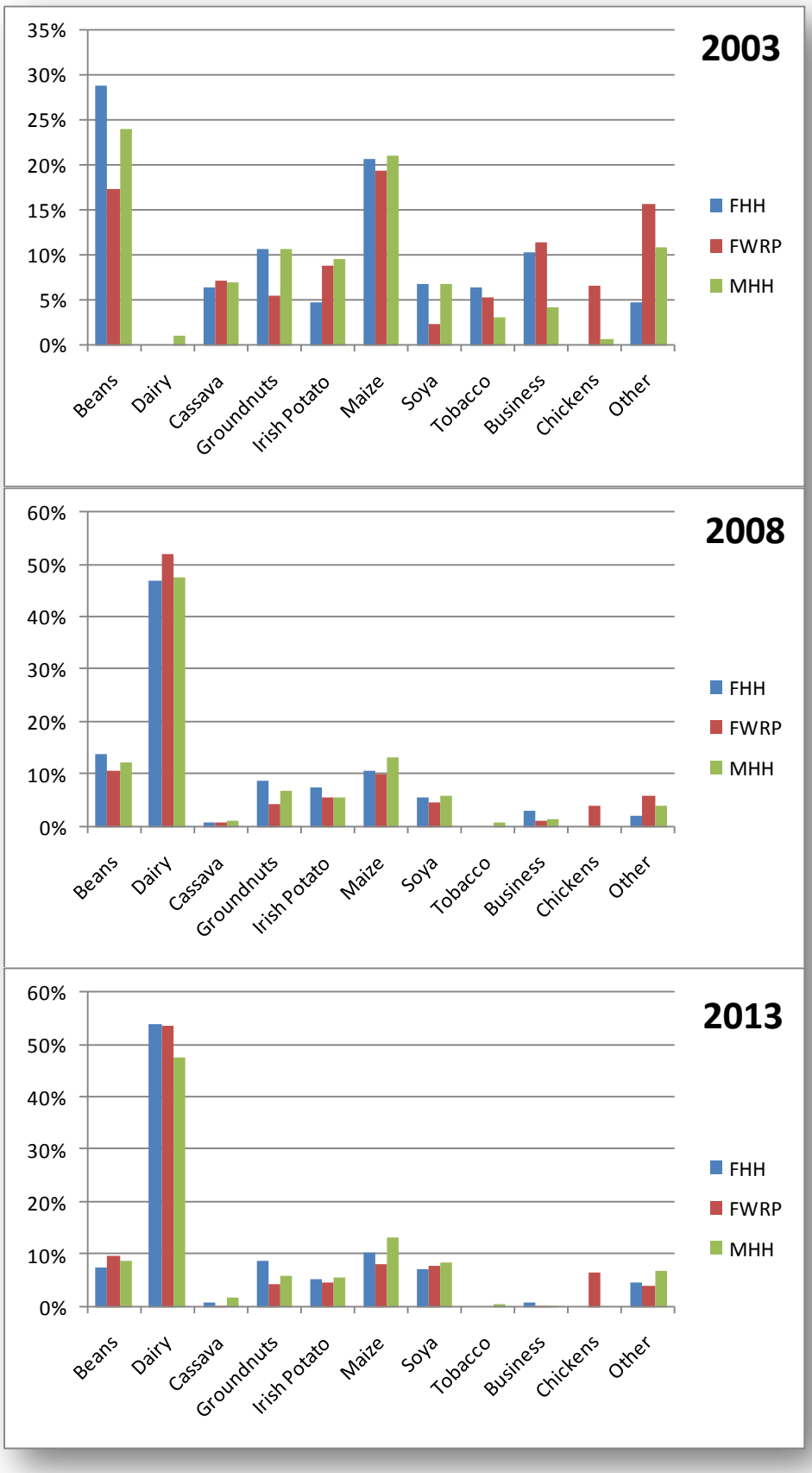
Those entrepreneurs with the highest performance ranking overall rather than reducing their range and number of enterprises actually increased the number of enterprises (Table 53). This supports the findings of Kodithuwakku and Rosa (2002) in Sri Lanka. They found that although farmers had all started together with the same one hectare of land (refer Table 7 on page 52), that the most successful had increased their range of enterprises, and were at the time of the study engaging in an average of 3.7 ventures each. They called these entrepreneurs "successfully pluriactive".

Table 53 : Relationship between FPR and Number of Enterprises

| FPR Category | Average Number of Enterprises |
|---|---|
| High | 4.5 |
| Med | 4.3 |
| Low | 3.9 |
| All | 4.3 |

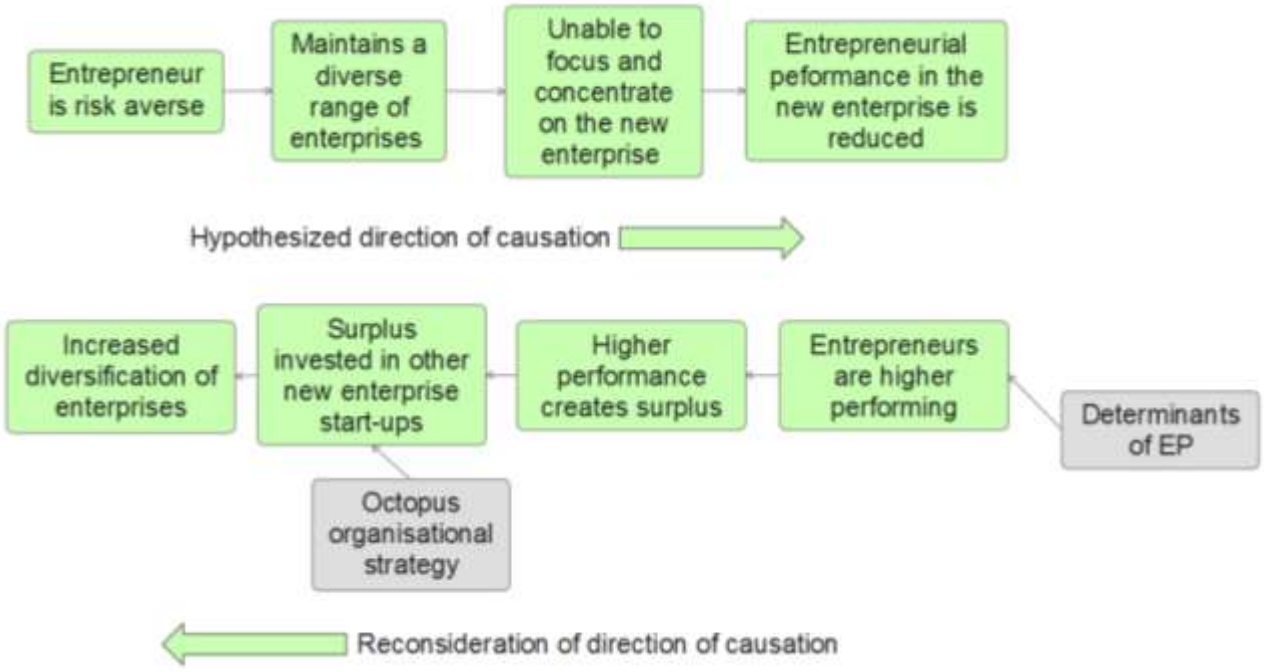
The assumption that diversity in the range of enterprises may improve survival prospects of any single enterprise; hedging risk and cross subsidising during difficult periods for any one enterprise (Kalleberg and Leicht, 1991) may be tentatively supported by this finding. This also supports the notion of the African 'octopus organisation' of Kiggundu (2002) and the assertion of Mishra *et al.* (2004) that enterprise diversification is "*a self-insuring strategy used by farmers to protect against risk*".

Figure 63 : Enterprise Mix Past, Present and Future by HH Headship



The relationship between risk mitigation and enterprise diversity is reconsidered in a graphic representation in Figure 64.

Figure 64 : Relationship between Risk and Enterprise Diversity Reconsidered




`The direction of causation may be reversed from the original assumption that those with higher levels of risk aversion would maintain enterprise diversity. By maintaining enterprise diversity in the face of the introduction of a demanding new enterprise into the mix might prevent the entrepreneur from focusing and concentrating resources on that enterprise, thereby compromising entrepreneurial performance. This may not hold true, or it may be that other factors are overriding, in that entrepreneurial success provides a catalyst for increased diversification, and not that maintaining a diversified portfolio of enterprises reduces entrepreneurial performance.

### 4.30. Gender and Risk Mitigation Working Hypothesis

Ownership of a high performance dairy animal does not guarantee high levels of production and return from milk sales. It is possible for the entrepreneur to revert to a 'survival strategy' or a state of 'marginal survival' (Cooper *et al.,* 1994) whereby the level of input is minimised with the consequence that the level of production will also be minimal, a low input/low output strategy (Table 54). In a survey of existing dairy farmers with purebred or near-purebred dairy animals in 2002, the researcher found that

average daily production was around 7 litres per animal per day, which represented a low input/low output strategy. An analogy often thought of is purchasing a performance car and then driving it always at 30mph. At that time entrepreneurs had limited access to commercially manufactured supplementary feeds and if supplementary feeds were provided to the animals they were restricted to a limited range of ingredients, the principal ingredient being maize bran (*madeya*) which was a waste product from maize milling in the village maize mills in the locality. There was no facility for purchasing supplementary feeds on credit, and the status at that time could be considered one whereby the entrepreneurs were *'constraint-driven'* (Bardasi *et al.,* 2011).

The MDEDP supported all enterprises in the dairy value chain from inputs suppliers to producer associations to milk processors, and through the efforts of the programme commercial feeds have been made available to the entrepreneurs within the MBGs through a feeds revolving fund. Feeds are taken on credit and repayment is made by deduction from the monthly milk revenues by the MBG Treasurer. Risk mitigation strategies may relate to cash preservation and a reluctance to incur expenditures for fear of exposure to debt and inability to repay, representing the '*preference-driven gap'* of Bardasi *et al.* (2011).

Table 54 : Low, Medium and High Input/Output Strategies

| Input Use | Low<br>7 litres | Medium<br>12 litres | High<br>20+ litres |
|---|---|---|---|
| High | | | Basic forage + high level of supplements |
| Medium | | Basic forage + minimal supplements | |
| Low | Basic forage only | | |

Entrepreneurs with high levels of risk aversion may choose to minimise their cash expenditure on feeds or not to purchase at all and since incremental milk production beyond a base level of an average 7 litres per cow per day is related to levels of supplementary feeding if all basic forage needs are being met. This will then result in the enterprise descending into a state of low input/low output. Reluctance to purchase medications may also reflect risk aversion and a strategy to minimise costs. Use of

acaricides is essential to keep the animals alive and failure to purchase and regularly use acaricides would be high risk as this would run the very real danger of loss of the animal, particularly from the deadly endemic East Coast Fever (ECF).

Table 55 : Performance by Gender Including Risk Mitigation Measures

| Item | Female | Male |
|---|---|---|
| Frequency of use of supplemental feeds reported | 2 | 1 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 1 |
| Frequency of use of acaricides | 1 | 2 |
| Frequency of use of medications | 2 | 1 |
| Medications purchased from Chimbia MBG in 2008 | 2 | 1 |
| Overall rating (only for 'risk mitigation' measures) | 1.8 | 1.2 |

Table 55 considers those measures relating to entrepreneur self-reported frequency of use of supplemental feeds and supporting information from financial and physical records kept by the MBG on feeds purchases. The table indicates that male entrepreneurs are using more feeds, and the use of supplementary feeds does consistently link to EP using both the field and overall performance ratings.

### 4.31. Triangulation of Overall and Field Performance Ranking Rankings

Table 56 reviews the correspondence between the field performance rating (FPR) of Masache and the overall performance rating (OPR) from the performance framework and measures developed subsequently. There is a degree of correspondence between the ratings suggesting that there is a level of consistency between the field and overall performance ratings, with some exceptions. The first is the relationship between number of child dependents and EP. While the field performance rating (FPR) has EP increasing with the number of child dependents, the overall performance rating (OPR) has EP declining. Both effects are plausible, as Lawson (2007) contends in his study in Lesotho, and dependent upon the age of the child and their ability to assist with the enterprise.

The second relates to the range and diversity of enterprises in the household enterprise mix. The OPR suggests that the highest performers have increased their range of

enterprises, where the FPR rates those entrepreneurs who have reduced the number of their enterprises as the highest performers (refer Figure A.13 on page 260). The FPR of Masache may have been influenced by the degree of focus and concentration on the dairy enterprise relative to the other enterprises.

Table 56 : Correspondence of Overall vs. Field Performance Ratings

| Entrepreneurial performance in the new venture is higher… | Fully | Partially | Not |
|---|---|---|---|
| the higher the level of education of the entrepreneur | | ■ | |
| the younger the entrepreneur operating the enterprise | ■ | | |
| when a male entrepreneur operates the enterprise | ■ | | |
| ...by household headship | ■ | | |
| for ventures operated together with working partners | ■ | | |
| ...males vs females with working partners | ■ | | |
| ...females with and without working partners | ■ | | |
| for entrepreneurs with fewer dependents | ■ | | |
| ...adult dependents | | ■ | |
| ...child dependents | | | ■ |
| for ventures operated by individuals with prior paid employment experience | | ■ | |
| for those entrepreneurs who have reduced their number of enterprises | | | ■ |

The Chapter has presented and discussed the analysis of primary and secondary data from the case study. This has included a discussion of the interpretation of the findings with support from information from focus group discussions and key informant interviews. In Chapter Five, the conclusions and recommendations that arise from the findings are presented. The contribution to knowledge is discussed, and future research directions are explored.

# Chapter Five – Conclusions and Recommendations

# 5 Conclusions and Recommendations

## 5.1. Introduction

The Chapter begins by summarising the findings and then compares these with the balance of findings from the academic literature. Conclusions and recommendations are developed, followed by discussion of the contribution to knowledge and future research.

## 5.2. Responding to the Study Hypotheses

Table 57 reproduces the research hypotheses developed in section 2.21 and provides a summary of the responses based upon the findings in Chapter Four.

Table 57 : Responses to the Research Hypotheses

| Hyp. | Reference | Hypothesis | Primary Research Response |
|---|---|---|---|
| 1 | Table A.2 | Entrepreneurial performance is higher with increased levels of education | **Mixed:** those with secondary education are among the higher performers in relation to those with primary education, for both males and females. Despite this those with no formal education rank as the highest performers |
| 2 | Table A.3 | Entrepreneurial performance is higher the younger the entrepreneur operating the enterprise | **Mixed:** female entrepreneurs are older, but there is insufficient evidence to support the hypothesis that younger entrepreneurs exhibit higher EP |
| 3 | Table A.4<br>Table A.5 | When industry type and provision of support services and inputs are controlled for, there is no difference in entrepreneurial performance between males and females | **No:** male entrepreneurs consistently rank higher against performance measures relative to females, and females with resident partners rank higher than female headed households |
| 4 | Table A.6<br>Table A.7<br>Table A.8 | Entrepreneurial performance is higher for ventures operated together with a working partner | **Yes:** there is evidence that entrepreneurs with a working partner exhibit higher EP than those who have no partner, irrespective of gender |
| 5 | Table A.9<br>Table A.10<br>Table A.11 | Entrepreneurial performance is higher for entrepreneurs with fewer dependents | **Mixed:** there is some evidence that EP declines with more adult dependents but the findings are inconclusive. There is ambiguity regarding the burden of, or assistance from child dependents and the effect of number of child dependents on EP |
| 6 | Table A.12 | Entrepreneurial performance is higher for ventures operated by individuals with prior work experience | **No:** those with work experience are more educated but there is insufficient evidence to support the hypothesis that prior work experience leads to higher EP |
| 7 | Table A.13<br>Table A.14 | Entrepreneurial performance is higher for those entrepreneurs who have reduced their number of enterprises following the incorporation of the dairy enterprise | **No:** the evidence linking change in enterprise diversity to EP is ambiguous and inconclusive. Those with the higher performance ranking have increased their range of enterprises in the enterprise mix, but this is 'reversed causality' |

Accepting that the sample sizes are small, the thesis examiners requested that the raw data be subject to appropriate statistical tests. The chi-square contingency test was selected as an appropriate non-parametric test for application to the data. This is a statistical test used to examine differences in categorical variables; estimating how closely an observed distribution matches an expected distribution. The results of the tests are presented in Appendix XVII on page 345. The table presents the results for both the field performance rating (FPR) and the overall performance rating (OPR). Given the limitations of sample size explained in section 3.14 sensitivity analysis is conducted by multiplying the cell values by n*2 (modeling a sample size of twice of the actual). For the actual sample, gender, household headship and presence of a working partner provides for a p value of less than 0.05 and then only for the field performance rating (FPR) and not the overall performance rating (OPR). When the sample size and contingency table cell values are multiplied by two to model a sample size of twice the actual, the FPR and OPR provide p values of less than 0.05 for education, gender and household headship.

## 5.3. Comparing Research Results with the Academic Literature

Table 58 compares the research hypothesis findings from the academic literature with those from the primary research. The hypothesis that educational level is a determinant of entrepreneurial performance is partially supported and this is consistent with the position of Chirwa (2008) in his study of Malawian non-agricultural micro and small-scale entrepreneurs, and of Okurut (2008) in his study of micro-entrepreneurs in Uganda, which included those engaged in the livestock sector. The primary research findings provide only partial support in that some of the best performers in the case study had no formal education.

The hypothesis that entrepreneurial performance is higher the younger the entrepreneur operating the enterprise is not supported by the primary research. Neither is there a contrary finding to support Kimuya (2001) in his study of rural-based entrepreneurs in Kenya nor the researcher analysis of the GEM (2001-06) APS survey data both indicating that entrepreneurial performance is positively related to age of the entrepreneur.

The hypothesis that there is no difference in entrepreneurial performance between males and females, even when industry type and provision of support services and inputs are controlled for, is rejected. This supports the findings of Peterman *et al.* (2011) in Nigeria and Uganda, and Okurut (2008) in Uganda who found evidence of female underperformance. The finding runs contrary to Bardasi *et al.* (2011); Amin (2010); Khanka (2009); Kepler and Shane (2007); Horrell and Khrishnan (2007) and Gilbert *et al.* (2002) who found that when controlling for confounding factors such as access to inputs, there was no significant performance difference between females and males.

The evidence from the case study provides support to the hypothesis that the presence of a resident working partner improves entrepreneurial performance. This in turn provides circumstantial evidence to suggest that time poverty is a constraint affecting EP, particularly affecting those female entrepreneurs without resident partners (FHHs). In a comparison of females and males both with resident partners, there were still differences in EP, suggesting that other factors are present in influencing EP. It may be that while benefits accrue there are also detrimental effects of partner participation, including potential conflict in management and utilisation of income.

The primary research findings support those of Peterman *et al.* (2011) in Uganda where mixed-gender ownership of enterprises resulted in lower levels of performance (as measured by agricultural productivity) compared with those solely owned by one member of the household. They speculated that the reasons for this might lie in "*the impact of unobserved household characteristics that may complicate decision making patterns*". Qualitative evidence from the primary research supports this with the same working hypothesis but with the same caveat that further investigation of the intra-household dynamics is required, indicating future research direction.

The effect of dependents upon entrepreneurial performance is ambiguous. It is likely that the presence and number of 'dependents' might affect entrepreneurial performance in both directions. Adult dependents and children of a certain age may be able to assist in supporting the enterprise, and their presence may be as or more significant than the presence of a resident partner. The evidence suggests, at least in terms of the OPR, that number of dependents is not a determining factor (refer Figure A.9 on page 256) but having more child dependents may actually improve entrepreneurial performance

(refer Figure A.11 on page 258) whereas having more adult dependents is likely to reduce performance (refer Figure A.10 on page 257).

Table 58 : Comparison of Research Findings with the Academic Literature

| Hypothesis | Authors' Positioning in the Academic Literature | Primary Research Response |
|---|---|---|
| Entrepreneurial performance is higher with increased levels of education | Agree: Peters and Brijlal, 2011; Gathenya *et al*, 2011; Nam *et al.*, 2010; Calvo and Garcia, 2010; Okurut, 2008; Swinney *et al.*, 2006 (females); Chirwa, 2008; Bhattacharjee *et al.* (2008); Dickson *et al.* (2008); Hietalahit, 2006; Van der Sluis *et al.* (2003); Cooper *et al.* (1994)<br>Disagree: Otoo *et al.* (2011); Khanka, 2009; Swinney *et al.* (males), Fasci and Valdez, 1998 | **Mixed:** those with secondary education are among the higher performers in relation to those with primary education, for both males and females. Despite this those with no formal education rank as the highest performers |
| Entrepreneurial performance is higher the younger the entrepreneur operating the enterprise | Agree: Fine *et al.*, 2012; de Kok *et al.*, 2010; Parker, 2006, GEM, 2008 | **Mixed:** female entrepreneurs are older, but there is insufficient evidence to support the hypothesis that younger entrepreneurs exhibit higher EP |
| When industry type and provision of support services and inputs are controlled for, there is no difference in entrepreneurial performance between males and females | Agree: Bardasi *et al.*, 2011; Amin, 2010; Khanka, 2009; Kepler and Shane , 2007; Horrell and Khrishnan, 2007; Chirwa, 2008 (profit margin); Gilbert *et al.*, 2002<br>Disagree: Peterman *et al.*, 2011; Okurut. 2008; Chirwa, 2008 (employment) | **No:** male entrepreneurs consistently rank higher against performance measures relative to females, and females with resident partners rank higher than female headed households |
| Entrepreneurial performance is higher for ventures operated together with a working partner | Agree: Khanka, 2009; Cooper *et al.* (1994)<br>Disagree: Peterman *et al.*, 2011; Chirwa, 2008 | **Yes:** there is evidence that entrepreneurs with a working partner exhibit higher EP than those who have no partner, irrespective of gender |
| Entrepreneurial performance is higher for entrepreneurs with fewer dependents | Agree: Wesley *et al.,* 2009; Niehm *et al.,* 2009; Jamali, 2009; Lawson, 2007 (individuals); Jennings and McDougald, 2007; Orser and Hogarth-Scott, 2002<br>Disagree: Fairlie and Robb, 2009; Singh and Belwal, 2008; Lawson 2007 (HH heads); Bird and Sapp, 2004; | **Mixed:** there is some evidence that EP declines with more adult dependents but the findings are inconclusive. There is ambiguity regarding the burden of, or assistance from child dependents and the effect of number of child dependents on EP |
| Entrepreneurial performance is higher for ventures operated by individuals with prior work experience | Agree: Lafuente and Rabetino, 2011; Fairlie and Robb, 2009; Boden and Nucci (2000); Fasci and Valdez (1998); Carter *et al.*, 1997 (males); Cooper *et al. 1994*<br>Disagree: Carter *et al.*, 1997 (females) | **No:** those with work experience are more educated but there is insufficient evidence to support the hypothesis that prior work experience leads to higher EP |
| Entrepreneurial performance is higher for those entrepreneurs who have reduced their number of enterprises following the incorporation of the dairy enterprise | Agree: Chirwa (2008), Mishra *et al.*, 2004, Kiggundu (2002)<br>Disagree: Kodithuwakku and Rosa (2002) | **No:** the evidence linking change in enterprise diversity to EP is ambiguous and inconclusive. Those with the higher performance ranking have increased their range of enterprises in the enterprise mix, but this is 'reversed causality' |

This implies that older child dependents may be of assistance in support of the enterprise, whereas some or all of the adult dependents may place greater burden particularly on time demands of females thereby having a deleterious effect (Lawson, 2007). The findings in general support the notion of 'time poverty' for females in particularly with their balance of work and family responsibilities (Jennings and McDougald, 2007) and suggest that the effects of child support to family enterprises warrants future research in this context.

There was insufficient evidence from the case study to support the hypothesis that prior general work experience was a determining factor in entrepreneurial performance (Table A.12). Specific enterprise experience was controlled for in the study, as one of the prerequisites for participation in the MDEDP was no prior experience in dairy entrepreneurship. The only exception was one individual who had worked as a farm labourer on a large dairy estate (Kadzamira Estate) in the locality.

The hypothesis that entrepreneurial performance is higher for those entrepreneurs who have reduced their number of enterprises following incorporation of the dairy enterprise found support from the field performance rating but not the overall performance rating. Those entrepreneurs with the highest performance ranking had actually increased their range of enterprises, and this finding supports Kodithuwakku and Rosa (2002) whose study demonstrated parallels to this research in that farmers started with at the same time with the same resources, with the most successful farmers having increased their range of enterprises.

The ambiguity in findings mirrors those of Chirwa (2008) who had hypothesised that on the one hand diversification may be used to spread the risk and lead to improved performance; but on the other may also affect performance negatively if the allocation of labour by the entrepreneur may lead to 'crisis management'. It is possible that any negative effects associated with the number of enterprises operated are masked by other factors determining performance. If the higher performing entrepreneurs in the case study have chosen to reinvest surpluses in new enterprises the effects of this strategy on entrepreneurial performance associated with the dairy enterprise may not have been seen at the time of investigation.

Over their longer period of investigation Kodithuwakku and Rosa (2002) found that some entrepreneurs who had initially been categorised as among the successful entrepreneurs had increased their range of enterprises but then had failed to allocate their time and other resources efficiently and manage this initially 'successful pluriativity' resulting in a decline in EP. Future research over an extended period of operation in this case study needs to pay attention to the possibility of this phenomenon emerging among those entrepreneurs who have achieved higher EP and increased their range of enterprises.

### 5.4. Responding to the Research Questions Posed

In response to the research questions posed in section 2.20 on page 98, evidence from the review of academic literature and analysis of primary and secondary data leads to the following tentative conclusions, as well as indications for further research. The responses to the research questions posed are summarised in Table 59.

Table 59 : Summary of the Response to Research Questions

| Research Questions | Academic Literature* | Case Study |
|---|---|---|
| Q1. Are there gender differences in entrepreneurial performance even when considering entrepreneurs operating within the same industry and controlling for size of enterprise and provision of technical and business support? | F<M<br>Peterman *et al.* (2011)<br>F=M<br>Gilbert *et al.* (2002)<br>F>M<br>Chirwa (2008) | F<M |
| Q2. If there are gender differences in entrepreneurial performance can these be explained by gender differences in attributes such as education, age and level of prior work experience? | Yes<br>Chirwa (2008)<br>No<br>(Khanka, 2009) | Some evidence for education but not for age or prior work experience |
| Q3. Are females relatively more risk averse? If so, do gender differences in level of risk aversion influence entrepreneurial performance? | Yes+No<br>(GEM, 2001-06)<br>(Watson and Robinson, 2003)<br>No<br>(Sonfield *et al.*, 2001) | Some evidence of risk aversity + influences EP |

| Research Questions | Academic Literature* | Case Study |
|---|---|---|
| Q4. Are female entrepreneurs constraint-driven or preference-driven or both? | Constraint driven Jamali (2009) Preference driven (DeMartino and Barbato, 2003) | Constraint driven ++ Preference driven ± |
| Q5. Are findings concerning gender differentials in entrepreneurial performance affected by the choice of entrepreneurial performance measure(s)? | Yes (Simpson *et al.,* 2012) (Watson and Robinson, 2003) | Yes |

** Examples of authors*

*Q1. Are there gender differences in entrepreneurial performance even when considering entrepreneurs operating within the same industry and controlling for size of enterprise and provision of technical and business support?*

The academic literature provides a mixed response to this research question. Some authors consider that gender differences in entrepreneurial performance have been wrongly 'diagnosed' as a result of problems of research design including failure to control for industry type (Shim & Eastlick, 1998) and also because of a failure to include risk in the formulation of the performance measure (Watson & Robinson, 2003). When these are included in the analysis, the authors argue that the gender differential in entrepreneurial performance disappears.

The case study controls for industry type by virtue of selection of one single enterprise. Analysis of the data using a suite of proxy measures specific to the case study enterprise suggests that there are gender differences in entrepreneurial performance (refer Figure A.4 on page 251) and also differences between females with resident partners and those without (refer Figure A.8 on page 255). The presence of a resident partner improves EP and this implies that it alleviates a constraint that is faced by the FHH in the absence of a working partner. The working hypothesis is that this is a labour constraint brought on by the demands of the enterprise and the competing demands for time encountered by females in balancing entrepreneurial activity and domestic responsibilities.

*Q2. If there are gender differences in entrepreneurial performance can these be explained by gender differences in attributes such as education, age and level of prior work experience?*

There is some evidence in the analysis of case study findings to support the hypotheses that entrepreneurial performance is related to education level but not to age of the entrepreneur nor prior work experience. Since females in the study exhibit lower levels of education (refer to Figure 58 on page 186) this implies that gender differentials in performance may be as a result of differences in educational level. While there is evidence of a relationship between entrepreneurial performance and education (refer Figure 59 on page 187) the interpretation of the research findings suggest that there are other factors that are accounting for gender differentials in performance, particularly since the highest performers have no formal education.

*Q3. Are females relatively more risk averse? If so, do gender differences in level of risk aversion influence entrepreneurial performance?*

The academic literature provides a mixed response to this question with some researchers providing evidence that females are more risk averse than males (Watson and Robinson, 2003) and others finding no differences (Sonfield et al., 2001). Analysis of the GEM APS survey data sets provides a more conclusive response when respondent's fear of failure is used as a proxy for risk aversity. The evidence from GEM data across 55 countries for the general population of respondents, and also when filtering for prospective entrepreneurs and even for existing owner / manages (refer Table A.22 on page 280) is that females are conclusively more risk averse than males, and this holds true among the sub-group of developing countries (refer Table 17 on page 85).

Evidence from the primary data investigation suggests that there are some differences in risk propensity between females and males, when exposure to credit and level of purchase of cash inputs for the dairy enterprise are used as proxies for risk propensity (refer Table 55 on page 197). Where diversity of enterprise mix in the household economy is used as a proxy for risk mitigation there is no evidence in the case study that females are more risk averse than males. This may reflect on the assumptions behind the relationship between enterprise diversity and risk mitigation. It may also be

the case that the phenomenon of the more successful entrepreneurs becoming "successfully pluriactive" (Kodithuwakku and Rosa, 2002) masks an underlying relationship.

There is compelling evidence in the academic literature that females do have a different set of motivating influences in their decision to venture into entrepreneurship and that in some instances this may influence their management of those enterprises, particularly in relation to the time they devote to the enterprises relative to their family commitments (Jennings & McDougald, 2007). There is conclusive evidence that a significantly lower proportion of females consider that they possess the attributes (knowledge, skills and experience) relative to males (refer Table 19 on page 97). The primary research does provide some circumstantial evidence of gender differences in management of what is an identical enterprise within a common enterprise association. There is qualitative evidence from focus group discussions and key informant interviews that points to gender differences in entrepreneurial motivation in respect to use of revenues and family orientation.

*Q4. Are females constraint-driven or preference-driven or both? If so, do either or both constraints explain differentials in EP?*

The original working title of the thesis was '*female entrepreneurship: lost opportunity or sound strategy?'* which focused on lower levels of participation of females in entrepreneurship globally, and asking the question '*Why?*' Did females face differentially greater barriers to entrepreneurship than males, or were they reluctant to become entrepreneurs for fear or failure or lack of self-efficacy? Once involved in an enterprise is female performance then reduced because of some constraining influence, or do females 'self-limit' in terms of the traditional measures of entrepreneurial performance by deliberately choosing to achieve other outcomes (Jennings and McDougald, 2007)? Could both factors be at work at the same time?

Over the years, researchers have coined various terms to describe this, from 'dispositional' and 'situational' (Carter *et al.*, 1997) to 'liberal feminist' and 'social feminist' (Alowaihan, 2004) to 'preference-driven' and 'constraint-driven' (Bardasi *et al.,* 2011). The latter authors found no evidence of discrimination in female access to formal finance in any of the developing regions they surveyed, including Sub-Saharan Africa

(SSA), one of the more visible constraints to enterprise development. On the contrary, Chirwa (2008) suggested that superior female performance in non-agricultural micro- and small enterprises in Malawi was actually attributable to females being given preferential access to microfinance compared to males.

In the case study, females had equal access to credit with support from the MDEDP, and were provided with the same level of technical and business support as males. Females were offered the same opportunity to participate in the dairy enterprise programme, and animals were distributed randomly to female and male entrepreneurs without favour. This suggests that females did not face external constraints in operating their enterprises. There is support from the key informant discussions for a finding of there being an internal labour constraint for females, leading to time poverty, and their need for support from, a male resident partner, other family member or paid employee (refer Figure 54 on page 181). Reluctance to take on traditional male roles (refer Table 51 on page 180) may also prevent females from working on some of the necessary dairy management tasks, even if they are not time-constrained. This suggests that the likelihood is that a combination of both constraint-driven and preference-driven factors are at work, as set out in Table 60.

