Copyright is owned by the Author of this thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.
Market In Their Palms?
Exploring Smallholder Farmers’ Use Of Mobile Phone Farming Applications And Their Effect On The Farmers’ Farming, Marketing And Well-Being

A Case Study of Selected Counties in Kenya

A Thesis Presented In Partial Fulfilment Of The Requirements For The Degree of Master of Philosophy in Development Studies at Massey University, Palmerston North, New Zealand

Massey University Manawatu Campus
New Zealand

Fredrick Odhiambo Ajwang
2014
ABSTRACT

The role of technology in development has been discussed in wide and varied literature. Over the course of history, technology has facilitated the process of development by helping individuals transcend some of the problems they face in their daily life. In recent times, the revolution in information and communication technology has come to play a crucial role in development and poverty reduction. This study explored the use of such technology, in this case the mobile phone farming applications, by smallholder farmers in Kenya to facilitate their agricultural production and marketing. The aim of the study was to explore the use of the mobile phone farming applications by the smallholder farmers to access markets and information and to assess the effects of their use on the farmers’ farming and marketing experience as well as their well-being outcomes.

The results from the study indicate that the mobile phone farming applications have facilitated the smallholder farmers to access markets and marketing information. These applications have been effective in reducing the information search costs and marketing transaction costs for the smallholder farmers leading to enhanced access to information and markets. The reduced marketing transaction costs have, in turn, led to increased market participation by the smallholder farmers. Evidence from the literature indicates that when smallholder farmers have increased access to market information, their power in the market, in terms of their ability to bargain with traders, increases. In this study, it was also found that the rural farmers had been empowered by their increased access to information and they could, therefore, engage in price negotiation with potential buyers. This, together with access to higher paying markets, led to an increase in the farmers’ income. Furthermore, the use of these applications facilitated the farmers to form networks with other farmers and traders. These networks, eventually became, an important source of marketing and production information to the farmers.

In contrast, it was found that the mobile phone farming applications were not effective in providing agricultural production information to the smallholder farmers. As a result, the farmers were using other means to access agricultural production information. These included the use of the internet and the networks and linkages with other farmers to access agricultural production information. However, evidence from the study indicates that, these mobile phone farming applications have a potential of facilitating smallholder farmers’ access to information and markets in Kenya.
DEDICATION

To Mum and Pam your prayers kept me going

‘Perhaps not to be is to be without your being.’

Perhaps not to be is to be without your being,
without your going, that cuts noon light
like a blue flower, without your passing
later through fog and stones,
without the torch you lift in your hand
that others may not see as golden,
that perhaps no one believed blossomed
the glowing origin of the rose,
without, in the end, your being, your coming
suddenly, inspiringly, to know my life,
blaze of the rose-tree, wheat of the breeze:
and it follows that I am, because you are:
it follows from ‘you are’, that I am, and we:
and, because of love, you will, I will,
We will, come to be.

Pablo Neruda
ACKNOWLEDGEMENTS

This thesis has been a work and journey of so many individuals. First, I would like to express my gratitude to the New Zealand Development Scholarship for funding my two-year studies at Massey University. My thanks also go to the scholarship managers both at Pretoria in South Africa and at Massey University. To the ‘invisible lady’ in the New Zealand High Commission in Pretoria- Loice Gimoa: your support throughout the scholarship application process was helpful, I feel indebted to you. To the International Student Support Office, especially Leuiana, Jamie and Sylvia, a big thank you for your support during my studies.

To my supervisors Dr Gerard Prinsen and Dr Maria Borovnik, I enjoyed working with you. Your advice and guidance have enabled me to come this far. However, more importantly, I have learnt a lot from both of you through the casual conversations we had so many a times…I will miss them sorely. To the other lecturers in the department with whom we have interacted in so many ways in the last two years…it was great learning from you in so many ways. To the librarians especially Bruce White and Nicola McCarthy, you helped me understand Endnote and were helpful in my literature review.

To the many individuals who facilitated my fieldwork, George the tea factory manager, Michael the agricultural officer and Linda of Mfarm you worked tirelessly to enable me access the research participants for interviews. My good friend Peter, you were an encouragement throughout the fieldwork process. In addition, to the many more individuals whom I cannot mention, thank you all for facilitating my fieldwork.

