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**BUILDING AN EQUITABLE FOOD SYSTEM IN GEORGIA WITH FUTURE
FARMERS: A BUSINESS CASE STUDY**

A Thesis Submitted
to the Faculty in partial fulfilment of the requirements for the degree of
Masters of Arts in Liberal Studies

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June 2023

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ABSTRACT

My thesis aims to investigate how a mobile application called *Future Farmers* ©, that connects farmers with retailers bypassing middlemen, can increase farmers' bargaining power thereby creating an equitable food system. More specifically, my thesis seeks to analyse the application's viability in the country of Georgia.

Drawing upon primary data collected through interviews with farmers and retailers as well as a review of relevant literature, this research will utilize a mixed-methods approach to explore the impact of this technology on the agricultural industry in Georgia. The company's revenue projections and market access are just some aspects evaluated while qualitative information is analysed regarding the wider social-economic effects of the said technology.

This holistic research approach provides insight into understanding what potential impact this technology has on creating an equitable agricultural value chain in the country of Georgia.

PREFACE

Farmers are the backbone of our society. From spending long hours in scorching heat to protecting crops from harsh weather conditions, farmers have to face myriad physical and emotional challenges as they harvest plants with their nurturing touch. Yet, they persevere, are pivotal in putting food on our plates, and are helping us meet our most basic human needs. However, they are seldom equitable beneficiaries in terms of income derived from the value chain in which retailers as well as middlemen obtain the lion's share.

Growing up, Elena Nikvashvilli witnessed the hardships her grandfather faced while dealing with middlemen in Georgia. This inspired her to create her dream project, *Future Farmers*. Now, Elena and her team are set out to create a platform that will increase farmers' bargaining power within the fresh produce supply chain and make farming more profitable for them.

In early-2021, Future Farmers was born. I met Elena at a Tuck-Magnuson start-up fair at Dartmouth College where I learned about her idea and joined Future Farmers as the Chief Operating Officer (COO). Coming from India, which is primarily an agricultural society, I have seen farmers struggle to make ends meet because of supply chain challenges. Through this research, I aim to analyse the feasibility of the Future Farmers mobile application in Georgia and consolidate the main findings in order to optimize the application for usage in the country. As of now, Future Farmers is registered as in LLC in Georgia, Europe.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my thesis advisors Peter DeShazo, Eric Ramsey and Tom Zoellner for their invaluable guidance, feedback and support throughout this project. They have been instrumental in shaping my academic and professional development.

I am also grateful to Elena Nikvashvilli for giving me the opportunity to be part of her start-up and for sharing her insights and expertise with me.

I would also like to thank the MALS program for providing me with wonderful opportunities at Dartmouth and for fostering a stimulating and enriching learning environment. I have learned a lot from this experience and I hope to apply it in my future endeavours.

Last but not least, I would like to thank all the farmers, retailers and experts who generously agreed to participate in the interviews and surveys and who contributed to the primary research. Their perspectives and experiences were essential for the success of this project and I appreciate their time and cooperation.

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INTRODUCTION

Day in the life of a farmer in Georgia

It is mid-winter in the eastern Georgian farm region of Kakheti and the temperature is below freezing. Anri (Georgian for *Henry*) is an 82-year-old farmer sitting next to his wood-burning stove in his modest kitchen. It is early in the morning and Anri has a lot on his mind. “What should I plant this spring,” Anri thinks as he sips his first cup of tea. “Should I lease three acres to another farmer this year or should I try to plant all five acres myself? How will I cover my costs? I wish I had more information on available inputs like seed and fertilizer.” All these questions keep turning over in his mind as he prepares to go outside to feed his twenty-five ducks that he raises for eggs. Like many farmers in this region, Anri relies primarily on his corn and wheat crops to pay his bills. He also has a modest hazelnut orchard which is relatively profitable for him. During the winter, his only income comes from selling duck eggs and a few ducklings per month.

Anri is worried about his future and the future of other farmers like him. Despite having some of the most fertile farmland in Asia, Georgian agriculture is severely depressed. The Georgian government issued five-acre farms to peasant families after the dissolution of the Soviet Union. These small farms successfully warded off starvation and famine during the turbulent nineties, but the system locked Georgian farmers into a subsistence lifestyle that persists to this day. Anri and many of his neighbors would not be able to cover all their expenses if it were not for the financial support of their children working jobs outside of Kakheti or on nearby farms. The small farm system in Georgia has prevented the agricultural scale seen in more developed agricultural economies. To make matters worse, Georgian farmers suffer from information

asymmetry. They rely on word of mouth and local vendors to find affordable inputs for their farms and end markets for their produce and livestock.

Today Anri is meeting with a local merchant who drives to his village monthly. The two men will discuss seed prices and fertilizer costs. Anri does not have the ability to travel outside of his village on a regular basis because he does not own a car; therefore, he relies on middlemen to supply his inputs and buy his produce. This system forces downward pressure on growers and prevents farmers from realizing greater profits. Anri really needs transparency and bargaining power. He is not aware where his produce and hazelnuts end up or the price at which they are sold in international markets. He is completely reliant on merchants with proprietary relationships to individual growers for all his inputs and end sales.

After his meeting with the merchant, Anri plans on improving his primitive irrigation system which is fed by a local stream. Last year the draught resulted in a 60% yield on his cereal crops, and he wants to prevent that from happening this summer. Developing infrastructure is hard work and Anri is only getting older.

That evening, Anri hosts a friend for dinner. Anri's wife passed away two years ago so the two men will converse alone. Tonight's topic of conversation will be crop selection for the upcoming season. "If only we had better information and greater market transparency," the two farmers quip. For now, they will do what they have always done and hope that prices improve this summer.

Georgian Agriculture

Georgia is a country located at the eastern end of the Black Sea on the southern flanks of the main crest of the Greater Caucasus Mountains. It is bounded on the north and northeast by Russia, on the east and southeast by Azerbaijan, on the south by Armenia and Turkey, and on the west by the Black Sea.



Figure 1: Map of Georgia [1]

The country has a rich history and culture, with a population of around 3.7 million people [2]. Some popular destinations in Georgia include Tbilisi, Poti, Batumi, Zugdidi, Kutaisi, Borjomi-Kharagauli National Park, Sukhumi, Stepantsminda, Mtskheta, and Gori. Georgia's fertile soil and favorable climate support production of a wide variety of high-value agricultural products, including grapes and wine, berries, nuts (hazelnuts, almonds, walnuts, and chestnuts), citrus fruits, apples, peaches, and apricots. The Georgian government has privatized over 45 percent and leased about 30 percent of the country's agricultural land. [3]

Research Methodology

I am conducting a comprehensive study on the "Future Farmers" mobile application, which aims to revolutionize the agricultural industry in Georgia by connecting farmers directly with retailers, bypassing middlemen.

The study seeks to:

- analyse the agricultural landscape of Georgia
- identify the main challenges
- test the initial hypothesis
- discuss the product's features
- analyse financial projections to determine the company's viability
- develop a marketing plan.

To ensure a thorough analysis, I will be employing both primary and secondary data collection methods. Through in-depth interviews with 10 farmers and 5 retailers, I aim to gain a nuanced understanding of the challenges they face and potential impact of the application. Considering Georgia's population, these numbers are not statistically significant but an analysis of the interviews will provide a general idea of the use case of Future Farmers. The competitors (middlemen) have not been interviewed as of now. Since the mobile application is still in its nascent stage, its use case was measured by conducting interviews with the target customers (i.e., farmers and retailers) only.

Initially, my research was focused on the viability of Future Farmers in the state of Bihar in India. I conducted 8 farmers and 12 retailers interviews and the results indicated that the App would not be profitable in the state. This is because both parties were hesitant in new using a new technology to negotiate prices. They conveyed that they did not view middlemen as a challenges in the supply chain. My analysis of the interviews in Georgia painted a different picture.

CHAPTER 1

The Agriculture Sector In Georgia

Agricultural Landscape

According to the most recent Census of Agriculture, in 2020, Georgia's agricultural producers sold more than \$9.57 billion worth of agricultural products. [4] The census showed more than 42,000 farms operating across the state, with 9.9 million acres in production. More than 17,000 of those farms raised cattle, either beef cows or dairy cows. [4]

Agriculture remains an important sector in terms of GDP contribution in Georgia as it accounted for 7-8 percent of GDP for the last five years. The sector also provides an important safety net for the rural population, considering that over 40 percent of Georgia's population lives in rural areas. [4]

However, Georgia is a net importer of agri-products. According to Trade Monitor Data (TMD), Georgia's total agricultural imports were \$1.34 billion in 2021, which represents an increase of over 29 percent since 2016. Leading suppliers of these goods are Russia, Ukraine, and Turkey, which collectively account for \$709 million, or nearly 53 percent of total imports. [5]

Crop Production:

Due to its mild climate and fertile soil, Georgia is an ideal place to grow a variety of crops. Imereti, which is located in the western part of the country, is a major producer of citrus fruits, grapes, and apples. It also produces walnuts and hazelnuts. The region's mild climate and fertile soil enable long-growing seasons. [6]

In the northwest part of the country is Racha-Lechkumi whose mountainous terrain and cool climate make it well-suited to produce onions, garlic, and tomatoes. [6] Kartli, which is centrally located, has a diverse landscape of mountains, lowlands as well as

forests and is a producer of cereals such as wheat, barley, and corn. [6] The southern part of the country has regions with a semi-arid climate and rocky soil such as Samtskhe-Javakheti where farmers produce drought-tolerant crops and grains such as wheat and barley. Tobacco is also grown here. [6]

Livestock Production:

Georgia is a producer of livestock, such as cattle, pigs, sheep, and chickens, which are reared in the country's mountainous areas where the colder weather and an abundance of meadows make them perfect for grazing. It also is famous for producing honey, tea, and wine in addition to its crops and livestock. [7]

In the eastern part of Georgia, regions such as Kakheti, with its mild climate and high-quality pastures make them ideal for raising cattle and sheep and producing dairy products. Samgegrelo-Zemo in the west of Georgia is known for sheep and goat production where farmers raise animals extensively. Centrally located Shida Kartli's diverse landscape allows for a variety of livestock production which includes cattle, pigs, sheep, and goats. The region is famous for beef products and has had a long tradition of cattle breeding. [7]

Viticulture:

The nation has a long history of viticulture stretching back thousands of years. Consequently, the wine business plays a significant role in the nation's economy. Due to domestic consumption and exports to other countries, which provide much-needed income to local communities throughout rural regions where the majority of vineyards are situated, wine-making has grown to be a significant economic contributor. Georgia exports wine worth over \$100 million annually, which is a significant contribution to the economy of the nation. [4], [5], [8]

The Georgian government identified agriculture as a priority for development and considerably increased funding for the sector, although priorities and programs change frequently. An example of this is the Agriculture Investment Fund which seeks to support the sector by providing credit to farmers. [8]

The preferential agro credit program has been implemented in Georgia since 2013 and involves subsidizing loan interest rates issued by commercial banks to farmers. In 2023, the budget of the program has increased to 200 million GEL (\$76 126 675). [8]

The agricultural sector remains a key part of the Georgian economy and continues to play a vital role in the country's economic growth. However, Georgia's agricultural sector faces a number of challenges that can hinder its growth and development.