Table 60 : Constraint- vs. Preference-Driven Gaps

| Constraint-driven (situational) | Preference-driven (dispositional) |
|---|---|
| Labour availability for specific tasks | Traditional male roles making females reluctant to carry out 'male' activities requiring assistance from a male family member or an employee |
| Time poverty | FWRPs need assistance with the enterprise from their resident partner but this may affect their level of control over resources making them reluctant to seek assistance. FHHs without help from family members need to employ workers but they may be reluctant since this is cash outlay and conflicting with immediate cash needs for the family |
| Lack of access to credit on preferential terms or with 'payment protection' | Reluctance to make expenditures on credit and become indebted (use of purchased inputs = exposure to debt) |
| Lack of surplus to re-invest (vicious circle) | Priority on expenditures for immediate household needs rather than the enterprise |

All of these factors, whether constraint-driven or preference-driven have a potential to impact upon entrepreneurial performance. The findings from the case study do support the hypothesis ($Hyp_0 5$) that the presence of a working partner improves entrepreneurial performance and this indicates that there is a link between labour availability and entrepreneurial performance. If labour availability for specific tasks, including provision of basic forage, is a constraining factor then this would certainly impact performance. If female-headed households are reluctant to employ workers and attempt to rationalise both domestic and income earning activities, then this is likely to affect performance of enterprises, and since dairy is known to be a labour-intensive enterprise, there is an implied threat to entrepreneurial performance if there is time poverty and labour availability is constrained. Similarly, if entrepreneurs find themselves in a vicious circle of low-input low-output commercial dairy operation, then lack of surplus to re-invest into the dairy enterprise and preference for use of any surplus for immediate household needs is likely to result in further attrition in the viable operation of the enterprise.

*Q5. Are findings concerning gender differentials in entrepreneurial performance affected by the choice of entrepreneurial performance measure(s)?*

The academic literature typically uses a traditional set of entrepreneurial performance measures, which typically includes growth in sales and employment (refer Table 2 on page 44). The choice of performance measures is challenged by some authors for being potentially 'male centric' (Watson and Robinson, 2003). If females make a conscious choice to limit the size of their enterprises in order to trade-off entrepreneurial and family responsibilities (Jennings and McDougald, 2007) then using measures such as size and growth of an enterprise is not only inadequate but potentially misleading in an assessment of EP.

The case study assesses EP using a suite of context-specific performance measures, but it could be that the choice of measures influences the conclusions. Revisiting the summary of performance measures utilised through a potentially 'male-centric' lens in Table 61 provides a checklist of potentially male-centric measures (MCMs).

Table 61 : Check of Performance Measures for Male Centric Measures

| Item | MCM* | Rationale |
|---|---|---|
| Entrepreneurs' perceptions of performance | No | Both M and F assessing |
| Body condition score of the principal animal | No | Sustainability of the enterprise |
| Body condition score of the female calf | No | Repayment obligation |
| Technical specialist performance score | Possible | Male assessing (potential bias) |
| Key informant performance score | Possible | Male assessing (potential bias) |
| Survival of 'first enterprise' (original animal) | No | Sustainability of the enterprise |
| Farmer reported maximum milk yield | Possible | Orientation for maximum sales |
| Farmer reported average milk yield | Possible | Orientation for maximum sales |
| Milk delivered to the MBGs | Possible | Orientation for maximum sales |
| Heifer pass-on (In-kind loan repayment) | No | Repayment obligation |
| Repayment of loan (Cash element) | No | Repayment obligation |
| Propensity to access formal Credit | Possible | Growth orientation |
| Frequency of use of supplemental feeds | Possible | Growth orientation |
| Supplemental feeds purchased from MBG | Possible | Growth orientation |
| Use of acaricides | No | Essential for sustainability |
| Use of medications | No | Essential for sustainability |
| Medications purchased from Chimbia MBG | No | Essential for sustainability |

** male-centric measure?*

If the performance ranking summaries are re-worked to exclude these potential MCMs, the difference in ranking changes are shown in Table 62.

Table 62 : Change in Performance Ranking with Removal of possible MCMs

| Possible Determinant | Reference | Change in H. Ranking | Change to highest ranking |
|---|---|---|---|
| Education | Table A.1<br>Table A.2 | No<br>No | Among those with formal education from secondary to lower primary |
| Age | Table A.3 | No | No change |
| Gender | Table A.4<br>Table A.5 | No<br>No | No changes |
| Assistance from a working partner | Table A.6<br>Table A.7<br>Table A.8 | No<br>No<br>Yes | For females only from 'with partner' to 'without partner' |
| Dependents | Table A.9<br>Table A.10<br>Table A.11 | Yes<br>Yes<br>Yes | From 4-6 to 7+<br>From 1-3 to no adult dependents<br>From 3 or less and 7+ to 1-4 children |
| Paid employment | Table A.12 | Yes | From no difference to those with no paid employment experience |
| Enterprise-mix | Table A.13<br>Table A.14 | No<br>Yes | For planned concentration on dairy changes from no change to less |

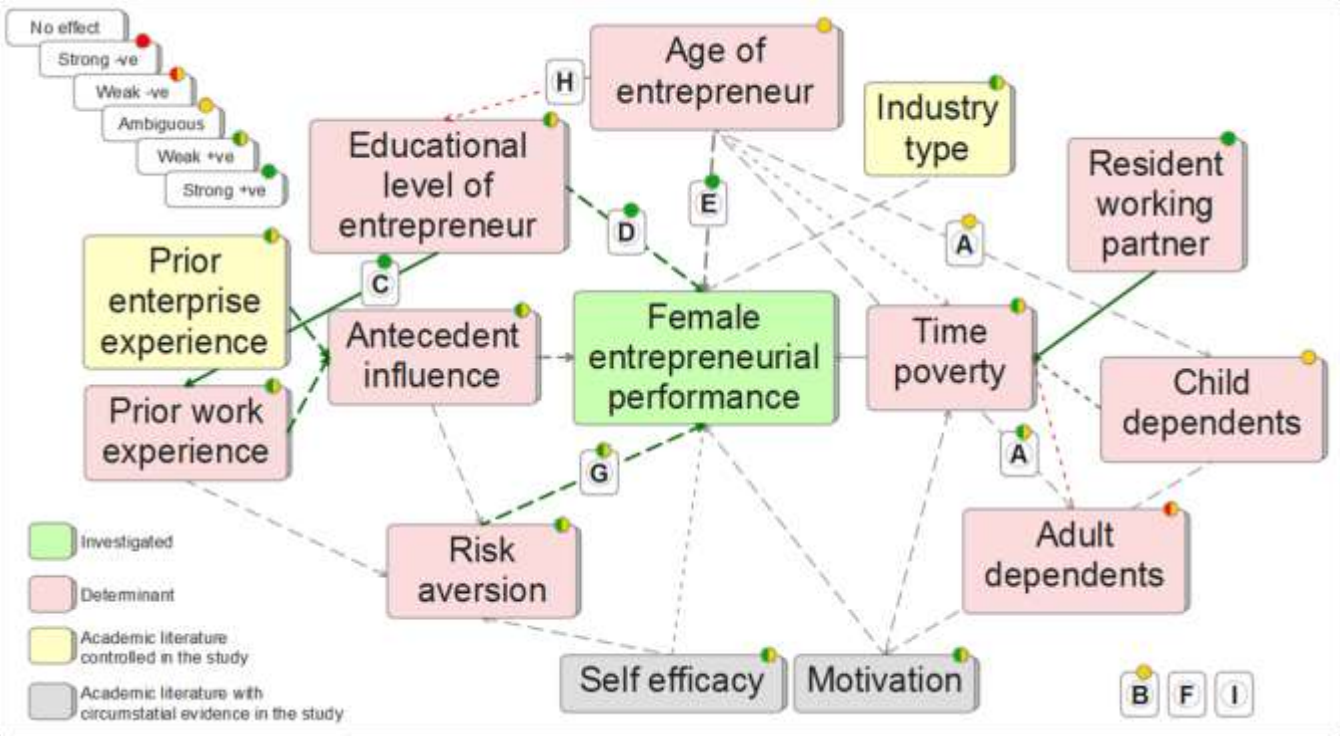
The adjustment to exclude potentially male-centric measures does affect the rankings in the performance tables for some of the determinants, and particularly for the relationship between dependents and EP. In the case of paid employment, the application of the MCM filter moves the result from ‘no difference’ to one of ‘no employment experience’ which is counter-intuitive. In general, there is consistency of findings and the application of this filter does not affect the results.

The same is true for the use of the field performance rating and the overall performance rating as alternative measures of EP. For analysis of the effects of education, age, gender, alternative measures of risk mitigation and assistance from a working partner, the two measures are mutually supporting. In contrast, for prior work experience, number of dependents and enterprise mix the measures produce contrary findings leading to a finding of ambiguity. While it could be argued that greater weight could be placed upon the overall performance rating (OPR) over the FPR there is always the possibility that the ‘black box’ of the FPR includes intangible but nonetheless significant factors that are not present in the OPR.

## 5.5. Refined Conceptual Model

The refined conceptual model includes the hypothesised element of time poverty and re-interprets the original conceptual model in Table 2 on page 23 with a particular focus on determinants of female entrepreneurial performance.

Figure 65 : Refined Conceptual Model




The case study finds evidence of lower propensity for risk for female-headed households (FHHs) in terms of frequency and volumes of purchased supplemental feeds (section 4.19.1) and does demonstrate differences between those female entrepreneurs with and without resident partners. Additional support for the apparent differences between FHHs and FWRPs in risk propensity arises from consideration of the propensity to access formal credit to expand the enterprise (section 4.17). This is supported by analysis of secondary data, which provides compelling evidence that even in developing countries females have a lower propensity for risk than males (refer Table A.21b on page 278). The findings are further supported by the body of academic literature, which relates risk propensity to entrepreneurial performance (refer 2.14 on page 85).

If diversity in the enterprise-mix of the household economy is accepted as an accurate proxy for risk mitigation then evidence from the actual and projected changes in the diversity of enterprise-mix partially supports the hypothesis that FHHs retain a constant or increased level of diversity to mitigate risk. Within the category of female entrepreneurs, FHHs and FWRPs diverge as time progresses bringing FHHs to the same level as MHHs. In contrast, FWRPs make reductions in the diversity of their enterprises moving from an average of 3.1 enterprises in 2003 to 3.5 enterprises by 2013, which is markedly lower than the levels of both FHHs, and MHHs (refer section 4.18 on page 169). This influence appears to be confounded by another phenomenon of those entrepreneurs, who are high performers, deciding to use their surplus income from their dairy enterprise to start-up new enterprises, something that was observed by Kodithuwakku and Rosa (2002) in a case study of smallholder farmers in Sri Lanka.

With the introduction of dairy from the inception in 2004, by 2008 almost half of household income was obtained from the dairy enterprise. While further specialisation and concentration in income earning sources was anticipated, with greater reliance on dairy, this expectation was not realised with the finding that respondents were planning for a very modest increase in the percentage of income from dairy from 49% in 2008 to 51% in 2013.

When discontinuance rates are used as a proxy for entrepreneurial performance, or rather the antithesis of discontinuance, which is taken to be survival in the case study, then the findings from the GEM data suggest that females exhibit consistently lower rates of discontinuance relative to males. This finding holds true across the entire range of entrepreneurial activity from Uganda with the highest level of entrepreneurial activity to the Netherlands with one of the lowest levels. Despite this, females also exhibit significantly lower levels of self-efficacy relative to males when measured using proxy indicators of perception of good opportunities for start-up (Table A.24) and belief in having the requisite knowledge, skills and experience to start a new business (Table A.29).

The finding that survival rate of the first dairy animal, the proxy for discontinuation rate in the case study, was markedly higher among females departs from analysis of discontinuance rates using secondary data. In the case study, 47% of female-headed

households had lost their first animal, compared with 33% of females with resident partners and 27% of male-headed households (refer Figure 38 on page 159.

This measure of relative underperformance of females is supported by other measures in the performance framework, including objectively verifiable measures such as the volume of milk delivered to the Milk Bulking Group and the MK value of supplemental feeds purchased through the MBG. Further support is provided by more subjective measures of performance including the FPR of the independent technical specialist and the overall performance rating (OPR) and the body condition score (BCS) of the dairy animals observed during household visits.

In some instances the level of performance of females with resident partners is on par with male headed households and divergent from those of female headed households, as measured by performance indicators such as milk volumes delivered to the MBG and in propensity to access formal credit, and this points clearly to specific challenges faced by FHHs as female entrepreneurs.

### 5.6. Further Working Hypotheses for Gender Differentials in Performance

The academic literature is mixed with regard to gender differentials in entrepreneurial performance. One of the principal criticisms of the finding of gender differentials in performance, which favour males, is the failure to take account of the 'industry effect' in measuring performance (Kalleberg and Leicht, 1991). Many of the large-sample econometric studies range across industry types, but data conclusively demonstrate that females have a tendency to venture into retail and service industries. Since these industry types typically exhibit higher failure rates, then choice of industry type is important in studying entrepreneurial performance and gender. The case study is ideal in this respect in that both males and female entrepreneurs are operating within the same enterprise type.

Entrepreneurial performance has been found to be positively related to direct work experience in the enterprise type in which the entrepreneur ventures (Kalleberg and Leicht, 1991). The case study also provides an opportunity to study entrepreneurs who have equal prior experience of the enterprise prior to start-up. The dairy enterprise development programme has provided training to both female and male entrepreneurs

equally, and this provides an opportunity to control for both prior work experience and subsequent networking and training opportunities within the industry.

Gender differentials in dairy EP have been uncovered. Within the category of female entrepreneurs there appears to be a difference in the performance of females with resident partners (FWRPs) relative to female-headed households (FHHs). One of the working hypotheses developed from this finding is that a possible determinant of relative underperformance is 'time poverty' on the part of the entrepreneur who provides much of the input of time to the enterprise. In the case of FWRPs, despite the female being the principal operator of the enterprise, the support available from her partner and the resulting share in workload may be providing her with the necessary time input to improve the performance of the enterprise.

One of the major time demands for the dairy enterprise is the requirement for basic forage for the dairy animal. Typically, smallholder dairy entrepreneurs do not have sufficient home-grown stocks of forage for the animal, and it becomes necessary to source this in locations distant from the homestead. A minimum quantity of basic forage is required to maintain the health and nutritional status of the animal, and supplementary feeds are providing added nutrition to the dairy animal resulting in increased levels of milk production and revenue. Increased levels of revenue enable more disposable income, and the opportunity to increase the levels of supplemental feeds, which will enable higher levels of milk production, provided that the balance between basic forage and supplements is maintained. This enables the entrepreneur to enter into a 'virtuous enterprise cycle' resulting in the achievement and maintenance of a high-input high-return enterprise.

The resulting working hypothesis is that, with demands for both the enterprise and other disparate enterprises under her control, and with the additional responsibility of providing care for both children and dependents, female entrepreneurs are suffering from 'time poverty'. The result is that she is unable to focus adequately on dairy, which is by its nature, a demanding enterprise. If this is true, then one strategy to reduce time poverty would be to focus and concentrate on the dairy enterprise by reducing the number of other enterprises making demands upon her time. If dairy does provide an opportunity for a 'step-up' to a higher plateau of income generation, then this would be a

sound strategy in ultimately ensuring the long-term success and sustainability of the dairy enterprise.

It may well be that four years into the development of these enterprises; it is too early to assess long-term sustainability and performance success. The measures that are being used to assess performance over this period may not be those that are needed to assess longer-term performance. Males may be going for ‘quick wins’. One piece of evidence suggestive of this is that MHHs are passing on the heifer calves as quickly as possible. This represents a win for the household, passing on the heifer calf prematurely to the household waiting in line, but a loss for the recipient. In terms of the net contribution to the ‘collective performance’ of the participating households of the Milk Bulking Group this is likely to represent a negative outcome as early pass-on suggests that the recipients and new start-ups are unduly disadvantaged. This mix of and interaction between individual and collective performance is one which indicates a useful starting point for future research direction (Davidsson and Wilklund, 2001). Recipients will have to expend scarce funds earned from other enterprises, in growing the heifer calf to the point where she delivers, starts to produce milk, and creates revenue for the household.

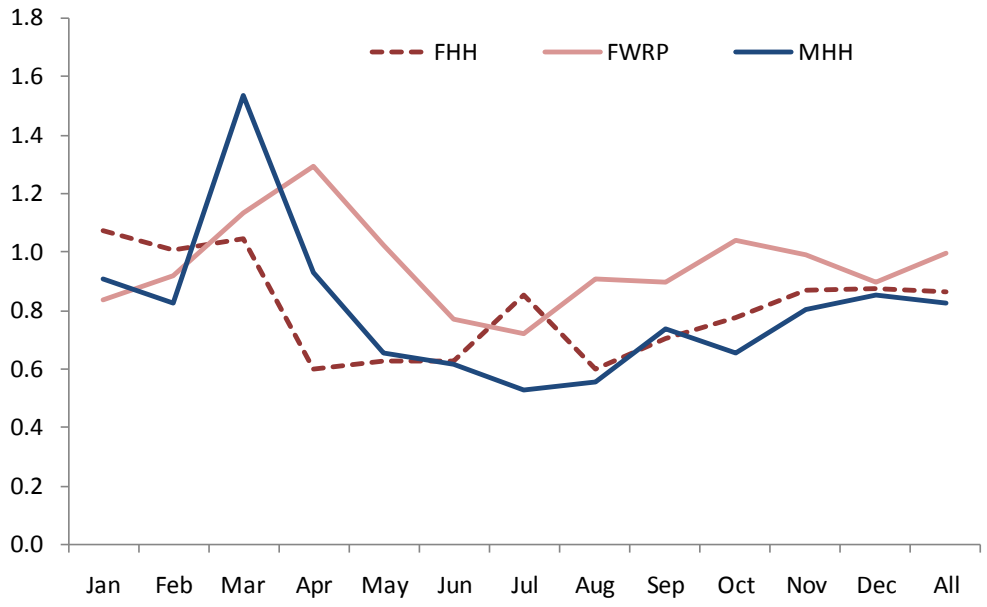
The research findings suggest that females are taking better care of the heifer calves and passing them on in a more viable condition. This needs to be further tested in follow-on research which investigates the dynamics of interaction between individuals and the collective of individuals who make up the Milk Bulking Group. Nothing has really been said about the collective performance of the group of entrepreneurs and how they work together for collective success. There is some anecdotal evidence that females are more faithful in delivering milk to the MBG (rather than vending) which increases the performance of the collective in terms of their credibility for acquisition of external funding and maintaining good relations with the buyer and processor. This aspect of collective performance of the group of entrepreneurs working in association, and the role of gender in supporting this performance needs to be explored in follow-on studies.

Analysis of secondary data sources demonstrates that if fear of failure is an adequate proxy measure for risk aversity, then females are relatively more risk averse than males, not only among the general population, but even among those who are either intent on

moving into entrepreneurship or who are already involved in operational enterprises. Some of the body of academic literature also supports this finding (Watson and Robinson, 2003) but suggests that females do not underperform simply because they may approach entrepreneurship with more caution or be more prudent in their operations. On the contrary, their contention is that if variation in the performance measure utilised is taken into account, along with absolute levels of that performance measure, then females actually perform better.

The performance measure, which they used to take into account variability, is the ratio between average net profit and the standard deviation of profits across enterprises, which they termed as the 'reward to variability ratio'. Chimbia MBG financial data was utilised to compute average gross and net revenues and their standard deviations by month for each household headship group. Figure 66 indicates that there is no evidence of lower levels of variation in net revenues for FHHs or FWRPs relative to MHHs. Overall, FHHs were found to have a ratio of variability to average net revenue within a range between FWRPs and MHHs.

Figure 66 : Ratio of Variation to Average Net Revenue Chimbia 2008




The evidence, at least in the context of this specific case study, does not support the contention that females trade-off lower revenues for reduced variability in revenues. It seems far more likely that female entrepreneurs and particularly FHHs in this case, face greater difficulties in maintaining levels of performance.

## 5.7. Conclusions and Recommendations arising from the Findings

The findings from the case study point to female underperformance, despite an *a prior* expectation that they would perform as well or better than their male counterparts. The initial working hypothesis that this may be related to higher levels of risk aversion among females manifesting in them being reluctant to move from the base low-input/low-output modality of operation to one of high-input/high-output is partially supported. This lends some credence to the preference-driven perspective of Carter *et al.* (1997) and Bardasi *et al.* (2011) in females self imposing limits to higher levels of entrepreneurial performance.

Findings from the key informant discussions suggest that females encounter constraints in being able to manage the dairy enterprise, in association with their other responsibilities in income earning and in supporting the household. It is possible that this combination of preference- and constraint-driven factors will further undermine performance to the point where a higher proportion of females discontinue the enterprise. Figure 38 on page 159 shows, four years after commencement of operation, without replacement of animals through provision made by the MDEDP, that almost half of the female-headed households would have discontinued the enterprise.

The MDEDP concept of support to dairy entrepreneurs was founded on principles of individual enterprise-ownership within a household or family structure. This was in contrast to other dairy enterprise development support initiatives such as the Malawi Social Action Fund Phase III (MASAFIII) predicated on the concept of collective ownership and shared management responsibility.

The evaluators of the MASAFIII improving livelihoods through public works programme wrote that *"most of the groups that were formed under ILTPWP have ceased to operate in the post-project period, as they [had] serve[d] the purpose of facilitating business training and savings mobilisation"* (Chirwa *et al.*, 2004. p.72). Despite this finding MASAFIII went ahead with technical support from the MDEDPIII in an initiative to form dairy enterprise groups through collectively owned and managed dairy production units. One of these was situated just yards away from the Chimbia MBG. Most of the members of these groups were exclusively female. At the time of the research the MASAF dairy group had collapsed, the animals had gone, and the *khola* lay empty.

Figure 67 : Proposition of Individual Ownership with Shared Activities

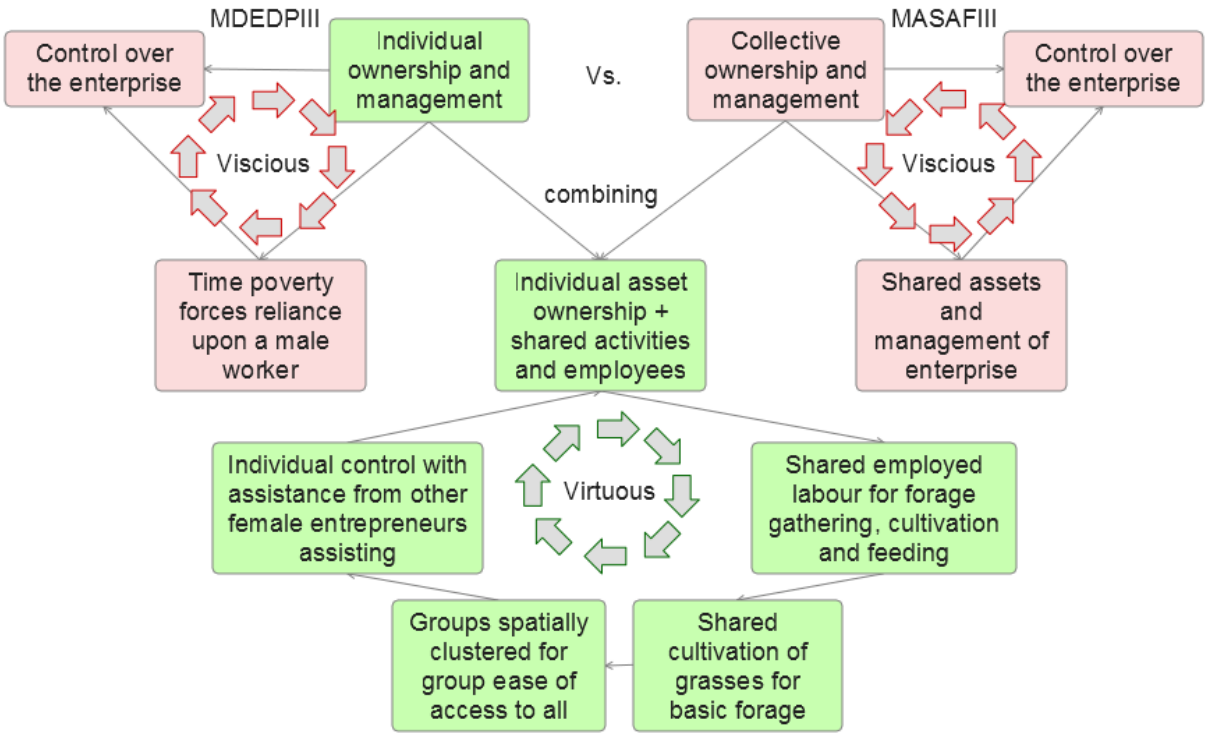



Figure 67 provides an illustration of what are considered weaknesses in both the MDEDPIII and MASAFIII dairy enterprise development programme concepts, as they relate to female dairy entrepreneurship control and management. The constraints to female dairy entrepreneurship in the MDEDPIII have been discussed in Table 60. Females in a household setting experience time poverty which requires that they rely upon support from a male family member or employee, and in doing this they relinquish some element of control over their enterprise. In contrast, MASAFIII participants were involved in a collectively owned and operated enterprise, with animals belonging to everyone, and no individual control over management of the enterprise. This resulted in a loss of ownership and control for the female participant. The enterprise belonged to everyone and to no one, with the *khola* situated away from the households, thereby creating further time conflicts for females in work and family in different locations.

Taking the best features of both concepts would provide females with the opportunity to overcome the constraint of time poverty, while retaining ownership of the enterprise and control over assets and income. In this design, female entrepreneurs in the same geographic location, within a cluster with a radius of no more than one mile, would form a ‘sub-group’. The sub-group would operate so that females could arrange to support

each other in group collection and delivery of milk and transportation to the MBG cooling centre; and in the gathering of forage grasses. The sub-group would employ workers specifically for these tasks and share in the wage costs of the employees. In a further possible development, the sub-group could rent available suitable land in the locality specifically for cultivation of forage grasses *in situ*.

Providing female entrepreneurs with equal access to enterprise opportunities, technical and extension support services and MBG revolving funds for purchase of inputs and medications on credit, may not be sufficient to encourage them to move into a mode of commercial operation, which is high input / high output. If as the findings suggest, females may be more reluctant to make these purchases, for fear of becoming indebted in the event that there is insufficient income from milk sales to repay, then there may be a need for extra support to females to overcome this preference-driven gap (Bardasi *et al.,* 2011). This support might take the form of 'payment protection' insurance with a subsidised premium initially, with the element of subsidy gradually phased out over time. In the event that the animal becomes ill and milk production and revenue are interrupted, payments for the necessary medicines and supplemental feeds will be made from the scheme.

## 5.8. Contribution to Knowledge

### 5.8.1. Academic contribution

The major theoretical contribution of the study is in the use of outcome modelling to develop a performance framework and through this define performance measures, which are then used as a suite of weighted dependent variables in assessing determinants of entrepreneurial performance. This approach departs from the use of one or two single measures of EP, as is the case in the majority of academic studies (refer Table 2 on page 44). Performance measurement becomes context- specific and better tailored to assessing differential entrepreneurial performance in terms of specific enterprises. The measures are also invariant of scale thereby removing the confounding effect of scale of enterprise with its associated measures such as number of employees and sales volumes as proxies of EP, the inappropriateness of which has been demonstrated by researchers such as Watson & Robinson (2003).

The academic contribution of the study in terms of applied knowledge is in translating the notion of potential male-bias in entrepreneurial performance measurement into operational reality. The study provides a worked example of applying the concept of male-bias in measurement of performance in an actual real-world application in a developing country. It extends current thinking in the choice of entrepreneurial performance measures beyond the traditional measures of return on assets, sales volumes, growth in employment to something which is both more 'nuanced' and also measureable rather than one that remains simply as a hypothetical notion.

### 5.8.2. Contribution to Policy

The primary research suggests that there are differences in the performance of female entrepreneurs relative to male entrepreneurs, at least in relation to dairy entrepreneurs practicing intensive smallholder commercial dairy production under conditions of zero grazing. This runs contrary to findings from the researcher analysis of secondary datasets, which supports the finding that female entrepreneurs consistently outperform their male counterparts, specifically in relation to discontinuance of enterprises. These findings suggest that a case can be made for special tailored support to female entrepreneurs to ensure their business survival, particularly for nascent entrepreneurs such as those in the case study a the time they commenced in 2004. In the light of the research findings, appropriate strategies can be developed for tailored assistance to those entrepreneurs who are receiving pass-on animals now and commencing their enterprises. Remedial measures to improve performance can also be put in place to assist those entrepreneurs who have been already been operating for a number of years. Some possible measures have been explored in section 5.7 on page 219.

### 5.8.3. Contribution to Industry/Business

The research points to the need for training requirements for dairy entrepreneurship, going beyond merely the technical requirements of dairy husbandry and into greater depth concerning management of time, choice of enterprises and consideration of the complementarities and competing demands of enterprises. The study implies a need to greater focus on promotion of the use of supplementary feeds to those entrepreneurs who through fear of becoming indebted are not purchasing sufficient supplements to maximise milk production and revenue. Provision of credit through revolving funds at the

MBG has not proven to be sufficient to encourage all entrepreneurs to purchase required levels of supplemental feeds to achieve high levels of production and revenue. There may be a need for a pilot scheme which initially provides an element of price subsidy on purchased feeds and then gradually reduces the subsidy as the entrepreneur becomes established in a high-input/high output mode of commercial operation.

### 5.8.4. Contribution to Individuals

For support workers in dairy enterprise development and potentially in any enterprise assistance endeavour, the use of the adaptation of the proportional piling (PP) technique yields a richness of information about the place of the new enterprise in the enterprise mix within the household economy. In rural smallholder, family households where use of family labour is critical to an enterprise and labour constraints typically prevail (Peterman *et al.* 2011) the introduction of a new high-input/high-output commercial enterprise has the potential to greatly enhance household incomes, but also makes demands upon the households' available human capital, which may mean that other enterprises suffer. Contrary to the *a priori* belief that entrepreneurs need to focus and concentrate on a limited number of enterprises to achieve high levels of EP, the evidence is that high performance stimulates further diversification of enterprises (Kodithuwakku and Rosa, 2002) supporting the notion of Kiggundu (2002) of the 'octopus' organisation in Africa.

The technique is truly participatory, soliciting input and active participation in discussions not only between the entrepreneur responsible for the enterprise and the extension or support worker(s) but with other household members. The technique although simple and in some ways abstract provides a visualisation of the entire household economy, and an opportunity to discuss their complementarities and tensions between enterprises. For the entrepreneur and supporting household members, seeing a simple intuitive visual representation of their household economy provides in of itself an opportunity to reflect on strategies to manage their resources. It also ensures that the enterprise is not discussed in isolation but as an integral part of the households' livelihood. The adaptation of the technique to reach back in time to reflect on the past enterprise mix and extrapolate to the future, provides an added dimension to the

instrument which adds utility and provides for a longitudinal perspective rather than merely a snapshot in time.

## 5.9. Future Research Direction

The research has explored determinants of entrepreneurial performance and focused latterly on gender differences in entrepreneurial performance, with risk mitigation as a possible explanatory factor for the performance differentials uncovered. Since industry-type is a potential confounding influence in assessment of differential performance, the case study of smallholder dairy entrepreneurs in Central Malawi has been particularly useful in studying male and female entrepreneurs operating the same enterprise.

The case study, similar to the study of rural entrepreneurs in the Mahaveli river valley of Sri Lanka (Kodithuwakku and Rosa, 2002 p. 431) provided for a '*natural experiment'* in which many of the normally confounding factors were controlled for. Entrepreneurs started at the same time, with no prior experience of dairy enterprise development prior to involvement in the dairy enterprise programme. All received equal access to management training and veterinary support through resident dairy extension officers and paravets, as well as access to supplementary feeds; drugs and acaricides utilising credit facilities from a revolving fund operated by the MBG.

The programme distribution of in-calf heifers strictly followed a quota system, which effectively ensured equal numbers of female and male participants in the programme, regardless of whether a female had a resident partner or was the *de facto* head of the households (divorced, separated or widowed). The first participants began operation in early 2004 and the primary research was conducted in late 2008 and early 2009 with follow-up key informant discussions and collation of MBG data in late 2010. While the sample size was limited owing to financial and time constraints, in future research, and funds permitting, this could be extended to include a larger number of research participants and across a wider number of MBGs, to include the farmers in the Northern Region (Mzuzu milk-shed), in addition to the Central Region (Lilongwe milk-shed). Sweetman (2008) discusses the importance of time use as an indicator of gender equality, and there is qualitative information from the primary research focus group and key informant discussions to suggest an inequitable burden of daily tasks for women, whether domestic household or income-earning activities. One of the causal factors of

differential performance hypothesised is the competing demand for time in undertaking the multiplicity of tasks involved in both domestic and economic activities.

The hypothesis is that female-headed households face demands on their time which exceed their ability to fulfil, and that this is true but to a lesser extent for females with resident partners, with partners proving assistance in some aspects of the enterprise activities being undertaken. One of the major limitations of the primary research was the inability to gather information on time investment by activity. Data on the time demands of dairy for individuals within the household and their relation to the other enterprises in the enterprise mix, in addition to the competition in time allocation between work and family-related household activities will provide much needed information to enrich the analysis that has been undertaken to-date.

There is a need for a greater emphasis on phenomenological analysis, which would provide more in-depth insight into how females cope with the work and family demands upon their time. Of particular interest is a more detailed understanding of the intra-household dynamics of time allocation as well as control of the resources of the household economy, and the effects of child support to the entrepreneur and the enterprise and the influence on EP. Future research will build upon this information utilising the existing mixed methods approach applied to an increased sample size to include more of the initial recipients of dairy animals in 2004 in both the Central and Northern regions of Malawi and across a wider range of MBGs. The extended study would include a time use study and a longer series of MBG financial data to support and complement the findings from household enquiries and discussions, with continued use of the circle and stones technique to explore changes in the enterprise mix further.