Finally, to the various people in the Institute of Development Studies who made my stay in Palmerston North memorable. Joy Davidson, Barbara Ann, Laura Callaghan, Lucy and so many more, I will not forget the movie nights, the board games, the dinners, the lunches, the tramping, the skiing, the singing and dancing and so many activities that lightened up my stay here. To my course mates, Justin Lewis, Zeyar Chit, Betty Camilus, Hakimeh Khadijah and Sophie…at first we were just strangers to each other, then course mates then acquaintances and finally good friends. I will surely miss you all!
TABLE OF CONTENTS

ABSTRACT ........................................................................................................................................... i

ACKNOWLEDGEMENTS .................................................................................................................... iii

LIST OF TABLES ............................................................................................................................... ix

LIST OF FIGURES ........................................................................................................................... ix

ABBREVIATIONS AND ACRONYMS ............................................................................................... x

CHAPTER ONE ................................................................................................................................... 1

INTRODUCTION ................................................................................................................................. 1

1.1 Research Background .................................................................................................................. 1

1.2 An Overview of Smallholder Farming in Kenya ......................................................................... 2

1.3 Research Aim and Objectives ...................................................................................................... 3

1.4 Layout of the Thesis ..................................................................................................................... 4

CHAPTER TWO ................................................................................................................................... 7

AGRICULTURE, DEVELOPMENT AND THE ROLE OF MOBILE PHONES IN AGRICULTURE ................................................................................................................................. 7

2.1 Introduction ................................................................................................................................. 7

2.2 Kenya’s Agriculture, a Historical Review .................................................................................. 7

2.2.1 The colonial period (1883-1963) ......................................................................................... 7

2.2.2 The post-independence period (1963-1980) ....................................................................... 9

2.2.3 Liberalisation period and beyond (1980 and beyond) ......................................................... 10

2.3 Agricultural Production Systems in Kenya ............................................................................... 11

2.3.1 The large-scale production system ..................................................................................... 11

2.3.2 The medium-scale production system ................................................................................ 12

2.3.3 The small-scale production system .................................................................................... 12

2.4 The Role of Agriculture in Economic Development in Kenya ............................................... 13
2.5 Smallholder Farmers’ Production and Marketing Problems in Kenya ....................... 14
2.6 The Mobile Phone Revolution in Africa ..................................................................... 16
2.7 Mobile Phone Industry in Kenya ............................................................................... 17
2.8 Information Asymmetry in Kenya Agricultural Production and Marketing ............ 18
2.9 Mobile Phone in Agriculture Production and Marketing ........................................... 20
   2.9.1 Mobile phone and agricultural production ......................................................... 20
   2.9.2 Mobile phone and agricultural marketing ......................................................... 22
2.10 Chapter Summary ..................................................................................................... 24

CHAPTER THREE .......................................................................................................... 25
THE CAPABILITY APPROACH AND EVALUATION OF SMALLHOLDER
FARMERS WELL-BEING .................................................................................................. 25
   3.1 Introduction ............................................................................................................. 25
   3.2 The Capability Approach ....................................................................................... 26
      3.2.1 Amartya Sen’s concept of development ......................................................... 26
      3.2.2 The capability approach examined ................................................................. 28
      3.2.3 Martha Nussbaum’s capability approach ....................................................... 30
   3.3 The Components of the Capability Approach ......................................................... 31
      3.3.1 Capabilities and functionings ....................................................................... 31
      3.3.2 Well-being freedom versus agency freedom ............................................... 34
   3.4 Operationalization of the Capability Approach ...................................................... 35
   3.5 Chapter Summary .................................................................................................. 37

CHAPTER FOUR .............................................................................................................. 39
METHODOLOGY AND RESEARCH METHODS ......................................................... 39
   4.1 Introduction ........................................................................................................... 39
   4.2 Research Preparation ............................................................................................. 39
5.3.3 Smallholder farmers male-female differences in using the mobile phone farming applications ....................................................................................................................... 67

5.3.4 The Smallholder Farmers Other Marketing Structures ............................................................................................................................................................................ 69

5.4. Smallholder Farmers, Experiences with the Other/Previous Marketing Outlets .......... 70

5.5 Smallholder Farmers’ use of the Mobile Phone Farming Applications ......................... 73

5.5.1 Mfarm mobile phone farming service ..................................................................... 73

5.5.2 Mfarmer and NAFIS mobile phone farming service ............................................... 75

5.6 The Costs and Affordability of the Mobile Phone Farming Applications ....................... 76

5.7 Information and Market Access through the Mobile Phone Farming Applications .......... 77

5.7.1 Mobile phone farming and smallholder farmers access to information .................... 78

5.7.2 The effect of mobile phone farming applications on the smallholder farmers’ access to markets ......................................................................................................................... 81