Some of these challenges include:

- War in Ukraine: Georgia's rural economy is being buffeted by national and global headwinds — inflation, supply chain disruptions, trade wars, droughts across the globe, the COVID pandemic, and the war in Ukraine — that is making it harder for farmers to make ends meet. As early as March, just a couple of weeks after the invasion began, David Kirvalidze, a board member for an international non-profit, Cultivating New Frontiers in Agriculture (CNFA) and previously minister of agriculture in Georgia, warned that the country – which imports most of its wheat from Russia – faces the prospect of a severe food security crisis as a result of the war in Ukraine, and would need at least 100,000 tons of wheat from the United States. [9]
- Lack of modern infrastructure: Many of Georgia's rural areas, where much of the country's agriculture is produced, lack modern infrastructure such as roads, bridges, and other transportation networks. This has made it difficult for farmers

to transport their products to market and can limit their access to key inputs such as seeds, fertilizer, and machinery. [9]

- Limited access to markets: Georgia's agricultural sector was affected by its limited access to international markets, as the country is surrounded by large and established agricultural producers, such as Turkey, Russia, Iran and Azerbaijan, which have more diversified and competitive products, lower production costs and better transport infrastructure. [9], [10]

The Value Chain

A value chain is a set of activities that add value to a product or service, from its production to its delivery to the final consumer. In agriculture, a value chain may include activities such as input supply, farm production, post-harvest handling, processing, storage, transport, marketing and distribution. An agricultural value chain analysis can help understand how farmers and other actors interact and coordinate along the chain, what are the costs and benefits of each activity, what are the quality and safety standards required by different markets, and what are the potential risks and opportunities for upgrading and diversification [5], [11]

In Georgia, some of the value chains that have been developed or supported by various projects and initiatives include wine, hazelnuts, honey, dairy, fruits and vegetables. These value chains have been selected based on their strategic importance for Georgia's economy, their export potential, their environmental sustainability and their social impact. Some of the activities that have been undertaken to strengthen these value chains include:

- Improving quality standards and certification procedures to comply with international market requirements. [12]

- Developing branding and marketing strategies to promote Georgian products and increase consumer awareness and demand. [13]
- Providing access to finance, business development services and innovation grants to small and medium-sized enterprises (SMEs) in the agriculture sector. Enhancing linkages and coordination among different actors along the value chain, such as farmers, processors, traders, retailers and consumers. [14]–[16]
- Supporting farmer organizations and cooperatives to increase bargaining power, reduce transaction costs and improve access to inputs and markets. Introducing climate-smart practices and technologies to increase productivity, resilience and efficiency of resource use. [14], [17]

An area where improvements could be made in the Georgian agricultural value chain is in the transparency and fairness of transactions. As mentioned earlier, farmers face challenges related to the middlemen who facilitate transactions between farmers and retailers (such as groceries). These intermediaries may have access to information and market data that is not readily available to farmers, and they may use this information to their advantage in negotiations with farmers. Improving the transparency and fairness of transactions in the agricultural value chain could help to create a level playing field for farmers and ensure that they receive a fair price for their products. Additionally, there is room for improvement in the Georgian agricultural value chain in terms of reducing waste and inefficiencies. The transportation and storage of agricultural products can be a major source of waste and inefficiency, with a significant portion of the food produced being lost or wasted due to spoilage, damage, or other factors. Improving the transportation and storage infrastructure in Georgia, as well as implementing measures to reduce food waste, could help to increase the efficiency and sustainability of the agricultural value chain.

Analysis of Georgian Agricultural Landscape

<p>Strengths</p> <ul style="list-style-type: none"> ● Soil-climatic conditions ● Government and donor support 	<p>Weaknesses</p> <ul style="list-style-type: none"> ● Low productivity and poor irrigation ● Lack of experience in exporting ● Lack of adequate knowledge ● Lack of technologies ● Lack of finance ● Weak logistics network ● Fragmentation of land ● Weak linkages in the value chain
<p>Opportunities</p> <ul style="list-style-type: none"> ● Increasing productivity ● Preferential trading regimes ● Replacing imports ● Modern techniques & technologies ● Resolving land registration problems ● Farmer education programs ● Inexpensive resources 	<p>Threats</p> <ul style="list-style-type: none"> ● Natural disasters ● Spread of diseases and pests

Overall, while the Georgian agricultural value chain has contributed significantly to the country's economy and provides a source of employment and income for a significant portion of the population, there is room for improvement in several areas.

By addressing challenges related to the efficiency and productivity of farming operations, the transparency and fairness of transactions, and the reduction of waste and inefficiencies, the agricultural value chain in Georgia could be strengthened and made more sustainable.

Georgian Food Retail Sector

The food retail sector in Georgia is characterized by the following features:

- **A mix of small-scale retailers and larger-scale supermarkets:** The food retail sector in Georgia is dominated by small-scale retailers, such as groceries, convenience stores, bakeries and markets, which account for about 80% of the market share. However, there are also some larger-scale supermarkets and hypermarkets, such as Carrefour, Goodwill and Spar, which have been expanding their presence and offering more variety and quality products.[18], [19]
- **A growing role of wholesalers and distributors:** The food retail sector in Georgia relies on wholesalers and distributors to supply products from local and foreign sources. Wholesalers and distributors play an important role in providing logistics, storage, marketing and quality control services for food retailers. Some of them also operate their own retail outlets or franchises. [18], [19]
- **An increasing demand for online and instant delivery:** The food retail sector in Georgia has been experiencing a surge in online and instant delivery services, especially during the COVID-19 pandemic. Online platforms, such as Glovo, Wolt and Bolt Food, offer fast and convenient delivery of food products from various retailers and restaurants. Instant delivery start-ups, such as Gorillas and Getir, promise to deliver groceries within 10 minutes or less. [20]

The Middleman Problem

Middlemen buy and sell agricultural products from farmers and then sell them to retailers. They provide transportation services for agricultural products in Georgia and usually show up on farmers' front doors with a truck.

Middlemen in Georgia The reliance on middlemen (Figure 2) by farmers in Georgia is a significant problem that needs to be addressed. This issue is caused by several factors, including diseconomies of scale, information asymmetry, and a lack of cooperation and transparency between retailers and farmers. As a result, farmers are forced to sell a large portion of their produce at low margins to middlemen, who take a up to 40% commission on each transaction. This not only lowers the net profits of farmers but also contributes to a lack of bargaining power for farmers in the marketplace. (See Appendix 1)

One of the main reasons for the high reliance on middlemen in Georgia is the existence of diseconomies of scale. In many cases, farmers cannot produce enough to sell directly to retailers (e.g., supermarkets, farmers' markets, specialty food stores, convenience stores, online retailers, co-ops, etc.) without the help of middlemen. This is because they often lack the necessary resources, such as transportation and storage facilities, to transport and store their produce on their own. As a result, they are forced to rely on middlemen to handle these tasks for them. (See Appendix 1)

Another factor that contributes to the reliance on middlemen in Georgia is information asymmetry. In many cases, farmers are not well-informed about the market conditions and the prices their products can fetch. This is because they often lack access to market information and cannot communicate directly with retailers. As a result, they are forced

to rely on middlemen to provide them with this information and to negotiate on their behalf.

A lack of cooperation and transparency between retailers and farmers is also a significant problem in Georgia. In many cases, retailers and farmers are not able to communicate directly with each other, which makes it difficult for them to negotiate and agree on fair prices for their produce. As a result, farmers are often forced to accept low prices for their produce from middlemen, who take a significant commission on each transaction.

Georgia has a unique problem with sourcing large volumes of fresh produce. Unlike other countries that may have more centralized and organized systems for procuring produce, Georgia's agricultural industry is characterized by a large number of small farmers and inconsistent procurement volumes within the supply chain. This makes it difficult for retailers to reliably source the products they need in the quantities they require. (See Appendix 1)

One of the key challenges facing retailers in Georgia is the lack of access to qualified suppliers. In many cases, the business relationship between retailers and farmers is based on word of mouth and personal connections. This can make it difficult for retailers to find new suppliers or to verify the quality and reliability of existing ones. (See Appendix 2)

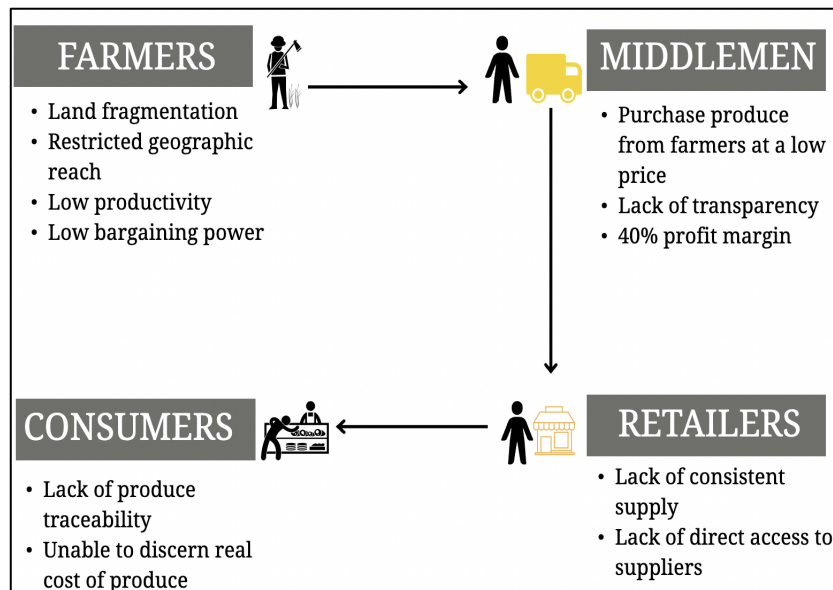


Figure 2: Main Challenges in the Georgian Agricultural Value Chain

Another issue is the lack of a reliable database or platform that can provide centralized information about the availability of different types of produce. This makes it difficult for retailers to plan their procurement efforts and ensure that they have a steady supply of fresh produce.