The relationship between individual and collective performance of participants in the MBG is worthy of further investigation with particular emphasis on the 'second generation' of recipients from the initial group of participants, following 'pass-on' of the female offspring. In the follow-up investigations, more years will have passed since inception of the enterprises and further developments among the group of entrepreneurs will be evident. Continued investigation will add further insight into the determinants and dynamics of entrepreneurial performance in the context of the unique *'natural experiment*' that the case study presents within Malawi.

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# APPENDICES

## List of Appendices

## List of Tables

## List of Figures



## List of Photographs

## Appendix I: Performance Ranking Tables

Table A.1 : Performance Ranking by Education of the Entrepreneur

(A higher coefficient translates to a lower ranking since 1 represents the best and 3 the worst ranking)

| Item | No formal education | Lower Primary | Upper Primary | Secondary |
|---|---|---|---|---|
| Body condition score of the principal dairy animal | 1 | 2 | 2 | 3 |
| Body condition score of female calf | 1 | 2 | 2 | 2 |
| Independent technical specialist performance score | 3 | 4 | 2 | 1 |
| Key informant performance score | 1 | 4 | 3 | 2 |
| Survival of 'first enterprise' (maintaining original animal) | 1 | 3 | 4 | 2 |
| Farmer reported maximum milk yield | 1 | 3 | 2 | 1 |
| Farmer reported average milk yield | 1 | 3 | 2 | 2 |
| Litres of Milk delivered to the MBGs | 1 | 3 | 2 | 3 |
| Heifer pass-on (In-kind loan repayment) | 1 | 3 | 4 | 2 |
| Repayment of loan (Cash element) | 1 | 1 | 2 | 1 |
| Propensity to access formal Credit | 1 | 3 | 4 | 2 |
| Frequency of use of supplemental feeds reported | 1 | 2 | 3 | 1 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 1 | 2 | 3 |
| Frequency of use of acaricides | 4 | 2 | 1 | 2 |
| Frequency of use of medications | 4 | 1 | 2 | 3 |
| Medications purchased from Chimbia MBG in 2008 | 1 | 3 | 3 | 2 |
| Overall rating (average of unweighted rankings) | 1.6 | 2.5 | 2.5 | 2.0 |
| Overall rating (average of weighted rankings) | 0.9 | 1.7 | 1.7 | 1.2 |
| Overall rating (excluding MCMs) | 1.8 | 2.1 | 2.5 | 2.1 |

Figure A.1 : FPR and OPR by Education Level

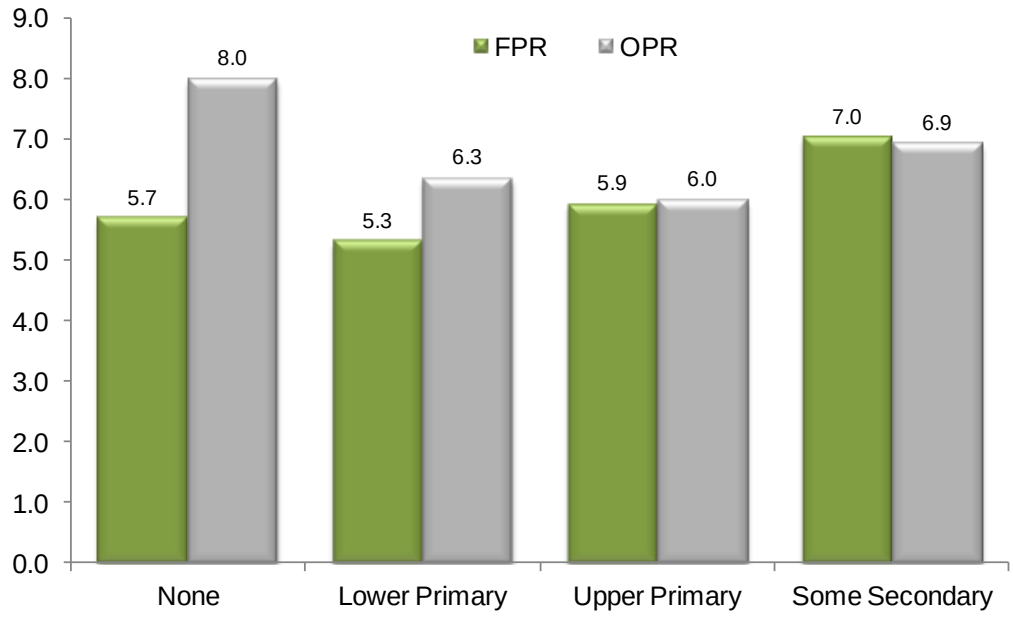


Table A.2 : Performance Ranking by Formal Education of the Entrepreneur

| Item | Lower Primary | Upper Primary | Secondary |
|---|---|---|---|
| Body condition score of the principal dairy animal | 1 | 1 | 3 |
| Body condition score of female calf | 1 | 1 | 1 |
| Independent technical specialist performance score | 3 | 2 | 1 |
| Key informant performance score | 3 | 2 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 3 | 1 |
| Farmer reported maximum milk yield | 3 | 2 | 1 |
| Farmer reported average milk yield | 2 | 2 | 1 |
| Litres of Milk delivered to the MBGs | 3 | 1 | 2 |
| Heifer pass-on (In-kind loan repayment) | 2 | 3 | 1 |
| Repayment of loan (Cash element) | 1 | 2 | 1 |
| Propensity to access formal Credit | 2 | 3 | 1 |
| Frequency of use of supplemental feeds reported | 2 | 3 | 1 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 1 | 2 | 3 |
| Frequency of use of acaricides | 1 | 1 | 1 |
| Frequency of use of medications | 1 | 2 | 3 |
| Medications purchased from Chimbia MBG in 2008 | 2 | 2 | 1 |
| Overall rating (average of unweighted rankings) | 1.9 | 2.0 | 1.4 |
| Overall rating (average of weighted rankings) | 1.2 | 1.4 | 0.8 |
| Overall rating (excluding MCMs) | 1.4 | 1.9 | 1.5 |

Figure A.2 : FPR and OPR by Formal Education of Entrepreneur

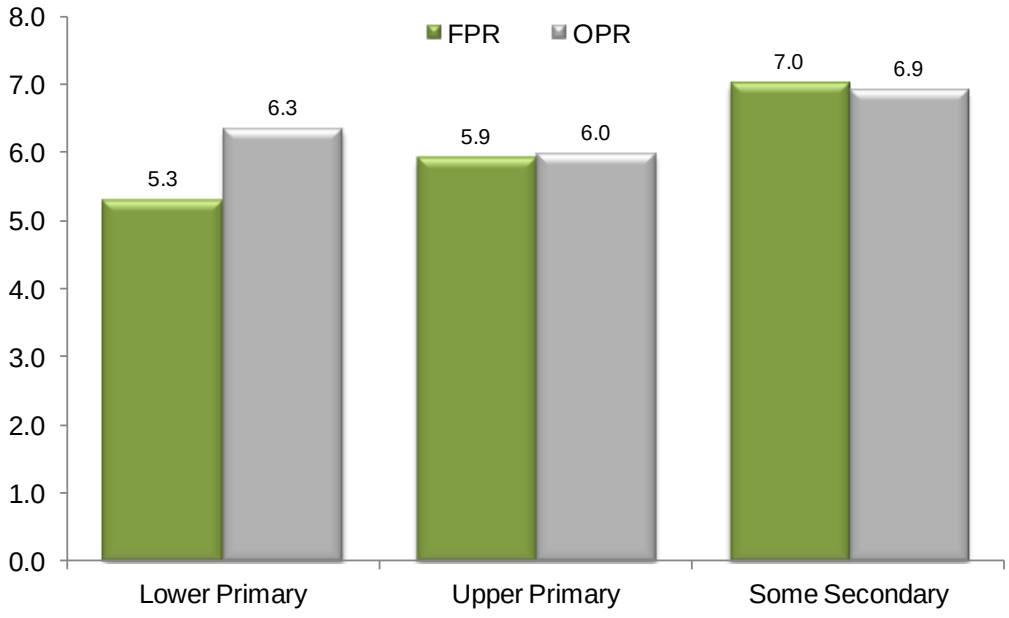


Table A.3 : Performance Ranking by Age Category of Household Head

| Item | Under 45 | 45-54 | 55+ |
|---|---|---|---|
| Body condition score of the principal dairy animal | 2 | 3 | 1 |
| Body condition score of female calf | 1 | 1 | 1 |
| Independent technical specialist performance score | 1 | 3 | 2 |
| Key informant performance score | 2 | 3 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 2 | 1 |
| Farmer reported maximum milk yield | 2 | 3 | 1 |
| Farmer reported average milk yield | 2 | 3 | 1 |
| Litres of Milk delivered to the MBGs | 1 | 2 | 3 |
| Heifer pass-on (In-kind loan repayment) | 1 | 3 | 1 |
| Repayment of loan (Cash element) | 1 | 1 | 1 |
| Propensity to access formal Credit | 1 | 2 | 2 |
| Frequency of use of supplemental feeds reported | 1 | 2 | 2 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 1 | 3 |
| Frequency of use of acaricides | 1 | 2 | 3 |
| Frequency of use of medications | 1 | 2 | 3 |
| Medications purchased from Chimbia MBG in 2008 | 1 | 2 | 3 |
| Overall rating (average of unweighted rankings) | 1.4 | 2.2 | 1.8 |
| Overall rating (average of weighted rankings) | 0.9 | 1.4 | 1.0 |
| Overall rating (average excluding MCMs) | 1.3 | 2.0 | 1.8 |

Figure A.3 : FPR and OPR by Age Category of Entrepreneur

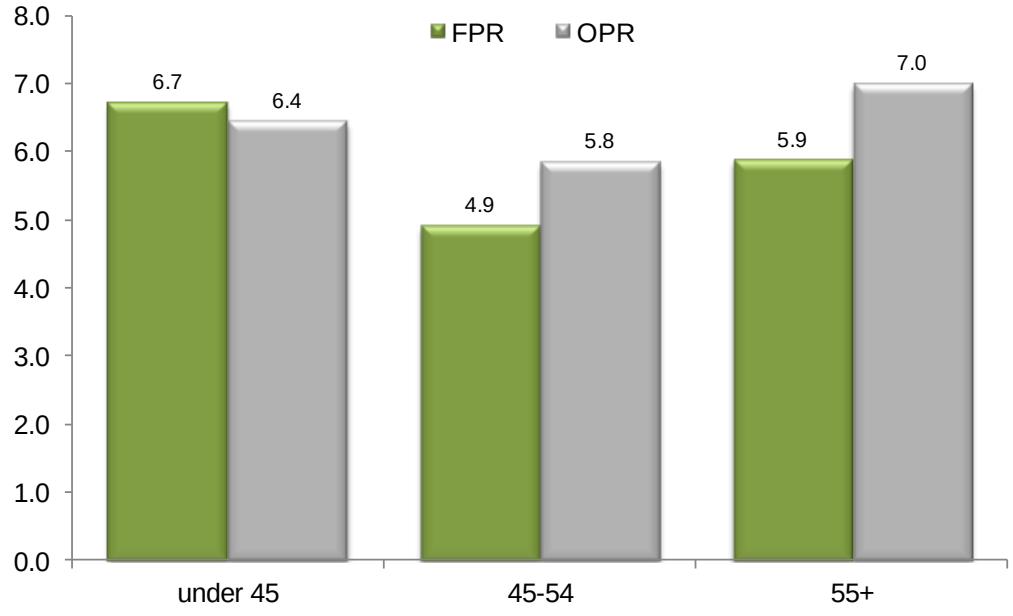


Table A.4 : Performance Ranking by Gender of Household Head

| Item | Female | Male |
|---|---|---|
| Body condition score of the principal dairy animal | 2 | 1 |
| Body condition score of female calf | 1 | 2 |
| Independent technical specialist performance score | 2 | 1 |
| Key informant performance score | 2 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 1 |
| Farmer reported maximum milk yield | 2 | 1 |
| Farmer reported average milk yield | 2 | 1 |
| Litres of Milk delivered to the MBGs | 2 | 1 |
| Heifer pass-on (In-kind loan repayment) | 2 | 1 |
| Repayment of loan (Cash element) | 2 | 1 |
| Propensity to access formal Credit | 2 | 1 |
| Frequency of use of supplemental feeds reported | 2 | 1 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 1 |
| Frequency of use of acaricides | 1 | 2 |
| Frequency of use of medications | 2 | 1 |
| Medications purchased from Chimbia MBG in 2008 | 2 | 1 |
| Overall rating (average of unweighted rankings) | 1.9 | 1.1 |
| Overall rating (average of weighted rankings) | 1.2 | 0.7 |
| Overall rating (excluding MCMs) | 1.8 | 1.3 |

Figure A.4 : FPR and OPR by Gender of Entrepreneur

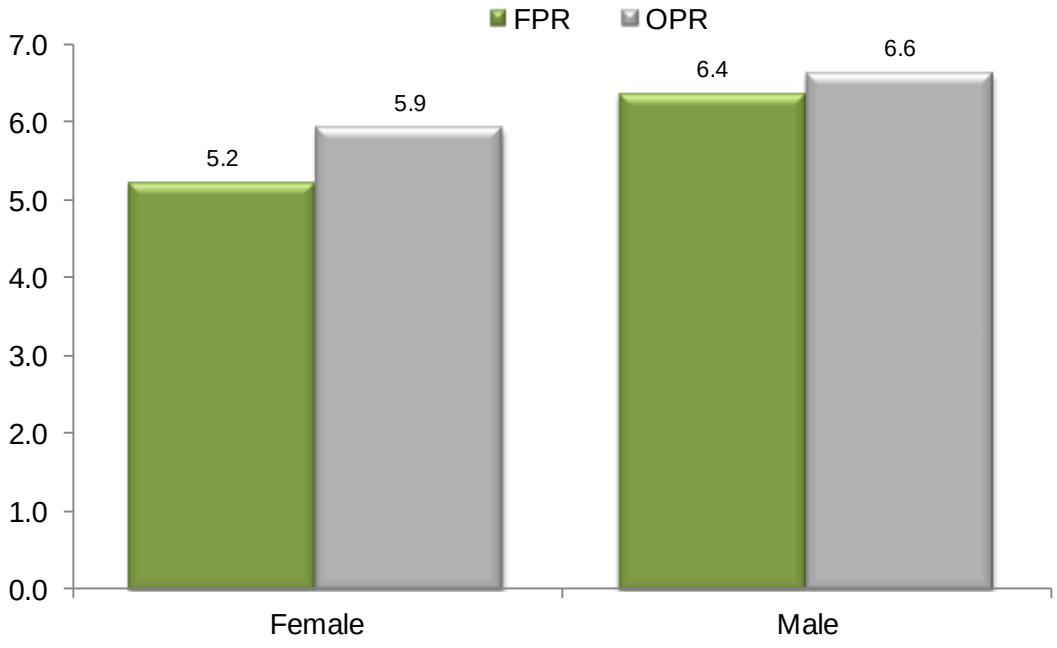


Table A.5 : Performance Ranking by Household Headship

| Item | FHH | FWRP | MHH |
|---|---|---|---|
| Entrepreneurs' perceptions of performance | 1 | 1 | 3 |
| Body condition score of the principal dairy animal | 3 | 2 | 1 |
| Body condition score of female calf | 1 | 3 | 2 |
| Independent technical specialist performance score | 3 | 2 | 1 |
| Key informant performance score | 3 | 2 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 3 | 1 | 1 |
| Farmer reported maximum milk yield | 2 | 3 | 1 |
| Farmer reported average milk yield | 2 | 3 | 1 |
| Litres of Milk delivered to the MBGs | 3 | 1 | 1 |
| Heifer pass-on (In-kind loan repayment) | 3 | 1 | 1 |
| Repayment of loan (Cash element) | 2 | 2 | 1 |
| Propensity to access formal Credit | 3 | 1 | 1 |
| Frequency of use of supplemental feeds reported | 3 | 1 | 2 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 2 | 1 |
| Frequency of use of acaricides | 1 | 3 | 2 |
| Frequency of use of medications | 1 | 3 | 1 |
| Medications purchased from Chimbia MBG in 2008 | 3 | 2 | 1 |
| Overall rating (average of unweighted rankings) | 2.4 | 2.0 | 1.2 |
| Overall rating (average of weighted rankings) | 1.6 | 1.1 | 0.7 |
| Overall rating (excluding MCMs) | 2.1 | 2.1 | 1.3 |

Figure A.5 : FPR and OPR by Household Headship

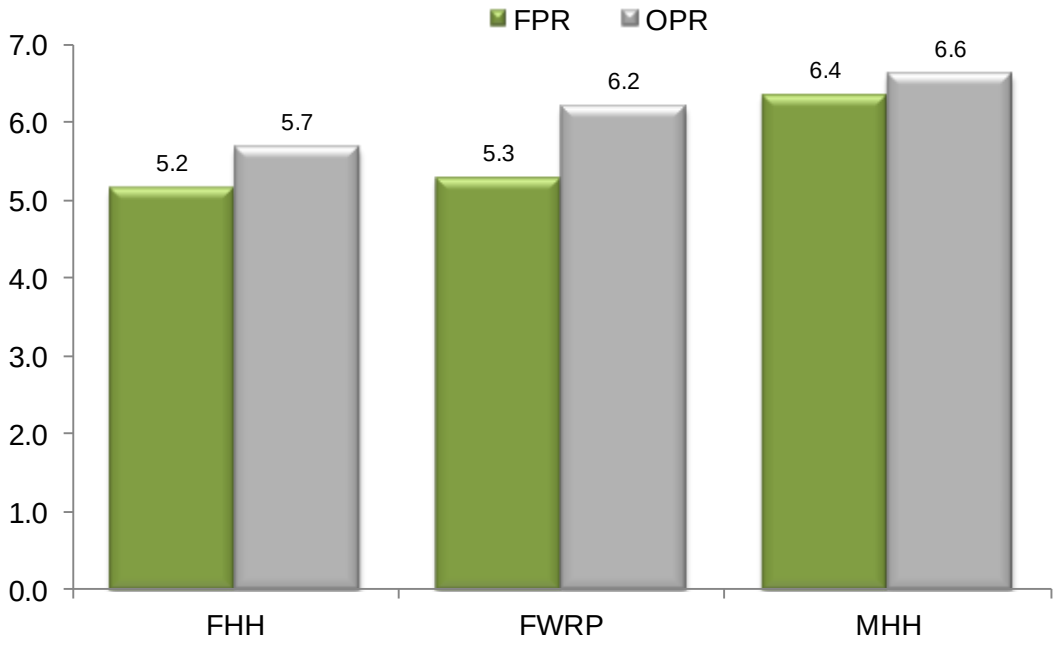


Table A.6 : Performance Ranking by Presence of a Working Partner

| Item | Not present | Present |
|---|---|---|
| Body condition score of the principal dairy animal | 2 | 1 |
| Body condition score of female calf | 1 | 2 |
| Independent technical specialist performance score | 2 | 1 |
| Key informant performance score | 2 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 1 |
| Farmer reported maximum milk yield | 1 | 1 |
| Farmer reported average milk yield | 2 | 1 |
| Litres of Milk delivered to the MBGs | 2 | 1 |
| Heifer pass-on (In-kind loan repayment) | 2 | 1 |
| Repayment of loan (Cash element) | 1 | 1 |
| Propensity to access formal Credit | 2 | 1 |
| Frequency of use of supplemental feeds reported | 2 | 1 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 1 | 2 |
| Frequency of use of acaricides | 1 | 2 |
| Frequency of use of medications | 1 | 2 |
| Medications purchased from Chimbia MBG in 2008 | 2 | 1 |
| Overall rating (average of unweighted rankings) | 1.6 | 1.3 |
| Overall rating (average of weighted rankings) | 1.1 | 0.7 |
| Overall rating (excluding MCMs) | 1.5 | 1.4 |

Figure A.6 : FPR and OPR by Presence of a Working Partner

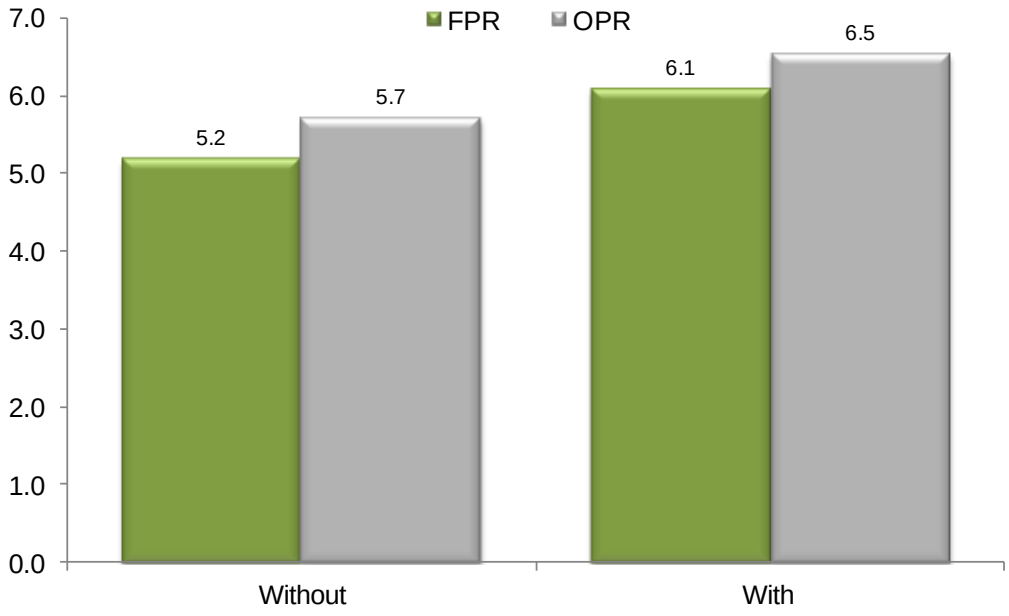


Table A.7 : Performance Ranking by Gender with Working Partner

| Item | Females | Males |
|---|---|---|
| Body condition score of the principal dairy animal | 2 | 1 |
| Body condition score of female calf | 2 | 1 |
| Independent technical specialist performance score | 2 | 1 |
| Key informant performance score | 2 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 1 |
| Farmer reported maximum milk yield | 2 | 1 |
| Farmer reported average milk yield | 2 | 1 |
| Litres of Milk delivered to the MBGs | 2 | 1 |
| Heifer pass-on (In-kind loan repayment) | 1 | 1 |
| Repayment of loan (Cash element) | 2 | 1 |
| Propensity to access formal Credit | 1 | 1 |
| Frequency of use of supplemental feeds reported | 1 | 2 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 1 |
| Frequency of use of acaricides | 2 | 1 |
| Frequency of use of medications | 2 | 1 |
| Medications purchased from Chimbia MBG in 2008 | 2 | 1 |
| Overall rating (average of unweighted rankings) | 1.8 | 1.1 |
| Overall rating (average of weighted rankings) | 1.1 | 0.7 |
| Overall rating (excluding MCMs) | 1.9 | 1.0 |

Figure A.7 : FPR and OPR by Gender with Working Partner

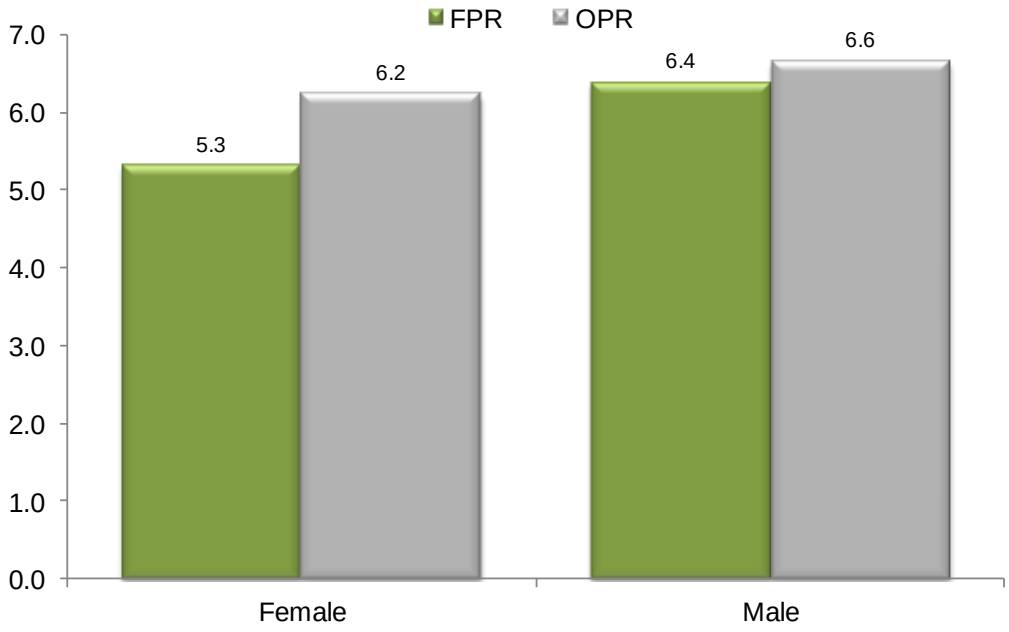


Table A.8 : Performance Ranking for Females with and without Partners

| Item | Without | With |
|---|---|---|
| Body condition score of the principal dairy animal | 2 | 1 |
| Body condition score of female calf | 1 | 2 |
| Independent technical specialist performance score | 2 | 1 |
| Key informant performance score | 1 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 1 |
| Farmer reported maximum milk yield | 1 | 2 |
| Farmer reported average milk yield | 1 | 1 |
| Litres of Milk delivered to the MBGs | 2 | 1 |
| Heifer pass-on (In-kind loan repayment) | 2 | 1 |
| Repayment of loan (Cash element) | 1 | 1 |
| Propensity to access formal Credit | 2 | 1 |
| Frequency of use of supplemental feeds reported | 2 | 1 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 1 | 2 |
| Frequency of use of acaricides | 1 | 2 |
| Frequency of use of medications | 1 | 2 |
| Medications purchased from Chimbia MBG in 2008 | 1 | 2 |
| Overall rating (average of unweighted rankings) | 1.4 | 1.4 |
| Overall rating (average of weighted rankings) | 1.0 | 0.8 |
| Overall rating (excluding MCMs) | 1.4 | 1.5 |

Figure A.8 : FPR and OPR for Females with and without Partners

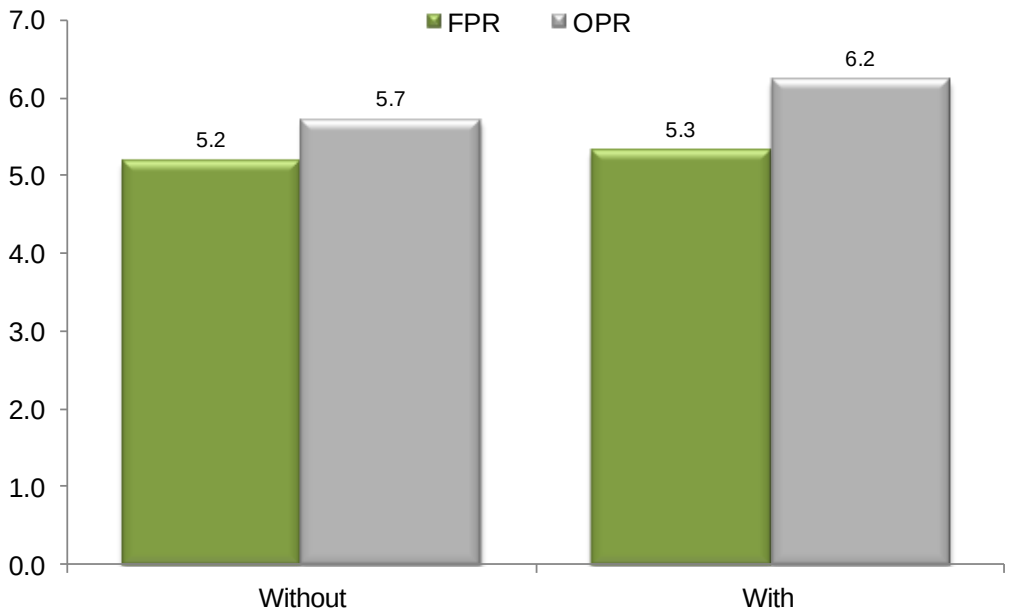


Table A.9 : Performance Ranking by Number of Dependents

| Item | 3 or less | 4-6 | 7+ |
|---|---|---|---|
| Body condition score of the principal dairy animal | 1 | 2 | 2 |
| Body condition score of female calf | 1 | 1 | 1 |
| Independent technical specialist performance score | 2 | 1 | 2 |
| Key informant performance score (n=41) | 2 | 1 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 3 | 2 | 1 |
| Farmer reported maximum milk yield | 1 | 2 | 3 |
| Farmer reported average milk yield | 1 | 2 | 3 |
| Litres of Milk delivered to the MBGs | 3 | 1 | 2 |
| Heifer pass-on (In-kind loan repayment) | 1 | 2 | 3 |
| Repayment of loan (Cash element) | 3 | 2 | 1 |
| Propensity to access formal Credit | 1 | 2 | 2 |
| Frequency of use of supplemental feeds reported | 3 | 1 | 1 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 2 | 1 |
| Frequency of use of acaricides | 2 | 1 | 3 |
| Frequency of use of medications | 2 | 3 | 1 |
| Medications purchased from Chimbia MBG in 2008 | 1 | 1 | 1 |
| Overall rating (average of unweighted rankings) | 1.8 | 1.6 | 1.8 |
| Overall rating (average of weighted rankings) | 1.2 | 1.0 | 1.2 |
| Overall rating (excluding potential male-centric measures) | 1.8 | 1.8 | 1.6 |

Figure A.9 : FPR and OPR by Number of Dependents

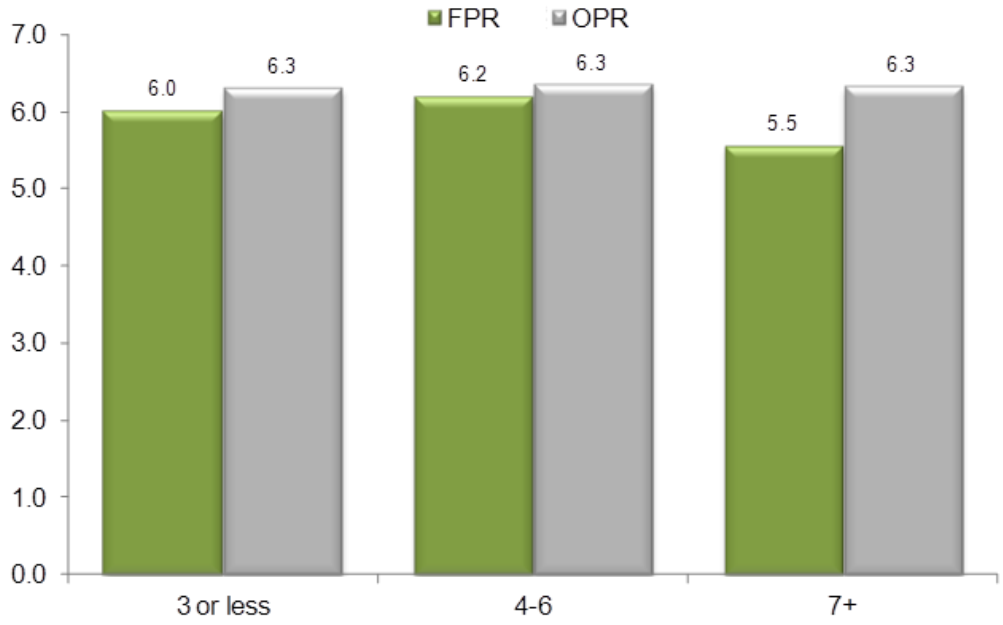


Table A.10 : Performance Ranking by Number of Adult Dependents

| Item | None | 1-3 | 4+ |
|---|---|---|---|
| Body condition score of the principal dairy animal | 2 | 2 | 3 |
| Body condition score of female calf | 2 | 2 | 1 |
| Independent technical specialist performance score | 3 | 1 | 2 |
| Key informant performance score (n=41) | 2 | 2 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 1 | 3 |
| Farmer reported maximum milk yield | 1 | 2 | 2 |
| Farmer reported average milk yield | 1 | 2 | 2 |
| Litres of Milk delivered to the MBGs | 1 | 1 | 3 |
| Heifer pass-on (In-kind loan repayment) | 1 | 2 | 3 |
| Repayment of loan (Cash element) | 2 | 2 | 1 |
| Propensity to access formal Credit | 3 | 1 | 2 |
| Frequency of use of supplemental feeds reported | 1 | 2 | 2 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 3 | 2 | 1 |
| Frequency of use of acaricides | 2 | 1 | 3 |
| Frequency of use of medications | 1 | 3 | 2 |
| Medications purchased from Chimbia MBG in 2008 | 1 | 2 | 3 |
| Overall rating (average of unweighted rankings) | 1.8 | 1.8 | 2.1 |
| Overall rating (average of weighted rankings) | 1.1 | 1.0 | 1.4 |
| Overall rating (excluding potential male-centric measures) | 1.6 | 1.9 | 2.4 |