5.7.3 Mobile phone farming and its effect on smallholder farmers production ............... 83

5.8 Smallholder Farmers’ Challenges of Using the Mobile Phone Farming Applications.. 84

5.9 Smallholder Farmers’ Access to Information and Markets Directly Through Their Mobile Phone and the Internet ................................................................................................................................. 86

5.10 Chapter Summary ........................................................................................................... 88

CHAPTER SIX ............................................................................................................................................................................................. 89

RESULTS AND ANALYSIS TWO– ANALYSIS OF SMALLHOLDER FARMERS’ WELL-BEING OUTCOMES ........................................................................................................................................ 89

6.1 Introduction .................................................................................................................... 89

6.2 Application of the Capability Approach in the Study .................................................... 89

6.3 Smallholder Farmers Well-Being Achievements ........................................................... 91

6.3.1 Smallholder farmers’ well-being outcomes ............................................................. 93

6.4 Chapter Summary ........................................................................................................... 96

CHAPTER SEVEN ........................................................................................................................................................................................ 97

DISCUSSION, CONCLUSION AND RECOMMENDATIONS ........................................... 97
7.1 Introduction .................................................................................................................... 97
7.2 The Place of Mobile Phone Farming Applications in Agricultural Production and Marketing ................................................................................................................................................................................................. 97
  7.2.1 Mobile phone applications and smallholder farmers’ access to production information ................................................................................................................................................................................................. 99
  7.2.2 Mobile phone applications and smallholder farmers’ access to markets and marketing information ................................................................................................................................................................................................. 101
7.3 The Smallholder Farmers’ Well-Being Outcomes ...................................................................................... 104
7.4 Conclusion and Summary of the Study Findings ...................................................................................... 106
7.5 Suggestions for Future Research ........................................................................................................... 108

REFERENCES ..................................................................................................................... 110

APPENDICES ...................................................................................................................... 120
  Appendix 1: Semi-Structure Interview Schedule ...................................................................................... 120
  Appendix 2: Participant Observation Guide .......................................................................................... 123
  Appendix 3: Massey University Human Ethics Low Risk Notification ...................................................... 124
  Appendix 4: Research Permit .................................................................................................................. 125
  Appendix 5: Information Sheet .................................................................................................................. 126
  Appendix 6: Participants Consent Form .................................................................................................. 127
LIST OF TABLES

Table 1: Research Participants Profile ..................................................................................... 66

LIST OF FIGURES

Figure 1: The Thesis Outline ..................................................................................................... 6
Figure 2: Conceptual framework of the capability approach in evaluation of smallholder farmers’ well-being .................................................................................................................. 53
Figure 3: Map of Nairobi County ............................................................................................ 59
Figure 4: Map of Kajiado County ............................................................................................ 60
Figure 5: Map of Nyandarua County ....................................................................................... 62
Figure 6: Map of Nandi County ............................................................................................... 63
Figure 7: Map of Narok County ............................................................................................... 65
### ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>ASAL</td>
<td>Arid and Semi-Arid Lands</td>
</tr>
<tr>
<td>BEAP</td>
<td>British East Africa Protectorate</td>
</tr>
<tr>
<td>CAADP</td>
<td>Comprehensive Africa Agriculture Development Programme</td>
</tr>
<tr>
<td>CCK</td>
<td>Communication Commission of Kenya</td>
</tr>
<tr>
<td>DRC</td>
<td>Democratic Republic of Congo</td>
</tr>
<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross National Product</td>
</tr>
<tr>
<td>HCDA</td>
<td>Horticultural Crops Development Authority</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>ITU</td>
<td>International Telecommunications Union</td>
</tr>
<tr>
<td>KARI</td>
<td>Kenya Agricultural Research Institute</td>
</tr>
<tr>
<td>KENFAP</td>
<td>Kenya National Federation of Agricultural Producers</td>
</tr>
<tr>
<td>KIPPRA</td>
<td>Kenya Institute of Public Policy Research and Analysis</td>
</tr>
<tr>
<td>Kgs</td>
<td>Kilogrammes</td>
</tr>
<tr>
<td>KSH</td>
<td>Kenya shillings</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MUHEC</td>
<td>Massey University Human Ethics Committee</td>
</tr>
<tr>
<td>NAFIS</td>
<td>National Agricultural Farmers Information Services</td>
</tr>
<tr>
<td>NEPAD</td>
<td>New Partnership for Africa’s Development</td>
</tr>
<tr>
<td>SAP</td>
<td>Structural Adjustment Programmes</td>
</tr>
<tr>
<td>SSA</td>
<td>Sub-Saharan Africa</td>
</tr>
</tbody>
</table>