Middlemen raise prices for consumers while underpaying farmers, leaving farmers poor and unproductive. Farmers encounter high production costs in their effort to boost production but hardly get fair pricing of their produce from middlemen, the bulk farm gate retailers. This is a common problem in Georgia, where nearly half of all Georgia farms made less than \$2,500 in 2017, while 15 percent made more than \$100,000. Although the number of farms in Georgia continues to decrease—from about 47,000 in 2007 to 42,000 in 2017—farms are growing in size. Average farm acreage in the state increased by 3 percent between 2012 and 2017. [21], [22]

The agricultural sector in Georgia is characterized by the following features:

- **Small-scale and fragmented farms:** The agricultural sector in Georgia is dominated by small-scale and fragmented farms, which account for about 80% of the total agricultural land area. [23] The average size of an individual farm in Georgia is 0.96 hectares and only 5% of farms are larger than 2 hectares. [24] The small farm size is a result of the land privatization process that took place after the collapse of the Soviet Union, which distributed land to rural families based on their household size. [25]
- **Predominance of land ownership:** The agricultural sector in Georgia is characterized by a predominance of land ownership, as most farmers own their land rather than lease or sharecrop it. According to a survey conducted in 2013, about 90% of farmers owned their land, while only 7% leased it and 3% sharecropped it. [26] Land ownership is seen as a source of security and social status by many farmers, who are reluctant to sell or rent out their land.
- **Limited access to land markets:** The agricultural sector in Georgia faces some challenges in accessing land markets, such as lack of information, high transaction costs, legal uncertainties and cultural barriers. Land markets are underdeveloped and inefficient, as there is no reliable cadaster system, no clear property rights, no effective dispute resolution mechanisms and no transparent registration procedures. [26] Land markets are also influenced by social norms and traditions, such as inheritance practices, family ties and community expectations.

The problem of sourcing large volumes of produce in Georgia is complex, compounded by the presence of many small farmers and inconsistent procurement volumes within the supply chain. The lack of access to qualified suppliers and reliable information about the availability of produce makes it difficult for retailers to plan their procurement

efforts and keep their shelves stocked. This can have negative impacts on the retail industry in Georgia and on the overall economy. The use of middlemen in the fresh produce supply chain can have negative impacts on all parties involved, including farmers, retailers, and end consumers. One of the key issues with middlemen is that they often take a significant commission on each transaction, sometimes as much as 40%. This can eat into the profit margins of both farmers and retailers, making it more difficult for them to earn a fair price for their produce. (See Appendix 1)

For farmers, the use of middlemen can be particularly detrimental. In many cases, middlemen are the only means by which farmers can sell their produce, particularly if they are small-scale producers without direct access to retail markets. As a result, farmers may be forced to accept low prices for their produce in order to sell it through middlemen. This can make it difficult for farmers to earn a decent income and invest in their operations, leading to a downward spiral of declining productivity and profitability.

Retailers also face challenges when it comes to working with middlemen. In addition to the high commissions that middlemen often charge, retailers may also have to deal with issues such as inconsistent quality and availability of produce. This can make it difficult for retailers to plan their procurement efforts and maintain a steady supply of fresh produce for their customers.

For end consumers, the use of middlemen can also have negative impacts. In some cases, the high commissions charged by middlemen are passed on to consumers in the form of higher prices for produce. This can make fresh produce less affordable for many consumers, particularly those on tight budgets. In addition, the use of middlemen can

also result in lower-quality produce reaching the market, as farmers may be forced to sell their produce at a lower price in order to sell it through middlemen.

Overall, the use of middlemen in the fresh produce supply chain can create a number of challenges for farmers, retailers, and end consumers. The high commissions charged by middlemen can eat into the profit margins of all parties involved, making it more difficult for everyone to earn a fair price for their produce. This can lead to a downward spiral of declining productivity and profitability, which can have negative impacts on the entire agricultural industry in Georgia.

Cost of Food in Georgia

The cost of food in Georgia is influenced by the following factors:

- **The cost of food in Georgia accounts for about 40% of household budget:** According to a survey by Budget Your Trip, the average cost of food in Georgia is equivalent to about \$5.8. Based on the spending habits of previous travelers, when dining out an average meal in Georgia should cost around \$2.3 per person. [27] Assuming a family of four spends \$23.2 per day on food, the monthly cost of food would be \$696. The median household income in Georgia was \$1,650 per month in 2020, which means that the cost of food would account for about 40% of household budget. [28]
- **The cost of food in Georgia is affected by inflation and exchange rate fluctuations:** The cost of food in Georgia is affected by inflation and exchange rate fluctuations, as most food products are imported or depend on imported inputs. The inflation rate in Georgia was 14.8% in November 2021, mainly driven by higher prices for food and beverages. [29] The exchange rate of

Georgian lari against U.S. dollar depreciated by 11.6% from January to November 2021, making imported food more expensive for Georgian consumers. [28]

- **The cost of food in Georgia is not subsidized by the government:** The cost of food in Georgia is not subsidized by the government, as there are no direct price controls or subsidies for food products. However, the government provides some indirect support for the agricultural sector, such as tax exemptions, preferential loans, grants and insurance schemes. The government also purchases some food products for public institutions, such as schools and hospitals. [14]

CHAPTER 2

Primary Research

Interview Methodology

Building upon the existing literature and primary data collected through interviews with farmers, retailers, and experts in the field, the thesis seeks to investigate the main challenges in the Georgian agricultural sector. This bottom-up approach of problem solving would then define the skeleton of the *Future Farmers* mobile application, a platform to connect farmers directly with retailers bypassing middlemen in the country of Georgia.

Interviewee Selection Methodology

Interviews with a diverse group of individuals were conducted to gain insights into the challenges and opportunities facing the agricultural industry in Georgia. Specifically, through interviews with farmers and retailers. Farmers and retailers were identified and reached out to through social media platforms such as Facebook and Elena's network circle. The farmers and retailers that agreed to test our application were also interviewed. Experts were selected based on their knowledge and experience in the agricultural sector in Georgia, which included an a lecturer from Akaki Tsereteli State University, a professional at Food and Agriculture Organization, and an ag-tech start-up founder in Georgia.

Farmers Hypothesis

In order to investigate the challenges faced by farmers in Georgia and the potential of the *Future Farmers* mobile application to address these challenges, this research will utilize a deductive approach to develop and test hypotheses related to the key factors affecting farmers in Georgia.

Specifically, this study will test the following hypotheses:

Hypothesis I: Farmers in Georgia face challenges related to small scale and lack of bargaining power, which limit their ability to negotiate favourable prices and reduce their costs.

Hypothesis II: Farmers in Georgia have limited access to affordable credit, which constrains their ability to invest in their farms and expand their operations.

Hypothesis III: Middlemen in Georgia charge low prices to farmers, which reduce farmers' profits and hinder their ability to access higher value markets.

Hypothesis IV: Farmers in Georgia lack knowledge of the market and the supply chain, which limits their ability to make informed decisions and access higher value markets.

By testing these hypotheses through empirical analysis and examining the impact of the *Future Farmers* application on farmers' income and market access, this research will provide insights into the potential of the mobile application to address the challenges faced by farmers in Georgia and contribute to a more equitable and sustainable food system. Additionally, this research will offer insights into the broader political economy of agriculture in Georgia and the role of technology in shaping agricultural value chains.

Farmers Interview Questions

Based on the above hypothesis, following questions for farmers' interview were drafted:

- Can you negotiate the price offered by the middlemen?

- If no, what do you think are the reasons?
- Do you have enough money to buy supplies such as seeds, farming tools and equipment?
- Do you borrow money for farming? If yes, what is the interest rate?
- Do you sell your products at a good price or a bad price? If low, how much is it worth?
- How much markup do you sell your products for?
- Do you know who the middlemen sell your products to?
- Do you know what is end price of your product is?
- Do you think if you had knowledge about the market and the supply chain would you sell it directly to the buyer?

Retailers Hypothesis

The study will specifically test three hypotheses related to the issues of product supply, middlemen management, and consumer knowledge.

Hypothesis I: Retailers may face inconsistent supply of products, which can create challenges in maintaining a reliable inventory and meeting customer demand.

Hypothesis II: Poor management of middlemen can also present challenges for retailers, potentially leading to delays or errors in product delivery and inventory management.

Hypothesis III: Buyers (i.e., the customers of the retailers) may lack knowledge in operation management, specifically in predicting demand 2 days before.

This could result in sudden shifts in demand that retailers are unprepared for, leading to issues with inventory management and supply chain coordination. By testing these hypotheses, the study aims to provide insights into the challenges faced by retailers in their operations and identify potential solutions to improve their efficiency and effectiveness.

Retailers Interview Questions

Based on the above hypothesis, following questions for retailers' interview were drafted:

- Do you experience inconsistencies or delays in supplies? Tell me about it.
- How many suppliers do you have? And with how many of them do you have long-term contracts?
- What percentage of your suppliers are small? How do you define small or big? In what quantities and how often do they deliver?
- Is it costly to deal with small suppliers? What are your pain points with them?
- Do you use any ERP system to manage and track your orders and sales? Which ones? How much do you pay for that?
- If you do use ERP, would you want to manage orders via that platform or separately?
- Would you consider using a marketplace to source your produce? Would you pay for that? How much?
- How do you predict demand?
- How often do you predict demand?

Preliminary Analysis

Initially, it was assumed that farmers have low bargaining power, while middlemen control the value chain and appropriate most of the money. It was also assumed that retailers want to have a steady supply of products at a cheap cost.