Figure A.10 : FPR and OPR by Number of Adult Dependents

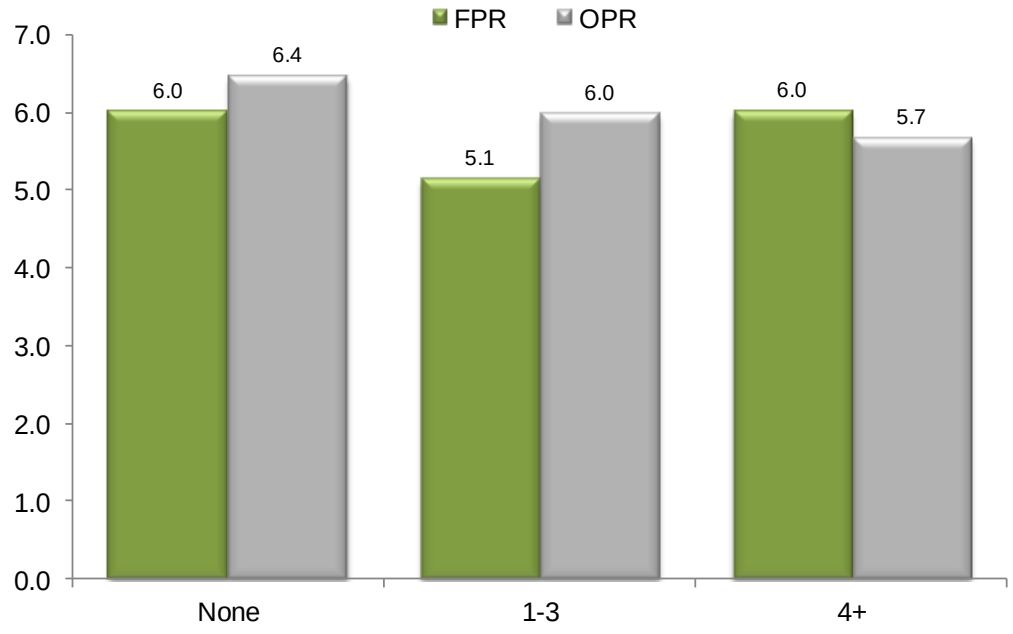


Table A.11 : Performance Ranking by Number of Child Dependents

| Item | 3 or less | 4-6 | 7+ |
|---|---|---|---|
| Body condition score of the principal dairy animal | 1 | 1 | 1 |
| Body condition score of female calf | 1 | 1 | 3 |
| Independent technical specialist performance score | 1 | 3 | 1 |
| Key informant performance score (n=41) | 1 | 1 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 3 | 1 |
| Farmer reported maximum milk yield | 1 | 2 | 2 |
| Farmer reported average milk yield | 1 | 2 | 2 |
| Litres of Milk delivered to the MBGs | 3 | 1 | 1 |
| Heifer pass-on (In-kind loan repayment) | 1 | 3 | 2 |
| Repayment of loan (Cash element) | 1 | 1 | 1 |
| Propensity to access formal Credit | 1 | 3 | 2 |
| Frequency of use of supplemental feeds reported | 3 | 1 | 2 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 3 | 1 |
| Frequency of use of acaricides | 2 | 1 | 3 |
| Frequency of  use of medications | 3 | 1 | 2 |
| Medications purchased from Chimbia MBG in 2008 | 3 | 2 | 1 |
| Overall rating (average of unweighted rankings) | 1.7 | 1.8 | 1.6 |
| Overall rating (average of weighted rankings) | 1.0 | 1.3 | 1.0 |
| Overall rating (excluding potential male-centric measures) | 1.8 | 1.6 | 1.8 |

Figure A.11 : FPR and OPR by Number of Child Dependents

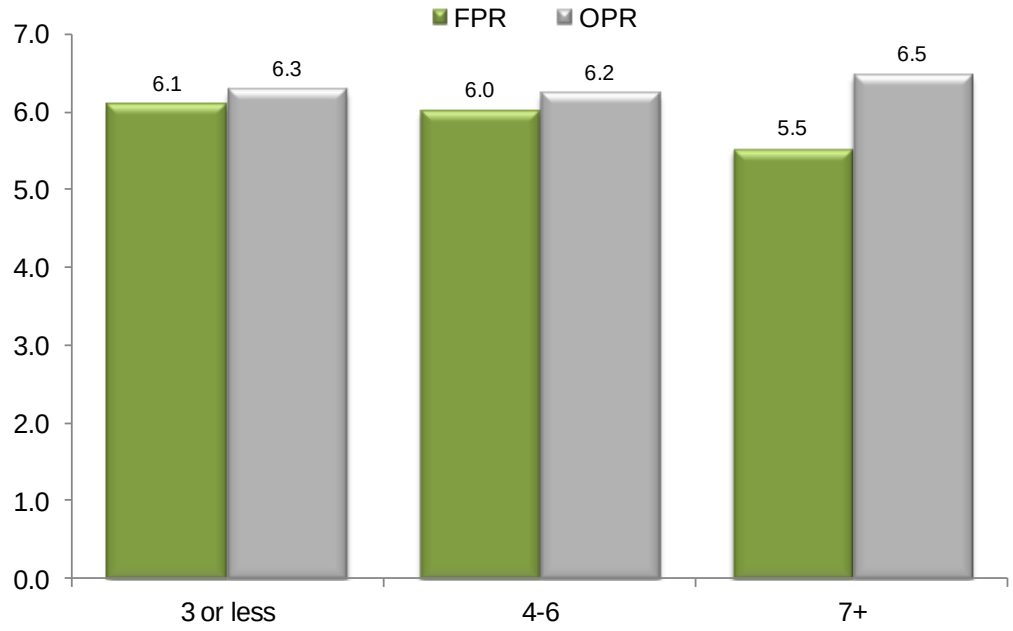


Table A.12 : Performance Ranking by Paid Employment Experience

| Item | None | Some |
|---|---|---|
| Body condition score of the principal dairy animal | 2 | 1 |
| Body condition score of female calf | 1 | 1 |
| Independent technical specialist performance score | 2 | 1 |
| Key informant performance score (n=41) | 1 | 1 |
| Survival of 'first enterprise' (maintaining original animal) | 1 | 1 |
| Farmer reported maximum milk yield | 2 | 1 |
| Farmer reported average milk yield | 2 | 1 |
| Litres of Milk delivered to the MBGs | 1 | 1 |
| Heifer pass-on (In-kind loan repayment) | 1 | 2 |
| Repayment of loan (Cash element) | 1 | 2 |
| Propensity to access formal Credit | 1 | 1 |
| Frequency of use of supplemental feeds reported | 1 | 2 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 1 | 1 |
| Frequency of use of acaricides | 1 | 2 |
| Frequency of use of medications | 1 | 1 |
| Medications purchased from Chimbia MBG in 2008 | 1 | 2 |
| Overall rating (average of unweighted rankings) | 1.3 | 1.3 |
| Overall rating (average of weighted rankings) | 0.8 | 0.8 |
| Overall rating (excluding potential male-centric measures) | 1.1 | 1.5 |

Figure A.12 : FPR and OPR by Paid Employment Experience

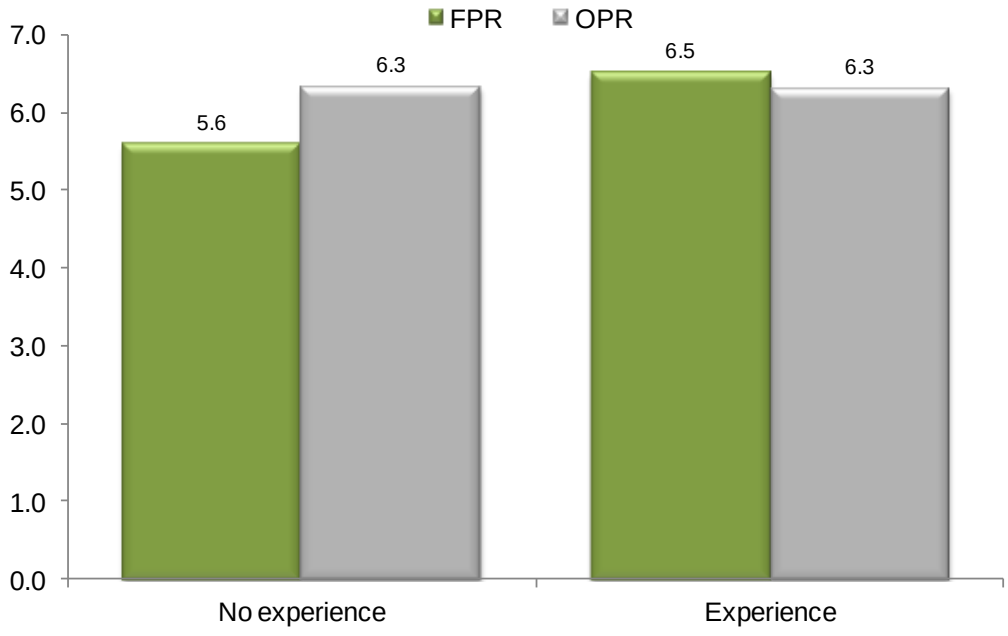


Table A.13 : Performance Ranking by Change in Enterprise Mix

| Item | Increased | Same | Reduced |
|---|---|---|---|
| Body condition score of the principal dairy animal | 1 | 2 | 1 |
| Body condition score of female calf | 2 | 2 | 1 |
| Independent technical specialist performance score | 3 | 2 | 1 |
| Key informant performance score (n=41) | 1 | 2 | 3 |
| Survival of 'first enterprise' (maintaining original animal) | 2 | 1 | 3 |
| Farmer reported maximum milk yield | 2 | 2 | 1 |
| Farmer reported average milk yield | 1 | 1 | 1 |
| Litres of Milk delivered to the MBGs | 1 | 2 | 2 |
| Heifer pass-on (In-kind loan repayment) | 1 | 2 | 3 |
| Repayment of loan (Cash element) | 1 | 1 | 1 |
| Propensity to access formal Credit | 1 | 3 | 2 |
| Frequency of use of supplemental feeds reported | 1 | 1 | 3 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 1 | 2 | 3 |
| Frequency of use of acaricides | 1 | 2 | 3 |
| Frequency of use of medications | 2 | 1 | 2 |
| Medications purchased from Chimbia MBG in 2008 | 1 | 2 | 3 |
| Overall rating (average of unweighted rankings) | 1.4 | 1.8 | 2.1 |
| Overall rating (average of weighted rankings) | 0.9 | 1.1 | 1.4 |
| Overall rating (excluding MCMs) | 1.4 | 1.6 | 2.1 |

Figure A.13 : FPR and OPR by Change in Enterprise Mix

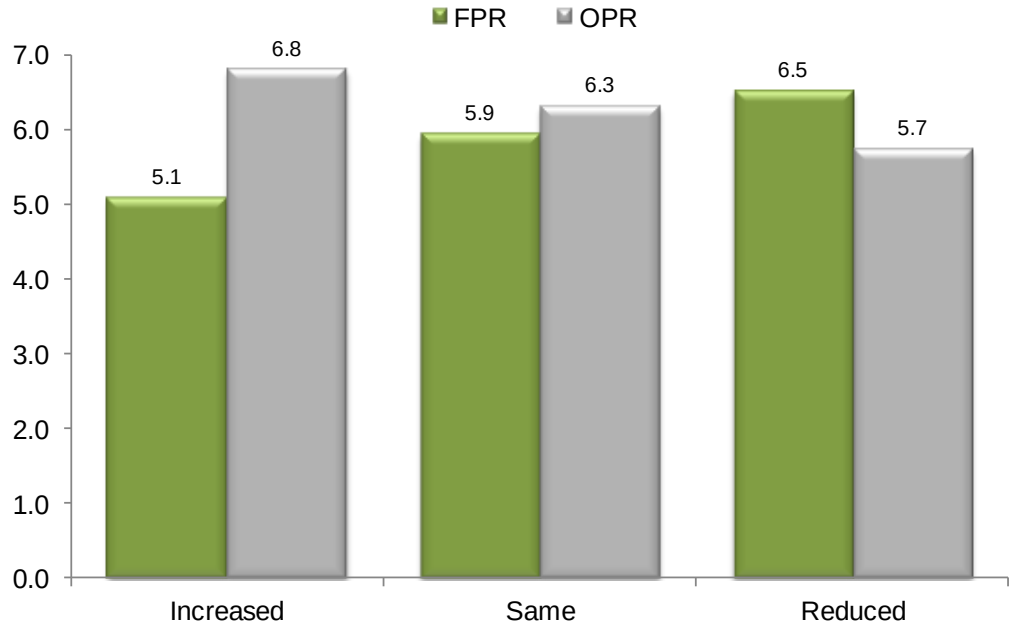
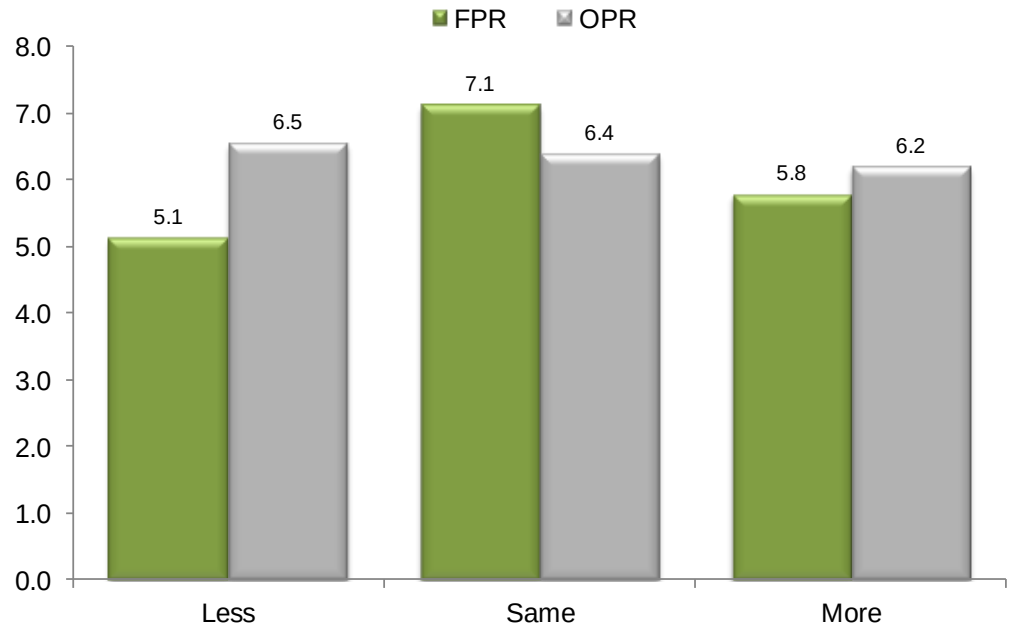


Table A.14 : Performance Ranking by Planned Concentration on Dairy Enterprise

| Item | Less | Same | More |
|---|---|---|---|
| Body condition score of the principal dairy animal | 1 | 1 | 1 |
| Body condition score of female calf | 1 | 1 | 1 |
| Independent technical specialist performance score | 3 | 1 | 2 |
| Key informant performance score (n=41) | 2 | 1 | 2 |
| Survival of 'first enterprise' (maintaining original animal) | 1 | 3 | 2 |
| Farmer reported maximum milk yield | 3 | 1 | 2 |
| Farmer reported average milk yield | 3 | 1 | 2 |
| Litres of Milk delivered to the MBGs | 3 | 1 | 2 |
| Heifer pass-on (In-kind loan repayment) | 1 | 2 | 3 |
| Repayment of loan (Cash element) | 1 | 1 | 3 |
| Propensity to access formal Credit | 3 | 1 | 2 |
| Frequency of use of supplemental feeds reported | 2 | 1 | 3 |
| Supplemental feeds purchased from Chimbia MBG in 2008 | 2 | 1 | 2 |
| Frequency of use of acaricides | 3 | 1 | 2 |
| Frequency of use of medications | 2 | 2 | 1 |
| Medications purchased from Chimbia MBG in 2008 | 1 | 2 | 3 |
| Overall rating (average of unweighted rankings) | 2.0 | 1.3 | 2.1 |
| Overall rating (average of weighted rankings) | 1.2 | 0.9 | 1.3 |
| Overall rating (excluding MCMs) | 1.4 | 1.6 | 2.0 |

Figure A.14 : FPR and OPR by Planned Concentration on Dairy Enterprise



## APPENDIX II: Secondary Data Analysis

Table A.15 : GEM Countries and Individuals Surveyed (APS) 2001-08

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Table A.16 : GEM Variables Description

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Table A.17 : % Starting Enterprises by Gender (GEM 2001-06)
Q1A. You are, alone or with others, currently trying to start a new business, including any self-employment or selling any goods or services to others.

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Table A.18 : Discontinuance by Gender as % of Population (GEM 2001-06)

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Table A.19 : Owner/Manager Discontinuance by Gender (GEM 2001-06)

Q1F. You have, in the past 12 months, sold, shut down, discontinued or quit a business you owned and managed, any form of self-employment, or selling goods or services to anyone

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Table A.20 : Weighted Discontinuance by Gender (GEM 2001-06)
Percentages are weighted by the % of Owner/Managers by Gender by Country

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Table A.24 : Opportunity as a Proxy for Self-Efficacy (GEM 2001-06)
Q1H. In the next six months there will be good opportunities for starting a business in the area where you live

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Table A.25 : Prospective Entrepreneurs Proxy Self-Efficacy (GEM 2001-06)
Q1H. In the next six months there will be good opportunities for starting a business in the area where you live

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Table A.26 : Knowledge of an Entrepreneur as a Proxy for Networking (GEM 2001-06)
Q1G. You know someone personally who started a business in the past 2 years.

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Table A.27 : Owner/Manager Knowledge of an Entrepreneur as a Proxy for Networking

Q1G. You know someone personally who started a business in the past 2 years.

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Table A.28 : Knowledge of an Entrepreneur of those with Intention to Start-up

Q1G. You know someone personally who started a business in the past 2 years.

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Table A.29 : Knowledge/Skill/Experience as a Proxy for Self-Efficacy (GEM 2001-06)

Q1I. You have the knowledge, skill and experience required to start a new business.

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Table A.30 : Owner/Manager Knowledge/Skill/Experience as a Proxy for Self-Efficacy

Q1I. You have the knowledge, skill and experience required to start a new business.

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Table A.31 : Prospective Entrepreneurs Self-Efficacy
Q1I. You have the knowledge, skill and experience required to start a new business
General population filtered for Q1E = 'Yes'

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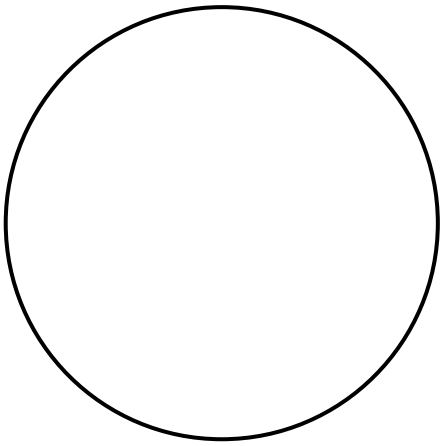
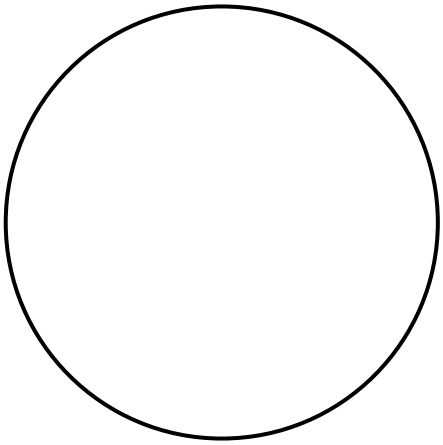
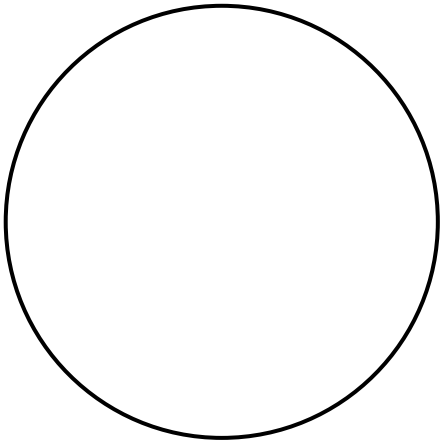
## APPENDIX III: Case Study Interview Guide

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. Initials of interviewer: | | 2. Date: | | 3. Start time: | : | 4. Time ended: | : |
| 5. Age of respondent: | | 6. Name: | | | | | |
| 7. Gender (tick over category): | | Male | | Female | | ID. to be assigned back at office (do not record here) | |
| 8. Marital Status: | | Single | | Married | | Separated/ Divorced | Widowed |
| 9. Head of Household | | Yes | | No | | Temporary HHH as partner is away | |
| 9. Dependents: | | 9a. Children | | | | 9b. Adults (exc. Spouse!) | |
| 10. Highest educational level achieved: | | None | Primary | Secondary | University | Post. Grad | |
| 11. Any vocational training | | None | | | | | |
| 12. What employment (paid work) experience do you have | | None | | | | | |
| 13. What were your reasons for going into dairy rather than another enterprise | | | | | | | |
| 14. Did you get involved in this business to take advantage of a business opportunity or out of necessity? | | Opportunity | | Necessity | | Something of both | |
| 15. Month and Year of start of business: | | Month | | | | Year | |
| | | | | | | | |

| Name of respondent | | Page 2 | |
|---|---|---|---|
| 16. Before you received the first dairy animal what were your sources of income (circle and stones participatory exercise)?<br><br>(The total must add up to 25) |  | Activity | No. |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | Total | |
| 17. At present what is the pattern of your income according to source of income earned?<br><br>(The total must add up to 25) |  | Activity | No. |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | Total | |
| 18. What do you envisage your pattern of household income to be in 5 years time (2013)?<br><br>(The total must add up to 25) |  | Activity | No. |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | Total | |

| 19. Before starting the dairy business did you have some business exposure through contact with family or friends? | No previous exposure at all prior to starting | Business exposure through family | Business exposure through friends |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Name of respondent | | | | Page 3 |
| 20. Question deleted | | | | |
| 21. How do you network with other business persons? | Don't network at all | | | |
| 22. Who do you network with principally? | Males exclusively | | Females exclusively | Both males and females |
| 23. Did you succeed in paying in full for your first dairy animal? | Yes - fully | | No - partially | No – was not able to pay at all |
| 24. Did you succeed in 'passing on' a heifer? | Yes | | No | |
| 25. If 'Yes' what age was the heifer when passed on? | N/A – did not pass on | | | Months |
| 26. If 'No' why not? | N/A – passed on | | | |
| 27. Your herd composition now? | Animal | Current Age | Gender | Body Condition Score |
| | 1st Heifer | | Female | |
| | | | | |
| | | | | |
| 27b. Give us an idea of your milk yield since you received the animal: | Maximum ever litres per day | | Average yield litres per day | |
| 28. Have you been using purchased supplementary feeds for your animal(s)? | No | Yes – at all times | | Yes – some of the time |
| 29. Have you been using acaricide for tick control? | No | Yes – every 14 days | | Yes – not regularly |

| Name of respondent | | | Page 4 |
|---|---|---|---|
| 30. Do you use purchased medications for your animal(s)? | No | Yes – at all times | Yes – some of the time |
| 31. Have you faced problems in operating this business? | No | | |
| 32. Would fear of failure prevent you from starting a new business? | Not at all | Depends upon the type of business | Yes | Other (specify) |
| 33. Did you have all the knowledge, skill and experience required to start this business? | Not at all | Somewhat | Absolutely |
| 34. Did you experience any barriers to starting up a business? | Not at all | Somewhat | Considerable |
| 35. Do those people who are successful at business have a high level of status and respect? | Not at all | Somewhat | High level |
| 36. Do you think that males make better business people? | Not at all | Somewhat | Absolutely |
| 37. Do you think that females make better business people? | Not at all | Somewhat | Absolutely |
| 38. Was/is position or status an important consideration in starting up (or operating) your business? | Not at all | Somewhat | Absolutely |
| 39. Was/is wealth creation an important consideration in starting up (or operating) your business? | Not at all | Somewhat | Absolutely |

| Name of respondent | | Page 5 |
|---|---|---|
| 40. If you had the opportunity to obtain a loan for any amount to expand your dairy enterprise how much would you borrow, and what would you use the borrowed funds for? | | |
| Notes/Observations: | | |

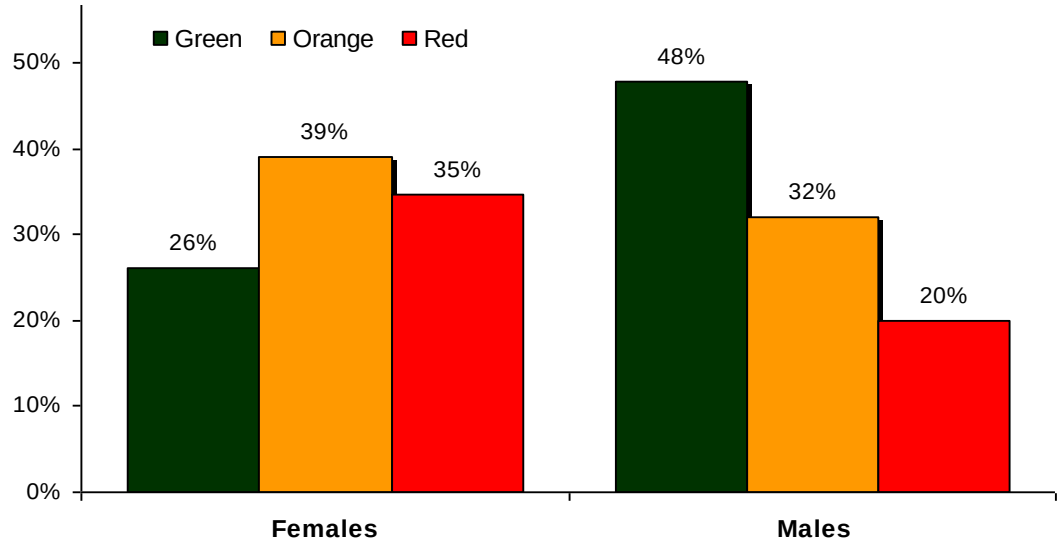
| Wealth Rank | Very Poor | Poor | Medium | Rich | Very Rich |
|---|---|---|---|---|---|

| Guidelines for the Management Performance Index | Max Score | Farmer Score |
|---|---|---|
| BCS of animal | 15 | |
| BCS of any calf present | 5 | |
| Whether pass-on or not | 25 | |
| Paid off the loan (dead cow fund) | 20 | |
| Improvement of premises or assets accumulated | 10 | |
| Using supplementary feeds currently | 10 | |
| Dipping of animal | 5 | |
| Drenching of animal | 5 | |
| Response of farmer - attitude to enterprise | 5 | |
| Total | 100 | |

| Management Performance Index Score | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|

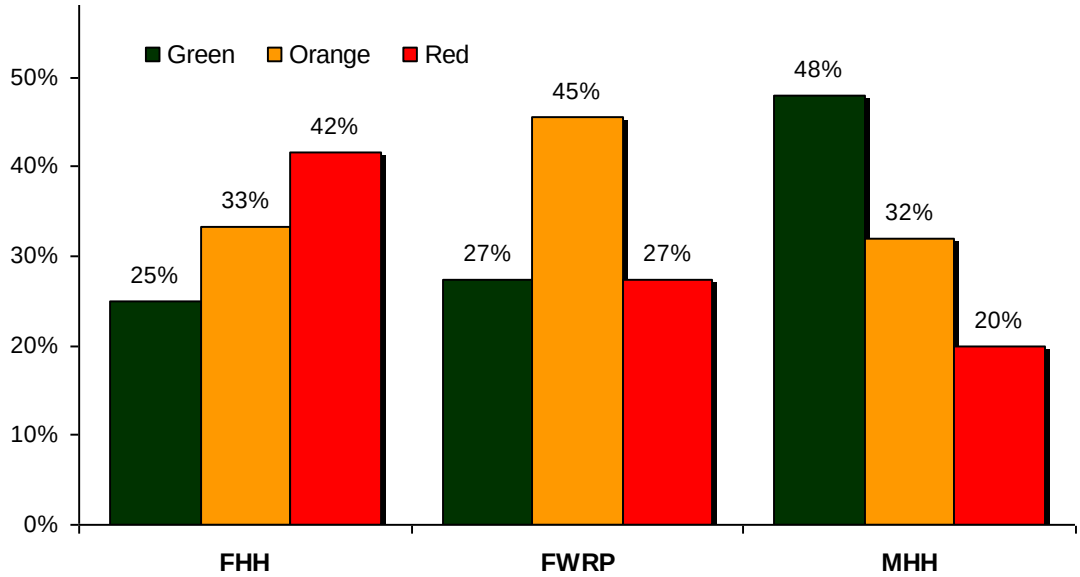
## APPENDIX IV: Comparison of Field Performance Ratings

A1: Rating by the Independent Field Officer - Females (n = 23) and Males (n = 25)

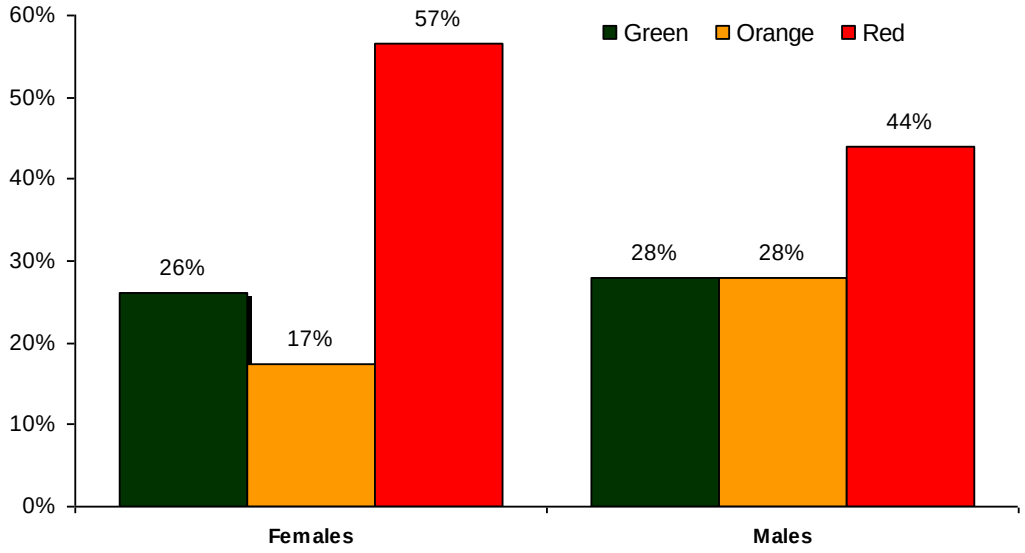



Green = High rating 7-10; Orange medium rating 5-6; Red low rating 0-4

A2: Rating by the Independent Field Officer - Female Headed Households (n = 12)
Females with Resident Partners (n =12) and Male Headed Households (n = 25)

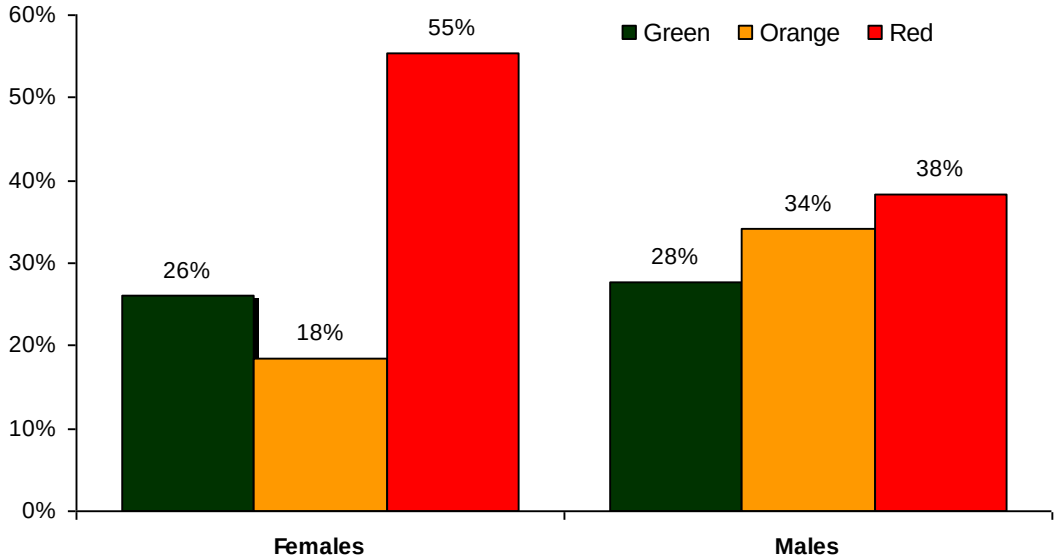


B1.1: Rating by the Resident Field Officer employed by Chitsantzo MBG – matched with the Sample of Farmers Interviewed by Masache

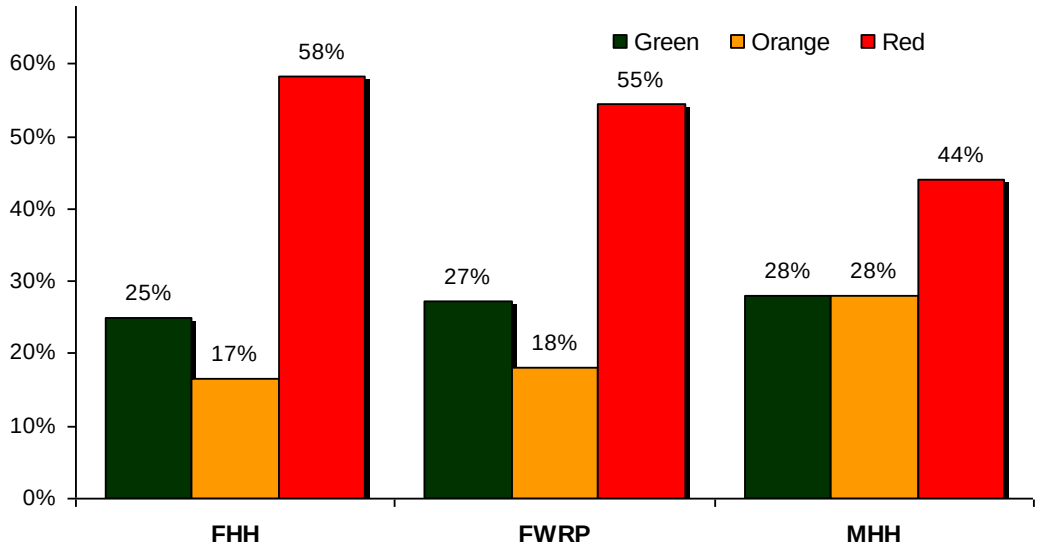



Green – would lend; Orange – might lend; Red – would definitely not lend for expansion

B1.2: Rating by the Resident Field Officer employed by Chitsantzo MBG – all farmers currently delivering milk to the MBG (Females and Males)

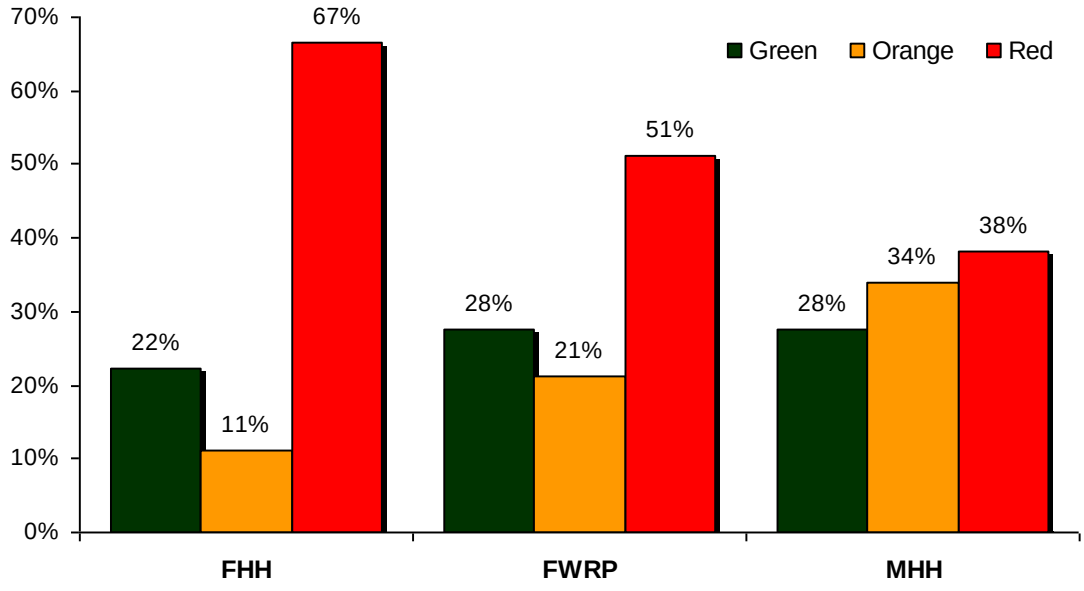


B2.1: Rating by the Resident Field Officer employed by Chitsantzo MBG – matched with the Sample of Farmers Interviewed by Masache

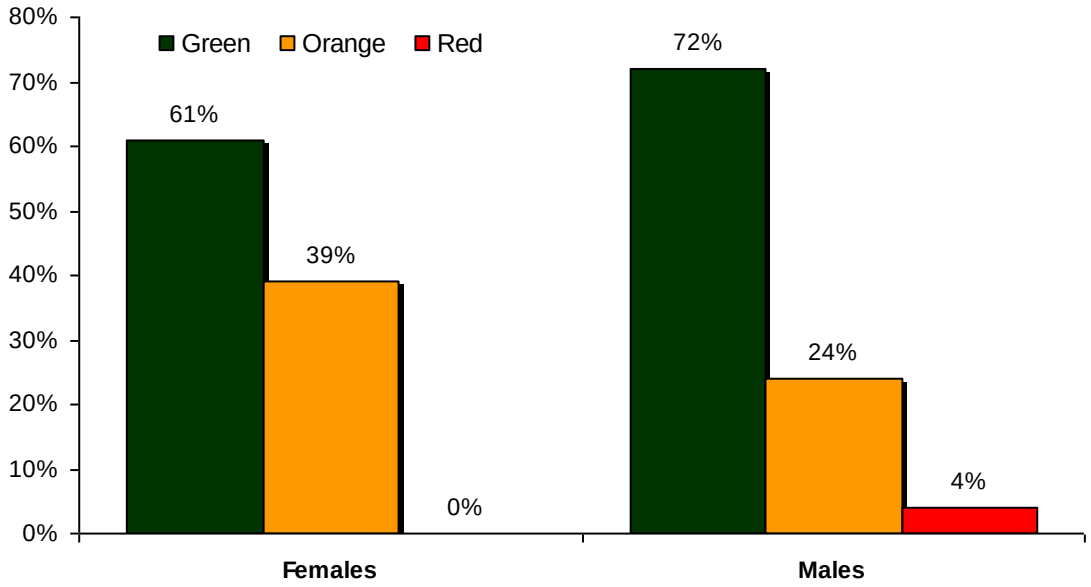



Green – would lend; Orange – might lend; Red – would definitely not lend for expansion

B2.2: Rating by the MBG Treasurer and Farmer from Chitsantzo MBG – all farmers delivering milk to the MBG (FHH; FWRP; MHH)

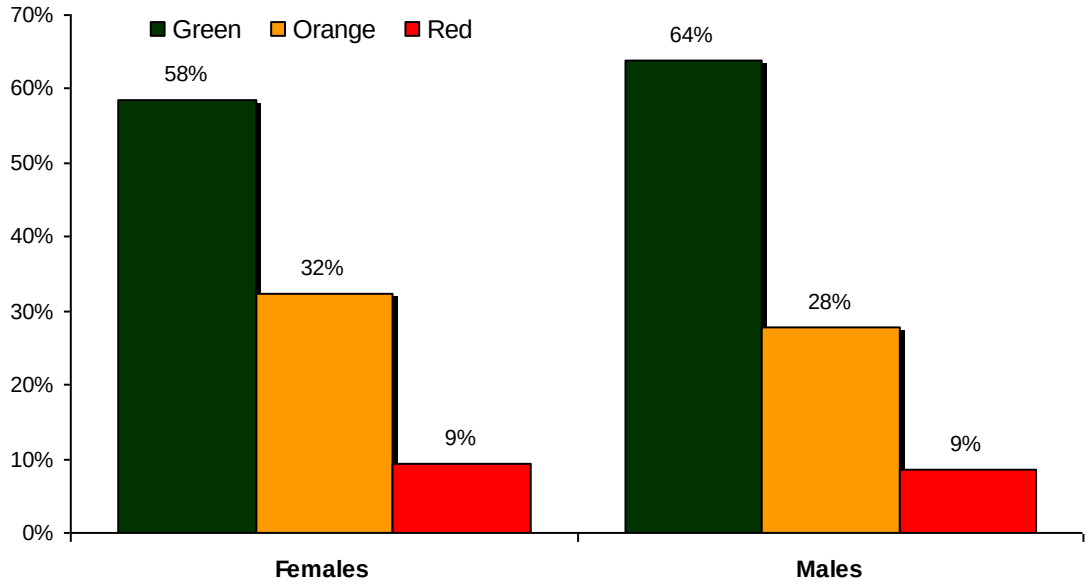


C1.1: Rating by the MBG Treasurer and Farmer from Chitsantzo MBG – matched with farmers sampled by Masache

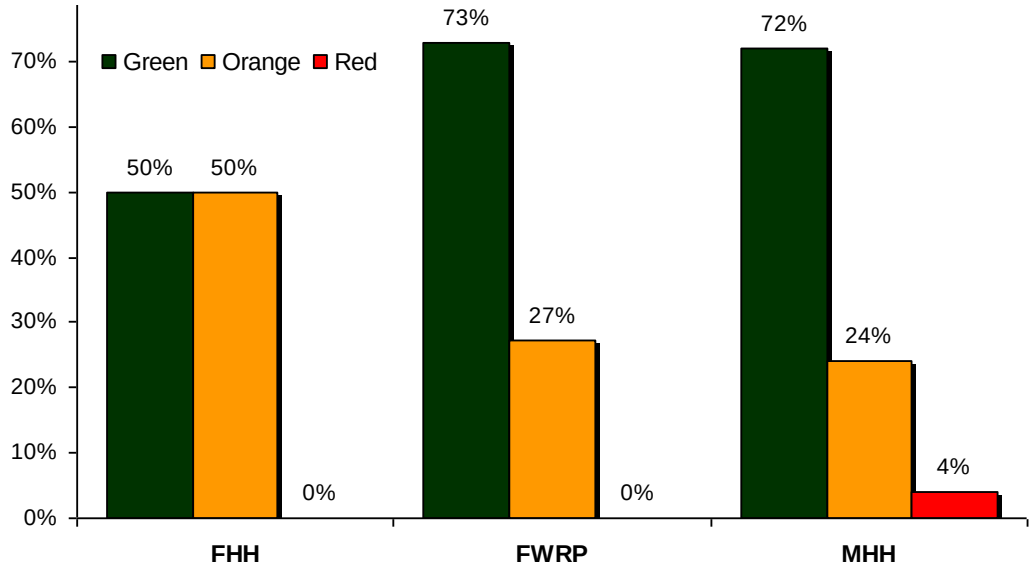



Green – would lend; Orange – might lend; Red – would definitely not lend for expansion

C1.2: Rating by the MBG Treasurer and Farmer from Chitsantzo MBG – all farmers delivering milk to the MBG (Females and Males)



C2.1: Rating by the MBG Treasurer and Farmer from Chitsantzo MBG – matched sample of farmers (FHH; FWRP; MHH)




Green – would lend; Orange – might lend; Red – would definitely not lend for expansion

C2.2: Rating by the MBG Treasurer and Farmer from Chitsantzo MBG – all farmers currently delivering milk to the MBG

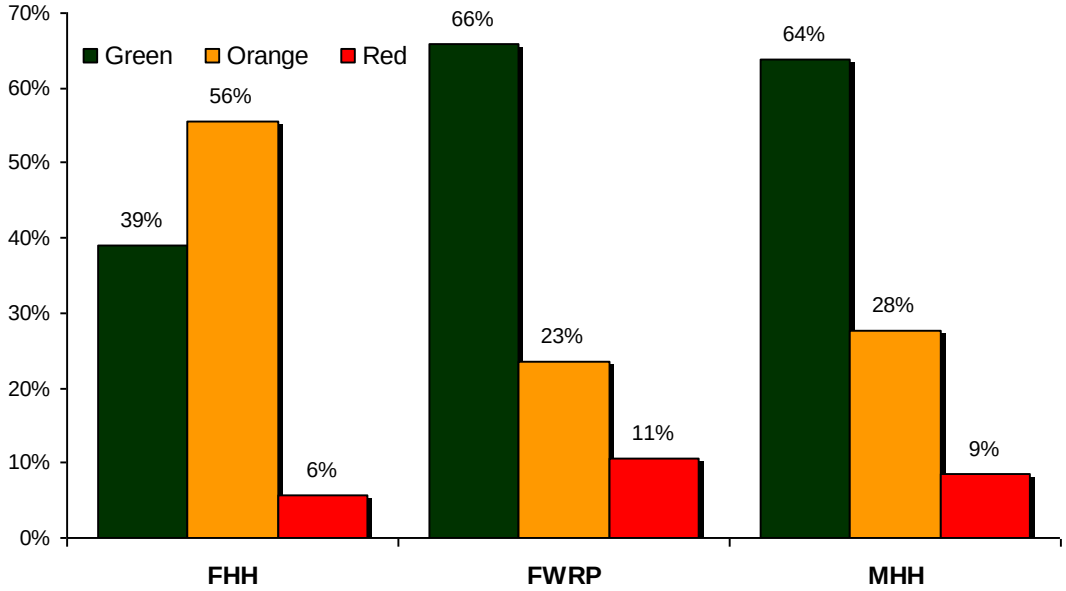


Table A.32 : Performance FPR's of the Three Raters

| S.N. | HHH | Origin | Ravat SPR | Mjima SPR | Masache SPR |
|---|---|---|---|---|---|
| 1 | MHH | Replacement | 2 | 3 | 3 |
| 2 | FHH | Replacement | 1 | 1 | |
| 3 | MHH | Replacement | 1 | 2 | 1 |
| 4 | FWRP | Original | 1 | 3 | |
| 5 | FWRP | Replacement | 1 | 1 | |
| 6 | FWRP | Replacement | 1 | 2 | 2 |
| 7 | MHH | Replacement | 2 | 2 | 2 |
| 8 | FHH | Replacement | 2 | 3 | 3 |
| 9 | FHH | Original | 1 | 1 | 1 |
| 10 | MHH | Original | 1 | 2 | 3 |
| 11 | FWRP | Replacement | 1 | 1 | |
| 12 | MHH | Original | 1 | 2 | 3 |
| 13 | FHH | Replacement | 1 | 2 | 2 |
| 14 | FHH | Replacement | 2 | 3 | 3 |
| 15 | FWRP | Original | 2 | 3 | |
| 16 | MHH | Pass-on | 2 | 3 | |
| 17 | FHH | Pass-on | 2 | 3 | |
| 18 | MHH | Original | 1 | 1 | 1 |
| 19 | MHH | Pass-on | 2 | 3 | |
| 20 | MHH | Pass-on | 1 | 2 | |
| 21 | FHH | Replacement | 1 | 1 | 1 |
| 22 | MHH | Original | 2 | 3 | 2 |
| 23 | FWRP | Pass-on | 2 | 3 | |
| 24 | FWRP | Original | 1 | 3 | 1 |
| 25 | FHH | Replacement | 2 | 3 | 3 |
| 26 | FHH | Original | 2 | 2 | 2 |
| 27 | FWRP | Original | 2 | 3 | 3 |
| 28 | FWRP | Replacement | 1 | 3 | 2 |
| 29 | MHH | Replacement | 2 | 3 | |
| 30 | MHH | Original | 2 | 3 | 1 |
| 31 | MHH | Pass-on | 1 | 2 | |
| 32 | FWRP | Replacement | 1 | 3 | |
| 33 | FWRP | Pass-on | 2 | 3 | |
| 34 | MHH | Original | 1 | 2 | 1 |
| 35 | FHH | Original | 1 | 3 | 1 |
| 36 | MHH | Original | 2 | 3 | 2 |
| 37 | MHH | Original | 1 | 1 | 1 |
| 38 | FWRP | Original | 1 | 2 | 1 |
| 39 | MHH | Replacement | 2 | 2 | 1 |
| 40 | FWRP | Original | 1 | 2 | |
| 41 | FWRP | Original | 1 | 3 | |
| 42 | MHH | Original | 1 | 3 | 1 |
| 43 | FWRP | Original | 1 | 2 | |

| S.N. | HHH | Origin | Ravat SPR | Mjima SPR | Masache SPR |
|---|---|---|---|---|---|
| 44 | MHH | Original | 2 | 2 | |
| 45 | FWRP | Replacement | 2 | 3 | 2 |
| 46 | MHH | Original | 1 | 1 | 1 |
| 47 | FWRP | Replacement | 1 | 1 | 2 |
| 48 | MHH | Original | 1 | 1 | 1 |
| 49 | FWRP | Original | 1 | 1 | |
| 50 | FWRP | Original | 1 | 1 | 1 |
| 51 | FWRP | Original | 1 | 1 | |
| 52 | FWRP | Pass-on | 1 | 1 | |
| 53 | FHH | Pass-on | 1 | 3 | |
| 54 | FWRP | Pass-on | 3 | 3 | |
| 55 | FWRP | Pass-on | 1 | 2 | |
| 56 | FWRP | Original | 1 | 1 | |
| 57 | MHH | Original | 1 | 3 | 2 |
| 58 | FWRP | Original | 1 | 3 | |
| 59 | FHH | Original | 2 | 3 | 2 |
| 60 | FWRP | Original | 2 | 2 | |
| 61 | MHH | Original | 1 | 2 | |
| 62 | MHH | Pass-on | 1 | 1 | |
| 63 | MHH | Pass-on | 1 | 1 | |
| 64 | MHH | Replacement | 1 | 2 | 2 |
| 65 | FHH | Original | 2 | 3 | 2 |
| 66 | FWRP | Original | 1 | 1 | 2 |
| 67 | MHH | Replacement | 1 | 1 | 1 |
| 68 | MHH | Original | 1 | 3 | 2 |
| 69 | MHH | Original | 1 | 1 | 1 |
| 70 | FWRP | Original | 1 | 3 | 3 |
| 71 | FWRP | Original | 2 | 3 | 3 |
| 72 | FHH | Pass-on | 2 | 3 | |
| 73 | FHH | Original | 2 | 3 | |
| 74 | FWRP | Original | 1 | 2 | |
| 75 | MHH | Replacement | 1 | 2 | |
| 76 | MHH | Original | 1 | 2 | |
| 77 | FWRP | Original | 1 | 3 | |
| 78 | MHH | Pass-on | 1 | 1 | |
| 79 | MHH | Original | 1 | 3 | 3 |
| 80 | FWRP | Pass-on | 1 | 1 | |
| 81 | FHH | Original | 2 | 1 | 3 |
| 82 | MHH | Original | 3 | 3 | 3 |
| 83 | MHH | Replacement | 1 | 3 | 2 |
| 84 | FWRP | Original | 3 | 2 | |
| 85 | FWRP | Pass-on | 3 | 3 | |
| 86 | MHH | Pass-on | 1 | 1 | |
| 87 | MHH | Pass-on | 1 | 1 | |
| 88 | FWRP | Original | 1 | 1 | |

| S.N. | HHH | Origin | Ravat SPR | Mjima SPR | Masache SPR |
|---|---|---|---|---|---|
| 89 | FWRP | Original | 1 | 3 | |
| 90 | FWRP | Pass-on | 1 | 3 | |
| 91 | MHH | Original | 1 | 1 | |
| 92 | MHH | Original | 3 | 3 | |
| 93 | MHH | Original | 1 | 1 | 2 |
| 94 | FWRP | Pass-on | 1 | 3 | |
| 95 | MHH | Pass-on | 1 | 2 | |
| 96 | FWRP | Pass-on | 1 | 1 | |
| 97 | MHH | Pass-on | 2 | 3 | |
| 98 | FWRP | Pass-on | 2 | 1 | |
| 99 | FHH | Original | 3 | 3 | |
| 100 | FWRP | Original | 1 | 3 | |
| 101 | FWRP | Original | 2 | 3 | |
| 102 | FHH | Pass-on | 1 | 3 | 3 |
| 103 | MHH | Pass-on | 1 | 3 | 1 |
| 104 | FWRP | Pass-on | 1 | 2 | |
| 105 | MHH | Original | 3 | 3 | |
| 106 | MHH | Original | 3 | 3 | |
| 107 | FWRP | Pass-on | 3 | 3 | |
| 108 | FWRP | Original | 2 | 3 | |
| 109 | MHH | Original | 2 | 2 | |
| 110 | MHH | Original | 2 | 2 | |
| 111 | FWRP | Original | 3 | 3 | |
| 112 | FWRP | Pass-on | 2 | 2 | |

## APPENDIX V: Request for Permission to Carry out Primary Research

The Chairman General
CREMPA
PO Box 376
Lilongwe

20 November 2008

Dear Sir

Request for Permission to Conduct PhD Fieldwork in CREMPA MBGs

I am writing to request permission to carry out a primary data collection exercise in the Central Region milk shed. I am undertaking postgraduate research studies at the University of Derby, U.K.

My topic relates to the determinants of female entrepreneurship. I have selected Lilongwe milk shed as a suitable location to carry out the last phase of my primary research. I have worked extensively in Malawi as a development professional, latterly focusing on enterprise development in my work with the Malawi Dairy Enterprise Development Programme from 1st October 2001 to 31st March 2005.

I intend to carry out the fieldwork for my research during the month of December 2008, and will be assisted in this by Mr MacMillan Masache and Mr Charles Siabu, former colleagues at Land O'Lakes, Inc. Malawi. I will be responsible for all the costs of this research effort. I intend to carry out the research through individual discussions with smallholder dairy farmers at their homesteads. These individuals will be sampled from the group receiving the first heifers from the USAID Heifer Loan Scheme, excluding Namwili MBG, since they received a more diverse group of animals including some Jersey/Guernsey Friesian Cross-breed animals. In order to maintain comparability between the farmers, I have filtered out those farmers receiving pure breed Friesian/Holsteins to make up the sample frame (see the table below). In addition, discussions will be held with key informants involved with the dairy farmers in the Lilongwe milk shed in relation to their perceptions of gender differences and similarities among the smallholder dairy farmers in the Lilongwe milk shed. Attached is an outline of the proposed research. More details of the day-to-day schedule will be communicated to your office if and when the permission will be granted.

The University has indicated that they regard the proposed research to be significant and beneficial to both the University and to the study of female entrepreneurship in general. Most countries now recognise the importance of entrepreneurship to economic development, and also the contribution that entrepreneurship can make to social development and empowerment of individuals and societies. The findings of the research will assist policy makers and practitioners to develop more effective enterprise support programmes.

The University of Derby has high respect for research ethics, and as such, I will do my utmost to uphold the highest ethical standards during the course of the research. I and the University of Derby will be very grateful for your assistance in this effort. I am happy to provide any further information if it will help you make the decision to enable the research effort to proceed.

Yours sincerely,

**PROPOSED RESEARCH OUTLINE**

**The Researcher:** Mr. Roy Thompson

**The Director of Studies**: Dr. Stephen G Longden

**Other Supervisors:** Dr. John Dakin

**The Derbyshire Business School**

**University of Derby, Kedleston Road, Derby, DE22 1GB**

**Tel: +44(0)1332 591796 Fax: +44(0)1332 622741**

**E-mail:** RoyHThompson@gmail.com, S.Longden@derby.ac.uk , J.A.Dakin@derby.ac.uk

**The scope of the research**: The research project is part of a five-year part-time PhD programme independently funded by the researcher, who has been working as a development professional for more than 25 years. Research focuses on the determinants of female entrepreneurship.

**The aim of the research** is to contribute to knowledge by generating a practical based understanding of female entrepreneurship. The research focuses on 'opportunity entrepreneurship' as distinct from 'necessity entrepreneurship'. Entrepreneurship in this context is conceptualised as recognition of the opportunities for new venture creation. The present research seeks to identify the significant gender differences in entrepreneurship which influence business start-ups and to test the hypothesis that females manage some types of enterprises differently from men. In addition, the research addresses the issue that has been identified in previous studies that postulates that females are relatively more 'risk averse' and therefore create a 'self-imposed brake' upon increased levels of female entrepreneurship.

**The approach** will be to randomly sample farmers from four MBGs who received dairy animals under the Heifer Loan Scheme funded by USAID and managed by Land O'Lakes, Inc. Malawi. The sample frame of farmers for the sample will be stratified into three categories, male-headed households (FHH); female-headed households (FHH) and females with resident partners (FWRP). The proposal is to sample 60 farmers in total and visit them individually at their homesteads during the month of December, 2008.

Sample Frame and Proposed Sample for Participants in Heifer Loan Scheme*

| | | | | Proposed Sample | | | |
|---|---|---|---|---|---|---|---|
| **MBG** | **Fems** | **Males** | **All** | **FHH** | **FWRP** | **MHH** | **All** |
| Chitsanzo | 42 | 37 | 79 | 8 | 8 | 8 | 24 |
| Dzaonewekha | 17 | 23 | 40 | 4 | 4 | 4 | 12 |
| Lumbadzi | 16 | 27 | 43 | 4 | 4 | 4 | 12 |
| Magomero | 17 | 25 | 42 | 4 | 4 | 4 | 12 |
| Total | 92 | 112 | 204 | 20 | 20 | 20 | 60 |

** received Friesians/Holsteins in the first round of the Heifer Loan Scheme*

**The issues of time and confidentiality**: Adults will be randomly sampled and interviewed individually. The semi-structured questionnaire will be designed to be as efficient as possible with a maximum duration of 30 minutes. Anonymity will be assured, and the survey will comply with all local laws relating to primary data collection exercises, including the Statistical Act of the country. Farmers will be given the opportunity to see and discuss the overall findings of the study in a facilitated workshop.

## APPENDIX VI: Description of BCS for Dairy – Neary and Yager (2002)

**BCS 1: Very Thin -** Individual spinous processes are very discrete. There is a deep indentation in the loin area, over the prominent transverse processes. Short ribs are very prominent, and there is no discernible fatty tissue in the loin or pelvic area. The pelvis and ribs appear sharp and can be easily palpated. There is a severe depression between the hooks and pins, and around the tail head. Notice the "V" shape from hooks to thurl to pins.

Redaction

**BCS 2: Thin -** The animal's skeleton is still very apparent. The individual spinous processes are clearly visible, but there is a small amount of fat tissue over the spine, hooks, and pins. The ribs and pelvis can be palpated with an insignificant amount of pressure. There is an evident depression between the hooks and pins, and over the transverse processes in the loin area. The tail head is seated in a shallow cavity with some fatty tissue covering the pin bones.

**BCS 3: Average or Normal** - The animal appears smooth over the spine, hooks, and pins, with a minor depression in the loin area. A layer of fat tissue covers the ribs and pelvis, which can be easily palpated with minimal pressure. A moderate, rather obvious depression is observed between the hooks and pins. There is a gentle "U" shape from hooks to thurl to pins. The tail head is situated in a small cavity, and fatty tissue can be easily felt over the entire area.

**Photograph A.1: Illustration of BCS=3**

Redaction

**BCS 4: Fat** - There are no spinous processes detectable, and no depression in the loin area, which gives the top-line of the animal a flat, tabletop appearance. The ribs can no longer be felt, and the pelvis can only be felt with firm pressure. The hooks and pins have a rounded appearance due to areas of fat covering; folds of fatty tissue can be seen around the tail head. Individual short ribs cannot be seen.

**BCS 5: Very Fat** - The animal has a smoothed appearance due to the amount of fat cover over the spine, and between hooks and pins. Spinous and transverse processes are covered in fat, giving the back a bulged appearance. The ribs and pelvic bones are covered with a thick layer of fatty tissue, and cannot be felt even with firm pressure. The tail head is concealed in a thick layer of fatty tissue. The rump is filled in from hooks to pins above the thurl.

Redaction

## APPENDIX VII: Draft Article concerning Dairy Entrepreneurs in Chimbia[1]

*"Chimbia Dairy Farmers Moving From Dependence to Self-Determination"*

Roy Thompson[2]

19 January 2009

In 2004 and 2005 Land O'Lakes, Inc. as part of the USAID/Malawi Dairy Enterprise Development Programme Phase III (MDEDPIII) distributed dairy animals to farmers in the Chitsanzo Milk Bulking Group (MBG) in Chimbia, Dedza district, some 70 kms (44 miles) south of the capital city Lilongwe.

As part of a privately funded research project Mr Thompson together with Mr Macmillan Masache, former Field Officer on the project, visited Lumbadzi and Chitsanzo MBGs in Dec 2008 and January 2009 and interviewed a total of 60 farmers who had been recipients of the first dairy animals. Of the total of 79 farmers who received animals in Chimbia 48 farmers were interviewed at their homes. In addition to the recorded interviews, the team made direct observations of the condition of the farmers' kholas[3] and the body condition score of the animals found there.

The focus of the research was on discerning differences (if any) in management performance of the dairy enterprise among the farmers and not on an evaluation of the Heifer Loan Sub-project. Nonetheless, the team, as former employees of the MDEDP, was interested to note the developments that had taken place since their participation in the project. Of the 48 farmers interviewed (and according to the planned stratification of the sample) 25 were male-headed households, 11 were females with resident partners and 12 were female headed households.

There has been a high level of 'attrition' of the original dairy animals with only some 2/3$^{rd}$ of the original animals remaining among the sampled farmers. Reasons are natural mortality from disease, snake bite, poisoning, culling owing to problem of fertility etc. The Heifer sub-project had a 'design-on-paper' system entitled 'the dead cow fund' whereby farmers paid in a fixed sum to the MBG of MK12,600 to cover the cost of replacing cows, which could in theory cover up to 10% losses (now less with the rising price of replacement animals). Despite the higher than planned levels of attrition, every farmer visited remained with one or more animals in their khola at the time of visit. Either the heifer calf has replaced the dam or action has been taken to replace the animal, through local purchase from the south (with particular mention of Clive the ex-VSO who worked in Dzaonewekha and is now involved in breeding in the south of the country). This has undoubtedly been assisted by the LO'L follow-on BDS (business development services) project which has sought to empower ancillary private sector entities to better support farmers through provision of feeds, veterinary services and improved dairy animals on commercial terms.

[1] This article was developed just after the field work to support a proposal for dairy entrepreneurs to receive credit from the Opportunity International Bank of Malawi

[2] Mr Thompson worked from Oct 2001 to Mar 2005 for Land O'Lakes, Inc. in Malawi on their USAID-funded Dairy Business Development Program. In 2004 he was the activity manager for the Heifer Loan sub-project which sourced high-grade Friesian/Holstein and Jersey/Guernsey dairy animals (mostly Heifers in-calf) from Zambia, Tanzania and South Africa.

[3] All animals are zero-grazed in pole and thatch structures adjacent or in close proximity to the farmers house (within the compound of the homestead)

A new development has been initiated with the National Insurance Company of Malawi (NICO) to insure animals at a cost of approximately MK5,000 per year. Twenty farmers have bought insurance so far and more will buy in 2009.

Farmers are generally not indebted after this 4-5 year period. Of those interviewed 96% had paid off all of their outstanding cash loans. Two-thirds of farmers had passed on a heifer calf to another farmer, and for the 1/3$^{rd}$ who had not reasons ranged between their animal delivering only bull calves to the dam dying and they having retained the heifer calf or obtained another animal.

Not all farmers can be considered equal in terms of their performance and their 'bankability'. In an independent assessment of both sample and all farmers delivering milk to the MBG cooling tanks, the following table gives an indication of those who might be considered top performers (green light); those who are mediocre (amber light); and those who are underperforming (red light). One assessor could only rate according to the observable sample; the other two had background knowledge of all farmers. For comparison both the sample of 48 farmers and the entire 'population' of 112 farmers' currently delivering milk to the centre are set out in the table.

| Rating | A (48) | B (48) | C (48) | B(112) | C (112) |
|---|---|---|---|---|---|
| Green | 38% | 27% | 67% | 27% | 61% |
| Amber | 35% | 23% | 31% | 25% | 30% |
| Red | 27% | 50% | 2% | 48% | 9% |

Assessor A considers that 38% of sample farmers are 'bankable'; Assessor B is stricter in only considering 27% to be the best performers. Assessor C (a farmer) was the most lenient assessor in considering between 61% and 67% of farmers to be high performers.

Discounting the farmer assessment we can consider that between 27% and 38% of farmers in Chimbia, therefore representing between approximately 30 and 40 farmers in the group are proving to be high performers based upon a technical assessment by trained extension officers/veterinary assistants.

It is these 40 farmers who represent the potential growth in the dairy population within the Chitsanzo Milk Bulking Group. A figure of 38% is consistent with global norms of small business success. If the mediocre performers are 'brought on' through further business 'incubation' and support then the proportion of really successful farmers in the group may increase to between 50 and 73% according to the technical assessors' rankings. In five and ten years time we would expect to revisit Chimbia and see these farmers with sizeable numbers of animals, others that have gone out of the dairy business and still others with the same one or perhaps two animals as they have now.

For those farmers who have paid their loans and passed on a heifer calf, they are now in the enviable position of being out of debt and at the same time sitting on equity in the form of dairy animals amounting to perhaps MK200,000 to MK400,000 of dairy animals. When farmers were asked if they would be prepared to borrow to expand their dairy business the almost universal response was 'yes' for 94% of farmers interviewed. Of this group approximately 1/3$^{rd}$ would borrow up to MK250,000; another 1/3$^{rd}$ up to MK300,000 and 1/3$^{rd}$ would be prepared to borrow up to MK600,000.

From this cursory analysis, it would appear that the majority of farmers would be prepared to borrow to finance the purchase of an additional dairy animal. If this animal were to be insured with NICO or under a similar scheme then the security of that additional 'asset' against borrowing would be secured. Farmers certainly do not have that level of cash on hand or savings in the bank. All farmers have accounts with the Opportunity International Bank of Malawi (OIBM). Their current policy on lending is to offer relatively small loans of up to MK20,000 (as reported by the extension officer), and this would seem to be too conservative in relation to the equity available for the average household and the potential for incremental income earning from an additional animal, plus the productive potential of that animal in terms of increasing the dairy 'herd' and increasing the business. At the same time, no institution wants to lend beyond the capacity of the borrower to repay, that would be a disservice to farmers who are currently expanding their businesses at the speed that nature allows.