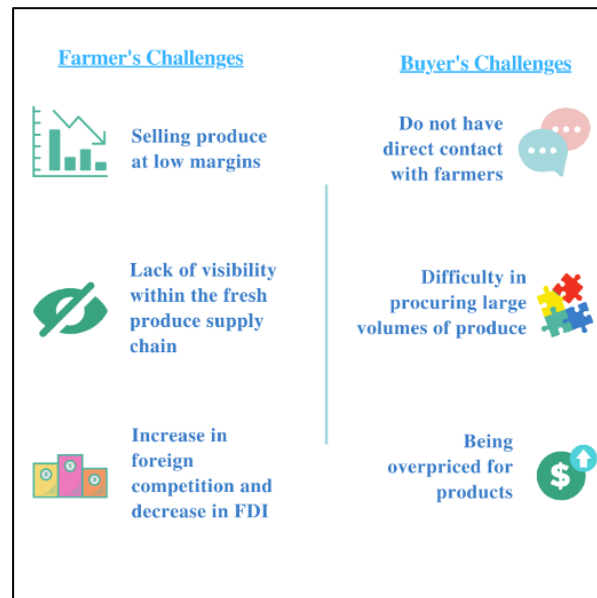


Figure 3: Farmers' and Retailers' Challenges

Thus, to solve the low bargaining power (for farmers) and create a steady supply of produce (for retailers), a decision was made to create a contract-based marketplace, where both parties could agree on the amount of produce, price, and time of the delivery.

By conducting interviews with farmers, retailers, middlemen, industry experts, and government agencies, one can confirm or refute the need for a contract-based platform. Insights into how to help farmers with quality control, standards, distribution, and funding can also be gained.

On the farmer's side, it was hypothesized that:

- a. Small scale of a typical farmer is the biggest reason for low bargaining power. So, by pooling resources together, the *Future Farmers* platform can

increase the aggregate bargaining power and raise prices and profits for farmers.

- b. Low prices offered by middlemen to farmers squeezed out the profits for farmers, further causing a dire financial situation. Thus, by educating farmers about market demand and prices, farmers can be given the power to charge higher prices and make higher profits.
- c. Lack of knowledge of the agriculture sector, supply and demand, and supply chain causes a mismatch between what farmers can charge and what they charge. By collecting the information for both sellers and retailers, the platform will be able to redistribute profits to farmers.

On the retailer's side, it was hypothesized that:

- a. Inconsistency of supply was the biggest issue. So, by pulling all farmers together, the platform will be able to provide a constant supply of produce.
- b. Poor management of suppliers causes a lot of problems, and, as a result, retailers do not want to deal with smaller and numerous small suppliers. By streamlining supplier management and educating farmers on standards and quality control, both retailers and suppliers could be provided better service.

Finally, during interviews other issues that might be more important than fixing the low bargaining power, lack of knowledge, and low prices for farmers or steady supply and poor supplier management for retailers were also brought to light.

Farmers' Interview Insights (See Appendix 1)

Through conversations with farmers, the following was confirmed:

- Farmers do not engage in long-term planning, with respect to crop selection or otherwise. Most activities and choices are performed on an ad hoc basis.
- Small farmers are primarily subsistence farmers and engage in commercial sales as a secondary activity. Sales are only done on an ad hoc basis after household needs are met.
- There is substantial farmer discontent, particularly with respect to realized prices on crop sales. Other areas of discontent include access to government funding and programs.
- There is little community or solidarity amongst farmers. Farmers are very independent.
- Achieving agriculture certifications is difficult. As certifications are generally necessary for sales outside Georgia, export markets are closed to many farmers.
- Farmers have access to smartphones, but there is limited sophistication and familiarity with technology in general.
- Access to farming equipment is limited.
- Strong discontent with the present situation should make farmers open to new solutions.
- Farmers themselves are most concerned with price. A solution that provides them with higher realized prices would be well received and readily adopted.
- While farmers may not plan strategically and may be unsophisticated, there is not a large desire amongst farmers themselves for increased education on strategy and modern farming techniques. This could be a hurdle for a product that seeks to improve planning and education.

- Given the limited familiarity with technology, any technology-based product will need to be as simple as possible to use.
- Helping farmers gain certifications would increase the number of potential customers, and thus potentially provide better realized sales prices.

Testing the Application:

- After the first version of the mobile application of developed, 12 farmers tested the prototype and shared positive feedback about their experience. The fact that they would be able to sell their products at a higher price by negotiating with retailers was particularly appealing for them. It is to be noted that these farmers are relatively younger and use mobile phones frequently.

Retailers' Interview Insights (See Appendix 2)

Through the conversations with retailers, the following was confirmed:

- Retailers are principally concerned with quality and the ability to acquire products consistently. Price is not their primary concern.
- Retailers are willing and able to provide transportation for larger middlemen.
- Retailers are unwilling to engage in long-term contracts due to uncertainty on price and demand.
- The fact that retailers are willing to accept higher prices is an opportunity. It means that the *Future Farmers* platform can provide farmers with higher realized sales prices should it be able to help them better meet the needs of retailers.
- The fact that retailers are willing to do at least some distribution themselves means that that is at least some alternative distribution infrastructure other than middlemen, which could be utilized.

- The fact that retailers are unwilling to engage in long-term contracts means that this cannot be a primary feature of the solution. If this feature was included, retailers would have to be persuaded to adopt it.

Experts Interview Analysis (See Appendix 3)

Based on the conversations with experts, it appears the main issue facing Georgian farmers is the lack of appropriate financing. Currently, most farmers are financed through grant-based projects and aid. However, only 50,000 of the 750,000 farmers receive funding.

In addition, to funding, the other key issues impacting farmers are a lack of technology and knowledge. It appears that several Georgian farmers are not aware of modern farming practices and which plants are ideal for Georgian climates. This is another opportunity area that could be addressed through informational and educational materials.

As it relates to middlemen, the experts highlighted that he did not believe that middlemen were the primary issue impacting farmers. According to them, middlemen are providing a needed service and while they are taking a significant portion of farmers' earnings, this is not farmers' most pressing issue. This perspective needs to be vetted further by farmers as well as middlemen to gain a full understanding of the middlemen's role.

Opportunities

Finally, three specific areas of opportunities were identified:

Scale

Most of the farmland within Georgia is fragmented with a significant number of small farmers. Due to the size of the farmland, which is usually no larger than 1 hectare, farmers are limited in crop production. Most of the crop production is sold in small villages or to middlemen who aggregate the produce across small farmers and then sell to larger retailers. However, many experts feel middlemen are not the biggest problem facing small farmers. Instead, they feel middlemen provide much-needed distribution services that would be amiss without their services.

On analyzing these results, it appears that land fragmentation is not something that can be improved upon. However, scale can be addressed by potentially connecting farmers together so they could aggregate through produce on their own increasing their bargaining power with middlemen and potentially incentivizing retailers.

Technology

Numerous experts have highlighted that the lack of technology and advanced farming tools have hampered small farmers' abilities. Many small farmers are leveraging very rudimentary farming tools and do not have access to advance farming technology such as tractors. This results in low crop production and an inability to expand or grow.

Financing

Experts have also expressed that financing is another pain point for farmers. Access to advanced technology as well as additional supplies is prohibited due to financing options. Today, the only finance options that small farmers have are high-interest rate loans that are fiscally out of reach of the average small farmer.

Analysing the results, an opportunity to connect farmers with alternative loan solutions with more favourable lending rates was also identified.

CHAPTER 3

Future Farmers

The Solution

A mobile application that connects farmers directly with retailers will help to overcome many of the challenges facing the fresh produce supply chain in Georgia. By providing a platform for direct connections between farmers and retailers, the application will help to reduce the need for middlemen and eliminate the high commissions that middlemen often charge. This will result in higher profits for farmers, as they would be able to keep more of the revenue from each sale.

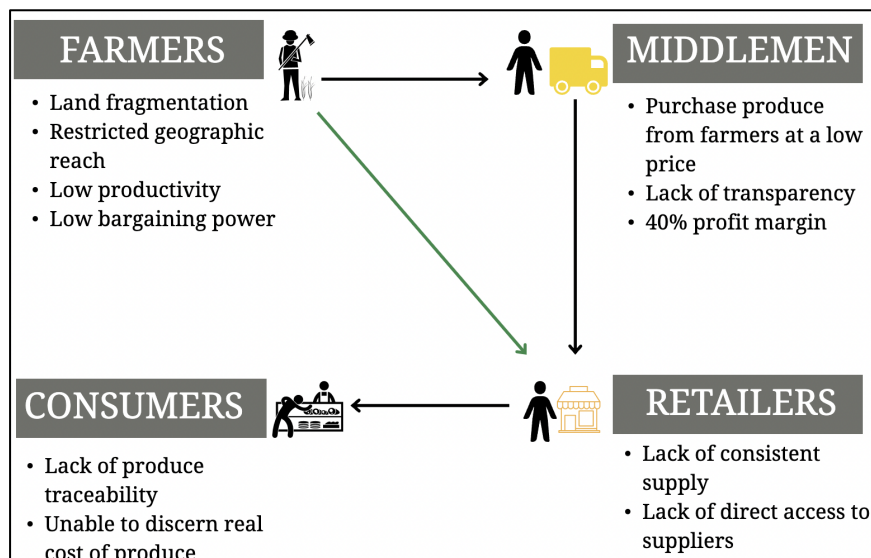


Figure 4: Connecting Farmers and Retailers with *Future Farmers*

In addition to providing a more profitable sales channel for farmers, *Future Farmers* will also help to expand the market for farmers' produce. In many cases, small-scale farmers in Georgia may not have direct access to retail markets and may be forced to sell their produce through middlemen in order to reach consumers. By using the mobile application to connect directly with retailers, farmers can potentially expand their market and increase their revenue.

The use of *Future Farmers* can also help to improve the quality and consistency of products available to retailers. By using the application to connect with a wider range of farmers, retailers can source produce from a greater number of suppliers and reduce their dependence on any one supplier. This will then help to mitigate the challenges of seasonality and inconsistent procurement volumes that currently plague the fresh produce supply chain in Georgia.

The use of *Future Farmers* could also help to improve the quality of products available to retailers. By providing a platform for direct connections between farmers and retailers, the application will enable retailers to access information about the availability and quality of different types of produce. This will help retailers make more informed decisions about their procurement efforts and to ensure that they are able to offer high-quality products to their customers.

Overall, the use of *Future Farmers* will have many benefits for farmers in Georgia. By providing a more profitable sales channel and expanding the market for their produce, the mobile application could help to improve the income and livelihoods of farmers.

Market Trends

An application connecting farmers directly with retailers in the country of Georgia will provide a substantial benefit to the fresh produce supply chain.