Lending institutions can be confident of high levels of repayment in a system where farmers in the milk bulking group are delivering the majority of their milk to the MBG and therefore to the processor; in the case of Chitsanzo MBG this is Lilongwe Dairy and Mr Karim. Farmers typically 'vend' milk locally for daily cash needs and supply the remainder (minus the calf and home consumption) to the MBG and receive a monthly 'salary'. They can plan with this money and treat it as a form of savings. Equally they can obtain A.I. services, veterinary services and supplemental feeds as credit against the delivery of milk and monitor these deductions as P.A.Y.E. (pay as you earn) deductions from their gross income from milk sales to Lilongwe Dairy.

Farmers are now ready to enter into commercial arrangements with those who can supply them with additional dairy animals. The problem is not their capacity to repay but in making credit arrangements on that scale and in finding those who can source and deliver good quality animals in a business arrangement. Those who are in a position to deliver and sell 40 or 50 animals will need to make a triangular arrangement which in the case of Chitsanzo MBG involves OIBM; Lilongwe Dairy and the MBG (or specifically the subgroup of farmers within the MBG who are deemed to be bankable) and even a 4$^{th}$ dimension which is NICO for life assurance for the animals. Farmers are willing to pay up to $2000 (MK280,000) for an animal of good quality. If an animal provides an average 19 litres of milk per day over a 305-day lactation period at a selling price of around MK68 per litre then this would entail perhaps a repayment schedule of around one-half of all gross income over a period of two lactations. Farmers may not see the financial benefits of an additional animal over that period of two years but after two years they would have increased their herd size and have hopefully one heifer calf to further build up their herd. OIBM interest rates are likely to be commercial+ which means in excess of 20% per annum and this may prove to be punitive for farmers.

Nevertheless, there are progressive farmers there who will expand their enterprises with or without credit facilities. Given the emphasis on moving farmers away from 'spoon-feeding' and dependence upon heavy support and subsidy to a situation where they can enter into commercial arrangements and benefit from business development services commercially provided, then it is certainly worth exploring the commercial opportunities that Chitsanzo MBG farmers represent at this stage in their collective and individual commercial development.

## APPENDIX VIII: Article on HIV/AIDs and Benefits of Dairy

Redaction

*Source: 'Women in Agriculture' - Land O'Lakes International Outlook Magazine Number 1, 2010*

## APPENDIX IX: Summary of Focus Group Discussions

| N$^{0.}$ | Focus Group Comp. | What does a dairy farmer need to be successful? | What problems do you encounter in dairy farming? | What solutions do you have to the problems? | How do you see the future of dairy farming and why? | If you were offered a loan at 22% would you take the loan? | How much would you take? | Men or women better farmers? | Why? |
|---|---|---|---|---|---|---|---|---|---|
| 1 | MHHs | It is very important to make use of what you have been taught | Inputs are very expensive | Telling our advisors about our problems<br>The advisors bring solutions to the MBG | Good<br>The family uses milk for the home<br>We find money for assisting the family<br>We find manure for use in the gardens<br>We have more cows so that we can pass on to other people | Yes, so that we can buy more cows<br>To buy everything necessary e.g. utensils for whatever we need for dairy farming<br>Because the interest rate is low | MK400,000 | Men | They have built many houses<br>They have bought land<br>They are paying children's school fees<br>Others have bought pigs |
| 3 | MHHs | Sufficient land for khola Sufficient land for grass and soya and for Rhodes grass<br>Have to be interested in the life of the cow<br>They must have dry grass (hay) and silage | High prices for inputs<br>Low prices for milk<br>Some cows die<br>Some animals give birth to bull calves only<br>Problems with A.I. | We make our own dairy mash | Good<br>Pay for children's school fees<br>Milk and food for the family<br>Manure for gardens<br>Build good houses | Yes, can take a loan so that the dairy farming can go well<br>Can open other businesses that will support dairy farming (ancillary businesses)<br>You can add more animals | MK500,000 | Women | They spend more time at home<br>They have got interest in dairy<br>They are natural carers<br>They feed the animals well |
| 4 | MHHs | Sufficient feed<br>Good khola<br>Care for the animals | Cows have problems getting pregnant<br>Medicines are expensive<br>Supplementary feed is expensive | Meet with the advisors<br>Meet with the MBG committee | Good<br>Milk helps the family<br>More manure which means more maize (staple food) | Yes, as it would help improve the business<br>Homes would be developed with the loan | MK350,000 | Men | Men work harder and do most of the necessary jobs by themselves<br>Women want other people to do the work for them<br>Women are easily discouraged |

| N$^{0.}$ | Focus Group Comp. | What does a dairy farmer need to be successful? | What problems do you encounter in dairy farming? | What solutions do you have to the problems? | How do you see the future of dairy farming and why? | If you were offered a loan at 22% would you take the loan? | How much would you take? | Men or women better farmers? | Why? |
|---|---|---|---|---|---|---|---|---|---|
| 7 | MHHs | Must keep sufficient feed for the whole year<br>Should have a tidy khola<br>Must take good care of the animal<br>Dipping the animal | Disease<br>Does not become pregnant quickly<br>Expensive medicines<br>Supplementary feeding expensive<br>Milk prices are low<br>Dairy cows scarce | Advisors help with medicines when the cows are sick<br>Making our own dairy mash<br>MPA President advocating with government on pricing | Good as sufficient money for the year<br>Manure for gardens<br>Producing more animals | Yes, so that can have more animals and more milk | MK600,000 | Men | Women do not know how to ride bikes to get more grass and rely on workers<br>Do not have tenacity<br>Too much work at home to care for animals |
| 5 | FWRPs | Care for animals properly<br>Alternate feed not just feeding one type of feed all the time | Feed is expensive<br>Milk price is low<br>Medicines are expensive | Make own supplementary feed | Want to have more animals<br>More money<br>Drink milk for the family<br>Manure for gardens<br>Send their children to school<br>Money for home<br>Happy families<br>Drink milk daily | Yes, as the interest rate is low | MK400,000 | Women | Stay at home<br>Natural Carers<br>Check the khola regularly |
| 6 | FWRPs | Tenacity in looking after the animals<br>Taking care of the khola<br>Having a good khola<br>Providing animals with sufficient feed | Milk going sour<br>Animal doesn't become pregnant quickly<br>Low prices for milk<br>Processor takes too long to pay<br>Feed is expensive<br>Medicines expensive<br>Milk prices reduced | Consult with the advisor | Good<br>Find manure for gardens<br>Find money<br>Get milk for household | Yes, will take a loan if there is an opportunity as we want to increase capital so that the business expands | MK600,000 | Women | Take care of the house<br>Pay school fees<br>Buy food<br>More responsible<br>More interest to build better houses |

| N$^{0.}$ | Focus Group Comp. | What does a dairy farmer need to be successful? | What problems do you encounter in dairy farming? | What solutions do you have to the problems? | How do you see the future of dairy farming and why? | If you were offered a loan at 22% would you take the loan? | How much would you take? | Men or women better farmers? | Why? |
|---|---|---|---|---|---|---|---|---|---|
| 2 | FHHs | Important to have sufficient feed for the animals<br>Good khola<br>Care for the khola (good maintenance) | Feed for dairy animals is very expensive<br>Milk is being sold at low prices<br>Late payments from the dairy processor<br>Medicines for animals are very expensive | Try to complain to those who are buying our milk and bargain for the price | Good<br>Want to have more animals in the future so they can have higher output<br>Can send children to school<br>Better houses<br>Healthy lives in order to help other people who are sick and old | Can take a loan at 22% interest and we can repay because of the milk we get from the animals | MK300,000 | Women | Better at budgeting<br>Better taking care of the home while men have other things to do<br>Men think of themselves but the woman thinks about the whole family<br>Some men can improve themselves secretly without telling their wives<br>Women are always there at the home and take care of the khola |
| 8 | FHHs | Must have interest in caring for animals<br>Feeding with proper feeds | When animal is dry then no money for the farmer<br>Cow does not become pregnant quickly<br>Supplementary Feed expensive | Other sources of income aside from dairy<br>Consult with advisors<br>Make our own dairy mash | Good<br>Women with no men and those with men see no difference because of dairy farming<br>Pay for school fees<br>Drink milk<br>Find manure for gardens<br>Employ people for gardens<br>Threat because milk prices have gone down | Yes, because the interest is not too high<br><br>Will develop their dairy business further | MK300,000 | Women | More women at the MBG<br>They can do the work themselves<br>Can build houses by themselves<br>They have interest in making their own homes |

APPENDIX X: Full-Page Figures for Figure 1 p.20, Figure 23 p.117, Figure 65 p.213

Figure A.15 : Full-page Thesis Processes and Stages

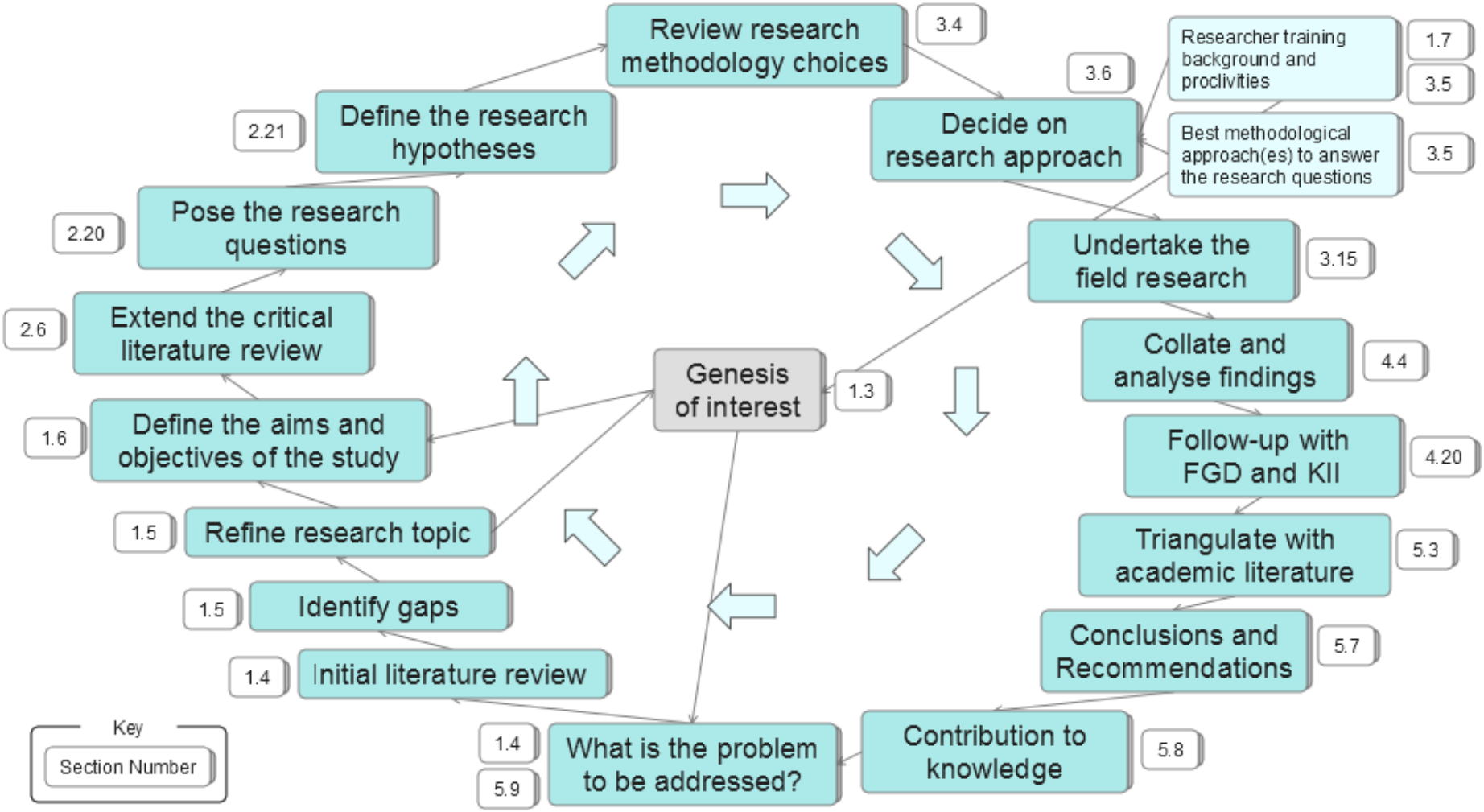


Figure A.16 : Full-page Case Study Performance Framework and Measures

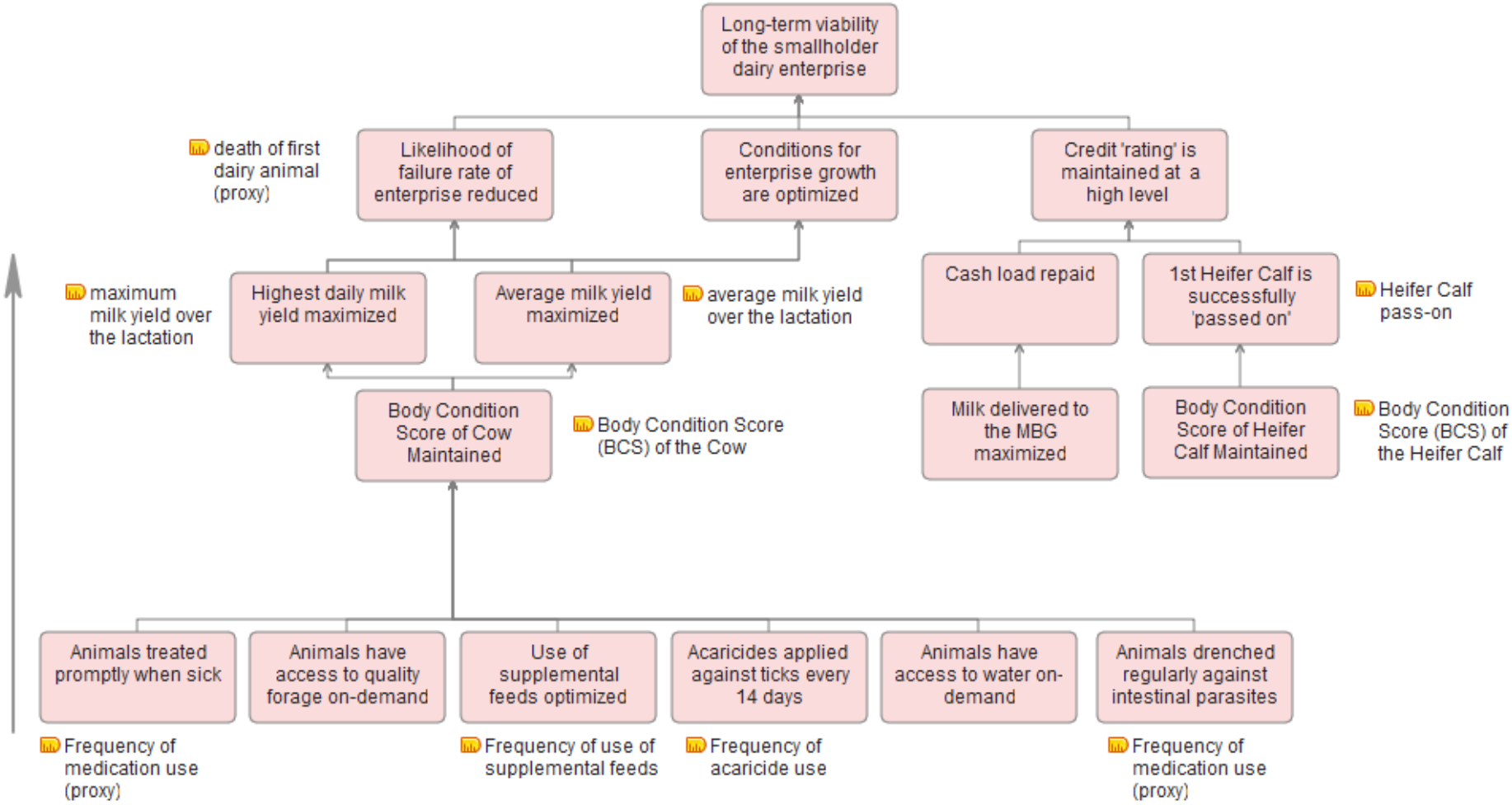
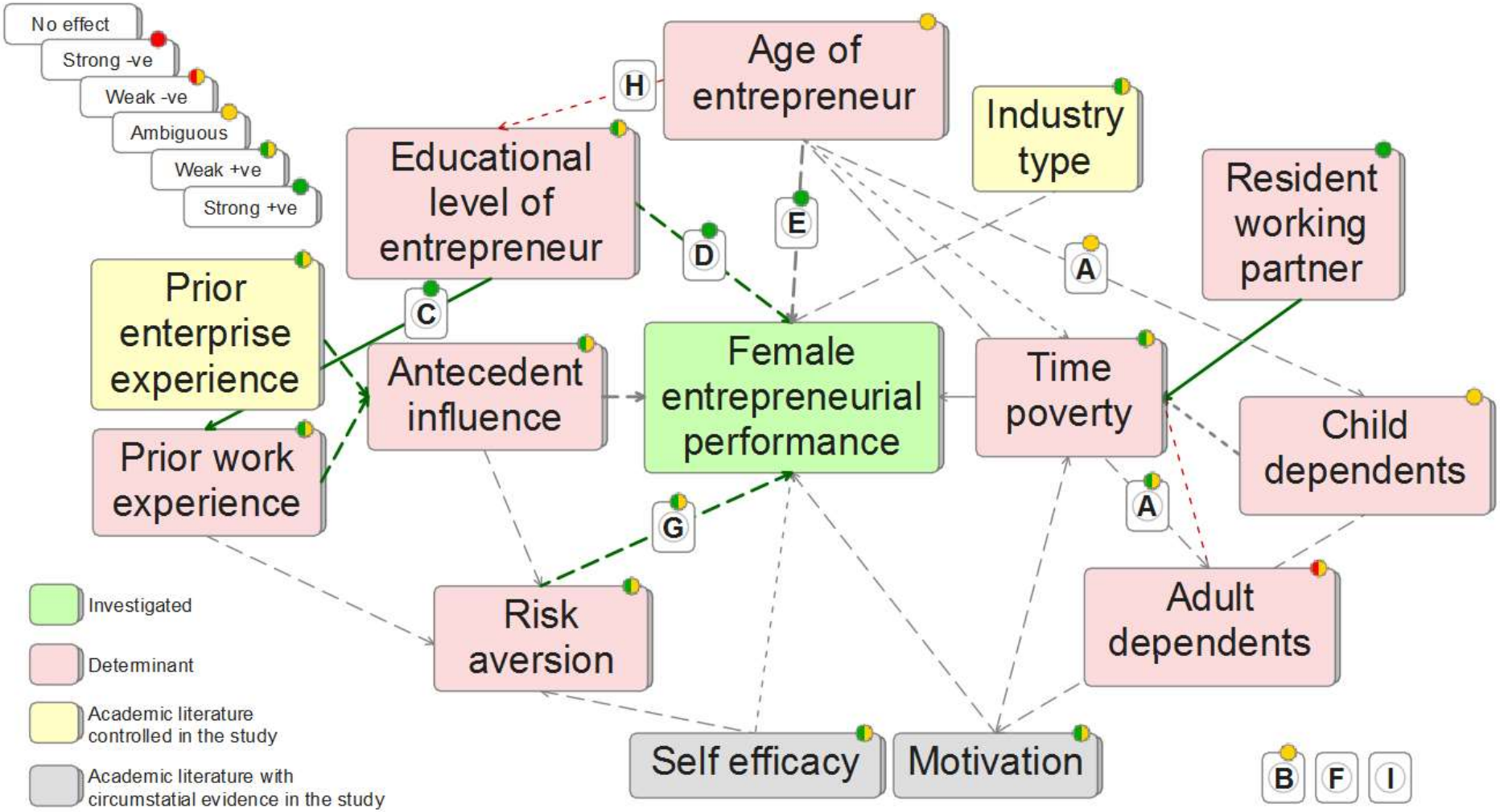


Figure A.17 : Full-page Case Study Refined EP Conceptual Model



## APPENDIX XI: Measures Scales and Coefficients for OPR Computation

For each outcome within the groups Discontinuance, Health, Nutrition, Repayment and Production a scale value is assigned as detailed in the table below. For example, if an animal is replaced this provides for a score of 0, since this is a negative outcome. In contrast, if the animal has not been replaced and is therefore the original animal that was provided at the inception of the project, this represents a positive outcome and is assigned a value of 1. In statistical (multiple regression) analysis this would be considered to be a 'dummy variable'. In the case of animals being sprayed with an acaricide there are three possible outcomes relating to frequency of use of acaricides. The most positive outcome is regular and consistent spraying which provides for an assigned value of 1. Infrequent spraying, which provides a significant threat to the health of the animal but is at least preferred to no spraying at all provides for an assigned value of 2/3$^{rd}$ or 0.667. Never spraying poses an extreme threat to the animal, which could lead to death and provides for an assigned value of zero. Each entrepreneur is assigned a value for each of the thirteen outcomes. In addition, each of the thirteen outcomes is provided with a weighting and in all cases the weights sum to a value of 1.0. The initial value assigned to each outcome for an entrepreneur is then multiplied by the weighting for that outcome. The weighted values for each of the thirteen outcomes for an entrepreneur are then summed and multiplied by 10 (to match the field performance rating scale of 1-10) to provide the Overall Performance Rating (OPR) for the individual and the value is then compared to the initial field performance rating (FPR)

| Group | Outcome | Measure of Achievement | Weight | Scale | Norm. value |
|---|---|---|---|---|---|
| Discontinuance | Likelihood of failure rate of enterprise reduced | Death of first dairy animal | 0.20 | Replaced = 0 or Original = 1 | 0 or 1 |
| Health | Acaricides applied against ticks every 14 days | Recall re. frequency of use | 0.10 | All time =1, some=.667, never=0 | 1 or 0.667 or 0 |
| | Animals treated promptly when sick | Medications purchased through the MBG | 0.05 | MK value of purchases | 1,2,3 categories |
| | Animals drenched regularly against intestinal parasites | Recall re. Frequency of use | 0.05 | All time =1, some=.667, never=0 | 1 or 0.667 or 0 |
| Nutrition | Body Condition Score of Cow Maintained | BCS of cow by independent technical specialist | 0.10 | Score 1-5 | 1,2,3 categories |
| | Use of supplemental feeds optimised | Purchase of supplemental feeds through the MBG | 0.05 | MK value of purchases | 1,2,3 |
| | Use of supplemental feeds optimised | Respondent recall re. frequency of use | 0.05 | All time =1, some=.667, never=0 | 1 or 0.667 or 0 |
| Nutrition and repayment | Body Condition Score of Heifer Calf Maintained | BCS of heifer calf by independent technical specialist | 0.05 | Score 1-5 | 1,2,3 categories |
| Repayment | 1st Heifer Calf is successfully 'passed on' | Heifer-calf passed on Yes/No | 0.10 | Yes =1 or No =0 | 0 or 1 |
| | Cash load repaid | Cash loan repaid in full Yes/No | 0.05 | Yes =1 or No =0 | 0 or 1 |
| Production | Average milk yield maximised | Recall re. Average milk production | 0.05 | Litres value | Proportion of max. |
| | Highest daily milk yield maximised | Respondent recall re. Maximum milk production | 0.05 | Litres value | Proportion of max. |
| | Milk delivered to the MBG maximised | MBG records of milk delivery by month 2008 | 0.10 | Litres value | Proportion of max. |

| HHH | Paid loan | Pass on | Supp Feed | Acaric | Meds | Max milk | Ave milk | BCS Cow | BCS Heif | Orig. Cow | Litres Milk | MK Feeds | MK Meds | OPR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.03 | 0.01 | 0.06 | 0.00 | 0.20 | 0.06 | 0.02 | 0.01 | 6.46 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.06 | 0.04 | 0.20 | 0.10 | 0.01 | 0.05 | 8.50 |
| MHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.03 | 0.03 | 0.07 | 0.04 | 0.20 | 0.07 | 0.04 | 0.03 | 7.51 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.02 | 0.03 | 0.07 | 0.05 | 0.20 | 0.02 | 0.03 | 0.01 | 7.72 |
| MHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.05 | 0.05 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.07 |
| FWRP | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.02 | 0.01 | 0.06 | 0.00 | 0.20 | 0.02 | 0.01 | 0.01 | 5.73 |
| FHH | 0.05 | 0.10 | 0.03 | 0.10 | 0.05 | 0.02 | 0.01 | 0.04 | 0.03 | 0.20 | 0.06 | 0.05 | 0.03 | 7.75 |
| FWRP | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.05 | 0.00 | 0.20 | 0.09 | 0.00 | 0.02 | 7.43 |
| FHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.03 | 0.02 | 0.06 | 0.05 | 0.00 | 0.03 | 0.02 | 0.01 | 4.64 |
| FHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.03 | 0.03 | 0.07 | 0.05 | 0.00 | 0.01 | 0.00 | 0.01 | 4.52 |
| FWRP | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.02 | 0.03 | 0.07 | 0.04 | 0.00 | 0.05 | 0.01 | 0.02 | 5.89 |
| FHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.03 | 0.03 | 0.06 | 0.00 | 0.00 | 0.05 | 0.02 | 0.02 | 4.61 |
| MHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.07 | 0.04 | 0.20 | 0.04 | 0.03 | 0.02 | 6.93 |
| MHH | 0.05 | 0.00 | 0.05 | 0.07 | 0.05 | 0.01 | 0.01 | 0.04 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 3.26 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.03 | 0.03 | 0.04 | 0.04 | 0.00 | 0.03 | 0.01 | 0.02 | 5.53 |
| FWRP | 0.05 | 0.10 | 0.05 | 0.10 | 0.03 | 0.04 | 0.05 | 0.06 | 0.00 | 0.20 | 0.02 | 0.01 | 0.01 | 7.31 |
| MHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.05 | 0.05 | 0.06 | 0.00 | 0.20 | 0.06 | 0.01 | 0.02 | 6.96 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.03 | 0.03 | 0.02 | 0.04 | 0.00 | 0.20 | 0.05 | 0.03 | 0.02 | 7.29 |
| FHH | 0.05 | 0.10 | 0.03 | 0.07 | 0.03 | 0.03 | 0.02 | 0.07 | 0.00 | 0.20 | 0.05 | 0.01 | 0.01 | 6.69 |
| MHH | 0.05 | 0.10 | 0.05 | 0.07 | 0.03 | 0.03 | 0.03 | 0.04 | 0.00 | 0.20 | 0.03 | 0.01 | 0.04 | 6.74 |
| MHH | 0.05 | 0.10 | 0.03 | 0.10 | 0.05 | 0.04 | 0.04 | 0.07 | 0.00 | 0.00 | 0.03 | 0.01 | 0.00 | 5.21 |
| FWRP | 0.05 | 0.00 | 0.05 | 0.10 | 0.03 | 0.03 | 0.04 | 0.06 | 0.00 | 0.00 | 0.10 | 0.03 | 0.02 | 5.12 |
| FWRP | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.04 | 0.04 | 0.00 | 0.01 | 0.00 | 0.00 | 4.86 |
| FHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.04 | 0.04 | 0.04 | 0.04 | 0.20 | 0.02 | 0.02 | 0.01 | 6.63 |
| FWRP | 0.05 | 0.10 | 0.05 | 0.07 | 0.03 | 0.02 | 0.02 | 0.04 | 0.00 | 0.20 | 0.01 | 0.01 | 0.00 | 6.03 |

| HHH | Paid loan | Pass on | Supp Feed | Acaric | Meds | Max milk | Ave milk | BCS Cow | BCS Heif | Orig. Cow | Litres Milk | MK Feeds | MK Meds | OPR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.08 | 0.04 | 0.00 | 0.01 | 0.00 | 0.01 | 4.42 |
| FHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.04 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 3.68 |
| FHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.03 | 0.02 | 0.06 | 0.00 | 0.20 | 0.10 | 0.03 | 0.03 | 8.16 |
| MHH | 0.05 | 0.00 | 0.05 | 0.07 | 0.05 | 0.02 | 0.03 | 0.04 | 0.00 | 0.20 | 0.04 | 0.01 | 0.01 | 5.72 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.03 | 0.04 | 0.03 | 0.10 | 0.05 | 0.20 | 0.08 | 0.00 | 0.03 | 8.63 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.04 | 0.04 | 0.09 | 0.00 | 0.20 | 0.08 | 0.00 | 0.02 | 8.28 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.06 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 4.89 |
| FHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.07 | 0.04 | 0.00 | 0.01 | 0.01 | 0.01 | 5.39 |
| FHH | 0.05 | 0.00 | 0.05 | 0.10 | 0.05 | 0.03 | 0.04 | 0.07 | 0.04 | 0.20 | 0.04 | 0.03 | 0.02 | 7.28 |
| FHH | 0.05 | 0.10 | 0.03 | 0.10 | 0.05 | 0.03 | 0.03 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.73 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.04 | 0.05 | 0.08 | 0.05 | 0.20 | 0.09 | 0.04 | 0.03 | 9.24 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.03 | 0.03 | 0.05 | 0.03 | 0.00 | 0.06 | 0.03 | 0.03 | 6.05 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.04 | 0.04 | 0.10 | 0.00 | 0.20 | 0.06 | 0.02 | 0.01 | 8.16 |
| FHH | 0.00 | 0.00 | 0.03 | 0.10 | 0.05 | 0.02 | 0.02 | 0.08 | 0.04 | 0.00 | 0.04 | 0.02 | 0.02 | 4.30 |
| FWRP | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.03 | 0.03 | 0.05 | 0.03 | 0.20 | 0.04 | 0.02 | 0.02 | 7.68 |
| FWRP | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.02 | 0.02 | 0.05 | 0.00 | 0.00 | 0.04 | 0.03 | 0.01 | 5.24 |
| MHH | 0.00 | 0.00 | 0.05 | 0.10 | 0.05 | 0.04 | 0.04 | 0.06 | 0.00 | 0.20 | 0.04 | 0.01 | 0.02 | 6.13 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.03 | 0.04 | 0.06 | 0.04 | 0.20 | 0.05 | 0.01 | 0.02 | 8.09 |
| MHH | 0.05 | 0.10 | 0.03 | 0.10 | 0.03 | 0.03 | 0.04 | 0.05 | 0.00 | 0.20 | 0.01 | 0.00 | 0.00 | 6.61 |
| FWRP | 0.05 | 0.10 | 0.05 | 0.07 | 0.03 | 0.02 | 0.03 | 0.06 | 0.00 | 0.20 | 0.03 | 0.03 | 0.02 | 6.85 |
| MHH | 0.05 | 0.10 | 0.03 | 0.07 | 0.05 | 0.02 | 0.02 | 0.04 | 0.02 | 0.20 | 0.02 | 0.02 | 0.03 | 6.71 |
| MHH | 0.05 | 0.10 | 0.05 | 0.10 | 0.05 | 0.03 | 0.02 | 0.06 | 0.00 | 0.20 | 0.04 | 0.03 | 0.02 | 7.50 |
| MHH | 0.05 | 0.10 | 0.03 | 0.10 | 0.05 | 0.03 | 0.03 | 0.08 | 0.00 | 0.00 | 0.06 | 0.05 | 0.03 | 5.98 |

## APPENDIX XII: Findings Conclusions and Recommendations Summaries

Table A.33 : FCR from Hypotheses

| Hypotheses | Findings | Conclusions | Recommendations |
|---|---|---|---|
| Entrepreneurial performance is higher with increased levels of education | Those with secondary education rank among the higher performers in relation to those with primary education. Despite this those with no formal education rank as the highest ranking performers, which is something of an aberration. | The findings lend support to the evidence in the literature that level of general education is an important element of human capital (Calvo and Garcia, 2010) and that education level is a determinant of EP. | Increased emphasis upon assisting entrepreneurs to further develop their general levels of education through improved literacy and numeracy programmes incorporated into the entrepreneurial and technical trainings provided by extension and other support workers. Further investigation as to why those with no formal education are performing so well. |
| Entrepreneurial performance is higher the younger the entrepreneur operating the enterprise | Those under 45 rank overall as the higher performers, but issues of causality arise since a higher proportion of males in the sample are under 45 and age may be a characteristic rather than a determinant. Female entrepreneurs are older (50 years vs 46 years for males) a phenomenon of entrepreneurship worldwide. A high percentage of females are in the 45-54 age group, | The evidence that age is a determinant of EP is inconclusive in the case study. Nevertheless, with an average age of 48 years for those who entered the industry in 2004/5 there is a likelihood that younger entrepreneurs are not having an opportunity to participate | Take measures to encourage younger people to participate in dairy entrepreneurship, through schemes that target individuals in their 30s. |
| When industry type and provision of support services and inputs are controlled for, there is no difference in entrepreneurial performance between males and females | Male entrepreneurs consistently rank higher for EP measures relative to females, for un-weighted and weighted measures and excluding possible MCMs. Exceptions to this general finding are in caring for the heifer calf ‘pass-on’ and in frequency of use of acaricides, particularly important in preventing the animals succumbing to ECF. Despite the self-reported frequent use of acaricides, females still rank lower than males in survival of the enterprise. | Females are conscientious in caring for animals and risk averse in their frequency of use of acaricides, nevertheless there is under-performance in relation to males. Within the grouping of female entrepreneurs female-headed households (FHHs) under-perform relative to females with resident partners (FWRPs) | Further effort to support female entrepreneurs through improved credit facilitation to ensure optimal use of purchased inputs. Females need to be treated differently in support programmes – with differential support mechanisms provided to FHHs and FWRPs. Programmes to support greater risk-taking through loan guarantee schemes against unexpected negative impacts upon the enterprise, which impact upon the ability of the entrepreneur to repay outstanding loans, not just death of the principal animal. |

| Hypotheses | Findings | Conclusions | Recommendations |
|---|---|---|---|
| Entrepreneurial performance is higher for ventures operated together with a working partner | There is evidence that male entrepreneurs with a working partner exhibit higher performance than female entrepreneurs who also have a working partner, but no evidence among female entrepreneurs that the presence of a working partner makes a difference | Suggests that MHHs may be receiving more assistance from their partners than FWRPs and that FWRPs may be facing labour constraints and experiencing time poverty along with FHHs | More research is required into work-family conflict among female entrepreneurs to establish the significance and consider mitigation measures – possible that labour-intensive enterprise opportunities should not be promoted for females, particularly those without resident partners to support |
| Entrepreneurial performance is higher for entrepreneurs with fewer dependents | Those with more child dependents exhibit higher performance; those with a high number of adult dependents (4+) rank the lowest against the suite of performance measures, but results are inconclusive | Child dependents who are older are providing assistance with the enterprise where adult dependents are more likely to impose greater burden. | Requirement for tailored support to female entrepreneurs, and particularly those with high dependency burden, to alleviate their time and human capital resource constraints through support 'clusters' sharing and rationalising resources. |
| Entrepreneurial performance is higher for ventures operated by individuals with prior work experience | There is inconclusive evidence that those with prior work experience exhibit higher performance. While the overall performance rankings show no differences, the field ranking demonstrates a relationship between work experience and EP. | Support programmes and Heifer scheme activities do not need to target those individuals with prior work experience. | No recommendation |
| Entrepreneurial performance is higher for those entrepreneurs who have reduced their number of enterprises following the incorporation of the dairy enterprise | Those with the higher performance ranking have increased their range of enterprises in the enterprise mix, but this is 'reverse causality' in that increased diversity in the enterprise-mix appears to be a result and not a cause of better performance. The findings relating enterprise mix and EP are inconclusive given that the FPR and OPR measures indicate contrary findings. Other measures of risk mitigation indicate a relationship. | Those who achieve higher performance use their surplus income from the enterprise to diversify into other income earning ventures. This supports the finding of Kodithuwakku and Rosa (2002). Nevertheless some evidence that females are adopting of more risk averse strategy in purchasing inputs | Consideration to providing insurance for repayment or servicing of loans for animals and inputs and not only for replacement of the principal animal in the event of death, in the event that milk delivery was disrupted and there was interruption of cash flow from the the enterprise (such as an outbreak of mastitis in the animal). The loan payment protection scheme would be conditional upon proper purchase of medications and feeds for the animal. |

Table A.34 : FCR from Research Questions

| Research Questions | Findings | Conclusions | Recommendations |
|---|---|---|---|
| Q1. Are there gender differences in entrepreneurial performance even when considering entrepreneurs operating within the same industry and controlling for size of enterprise and provision of technical and business support? | The case study provides evidence that there are differences in entrepreneurial performance between male and female dairy entrepreneurs, with females underperforming relative to males and female headed households underperforming relative to females with resident partners | There exists a gender difference in entrepreneurial performance (EP) in the case study, which contrasts with the findings of Chirwa (2008) for non-agricultural female entrepreneurs. FHHs are underperforming in relation to FWRPs with some notable exceptions. | Female entrepreneurs require special tailored assistance to enable them to overcome both constraint-driven and preference-driven gaps (Bardasi *et al.,* 2011) if they are to fulfil their potential as dairy entrepreneurs within the context of Malawi. |
| Q2. If there are gender differences in entrepreneurial performance can these be explained by gender differences in attributes such as education, age and work experience? | EP is linked to general educational level for both males and females, except for those with no formal education. No clear relationship between age and performance, and the same for work experience and EP, except for the field ranking. | There is a relationship between education and EP for both females and males. Inconclusive relationship between both age and work experience and EP. Gender differences cannot be fully explained by the differences in these attributes. | Improvement in general educational levels through adult-education and life-long learning should be encouraged. |
| Q3. Are females relatively more risk averse? If so, do gender differences in level of risk aversion influence entrepreneurial performance? | Frequency of use and purchases of supplementary feeds and medications suggest that females are more risk averse and this partially explains differentials in EP. | Females are conscientious in caring for animals and risk averse in their frequency of use of acaricides, but may not be using sufficient inputs because of fear of debt exposure | Female entrepreneurs need to be provided with tailored support such as ‘payment protection’ insurance to guarantee repayments for purchased inputs taken on credit |
| Q4. Are female entrepreneurs constraint-driven or preference-driven or both? | Evidence that females face a labour constraint partially overcome by family assistance | Female entrepreneurs are both constraint-driven and preference-driven in the case study | Female entrepreneurs to cluster into ‘sub-groups’ for mutual support including shared labour. |
| Q5. Are findings concerning gender differentials in entrepreneurial performance affected by the choice of entrepreneurial performance measure(s)? | The choice of entrepreneurial performance measure(s) does influence findings e.g. field performance rating and overall performance rating in the case of the effect of work experience. | There is a close correlation between subjective assessment of technical experts entrepreneur by entrepreneur and performance rankings from the suite of measures using the performance framework | Always necessary to triangulate measures from a mixed methods suite of instruments which are specific to the enterprise context in order to ensure that reliable findings are determined. |

## APPENDIX XIII: The Research 'Onion' Proclivities

Table A.35 : Researcher Proclivities Based on Saunders *et al.,* (2009)

Redaction

Redaction

Table A.36 : Researcher Position in Relation to Saunders *et al*. (2009) Table 4.1 pg. 119

| | Positivism | Realism | Interpretivism | Pragmatism |
|---|---|---|---|---|
| Ontology: *researcher's view of the nature of reality* **Pragmatist primarily, yet undoubtedly with a positivist / postpositivist propensity** | External, objective and independent of social actors | Objective, exists independently of human thoughts and beliefs or knowledge of their existence (realist) but is interpreted through social conditioning (critical realist) | Socially constructed, subjective, may change, multiple | External, multiple, view chosen to best enable answering of the research question |
| Epistemology: *Researcher's view regarding what constitutes acceptable knowledge* **Pragmatist primarily, yet undoubtedly with a positivist propensity** | Only observable phenomena can provide credible data, facts. Focus on causality and law like generalisations, reducing phenomena to simplest elements | Observable phenomena provide credible data, facts. Insufficient data means inaccuracies in sensations (direct realism). Alternatively, phenomena created sensations which are open to misinterpretation (critical realism). | Subjective meanings and social phenomena. Focus upon the details of situation, a reality behind these details, subjective meanings motivate actions | Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data |
| Axiology: *researcher's view of the role of values in research* **Firmly Positivist** | Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance | Research is value laden; the researcher is biased by world views, cultural experiences and upbringing. These will impact the research. | Research is value bound, the researcher is part of what is being researched, cannot be separated and so will be subjective | Values play a large role in interpreting results, the research adopting both objective and subjective points of view |
| Data collection techniques most often used **Pragmatist/Realist positivist leanings** | Highly structured, large samples, measurement, quantitative, but can be qualitative | Methods chosen must fit the subject matter, quantitative and qualitative. | Small samples, in-depth investigations, qualitative | Mixed or multiple methods designs, quantitative and qualitative |

## APPENDIX XIV: Criteria of Soundness Questions and Responses

Table A.37 : Criteria of Soundess Responses Marshall and Rossman (2011) pp. 251-256

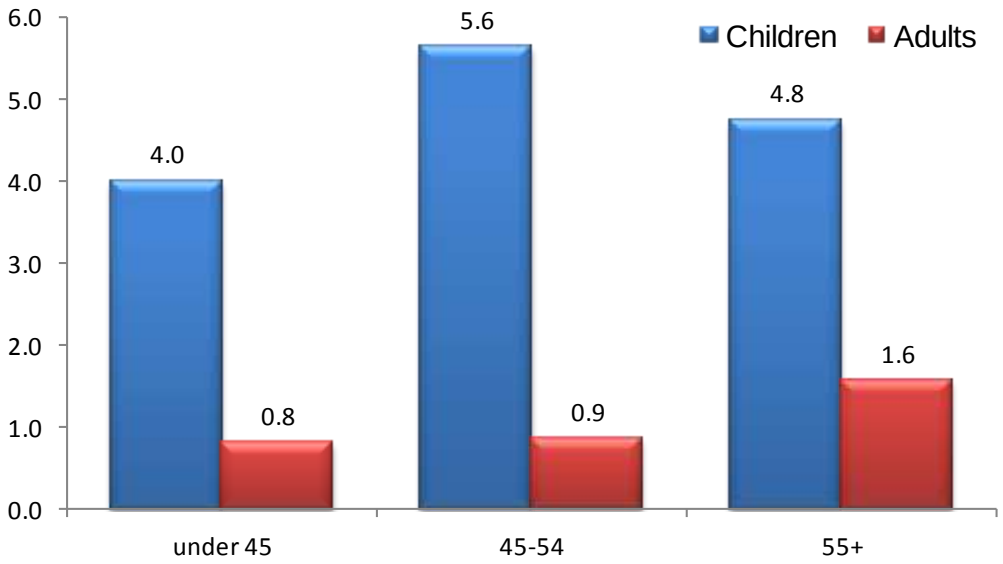
| # | Criterion: "The Researcher…" | Response |
|---|---|---|
| 1 | Explicates the design and methods so that the reader can judge whether they are adequate and make sense | The research design and research methods are described in detail with consideration of limitations and caveats |
| 2 | Includes a rationale for qualitative research generally and for the specific genre in which the study is situated | Mayoux and Chambers (2005); Sharp (2007); Block and Webb (2001) Section 3.4.1 |
| 3 | Discusses the anticipated methods for attaining entry and managing role, data collection, recording, analysis, ethics and exit | Sections 3.12, 3.20 and 3.15.6 |
| 4 | Describes how the site and the sample will be selected | Sections 3.13 and 3.14 |
| 5 | Makes the data collection and analysis procedures transparent | Section 3.4.1 |
| 6 | States clearly any assumptions that may affect the study | Major assumption that diversity in the enterprise mix was a marker of a risk mitigation strategy when this proved not to be the case and then the findings were triangulated with contemporary findings from the academic literature. |
| 7 | Engages in some preliminary self-reflection to uncover personal subjectivities | Makes mention of the researcher involvement prior to the study and pre-existing views on gender differentials. |
| 8 | Articulates how the researcher will be a finely tuned instrument whose personal talents, experiential biases, and insights will be used consciously | The researcher comes from an essentially positivist background but recognizes the inherent limitations of a purely quantitative study and the greatly enhanced insight from a mixed methods approach. |
| 9 | Will argue that he will take care to be self-analytical and will recognize when he is becoming overly subjective and not critical enough of his interpretations | With positivist leanings always cautious about the validity and reliability of findings and the need for objectively verifiable measures and data collection instruments – triangulation the principal means to guard against potential bias assessment. |
| 10 | Analyses the conceptual framework for theoretical biases | The conceptual framework has been developed from the critical literature review particularly for those authors in Africa and with close relationship to the case study, such as Chirwa, Peterman. |
| 11 | Articulates how he will reflexively engage with and discuss the value judgments and personal perspectives that are inherent in data collection and analysis | Consideration of enterprise mix and risk mitigation was a preconceived notion from a more deductive perspective, and the findings change that perspective. |

| # | Criterion: "The Researcher…" | Response |
|---|---|---|
| 12 | Exercise caution in distinguishing between descriptive field notes and judgmental ones | Use of independent technical assessors to counter this and use of more than one – took care not to engage in dialogue with the assessor concerning BCS or the subjective performance assessment until the end of the entire interview process so as not to contaminate the process |
| 13 | Writes about his tolerance for ambiguity, how he will search for alternative explanations, check out negative instances, and use a variety of methods to ensure that the findings are strong and grounded (with triangulation for example) | Extensive use of triangulation in the field research, with a mixed methods approach to obtain the findings, and prepared to change position and not attempt to make results fit the a priori reasoning. |
| 14 | Discuss methods used for ensuring data quality and ensuring against ethnocentric explanations by eliciting cross-cultural perspectives | Use of triangulation with objective measurement from MBG records and check of this against self-assessment by respondents. Gender-bias and cultural perspectives dealt with through soliciting a cross-section of viewpoints and not allowing one viewpoint to dominate particularly in the analysis of key informant discussions. |
| 15 | Describes preliminary observations, a pilot study, or first days in the field, demonstrating how the research questions have been generated from observation, not merely from library research | The semi-structured interview guide was taken to the field and there was an immediate realization that the desk design of the instrument had deficiencies. After an initial set of interviews the interview guide was adjusted, including deletion of one question and addition of the guideline performance management criteria. |
| 16 | Is careful about the sensitivity of those being researched | Carried chairs for use by the interviewer and the principal respondent to make them comfortable, respected their time through strictly controlled time management of interviews, made appointments with them so as to cause minimal disruption to their schedules and kept to the schedule as much as possible so as not to unduly interfere with their work commitments |
| 17 | Maintains ethical standards | Detailed in section 3.20 |
| 18 | Argues that people in the research setting will likely benefit in some way | Argument provided in section 5.8.4 |

## APPENDIX XV: Relationships between Determinants

| Id | Hypothesised relationship |
|---|---|
| A | Relationship between age and number of child and adult dependents |
| B | More dependents more enterprises (Block and Webb, 2001) |
| C | Those who have work experience are the more educated |
| D | Female entrepreneurs are less well educated |
| E | Female entrepreneurs are older |
| F | Assistance from a working partner enables more enterprises to be operated in the HH economy |
| G | Female entrepreneurs are more risk averse |
| H | Younger entrepreneurs are more educated |
| I | Older entrepreneurs have a greater range of enterprises (Block and Webb, 2001) |

### A Relationship between age and number of child and adult dependents



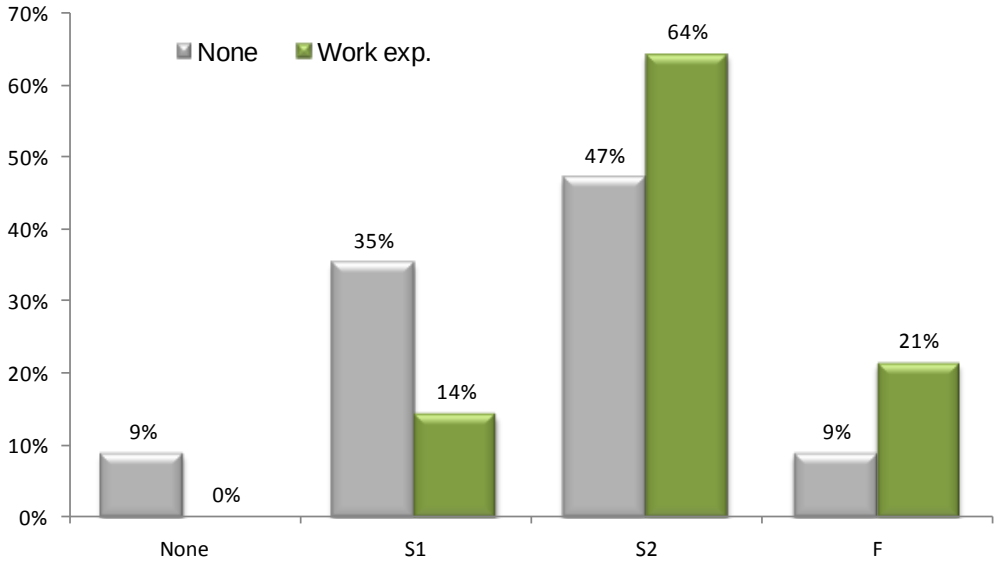

Suggests that number of adult dependents is increasing with age. The relationship between age and child dependents appears to increase and then decline for those 55 years and over which is expected, even with the extended family system prevailing.

## B More dependents more enterprises (Block and Webb, 2001)

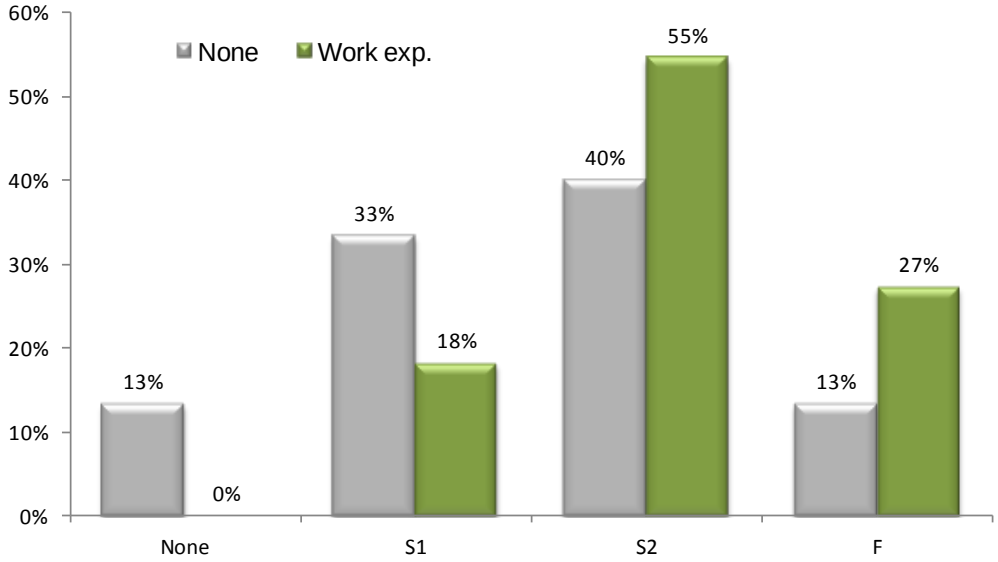
Redaction

## C Those who have work experience are the more educated

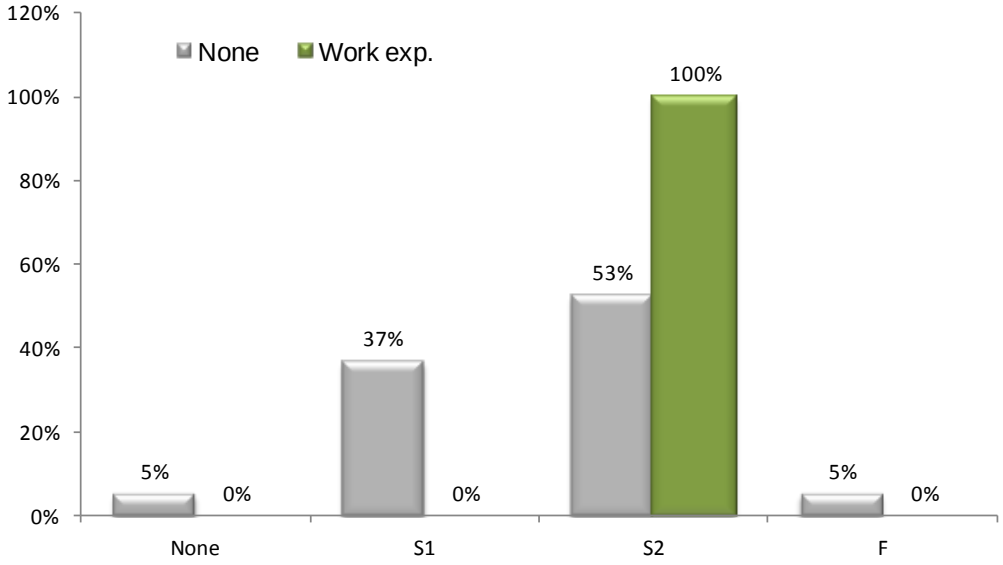
There is evidence that those with work experience are the more educated




Holds true for MHHs -those who have had work experience are the more educated

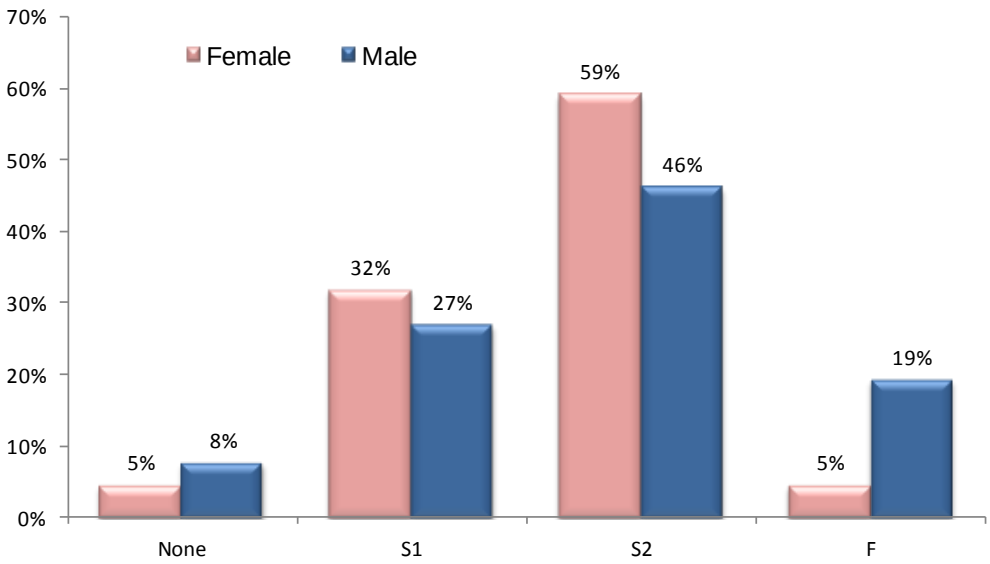



Holds true for females also - those with work experience are the more educated



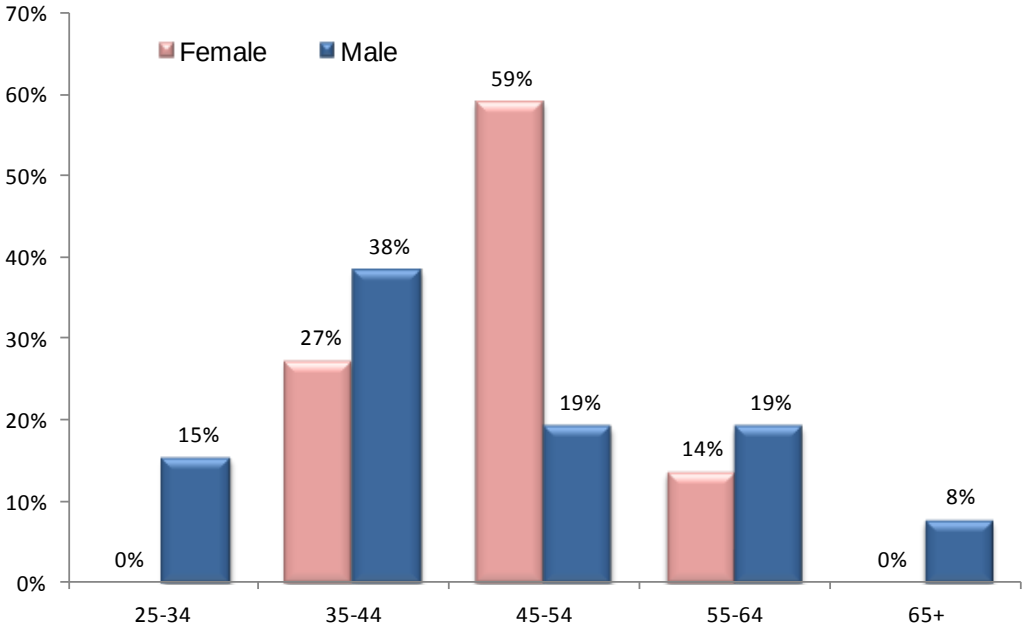
## D Female entrepreneurs are less well educated

Males in the case study are more educated than females with a higher percentage having some secondary education



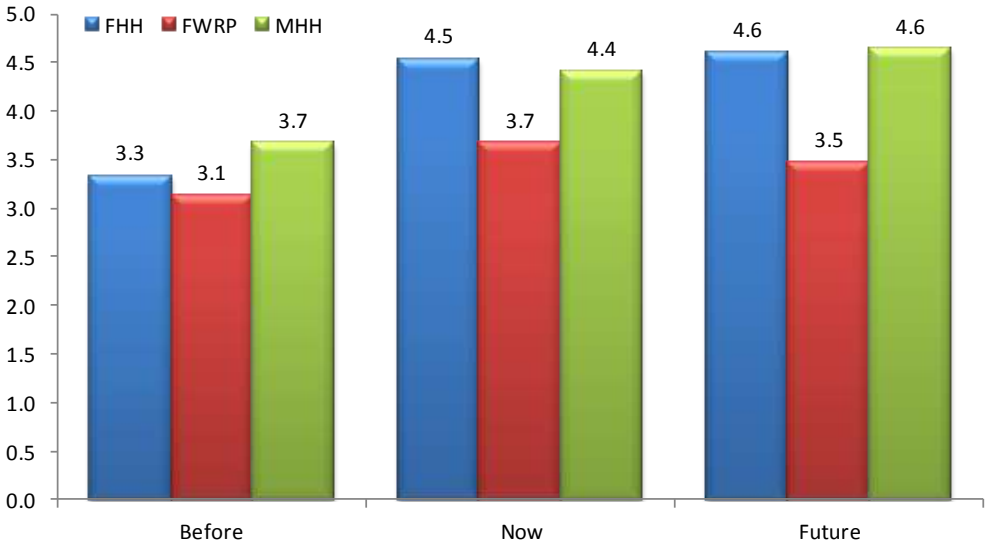

## E Female entrepreneurs are older

On balance female entrepreneurs are older - 73% of females are 45 years and older compared with 46% of males



## F Assistance from a working partner enables more enterprises to be operated in the HH economy

Does not hold true since FHHs are also increasing their range of enterprises whereas FWRPs are not

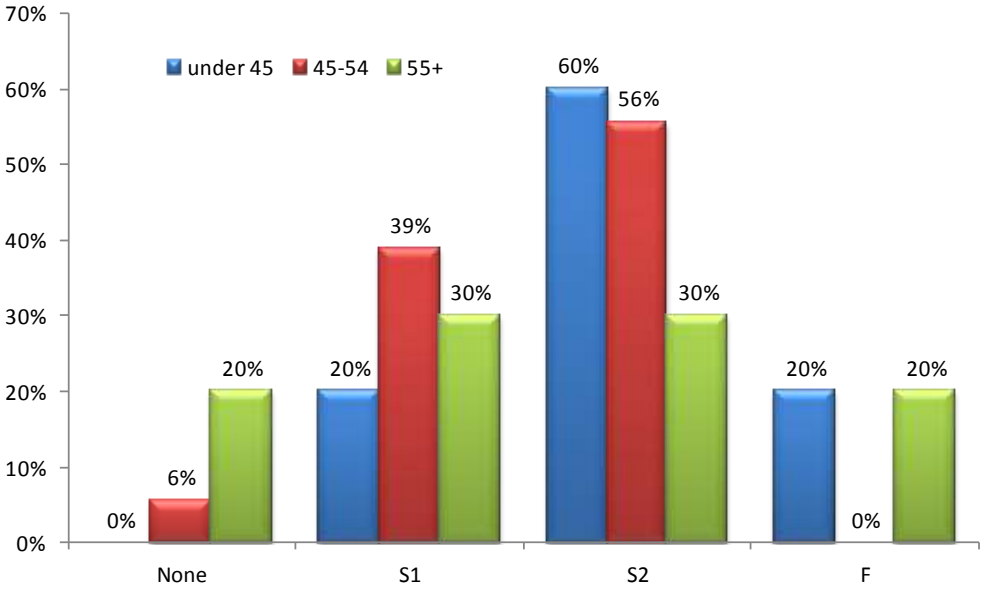



## G Female entrepreneurs are more risk averse

Proxies used are frequency and purchase of supplementary feeds, frequency of use of acaricides, frequency and use of medications, see section 4.30.

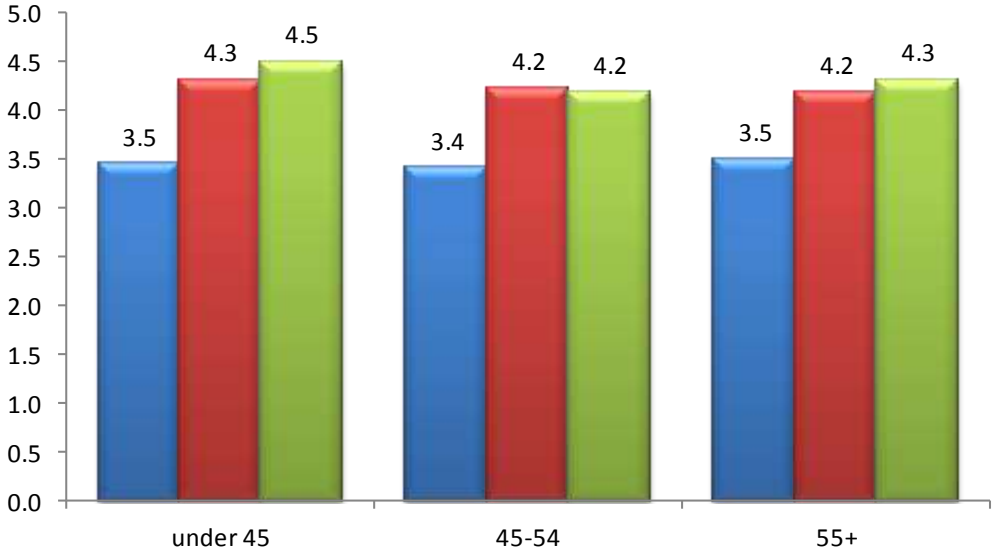
## H Younger entrepreneurs are more educated

No clear relationship between age and educational level – same result when filtering for male and females

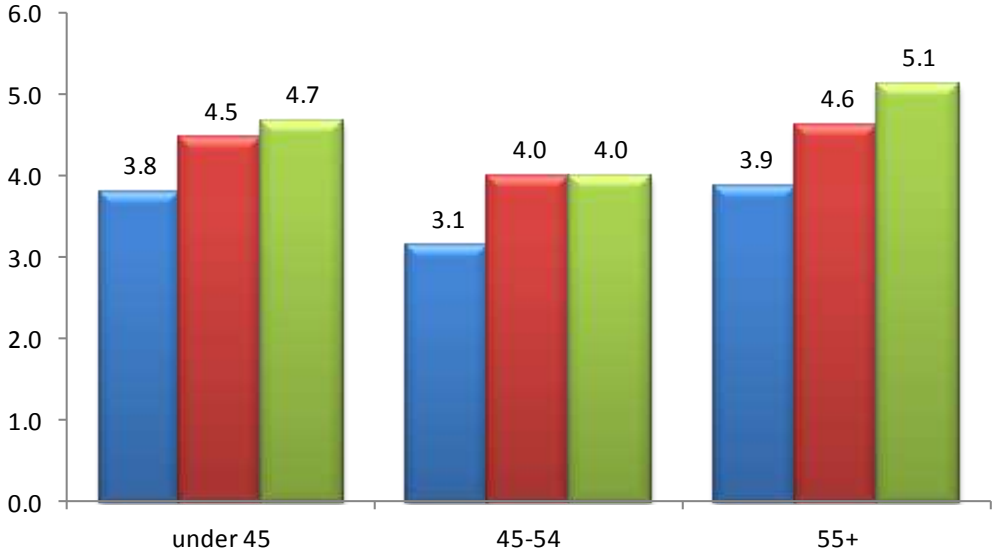


## I Older entrepreneurs have a greater range of enterprises (Block and Webb, 2001)

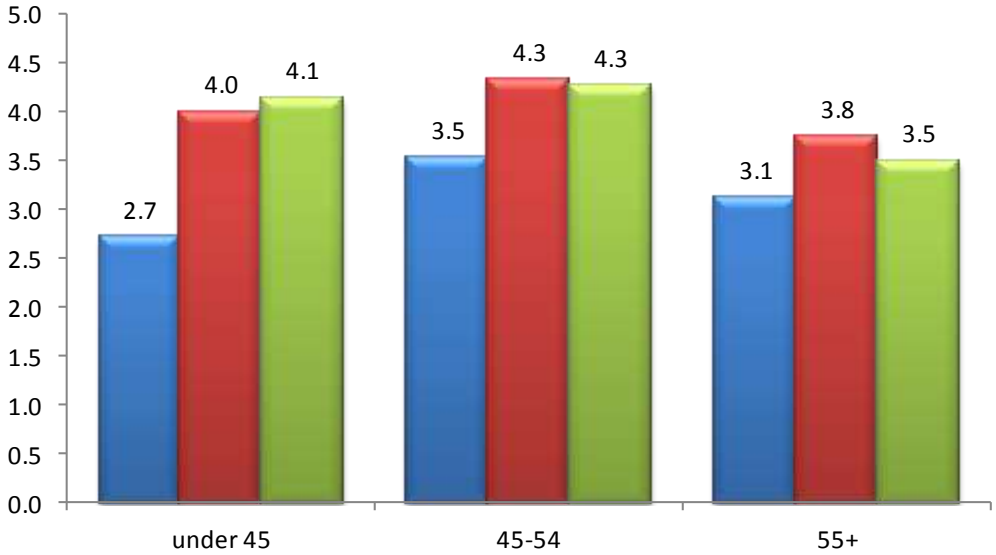
Suggestion here that younger entrepreneurs may be starting more enterprises but possibly differences are not significant