Built on genetic engineering, automation, the Internet of Things, and artificial intelligence, the Agriculture technology (AgTech) market is steering the agricultural sector around the world toward the path of innovation and unprecedented growth. [30]

Agriculture technology (AgTech) is the use of technology in agriculture. It includes a wide range of technologies, such as:

- Precision agriculture: This uses sensors and data to help farmers make better decisions about crop planting, fertilization, and irrigation. [31], [32]
- Robotics: This uses robots to automate tasks such as planting, harvesting, and weeding. [32]
- Drones: This uses drones to collect data about crops and livestock. [32], [33]
- Artificial intelligence: This uses AI to analyse data and make predictions about crop yields and livestock health. [32]
- Blockchain: This uses blockchain to track the movement of food from farm to fork. [32]

It is helping farmers to increase crop yields by using precision agriculture to optimize their planting, fertilization, and irrigation practices, reduce costs by automating tasks such as planting, harvesting, and weeding, improve food safety by using sensors and data to track the movement of food from farm to fork, and sustain the environment by using precision agriculture to reduce the use of pesticides and fertilizers. [34]

AgTech is having a major impact on the agricultural sector around the world. It is helping farmers to produce more food with fewer resources, which is essential to feeding a growing population. It is also helping farmers to improve the quality and safety of food, which is important for human health. AgTech is a promising technology that has the potential to revolutionize agriculture.

Developing countries are driven by three mega-trends in the AgTech sector:

- Sustainability: Growing awareness and interest in climate change solutions is pressuring developing countries to find creative solutions. There are inefficiencies across production, transactions, and communication in the countries which is why investors are increasingly interested in young firms

focusing on sustainable solutions. Clearly, the demand for sustainable solutions is growing. [35]

- Digitization: The degree of digitization is relatively low in developing countries but is rapidly increasing. Cell phone usage is widespread making mobile solutions attractive. Competition is still relatively weak in most countries, as digital education, and investments lag. Thus, progress toward seeking digital solutions to rectify these problems is increasing. [36]
- Industrialization: Agriculture has a meaningful share of GDP but is underpenetrated by technological solutions. A large percentage of the population is active in agriculture, creating a mass market for solutions. Clear gaps in supply chains can be identified and improved or filled. Agriculture technology can facilitate this process by improving the productivity and efficiency of farming, which reduces the amount of labor needed to produce food and frees up workers for other sectors. Innovation in agricultural machinery and farming methods, such as tractors, harvesters, irrigation systems, and fertilizers, that increase the scale, speed, and output of farming. [37]

Future Farmers is at the intersection of these trends.

Market Sizing

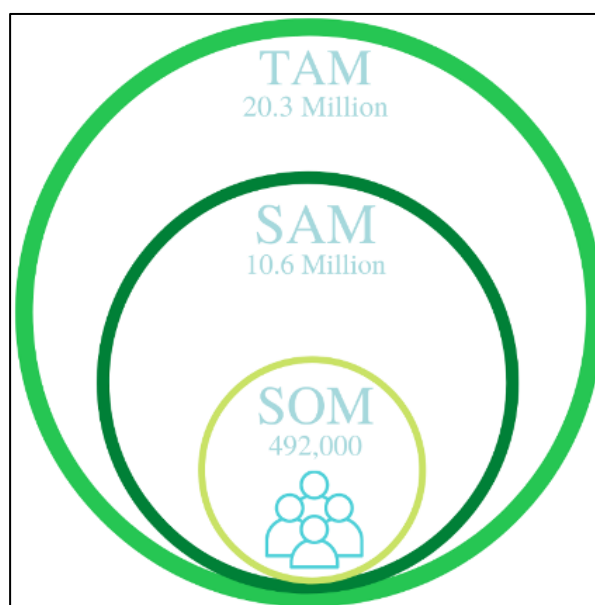


Figure 5: TAM, SAM, SOM

The Total Available Market (TAM), and the target customers for the mobile application, which include farmers within developing countries in Europe, is 20.3 million and the potential revenue is \$4.1 billion. [38] The Total Available Market refers to the total demand for the product or service across all segments, all possible substitutes or alternatives and via all potential channels i.e. it is the total demand available to us if we were the only provider of the product or service and no alternatives were available. [39], [40] The Serviceable Available Market (SAM), which includes farmers who have access to the internet within TAM, is 10.6 million with a potential revenue of \$2.1 billion. [41], [42] In its early stage, *Future Farmers* is targeting farmers in Georgia who have access to the internet. This makes up its Serviceable Obtainable Market (SOM) of 492,000 farmers with a potential revenue of \$98.4 million. [43]

These numbers indicate that *Future Farmers* has a large and attractive market opportunity for its app. The TAM shows the maximum possible revenue that can be

generated if all farmers in developing countries in Europe adopted the app. The SAM shows the more realistic revenue potential that can be achieved by focusing on farmers who have internet access and are more likely to use the app. The SOM shows the initial revenue potential that can be obtained by targeting a specific segment of farmers in Georgia who have internet access and are within the reach of *Future Farmers*. These numbers also help to prioritize the marketing and sales strategies, as well as to communicate the value proposition of the app to potential investors.

Value Creation

<p>Customer Problem Small Georgian farmers have minimal profits due to the following:</p> <ul style="list-style-type: none"> • Low bargaining power with the middlemen: • <i>Small Scale</i> • <i>Lack of cooperation</i> • <i>Informational asymmetry</i> • Lack of access to cheap money: • <i>High interest rates</i> • <i>Low success with securing grant money</i> • <i>Lack of PPE</i> <p>Buyers face problems with procurement:</p> <ul style="list-style-type: none"> • Difficulty sourcing large volumes of produce • Poor quality of products • Inconsistent procurement volumes • Difficulty predicting demand • Lack of access to qualified suppliers 	<p>Solution Agricultural Platform (website & app) with:</p> <ul style="list-style-type: none"> • just-in-time marketplace • User rating functionality • Message Center <p>Solution allows B2C businesses to do business directly with farmers bypassing the middlemen.</p> <p>Key Metrics</p> <ul style="list-style-type: none"> • % of farmers and B2C businesses using the platform within a year • # of transactions settled through the platform monthly • % increase in farmers' and value chain profits • Increased ability of grocers to consistently project supply <u>Le</u>, stock their shelves 	<p>Unique Value Proposition</p> <p>Enable farmers make better decisions and achieve higher profits.</p> <p>Provide buyers with supply chain stability and increase customer satisfaction.</p> <p>Create connections between farmers and B2C businesses to allow both parties make better decisions and capture greater value.</p>	<p>Unfair Advantage</p> <ol style="list-style-type: none"> 1. Unmet need 2. Elena is Georgian and has a unique position to gain customer trust. 3. Elena knows farmers, including her grandfather, personally 4. Bottom-up approach, identifying the customers' problems to inform the solution <p>Channels</p> <ol style="list-style-type: none"> 1. Word of mouth 2. Text messaging 3. Direct outreach 4. TV ads 	<p>Customer Segments</p> <p>Georgian farmers rarely specialize in specific crop and do not own more than 5 acres of land each (only 4% own more than 5 acres). Therefore, we decided to segment the customers based on geography and size:</p> <ul style="list-style-type: none"> • Small farmers in the following regions: <ul style="list-style-type: none"> • Kakheti • <u>Kartli</u> • Samegrelo • Adjara <p>The following segments of B2C businesses in Georgia:</p> <ul style="list-style-type: none"> • Grocers • HORECA
<p>Cost Structure</p> <ul style="list-style-type: none"> • Platform setup costs- approx. 35K (Goodfirms.com research estimate) <ul style="list-style-type: none"> • 4-11 weeks to develop on average for simple app • Marketing and advertising costs- minimal, start word of mouth during MVP phase • Customer acquisition costs- minimal during MVP phase. <ul style="list-style-type: none"> • 30K to start scaling first year (cutomerthink.com) 		<p>Revenue Streams</p> <p>For-profit:</p> <ul style="list-style-type: none"> • Charge retailers <p>Non-profit:</p> <ul style="list-style-type: none"> • Funding from Ministry of Agriculture • Funding from Georgian Farmer's Association • Funding from non-profit organizations: People in Need, the EU, USAID • Bootstrapping, <u>Gofundme</u> • Pitch competitions (secured 1000 so far) 		

Lean Canvas is adapted from The Business Model Canvas (<http://www.businessmodelgeneration.com>) and is licensed under the Creative Commons Attribution-Share Alike 3.0 Un-ported License.

Figure 6: Lean Business Canva of *Future Farmers*

Farmers would benefit greatly from the innovative application which, by bypassing middlemen from the supply chain, will make farming more profitable for them. They will have easy access to retailers and after a few transactions would eventually adopt

strategies to retain and attract more buyers, which would further encourage them to adopt farming practices that ensure the production of high-quality products. Moreover, giving direct access to markets to the farmers will help them understand the pricing, better plan their crop calendar and production, and avoid waste.

Consequently, for retailers' fresh produce will be one phone tap away from their shops, thereby making it more appealing for them to purchase from Georgian farmers directly and – in the process– make the domestic market just as competitive as the foreign one. Eventually, they will also be able to identify quality suppliers and better trace their produce.

Entering the Georgian market allows for a hugely lucrative opportunity; as a small country, it will enable faster penetration. Moreover, the country's population has strong fundamentals in phone usage rates and internet access which is why the online app-based solution will be easy to use for the customers.

CHAPTER 4

The Product

Product Development

The problem of inefficient agricultural supply chain was identified and verified through qualitative interviews with farmers and retailers in March 2021. A low-fidelity prototype of a mobile application was designed using Balsamiq and evaluated by 12 farmers and 2 retailers in May 2021. A minimal viable product (MVP) was developed and presented at the Winter Tuck-Magnuson start-up fair in November 2021, where feedback from more than 30 students and start-up founders at Dartmouth was collected and analysed. The MVP is currently being improved based on the feedback and will be ready for beta testing among farmers and retailers in Georgia by the end of 2023.

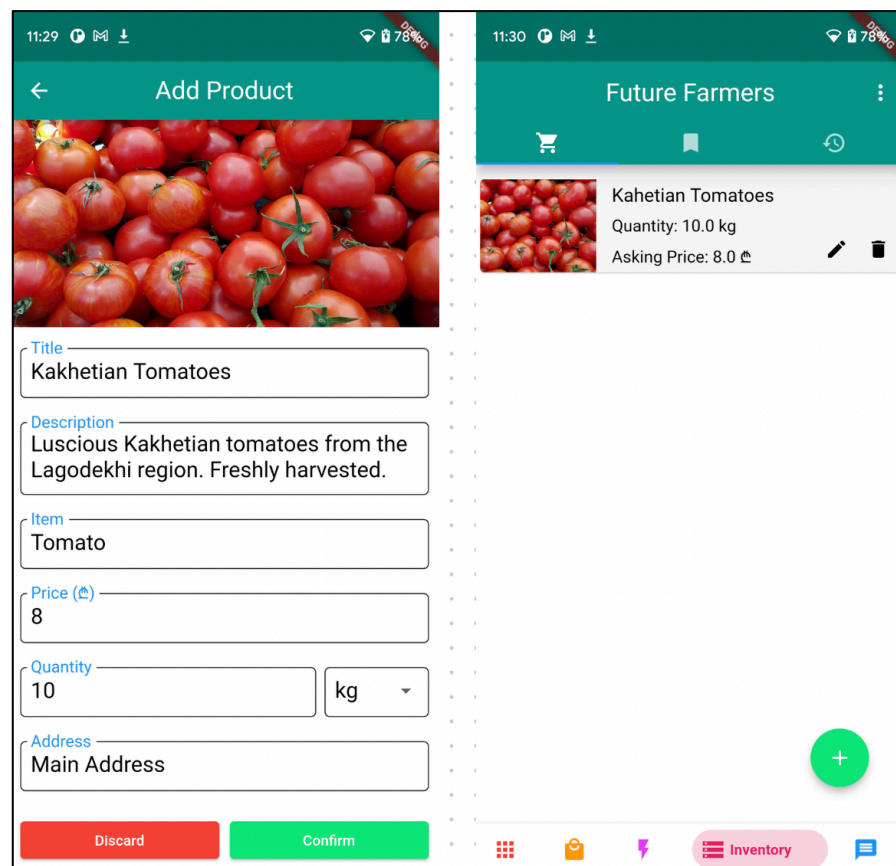






Figure 7: Screenshots of MVP

Features

	<p>Easy To Use: <i>Future Farmers</i> App works on every mobile device from Android to iOS. The App is also simple and intuitive to use. Simply download the <i>Future Farmers</i>' App for free, create your farmer or retailer profile, and start connecting.</p>
	<p>Upload Pictures: On their profiles, farmers can share pictures of their farm, freshly produced fruits, vegetables, and grains allowing them to build up their reputation and brand.</p>
	<p>User-Friendly Search Feature: The search feature enables retailers to filter results based on products' attributes, price, location, posting date, etc. It saves time and makes the buying process easier.</p>
	<p>Interactive Chatting: Farmers and retailers can chat with one another directly, negotiate prices, and set up a delivery time. <i>Future Farmers</i> will ensure on-time delivery of all produce.</p>



Sales Data: Users can monitor their sales and purchase data on a daily, weekly or monthly basis right from the *Future Farmers'* App. This at-a-glance insight will help all users optimize their sales negotiation.

Additional Recommendations for the Product:

There are several other features that this application could have to further improve the user experience for both farmers and retailers. Some potential features that could be added include:

1. A ratings and reviews system, where farmers and retailers can rate and review each other based on their experiences with the virtual marketplace. This can provide valuable feedback for both parties and can help to build trust and credibility in the virtual marketplace.
2. A payment system that allows for secure and convenient transactions between farmers and retailers. This can make it easier for retailers to purchase produce from farmers and can help to ensure that both parties are protected from fraud or other risks.
3. A notifications system that alerts farmers and retailers when a new product is listed, or when there are changes to prices or other important information. This can help to keep both parties informed and up-to-date, and can make it easier to stay on top of the latest developments in the virtual marketplace.

4. Integration with other popular tools and platforms, such as social media or email, to make it easier for farmers and retailers to share information and connect with each other. This can help to increase the reach and visibility of the virtual marketplace and can make it easier for more farmers and retailers to participate.

Overall, these additional features can help to enhance the user experience for both farmers and retailers and can make the virtual marketplace more useful and effective for facilitating trade and building successful business relationships.

Moreover, the possibility of developing a website in the future will also provide several potential benefits, such as:

- Increased accessibility: A website can be accessed from a wider range of devices, including desktop computers, laptops, and tablets, whereas a mobile application is typically only accessible from smartphones. This could make it easier for a wider range of users to access the company's services.
- Enhanced functionality: A website can offer more advanced features and functionality than a mobile application, such as the ability to display more detailed information, support more complex interactions, and offer a wider range of services.
- Improved searchability: A website is more easily discoverable by search engines than a mobile application, which can make it easier for users to find the company through search results.

- Greater reach: A website can be accessed by users from anywhere in the world, whereas a mobile application is typically only available in the app stores of specific countries or regions. This could make it easier for the company to reach a global audience.

Logistics

The logistics of the application will depend on various factors such as the size and scale of the operation, the specific needs and preferences of the farmers and retailers, and the overall business model of the mobile application company. Some potential options for handling the logistics of the application include

1. *Future Farmers* could handle the delivery of the products directly. This could involve using company-owned vehicles and personnel to pick up the produce from the farmers and deliver it to the retailers. This approach could provide more control over the delivery process, but it would also require a significant investment in logistics infrastructure and personnel.
2. *Future Farmers* could partner with a third-party logistics company in Georgia to handle the delivery of the produce. This could involve working with a company that has experience in handling produce deliveries and has the necessary infrastructure and personnel in place. This approach could provide a more cost-effective way to handle the delivery of the product, but it would also require *Future Farmers* to give up some control over the delivery process.
3. *Future Farmers* could simply act as a software layer connecting farmers and retailers, and leave it up to the farmers to handle the delivery of the produce. This approach would require the least investment in logistics infrastructure

and personnel, but it would also mean that it would have less control over the delivery process and could potentially face challenges in ensuring timely and reliable delivery of the produce.

Overall, the best approach for handling the logistics of the application will depend on the specific needs and preferences of the broader market and competitive landscape.

CHAPTER 5

Financials

Financial projections are an essential part of any start-up business plan, especially for a mobile application. They provide a quantitative estimate of the expected revenues, costs, profits, and cash flows of the app over a given period of time. These numbers can be helpful to understand the potential market size, customer demand, pricing strategy, and profitability of the app. They can also help investigate the scalability of the app, which refers to its ability to handle increasing amounts of users and transactions without compromising its performance or quality. By projecting different scenarios of user growth, revenue growth, and cost reduction, financial projections can help evaluate the feasibility and sustainability of scaling the app to meet the market needs and expectations.

Revenue Generation

Future Farmers will charge 5% commission/transaction as opposed to middlemen's 40% commission/transaction making the application more profitable for both farmers and retailers (see Appendix 3). The App will be initially marketed through word-of-mouth, text messaging, direct outreach using the sales team, and TV ads. Digital marketing on Facebook, Instagram, and other social media will be leveraged to expand reach.

Some other potential revenue streams include

1. Charging a subscription fee for access to the virtual marketplace. This could be a monthly or annual fee that farmers and retailers would have to pay in order to use the platform and access its features. This could be a one-time fee for signing up for the app, or it could be a recurring subscription fee that users would have to pay in order to continue using the platform. The exact amount of the fee

would depend on factors such as the value that the app provides to its users and the competitive landscape in the market. The fee could be collected through in-app purchases or by requiring users to enter their payment information when they sign up for the app.

2. Offering premium features or services for an additional fee: Future Framers could offer enhanced search or filtering capabilities, or additional support and advice, for a higher price. This could involve the app providing extra features or services that are only available to users who are willing to pay for them. For example, the app could offer a premium version that allows farmers to list their products on the platform for a longer period of time, or it could offer a service that connects farmers with financial institutions to help them obtain loans or other financial services. Offering premium features or services can be a good way for the creators of the app to generate revenue, as it allows them to monetize the platform without directly charging users for access to the app or taking a cut of their transactions.
3. Generating revenue through advertising or sponsored content: *Future Farmers* could allow advertisers to target farmers and retailers with relevant ads or sponsored content, which could generate revenue for the company. This could involve the app displaying ads or sponsored posts from businesses that want to promote their products or services to the users of the platform. This can make the app more appealing to farmers and retailers, who may be more willing to use the platform if they don't have to pay a fee or a commission to access it. Additionally, since the revenue from ads or sponsored content is based on the number of users on the platform, the creators of the app can potentially earn more revenue as the platform grows and reaches more users.

4. Partnering with financial institutions to offer loans or other financial services to farmers or retailers: This could involve the app providing a platform for farmers or retailers to apply for loans or other financial services from financial institutions, and the financial institutions would pay the app a fee for providing access to the platform. This can also provide additional value to users of the platform, as it allows them to easily apply for loans or other financial services without having to go through a separate process.

Overall, there are many potential ways that *Future Farmers* can generate revenue from this application, and the specific approach that the company takes will depend on factors such as the target market, the competition, and the overall business model.

Launching the Application

Currently, the MVP (minimal viable product) of the application has been tested by 12 farmers and 2 retailers. They shared feedback on how the application can be improved further. Once the application has been optimised based on the feedback, it will go through a round of beta testing among 35 farmers and retailers each. After that more improvements will be made to the application as farmers and retailers make their first transactions using the online marketplace. During this time, the logistics of the transactions would also be built where either the farmers or the retailers will transport the produce or Future Framers will partner with a their party logistics company to transport it. After the completion of this round, the Application will be launched to a small network of 100 farmers and retailers in Elena's network circle. During this time, the application will see continuous improvements as more feedback is collected from

the customers. Moving forward, *Future Farmers* will be introduced to a larger set of farmers and retailers through Facebook and Text Messaging and finally sales and marketing professionals will be hired so that they can spread the word on a grassroots level in Georgia. As of now, *Future Farmers* has been able to raise \$17,000 through pitch competitions and incubators in seed funding but an additional \$100,000 would be required to hire a team of freelance android and web developers as well as sales and marketing professionals.