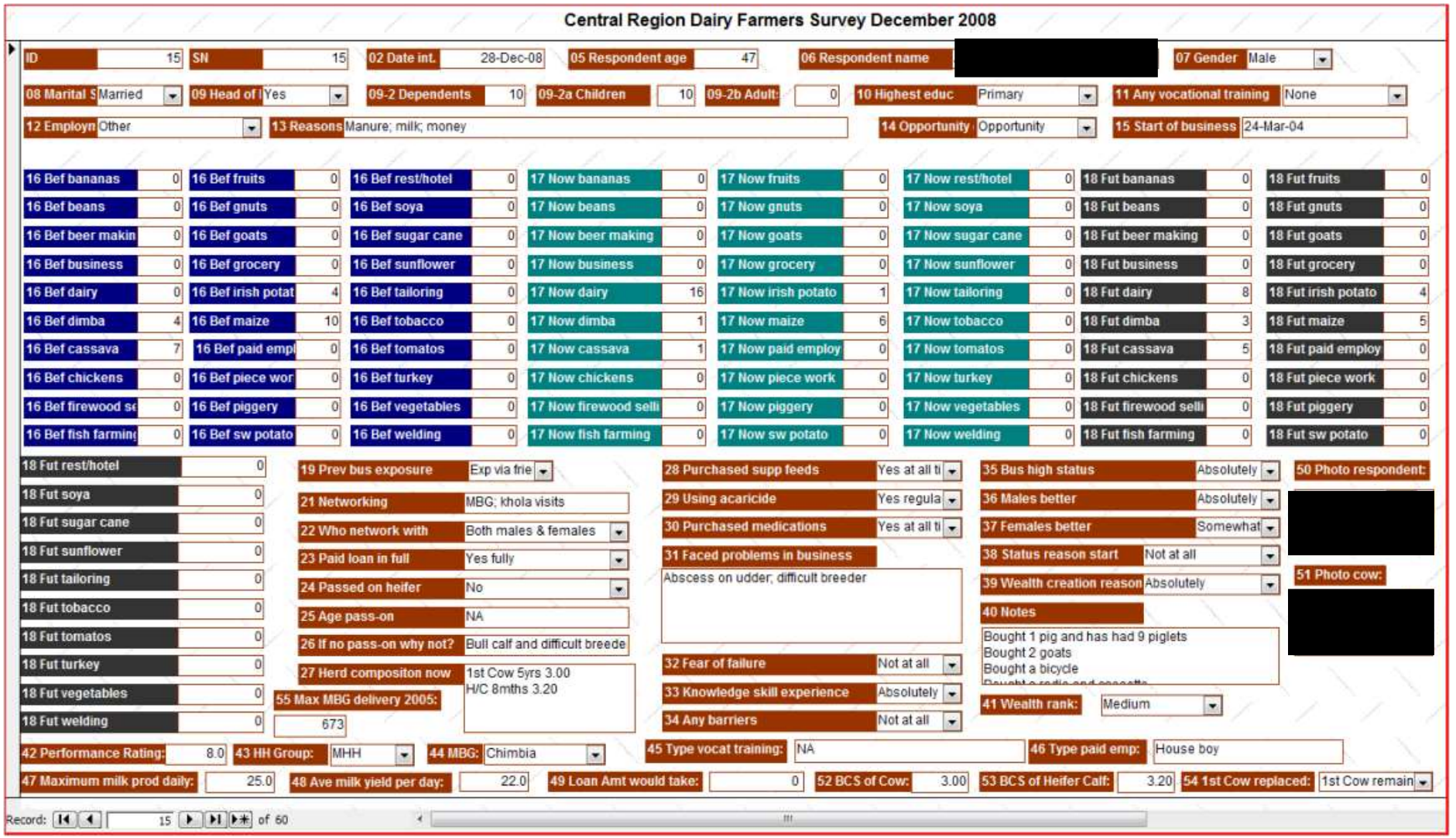

No conclusive relationship between age and number of enterprises for males only – some suggestion that older males diversifying




No clear relationship between age and number of enterprises for females only



## APPENDIX XVI: MSAccess Data File Format



# APPENDIX XVII: Statistical Tests of Significance for OPR and FRP

## EDUCATION LEVEL

**FPR Categories for Chi-Square Significance Testing**

Actual

| Educ.Level | low | med | high | All |
|---|---|---|---|---|
| None | 2 | 1 | 1 | 4 |
| Primary | 19 | 9 | 7 | 35 |
| Secondary | 0 | 4 | 2 | 6 |
| **All** | **21** | **14** | **10** | **45** |

Expected

| Educ.Level | low | med | high | All |
|---|---|---|---|---|
| None | 1.9 | 1.2 | 0.9 | 4 |
| Primary | 16.3 | 10.9 | 7.8 | 35 |
| Secondary | 2.8 | 1.9 | 1.3 | 6 |
| **All** | **21** | **14** | **10** | **45** |

p = 0.166

**With Sample Multiplier**

| Educ.Level | low | med | high | All |
|---|---|---|---|---|
| None | 4 | 2 | 2 | 8 |
| Primary | 38 | 18 | 14 | 70 |
| Secondary | 0 | 8 | 4 | 12 |
| **All** | **42** | **28** | **20** | **90** |

Expected- Chimbia only

| Educ.Level | low | med | high | All |
|---|---|---|---|---|
| None | 3.7 | 2.5 | 1.8 | 8 |
| Primary | 32.7 | 21.8 | 15.6 | 70 |
| Secondary | 5.6 | 3.7 | 2.7 | 12 |
| **All** | **42** | **28** | **20** | **90** |

Sample multiplier 2.0 0.011

**OPR Categories for Chi-Square Significance Testing**

Actual

| Educ.Level | low | med | high | All |
|---|---|---|---|---|
| None | 0 | 2 | 2 | 4 |
| Primary | 11 | 17 | 7 | 35 |
| Secondary | 0 | 5 | 1 | 6 |
| **All** | **11** | **24** | **10** | **45** |

Expected

| Educ.Level | low | med | high | All |
|---|---|---|---|---|
| None | 1.0 | 2.1 | 0.9 | 4.0 |
| Primary | 8.6 | 18.7 | 7.8 | 35.0 |
| Secondary | 1.5 | 3.2 | 1.3 | 6.0 |
| **All** | **11** | **24** | **10** | **45** |

p = 0.210

**With Sample Multiplier**

| Educ.Level | low | med | high | All |
|---|---|---|---|---|
| None | 0 | 4 | 4 | 8 |
| Primary | 22 | 34 | 14 | 70 |
| Secondary | 0 | 10 | 2 | 12 |
| **All** | **22** | **48** | **20** | **90** |

Expected- Chimbia only

| Educ.Level | low | med | high | All |
|---|---|---|---|---|
| None | 2.0 | 4.3 | 1.8 | 8 |
| Primary | 17.1 | 37.3 | 15.6 | 70 |
| Secondary | 2.9 | 6.4 | 2.7 | 12 |
| **All** | **22** | **48** | **20** | **90** |

Sample multiplier 2.0 0.020

**AGE CATEGORY**

**FPR Categories for Chi-Square Significance Testing**

Actual

| Age Categ. | low | med | high | All |
|---|---|---|---|---|
| under 45 | 5 | 9 | 8 | 22 |
| 45-54 | 14 | 4 | 4 | 22 |
| 55+ | 6 | 5 | 5 | 16 |
| **All** | **25** | **18** | **17** | **60** |

Expected

| Age Categ. | low | med | high | All |
|---|---|---|---|---|
| under 45 | 9.2 | 6.6 | 6.2 | 22 |
| 45-54 | 9.2 | 6.6 | 6.2 | 22 |
| 55+ | 6.7 | 4.8 | 4.5 | 16 |
| **All** | **25** | **18** | **17** | **60** |

p = 0.101

**With Sample Multiplier**

| Age Categ. | low | med | high | All |
|---|---|---|---|---|
| under 45 | 10 | 18 | 16 | 44 |
| 45-54 | 28 | 8 | 8 | 44 |
| 55+ | 12 | 10 | 10 | 32 |
| **All** | **50** | **36** | **34** | **120** |

Expected- Chimbia only

| Age Categ. | low | med | high | All |
|---|---|---|---|---|
| under 45 | 18.3 | 13.2 | 12.5 | 44 |
| 45-54 | 18.3 | 13.2 | 12.5 | 44 |
| 55+ | 13.3 | 9.6 | 9.1 | 32 |
| **All** | **50** | **36** | **34** | **120** |

Sample multiplier 2.0 0.004

**OPR Categories for Chi-Square Significance Testing**

Actual

| Age Categ. | low | med | high | All |
|---|---|---|---|---|
| under 45 | 8 | 9 | 5 | 22 |
| 45-54 | 6 | 14 | 2 | 22 |
| 55+ | 5 | 8 | 3 | 16 |
| **All** | **19** | **31** | **10** | **60** |

Expected

| Age Categ. | low | med | high | All |
|---|---|---|---|---|
| under 45 | 7.0 | 11.4 | 3.7 | 22.0 |
| 45-54 | 7.0 | 11.4 | 3.7 | 22.0 |
| 55+ | 5.1 | 8.3 | 2.7 | 16.0 |
| **All** | **19** | **31** | **10** | **60** |

p = 0.612

**With Sample Multiplier**

| Age Categ. | low | med | high | All |
|---|---|---|---|---|
| under 45 | 16 | 18 | 10 | 44 |
| 45-54 | 12 | 28 | 4 | 44 |
| 55+ | 10 | 16 | 6 | 32 |
| **All** | **38** | **62** | **20** | **120** |

Expected- Chimbia only

| Age Categ. | low | med | high | All |
|---|---|---|---|---|
| under 45 | 13.9 | 22.7 | 7.3 | 44 |
| 45-54 | 13.9 | 22.7 | 7.3 | 44 |
| 55+ | 10.1 | 16.5 | 5.3 | 32 |
| **All** | **38** | **62** | **20** | **120** |

Sample multiplier 2.0 0.252

**GENDER**

**FPR Categories for Chi-Square Significance Testing**

Actual

| Gender | low | med | high | All |
|---|---|---|---|---|
| Female | 17 | 9 | 4 | 30 |
| Male | 8 | 9 | 13 | 30 |
| **All** | **25** | **18** | **17** | **60** |

Expected

| Gender | low | med | high | All |
|---|---|---|---|---|
| Female | 12.5 | 9.0 | 8.5 | 30 |
| Male | 12.5 | 9.0 | 8.5 | 30 |
| **All** | **25** | **18** | **17** | **60** |

p = 0.018

**With Sample Multiplier**

| Gender | low | med | high | All |
|---|---|---|---|---|
| Female | 34 | 18 | 8 | 60 |
| Male | 16 | 18 | 26 | 60 |
| **All** | **50** | **36** | **34** | **120** |

Expected- Chimbia only

| Gender | low | med | high | All |
|---|---|---|---|---|
| Female | 25.0 | 18.0 | 17.0 | 60 |
| Male | 25.0 | 18.0 | 17.0 | 60 |
| **All** | **50** | **36** | **34** | **120** |

Sample multiplier 2.0 0.000

**OPR Categories for Chi-Square Significance Testing**

Actual

| Gender | low | med | high | All |
|---|---|---|---|---|
| Female | 13 | 14 | 3 | 30 |
| Male | 6 | 17 | 7 | 30 |
| **All** | **19** | **31** | **10** | **60** |

Expected

| Gender | low | med | high | All |
|---|---|---|---|---|
| Female | 9.5 | 15.5 | 5.0 | 30.0 |
| Male | 9.5 | 15.5 | 5.0 | 30.0 |
| **All** | **19** | **31** | **10** | **60** |

p = 0.107

**With Sample Multiplier**

| Gender | low | med | high | All |
|---|---|---|---|---|
| Female | 26 | 28 | 6 | 60 |
| Male | 12 | 34 | 14 | 60 |
| **All** | **38** | **62** | **20** | **120** |

Expected- Chimbia only

| Gender | low | med | high | All |
|---|---|---|---|---|
| Female | 19.0 | 31.0 | 10.0 | 60 |
| Male | 19.0 | 31.0 | 10.0 | 60 |
| **All** | **38** | **62** | **20** | **120** |

Sample multiplier 2.0 0.011

**HHH**

**FPR Categories for Chi-Square Significance Testing**

Actual

| HHH | low | med | high | All |
|---|---|---|---|---|
| FHH | 11 | 1 | 3 | 15 |
| FWRP | 6 | 8 | 1 | 15 |
| MHH | 8 | 9 | 13 | 30 |
| **All** | **25** | **18** | **17** | **60** |

Expected

| HHH | low | med | high | All |
|---|---|---|---|---|
| FHH | 6.3 | 4.5 | 4.3 | 15 |
| FWRP | 6.3 | 4.5 | 4.3 | 15 |
| MHH | 12.5 | 9.0 | 8.5 | 30 |
| **All** | **25** | **18** | **17** | **60** |

p = 0.003

**With Sample Multiplier**

| HHH | low | med | high | All |
|---|---|---|---|---|
| FHH | 22 | 2 | 6 | 30 |
| FWRP | 12 | 16 | 2 | 30 |
| MHH | 16 | 18 | 26 | 60 |
| **All** | **50** | **36** | **34** | **120** |

Expected- Chimbia only

| HHH | low | med | high | All |
|---|---|---|---|---|
| FHH | 12.5 | 9.0 | 8.5 | 30 |
| FWRP | 12.5 | 9.0 | 8.5 | 30 |
| MHH | 25.0 | 18.0 | 17.0 | 60 |
| **All** | **50** | **36** | **34** | **120** |

Sample multiplier 2.0 0.000

**OPR Categories for Chi-Square Significance Testing**

Actual

| HHH | low | med | high | All |
|---|---|---|---|---|
| FHH | 7 | 6 | 2 | 15 |
| FWRP | 6 | 8 | 1 | 15 |
| MHH | 6 | 17 | 7 | 30 |
| **All** | **19** | **31** | **10** | **60** |

Expected

| HHH | low | med | high | All |
|---|---|---|---|---|
| FHH | 4.8 | 7.8 | 2.5 | 15.0 |
| FWRP | 4.8 | 7.8 | 2.5 | 15.0 |
| MHH | 9.5 | 15.5 | 5.0 | 30.0 |
| **All** | **19** | **31** | **10** | **60** |

p = 0.284

**With Sample Multiplier**

| HHH | low | med | high | All |
|---|---|---|---|---|
| FHH | 14 | 12 | 4 | 30 |
| FWRP | 12 | 16 | 2 | 30 |
| MHH | 12 | 34 | 14 | 60 |
| **All** | **38** | **62** | **20** | **120** |

Expected- Chimbia only

| HHH | low | med | high | All |
|---|---|---|---|---|
| FHH | 9.5 | 15.5 | 5.0 | 30 |
| FWRP | 9.5 | 15.5 | 5.0 | 30 |
| MHH | 19.0 | 31.0 | 10.0 | 60 |
| **All** | **38** | **62** | **20** | **120** |

Sample multiplier 2.0 0.039

**PRESENCE OF A WORKING PARTNER**

**FPR Categories for Chi-Square Significance Testing**

Actual

| W.Partner | low | med | high | All |
|---|---|---|---|---|
| No | 11 | 1 | 3 | 15 |
| Yes | 14 | 17 | 14 | 45 |
| **All** | **25** | **18** | **17** | **60** |

Expected

| W.Partner | low | med | high | All |
|---|---|---|---|---|
| No | 6.3 | 4.5 | 4.3 | 15 |
| Yes | 18.8 | 13.5 | 12.8 | 45 |
| **All** | **25** | **18** | **17** | **60** |

p = 0.011

**With Sample Multiplier**

| W.Partner | low | med | high | All |
|---|---|---|---|---|
| No | 22 | 2 | 6 | 30 |
| Yes | 28 | 34 | 28 | 90 |
| **All** | **50** | **36** | **34** | **120** |

Expected- Chimbia only

| W.Partner | low | med | high | All |
|---|---|---|---|---|
| No | 12.5 | 9.0 | 8.5 | 30 |
| Yes | 37.5 | 27.0 | 25.5 | 90 |
| **All** | **50** | **36** | **34** | **120** |

Sample multiplier 2.0 0.000

**OPR Categories for Chi-Square Significance Testing**

Actual

| W.Partner | low | med | high | All |
|---|---|---|---|---|
| No | 7 | 6 | 2 | 15 |
| Yes | 12 | 25 | 8 | 45 |
| **All** | **19** | **31** | **10** | **60** |

Expected

| W.Partner | low | med | high | All |
|---|---|---|---|---|
| No | 4.8 | 7.8 | 2.5 | 15.0 |
| Yes | 14.3 | 23.3 | 7.5 | 45.0 |
| **All** | **19** | **31** | **10** | **60** |

p = 0.353

**With Sample Multiplier**

| W.Partner | low | med | high | All |
|---|---|---|---|---|
| No | 14 | 12 | 4 | 30 |
| Yes | 24 | 50 | 16 | 90 |
| **All** | **38** | **62** | **20** | **120** |

Expected- Chimbia only

| W.Partner | low | med | high | All |
|---|---|---|---|---|
| No | 9.5 | 15.5 | 5.0 | 30 |
| Yes | 28.5 | 46.5 | 15.0 | 90 |
| **All** | **38** | **62** | **20** | **120** |

Sample multiplier 2.0 0.125

**TOTAL DEPENDENTS CATEGORY**

**FPR Categories for Chi-Square Significance Testing**

Actual

| T.Dep.Cat. | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 5 | 6 | 1 | 12 |
| 4-6 | 6 | 5 | 8 | 19 |
| 7+ | 14 | 7 | 8 | 29 |
| **All** | **25** | **18** | **17** | **60** |

Expected

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 5.0 | 3.6 | 3.4 | 12 |
| 4-6 | 7.9 | 5.7 | 5.4 | 19 |
| 7+ | 12.1 | 8.7 | 8.2 | 29 |
| **All** | **25** | **18** | **17** | **60** |

p = 0.218

**With Sample Multiplier**

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 10 | 12 | 2 | 24 |
| 4-6 | 12 | 10 | 16 | 38 |
| 7+ | 28 | 14 | 16 | 58 |
| **All** | **50** | **36** | **34** | **120** |

Expected- Chimbia only

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 10.0 | 7.2 | 6.8 | 24 |
| 4-6 | 15.8 | 11.4 | 10.8 | 38 |
| 7+ | 24.2 | 17.4 | 16.4 | 58 |
| **All** | **50** | **36** | **34** | **120** |

Sample multiplier 2.0 0.021

**OPR Categories for Chi-Square Significance Testing**

Actual

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 5 | 6 | 1 | 12 |
| 4-6 | 5 | 11 | 3 | 19 |
| 7+ | 9 | 14 | 6 | 29 |
| **All** | **19** | **31** | **10** | **60** |

Expected

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 3.8 | 6.2 | 2.0 | 12.0 |
| 4-6 | 6.0 | 9.8 | 3.2 | 19.0 |
| 7+ | 9.2 | 15.0 | 4.8 | 29.0 |
| **All** | **19** | **31** | **10** | **60** |

p = 0.816

**With Sample Multiplier**

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 10 | 12 | 2 | 24 |
| 4-6 | 10 | 22 | 6 | 38 |
| 7+ | 18 | 28 | 12 | 58 |
| **All** | **38** | **62** | **20** | **120** |

Expected- Chimbia only

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 7.6 | 12.4 | 4.0 | 24 |
| 4-6 | 12.0 | 19.6 | 6.3 | 38 |
| 7+ | 18.4 | 30.0 | 9.7 | 58 |
| **All** | **38** | **62** | **20** | **120** |

Sample multiplier 2.0 0.538

**CHILD DEPENDENTS CATEGORY**

**FPR Categories for Chi-Square Significance Testing**

Actual

| Ch.Dep.Cat | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 7 | 9 | 4 | 20 |
| 4-6 | 9 | 4 | 7 | 20 |
| 7+ | 9 | 5 | 6 | 20 |
| **All** | **25** | **18** | **17** | **60** |

Expected

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 8.3 | 6.0 | 5.7 | 20 |
| 4-6 | 8.3 | 6.0 | 5.7 | 20 |
| 7+ | 8.3 | 6.0 | 5.7 | 20 |
| **All** | **25** | **18** | **17** | **60** |

p = 0.481

**With Sample Multiplier**

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 14 | 18 | 8 | 40 |
| 4-6 | 18 | 8 | 14 | 40 |
| 7+ | 18 | 10 | 12 | 40 |
| **All** | **50** | **36** | **34** | **120** |

Expected- Chimbia only

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 16.7 | 12.0 | 11.3 | 40 |
| 4-6 | 16.7 | 12.0 | 11.3 | 40 |
| 7+ | 16.7 | 12.0 | 11.3 | 40 |
| **All** | **50** | **36** | **34** | **120** |

Sample multiplier 2.0 0.138

**OPR Categories for Chi-Square Significance Testing**

Actual

| Ch.Dep.Cat | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 8 | 10 | 2 | 20 |
| 4-6 | 6 | 10 | 4 | 20 |
| 7+ | 5 | 11 | 4 | 20 |
| **All** | **19** | **31** | **10** | **60** |

Expected

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 6.3 | 10.3 | 3.3 | 20.0 |
| 4-6 | 6.3 | 10.3 | 3.3 | 20.0 |
| 7+ | 6.3 | 10.3 | 3.3 | 20.0 |
| **All** | **19** | **31** | **10** | **60** |

p = 0.809

**With Sample Multiplier**

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 16 | 20 | 4 | 40 |
| 4-6 | 12 | 20 | 8 | 40 |
| 7+ | 10 | 22 | 8 | 40 |
| **All** | **38** | **62** | **20** | **120** |

Expected- Chimbia only

| HHH | low | med | high | All |
|---|---|---|---|---|
| 3 or less | 12.7 | 20.7 | 6.7 | 40 |
| 4-6 | 12.7 | 20.7 | 6.7 | 40 |
| 7+ | 12.7 | 20.7 | 6.7 | 40 |
| **All** | **38** | **62** | **20** | **120** |

Sample multiplier 2.0 0.524

**ADULT DEPENDENTS CATEGORY**

**FPR Categories for Chi-Square Significance Testing**

Actual

| Ad.Dep.Cat | low | med | high | All |
|---|---|---|---|---|
| 0 | 16 | 11 | 11 | 38 |
| 1-3 | 6 | 5 | 6 | 17 |
| 4+ | 3 | 2 | 0 | 5 |
| **All** | **25** | **18** | **17** | **60** |

Expected

| HHH | low | med | high | All |
|---|---|---|---|---|
| 0 | 15.8 | 11.4 | 10.8 | 38 |
| 1-3 | 7.1 | 5.1 | 4.8 | 17 |
| 4+ | 2.1 | 1.5 | 1.4 | 5 |
| **All** | **25** | **18** | **17** | **60** |

p = 0.651

**With Sample Multiplier**

| HHH | low | med | high | All |
|---|---|---|---|---|
| 0 | 32 | 22 | 22 | 76 |
| 1-3 | 12 | 10 | 12 | 34 |
| 4+ | 6 | 4 | 0 | 10 |
| **All** | **50** | **36** | **34** | **120** |

Expected- Chimbia only

| HHH | low | med | high | All |
|---|---|---|---|---|
| 0 | 31.7 | 22.8 | 21.5 | 76 |
| 1-3 | 14.2 | 10.2 | 9.6 | 34 |
| 4+ | 4.2 | 3.0 | 2.8 | 10 |
| **All** | **50** | **36** | **34** | **120** |

Sample multiplier 2.0 0.294

**OPR Categories for Chi-Square Significance Testing**

Actual

| Ad.Dep.Cat | low | med | high | All |
|---|---|---|---|---|
| 0 | 10 | 20 | 8 | 38 |
| 1-3 | 6 | 10 | 1 | 17 |
| 4+ | 3 | 1 | 1 | 5 |
| **All** | **19** | **31** | **10** | **60** |

Expected

| HHH | low | med | high | All |
|---|---|---|---|---|
| 0 | 12.0 | 19.6 | 6.3 | 38.0 |
| 1-3 | 5.4 | 8.8 | 2.8 | 17.0 |
| 4+ | 1.6 | 2.6 | 0.8 | 5.0 |
| **All** | **19** | **31** | **10** | **60** |

p = 0.344

**With Sample Multiplier**

| HHH | low | med | high | All |
|---|---|---|---|---|
| 0 | 20 | 40 | 16 | 76 |
| 1-3 | 12 | 20 | 2 | 34 |
| 4+ | 6 | 2 | 2 | 10 |
| **All** | **38** | **62** | **20** | **120** |

Expected- Chimbia only

| HHH | low | med | high | All |
|---|---|---|---|---|
| 0 | 24.1 | 39.3 | 12.7 | 76 |
| 1-3 | 10.8 | 17.6 | 5.7 | 34 |
| 4+ | 3.2 | 5.2 | 1.7 | 10 |
| **All** | **38** | **62** | **20** | **120** |

Sample multiplier 2.0 0.062

**WORK EXPERIENCE**

**FPR Categories for Chi-Square Significance Testing**

Actual

| Work Exp. | low | med | high | All |
|---|---|---|---|---|
| No | 21 | 10 | 11 | 42 |
| Yes | 4 | 8 | 6 | 18 |
| **All** | **25** | **18** | **17** | **60** |

Expected

| Work Exp. | low | med | high | All |
|---|---|---|---|---|
| No | 17.5 | 12.6 | 11.9 | 42 |
| Yes | 7.5 | 5.4 | 5.1 | 18 |
| **All** | **25** | **18** | **17** | **60** |

p = 0.114

**With Sample Multiplier**

| Work Exp. | low | med | high | All |
|---|---|---|---|---|
| No | 42 | 20 | 22 | 84 |
| Yes | 8 | 16 | 12 | 36 |
| **All** | **50** | **36** | **34** | **120** |

Expected- Chimbia only

| Work Exp. | low | med | high | All |
|---|---|---|---|---|
| No | 35.0 | 25.2 | 23.8 | 84 |
| Yes | 15.0 | 10.8 | 10.2 | 36 |
| **All** | **50** | **36** | **34** | **120** |

Sample multiplier 2.0 0.013

**OPR Categories for Chi-Square Significance Testing**

Actual

| Work Exp. | low | med | high | All |
|---|---|---|---|---|
| No | 14 | 20 | 8 | 42 |
| Yes | 5 | 11 | 2 | 18 |
| **All** | **19** | **31** | **10** | **60** |

Expected

| Work Exp. | low | med | high | All |
|---|---|---|---|---|
| No | 13.3 | 21.7 | 7.0 | 42.0 |
| Yes | 5.7 | 9.3 | 3.0 | 18.0 |
| **All** | **19** | **31** | **10** | **60** |

p = 0.594

**With Sample Multiplier**

| Work Exp. | low | med | high | All |
|---|---|---|---|---|
| No | 28 | 40 | 16 | 84 |
| Yes | 10 | 22 | 4 | 36 |
| **All** | **38** | **62** | **20** | **120** |

Expected- Chimbia only

| Work Exp. | low | med | high | All |
|---|---|---|---|---|
| No | 26.6 | 43.4 | 14.0 | 84 |
| Yes | 11.4 | 18.6 | 6.0 | 36 |
| **All** | **38** | **62** | **20** | **120** |

Sample multiplier 2.0 0.352

## Performance Rating Chi-Square P values for Actual Sample = n with sensitivity analysis for n*2

| Research Hypotheses | Disaggregation | FPR n | FPR n*2 | FPR n[1] | FPR n*2[1] | OPR n | OPR n*2 | OPR n[1] | OPR n*2[1] |
|---|---|---|---|---|---|---|---|---|---|
| Entrepreneurial performance is higher with increased levels of education | | 0.166 | 0.011 | | ** | 0.210 | 0.020 | | ** |
| Entrepreneurial performance is higher the younger the entrepreneur operating the enterprise | | 0.101 | 0.004 | * | ** | 0.612 | 0.252 | | |
| When industry type and provision of support services and inputs are controlled for, there is no difference in entrepreneurial performance between males and females | Females vs Males | 0.018 | 0.000 | ** | ** | 0.107 | 0.011 | | ** |
| | Household Headship | 0.003 | 0.000 | ** | ** | 0.284 | 0.039 | | ** |
| Entrepreneurial performance is higher for ventures operated together with a working partner | | 0.011 | 0.000 | ** | ** | 0.353 | 0.125 | | |
| Entrepreneurial performance is higher for entrepreneurs with fewer dependents | Total dependents | 0.218 | 0.021 | | ** | 0.816 | 0.538 | | |
| | Child dependents | 0.481 | 0.138 | | | 0.809 | 0.524 | | |
| | Adult dependents | 0.651 | 0.294 | | | 0.344 | 0.062 | | * |
| Entrepreneurial performance is higher for ventures operated by individuals with prior work experience | | 0.114 | 0.013 | | ** | 0.594 | 0.352 | | |

[1] * p <=0.10 p <= 0.05

## APPENDIX XVIII: Examiners' Guidance and Candidate Response

**PhD Thesis Guidance from the Viva of 28th September 2011 – Roy H Thompson**
**Response to Examiners' Comments in Revising the Thesis document as of 9th July 2012**

| Examiners' Guidance | Candidate Response |
|---|---|
| We are confident that you have the primary data necessary to build a coherent PhD. | Reviewed viva panel comments in-depth and have rewritten substantial sections of the thesis, placing greater reliance on the analysis of the primary data and relegated analysis of secondary data to become an adjunct to the literature review rather than a method of external triangulation of the primary research findings. Revisited and significantly expanded qualitative work from focus group discussions and key informant interviews. As a result the thesis now has markedly improved coherence as a document, appropriate to PhD standard. |
| We recommend that you develop a model for your thesis outlining the processes and stages you intend to follow for the thesis and include this in your introductory chapter. | A new model for the thesis has been constructed and is now incorporated as a significant item within Chapter One. The revised, five chapter structure, includes an overview (Chapter One) outlining the processes and stages and this has been consistently followed in the literature reivew, methodology, data analysis and conclusions and recommendations chapters. |
| Undertake a significant new critical literature review in order for you to understand how your thesis could contribute to knowledge. | A significant new critical literature review has been undertaken, emphasising current (including 2012) researchers and with a developing country focus, Africa if possible and Malawi where available. The conceptual model has been revised with regard to latest developments noted in the literature. |
| We believe the GEM study has become a distraction and recommend that you carefully review how to use it; perhaps as part of the literature review. It does not fit as part of the triangulation process for the research. | Removed the previously existing Chapter Five and minimsed the use of GEM elsewhere. Incorporated only those pieces which represent my own interpretation of the secondary data provided by the GEM datasets with a focus on lesser developed countries, in the remodelled Chapter Two Literature Review. The GEM datasets are no longer used as a focal part of the triangulation process. |
| We recommend you view gender as just one of a series of variables in terms of dependent, independent and isolate those relevant to the aims and objectives that you develop from your literature review. | Have now articulated hypotheses in relation to the various determinants of entrepreneurial performance as identified from the updated literature review, with gender treated as one of the determinants in the literature review and the analysis of findings. Have replicated the summary findings of the original pg 168 (performance measures matrix of rankings) for all determinants, and additionally have created an overall performance rating (OPR) which is compared with the intial field performance rating (FPR) made during the fieldwork. |
| Provide a summary for your contribution to knowledge. | Following reflection upon the updated research outcomes a review of contribution to knowledge was undertaken. This revised and expanded version is now included in the new Chapter Five. |
| Provide validity for your 'circles and stones/ bottle tops' data gathering tool. | Revisited the participatory research and have reflected upon what appear to be seminal papers, which are now incorporated as justification within the methodology chapter. Provided an illustration which offers validity for the unique adaptation utilised within the current research. |

**PhD Thesis Guidance from the Viva of 30th October 2012 – Roy H Thompson**
**Response to Examiners' Comments in Revising the Final Thesis document**

**Covering document as per Research Office email instruction of 31st October, 2012**

| Examiners' Guidance | Candidate Response |
|---|---|
| 1. You are required to ground the areas of the methodology, method and analysis within the academic literature. | A section 3.11 has been added to discuss this, entitled Placing the methodology and analytical approach within the academic body on page 121 including a table Table 25 : Authors of Influence in the Study Methodology and Analysis adapted from Table 2 in the critical literature review of Chapter Two. |
| 2. Accepting that the sample sizes are small we still require you to subject the raw data to appropriate statistical tests. The results of the significance levels may strengthen the overall conclusions. You need to include a brief summary within the conclusion section. | Sentence added to the last paragraph of section 3.13 on pg.127 explaining that significance tests are being included at the direction of the thesis examiners as per the guidance (refer to 3.14).<br><br>Results of the Chi-square tests are presented in Appendix XVII on page 345.<br><br>Brief summary in conclusion section in section 5.2 on page 200. |
| 3. Explain how you got from the raw data to OPR. | An additional page added to APPENDIX XI: Measures Scales and Coefficients for OPR Computation on page 326 explaining in detail how the raw data has been transformed into OPR coefficients by group and outcome and then combined into one single OPR coefficient for comparison with the FPR coefficient |
| 4. The above changes need new sections/paragraphs and should be highlighted within the text when submitting the revised thesis. | All sections that have been added in the revised thesis document are in red (accent 2, darker 50%) underlined. The location of all additions has been detailed in candidate response to examiners' guidance in this table [Note: these have been removed for the on-line document which has been made on 12-Feb-13] |