CHAPTER 6

Marketing

Understanding the competitive landscape and planning a marketing strategy is essential for the long-term viability of the mobile application that connects farmers with retailers in the country of Georgia. By analysing the strengths, weaknesses, opportunities and threats of the existing and potential competitors, the app can identify its unique value proposition and differentiate itself from other similar platforms. Moreover, by developing a clear and realistic marketing plan, the app can reach its target audience, communicate its benefits and features, and build trust and loyalty among its users. A well-designed marketing strategy can also help the app to expand its market share, increase its revenue and profitability, and achieve its social and environmental goals. Furthermore, by understanding the competitive landscape and planning a marketing strategy, the app can also explore ways to scale further in developing countries, where there is a high demand for innovative solutions that can improve the efficiency and sustainability of the agricultural sector.

Competitive Landscape

Although there are several AgTech companies in the Georgian market, none of them are direct competitors of *Future Farmers*. Therefore, *Future Farmers* is considered to be the first mover in this market. Below is the description of all the companies that are in the AgTech space:

Soplidan.ge [44]

Soplidan is an online grocer, focusing on products from small/medium-sized farmers. Soplidan is an actual retailer, not a platform. It purchases produce from farmers, holds it as inventory, and then sells the products via its website to end customers.

Soplidan handles its own delivery, although only delivers within Tbilisi and its suburbs. Customers can also purchase via the Wolt and Glovo apps, with delivery handled by those services. Soplidan also ships outside of Georgia using Georgia Post. Soplidan primarily sells raw produce, meat, and basic processed foods (cheeses, butter, etc).

While Soplidan works with small/medium-sized farmers, it should be noted that it appears that they are primarily working with more sophisticated farmers within this class. The featured suppliers on Soplidan's website are commercial farms that have their own brands. They specialize in certain categories, have certifications, and appear to perform some processing themselves. It is not clear if Soplidan also works with less sophisticated subsistence farmers. It is not clear how farms get their products to Soplidan.

[Agronavti.ge](#)[45], [46]

An information portal that includes farming news, a blog, and links to educational resources on farming techniques and regulations. The website has limited content and features and does not appear like it would be very useful. They also have an app version of their website that was heavily advertised in the beginning but does not seem to have any traction as of now.

[Argomap.ge](#)[47], [48]

A directory and communication portal where agribusiness participants (farmers, buyers, equipment suppliers, veterinarians) can list their business and contact information. The website has limited entries and does not appear to be used by very many businesses.

[eBazaar.ge](#)[49]

It is Georgia’s first online agricultural marketplace that allows users to buy fresh, healthy and high-quality Georgian agricultural products directly from local farmers. It offers a variety of products such as dairy products, eggs, honey, fruits, vegetables, meat, fish, nuts, spices and more. It also provides delivery service to the customers’ doorsteps. It was founded in 2019 by Giorgi Koberidze and Nika Kurdiani with the support of USAID Zrda Activity in Georgia.

Competitors	Targeting Small Farmers?	Two-sided Marketplace?	Not Holding Inventory?	Connecting Farmers and Retailers?
Soplidan.ge	NO	NO	NO	NO
<u>Agronavti</u>	NO	NO	YES	NO
Argomap.ge	YES	NO	NO	YES
eBazaar.ge	YES	YES	YES	NO
<u>FutureFarmers</u>	YES	YES	YES	YES

Figure 11: *Future Farmers* Competitive Analysis

Differentiating Factor

There are no other active two-sided online marketplaces connecting Georgian farmers with retailers. The closest competitor, eBazaar.ge, connects farmers to consumers and not to retailers. The reason why the direct connection to retailers is more viable in Georgia is because retailers would bulk-purchase fresh produce, making it more convenient for farmers to make sales. Furthermore, *Future Farmers* has the following unique selling points:

- The team has unique combination of both local and international experience and a diversity of academic and professional backgrounds. Moreover, the founder comes from a family of farmers and a similar socioeconomic background which will allow *Future Farmers* to secure the trust of the customer segments.
- Customer-centric approach is used in creating the app. The team first applied design thinking and lean methodology to first identify the customer problem and then proposed a solution (bottom-up approach) as opposed to competition that focused on a product and later failed at establishing product-market fit (top-down approach).
- Mobile-based online application is another added advantage. Since most farmers do not have a laptop but have a smartphone, the focus is on developing a mobile-based application versus a website.
- *Future Farmers* will have a robust marketing strategy. Besides traditional marketing channels, the marketing strategy will focus on the marketing channels that are being consumed by the target consumers. In order to address the trust issues of the farmers, it is important to heavily utilize word-

of-mouth and direct sales channels as well as TV ads. In order to target the retailers, it will be crucial to use social media and text messages.

- Georgia has has a favourable internet ecosystem compared to when the competition launched their products. Internet penetration is now high in Georgia at 80%. This will allow the app to reach customers faster and achieve quick adoption of our product.

Marketing Strategy

Future Farmers has carefully developed a diverse marketing plan intended to keep our brand in the hearts and minds of our customers, enabling to launch and grow the business.

Word of mouth	Farmers will not be incentivized to spread the word about <i>Future Farmers</i> as it is important to build trust with them organically. Instead, the company will rely on them to spread the word hoping that their satisfaction rates will be high.
Text messages	This is a very important source of marketing as farmers and retailers use text messaging as the primary means of communication. In addition, this kind of marketing is widely used in Georgia
TV Ads	Farmers consume information mainly via TV. Television commercials will be created that will be telecasted across rural Georgia as one of the primary marketing strategies.
Content marketing	On the website, <i>Future Farmers</i> will release marketing content through blogs that aims to provide farmers’ and retailers’ testimonials and stories to the audience as well as inform them about the value that the platform provides.

CHAPTER 7

Final Recommendations

Small farmers have no negotiation power with respect to pricing. They are unable to forecast demand for their produce and generally attempt to sell everything at once, as a forced seller. Moreover, minimal technology, no irrigation infrastructure, no storage facilities are available to farmers.

Farmers often rent a portion of their land, which allows them to increase or decrease their acreage in a given season. Even they do not plan, in theory they could increase/decrease acreage based on expected demand. A portion of the crop produced is used for the household's food while the rest is sold in the market. Farmers do not track costs meaningfully and usually do not have employees as they just work the land themselves. They sell a variety of products without any specialization and do not get support from the government. Some farmers appear to be aware that selling during off-season is better, but do not have green houses. Large farmers are better positioned in the market.

Retailers require a stable supply of products in smaller lot sizes and pricing is a secondary concern for them. Farmers sometimes sell to consumers directly themselves, but that requires renting a stall and moving up the value chain incurs other costs. So even if this would give them more control over price, they would not end up with any more profit because of the increase in overhead costs. There are three sales channels for farmers: Middlemen, direct to stores, direct to customers

- Farmers do not plan in advance, but this is due to having no insight into future price and volume demands, if they had some certainty, planning would be easier. The *Future Farmers* mobile application will help farmers keep track of prices and demand and make planning easier.
- The App as currently conceived is a just-in-time marketplace. While this will provide better price transparency, it does not solve several of the underlying issues, and requires a large number of users to be useful. Large buyers would still have bargaining power over small farmers who want to sell their products immediately.
- If in addition to just-in-time buying/selling, the app created a marketplace for ongoing contracts, it could provide stores with their steady supply of small produce, while giving farmers guarantees, thus allowing them to plan. There is upside for stores should prices increase beyond their expectations, as they could keep the benefit, but farmers would be protected on the downside.
- There must be protections for the farmer should their crop fail, and they cannot meet their terms. But also, there would need to be penalties if farmers can meet their contract but choose not to, because the price has increased. The just-in-time marketplace can be used to allow farmers to sell the remainder of the products not contracted.
- By allowing farmers to plan ahead, *Future Farmers* can provide relief, even if pricing is bad. If farmers know that pricing will be poor earlier, they can adjust costs and crops around that knowledge, rather than be caught off guard at the end of the season.

- Thus, the *Future Farmers* mobile application will be beneficial to both farmers and retailers.
- For the next steps, the *Future Farmers* application should be tested among a focus group of farmers and retailers to ensure that both parties can use the application with ease and share their feedback to improve it.

Appendices

Appendix 1: Farmers' Interview

Interview 1: Avto Barbaqadze

What is the overview of your reason for farming and your thoughts on Georgian agricultural industry

- No other choice but to work on land – no other job
- Only source of income and support his family
- Whatever he grows he consumes for family and sells whatever is left to buy things like sugar oil etc that cant be produced at home
- Has small chunk of land that he works on

What are operations of the farm like (what do you grow what tech employed)?

- Farm operations work by he is working on land
 - Pays someone with a tractor for whats hard to do manually
- Wheat and corn but can grow anything on this land because very fertile
- Has a vineyard that works on himself
- Land is only 2 hectares
- Only grows wheat and corn because that's what he needs for his family
 - Has pigs and chickens and stuff and he feeds this stuff to his family
- Will sell 25% or wheat/corn produced
 - If grow corn on specific land then cant grow anything else so not much seasonality
 - Will grow tomato cucumber depending on season

What is the relationship between the different players in the value chain (suppliers, customers, end users)?

- Trust based relationships
- Will sell produce to the people you know because they trust u and know u have good stuff
- Suppliers same story – go to the people who you trust and know they have good stuff
- Don't know who the end consumer is (neither do buyers because there five or six layers of middle men)
- Basically does not know how he could trust any foreigner because if he doesn't know them they he can't trust them
 - If his supplier doesn't sell him good stuff then there would be bad word of mouth about his products
- Not willing to use new sources because he has an established relationship

How to improve economic outlook?

- Any financial help from government would help
- Finances are the main problem – doesn't' have enough money to grow business

Interview 2: Emeliane Kiladze

Thank you for your interest in my country. I formally worked in healthcare. Starting a new career in farming in home town.

How much do you see with your products? You are growing blueberries?

Very easy to sell in Russia, despite the political situation, an economic relationship still exists. Selling into many markets other than Russia requires various certifications. These other countries often have better prices and are more reliable. Certifications are difficult and expensive for Georgian farmers to achieve. There are only 1 or 2 certification consulting organizations active in Georgia. To then actually get the certification requires inviting the certification organization to Georgia, at great expense. Certification is my largest issue.

How do you get products to market?

I do it myself. You can transport by car. You can transport by cart. However, most farmers use middleman. 80% of products from Georgia sell in Russia. I do not like Russia. Not good market. Not reliable. Poor price.

What do you mean by not reliable?

10 years ago Russia forbid all imports. There is no diplomatic relationship with Russia which makes this hard. Price is also not good. Why? No certifications and bureaucratic issues. Customers do not care about quality, and so are not willing to pay for quality.

Do you and other farmers have information on sophisticated farming practices?

Big issue. Depends on many factors. Lack of mechanization is very big problem. I need a tractor with GPS but cannot find it, and do not know how to solve it. I could buy one from outside Georgia, but it would be very expensive.

It is easy to borrow money?

I am a beginner. I am not sure. I had a conversation with a bank and they made promises, so it has been easy so far. Interest rates are very low. The government has helped me with preferential loan terms, no long payments for 5 years.

How about other farmers?

Many of my friends have loans as well.

How big is your farm?

Today I have 14 hectares. I am in discussions for an additional 20 hectares. My farm is larger than average. I do not know the size of the average farmer.

What is the biggest issue facing farmers?

Lack of modernization. No laboratories. Lack of machines. Lack of education. Farmers don't know why need laboratories, why machines, why certifications. Biggest problem is education and leads to the other problems.

How is farming being passed down?

From parents and friends. But no one is looking outside that for additional education.

Distribution?

Middleman come to my farm. They pay less. If I export myself I get \$10 per kg, if middleman then \$5 per kg. When I export myself I make the deal myself with the foreign buyer and hire a person to deliver the product or they send someone. It is not hard to find a person to deliver a product. I have to pay them a fee but it is easy. [I asked him this twice to confirm that this was indeed the case].When I use a middleman the middleman come to my farm and make a purchase then and there and take the product immediately.

Interview 3 with Erekle Nozadze

I live in Apeni, Kakheti.

There are economic problems and everyone has to deal with the banks that charge high interest rates.

There are no laboratories. Everyone adds too much fertilizers. They do not study the soil.

Another problem is that they do not know what the market price will be and whether they will be able to sell so they throw away some produce.

If one crop has a good price this year, next year everyone will grow that. So the price will plummet as a result.

In other countries they know what volume to grow. No one is helping us here.

A) the middlemen squeeze the margins from farmers

- Do you sell your products at a good price or bad price? If low, how much is it worth?

The prices are minimal, it is definitely unacceptable.

The chemicals are too expensive and oil. The sale prices are too low, but we do not have any other choice.

For vegetables and fruits, the middlemen determine the prices. They agree among themselves what price to pay.

Prices of corn is determined based on market forces. If corn is imported from Ukraine, then the prices drop. The price for corn is rather high now.

Corn is bought by farmers and processing plants.

The merchant will buy corn and then sell it to the plant. Merchant does not have much power over the price of corn and hazelnuts.

Since corn and hazelnut are not perishable they have a higher price, because you can store it and sell it at a higher price later.

There are no factories to sell them tomatoes.

If the merchant buys for 0.7 GEL, they have to sell it for 1.2 GEL in the cities and centers.

- How much mark-up do you sell your products for?

I do not really do cost accounting. Even if my grapes do not sell for a good price, I still need to take care of my vineyard. Even if I am at a loss, I still need to sell it.

- How much do you think the final consumer buys your product?
- Do you think the middleman's wages are justified?
- What value do you think the middleman brings?
- What alternative arrangements can be made (rather than have a middleman)?

Middlemen buy the plastic for greenhouses and they give it to the people in the village. Their agreement is that the crop that the farmer grows will be only sold to that specific middlemen.

Sometimes middlemen make a loss as well. So the farmer cannot negotiate prices.

B) Farmers do not have knowledge of the market and the supply chain

- Do you know what is a fair market price for your product?

We have information about what is the end price for our products but it does not matter because the merchant determines the price and we cannot negotiate.

Farmers have trouble with transportation and even if they transported their product to the open market, all the places there are already occupied.

Naturally, you are in the hands of the middlemen.

- Do you know who are the buyers of the middlemen?

-
- What is the end price of your product?
- Have you taken part in any training programs by FAO or other organizations?

C) They need knowledge of the market and the supply chain to do better

- Do you think if you had better knowledge about the market and the supply chain you would sell directly to the buyer?

Of course I would like to avoid dealing with the middlemen. If there is a difference in the price, why not. Middlemen are stable though.

- If no, would you sell it if you did not have additional costs?

D) They need access to affordable money

- Do you borrow money for farming?

Banks give out loans. I get a loan sometimes, agroloan. I prepare a plan showing what I need and based on that I get a loan. I pay it back when I get harvest.

- If yes, what is the interest rate? Is it a good deal?

35-37% is the loan. The interest is really high, but personal loan from a bank is even more expensive. The agroloan is supposed to be a better deal. Sometimes I can make an early payment which is better.

I took out 3500 GEL in August. I need to pay back 4000 GEL.

- Who do you borrow from?
- Why do you need the money?

For fertilizers, herbicides and pesticides.

E) Small scale is a problem with respect to bargaining power and lowering costs

- Can you negotiate the price offered by the merchant?
- no
- If no, what would help you to increase your bargaining power?

If there was a factory that can buy some produce that would help. Now the merchant selects the produce and does not take all of it.

- Would bigger land help with bargaining power? Or lowering costs?

F) If provided an opportunity, farmers would use technology

- Would you use better technology?
- What kind of technology would you like to have access to?

G) They would be willing to pick up digital/computer/smartphone skills if it improves their sales

- Do you have a computer or smartphone?
- If no, would you pick up the necessary skills to use them if your sales prospects increased?

Other General Questions

- Tell me about yourself
- What do you do?
- What is your main source of income?
- What do you grow?

I have a vineyard on 0.5 hectares, hazelnut garden, corn fields (for the family and for sale), watermelon garden, tomatoes.

We also have pigs for family and for sale.

We do not get as much watermelon anymore, because the soil does not have as much resources. We harvest 20-25 tones from 1 hectare now.

People are switching from growing tomatoes to growing tobacco.

- How big is your land?

I have my own 2 hectares and I also work on my sister's land that is 0.5 hectares.

- Tell me about your farming operation? (size, crops and most profitable crops, margins, tech employed, market, value chain and players, history, average farm, tell me about Georgian Ag as a whole)

- Do you enjoy farming?

- What are some of the struggles you are facing as a farmer?

- Has anyone ever tried to help you before? How did that go?

- What's the biggest problem you have today and how do you solve it?

How would you like to solve it?

- Tell us about your neighbors. What do they grow? How successful are they?

- Any other problems/pain points?

Interview 4: Goga Gelashvili

Village Shroma

A) the middlemen squeeze the margins from farmers

- Do you sell your products at a good price or bad price? If low, how much is it worth?

Depends on the harvest and the volume. Sometimes there is drought or rain and we do not get much harvest. Farming is a lottery. If there is too much of something, the price drops. Corn was 0.6 GEL during harvest. Then we store the corn and sell it for 0.1-0.15 GEL more later and the rest remains with us. It is important to expand and we do not have the means to expand.

There are merchants with vans and they have chicken farms in Tbilisi. They take 4-5 tones from me. Sometimes they would take 30-50 tones in one go. At some point, corn is imported from Russia and the rice drops. When it is too cold, they cannot import corn and the price goes up again.

I do not have any contracts with the merchants. They get 0.05 GEL as a profit. They do not have contracts with the sellers either. I would rather have a contract because I would rather earn a stable 0.02 GEL profit. I am going to deliver 500 tones to the chicken farm. They have their own storage facilities. They store corn after they buy it at the time of harvest. The farmers that do not have storage, they sell corn immediately after harvest.

There are storage facilities in Gelati. I use those when my storage facilities are not enough. I pay 5% on kg for rent. I have white and red corn.

- How much mark-up do you sell your products for?

I rented 1 hectare for 600 GEL. In order to harvest corn, I need 3200 GEL for 1 hectare. In a good condition, if you harvest 10 tones, 5 tones is a cost. 15 tones of corn is amazing harvest.

- How much do you think the final consumer buys your product?
- Do you think the middleman's wages are justified?
- What value do you think the middleman brings?
- What alternative arrangements can be made (rather than have a middleman)?

B) Farmers do not have knowledge of the market and the supply chain

- Do you know what is a fair market price for your product?
- Do you know who are the buyers of the middlemen?
- What is the end price of your product?
- Have you taken part in any training programs by FAO or other organizations?

C) They need knowledge of the market and the supply chain to do better

- Do you think if you had better knowledge about the market and the supply chain you would sell directly to the buyer?
- If no, would you sell it if you did not have additional costs?

D) They need access to affordable money

- Do you borrow money for farming?
- If yes, what is the interest rate? Is it a good deal?
- Who do you borrow from?
- Why do you need the money?

E) Small scale is a problem with respect to bargaining power and lowering costs

- Can you negotiate the price offered by the merchant?
- If no, what would help you to increase your bargaining power?
- Would bigger land help with bargaining power? Or lowering costs?

F) If provided an opportunity, farmers would use technology

- Would you use better technology?
- What kind of technology would you like to have access to?

G) They would be willing to pick up digital/computer/smartphone skills if it improves their sales

- Do you have a computer or smartphone?
- If no, would you pick up the necessary skills to use them if your sales prospects increased?

Other General Questions

- Tell me about yourself
- What do you do?

I am a musician, I was working in the studio for 18 years. I am limited now because of the pandemic. I am a DJ in Lagodekhi.

I built a small storage with a loan and we grow corn. We rent land. We own 1.5 hectares and we rent up to 7-12 hectares. It is problematic to rent land because sometimes the owner of the land wants to use the land himself. I have been doing this for 11 years.

I have been renting the same piece of land for years and the owners want to sell it. I would have to pay 13,000 GEL for each hectare. I needed 11,000 GEL more (for 23% interest) to purchase the land. If I do that, I might not be able to pay it back, the land might not be enough to cover the financial costs. I do cost accounting every year. I have been in 23 countries and I know what happens there. I pay 6000 GEL every year to Credo bank.

The creditor wants to know what is the purpose of the loan. There is lack of equipment and technology, I need to plow the land and cannot find anyone who would do it for me. We have problems all the time. I cannot do anything during vegetation period.

Irrigation infrastructure is broken and we have to bring water from 1.5 km far. If I had 10 hectares, I would be able to secure a loan for a lower interest rate.

I have ideas but I need finances. Finances is the most important problem to be solved. The next is technology and equipment problem. We have American hybrid corn.

Grants are accessible to big farmers. They are giving out grants based on nepotism. The grants are not publicly available, it is decided beforehand who will get the grant money.

I wanted to build a storage facility so I took out a loan for 20,000 GEL with 4 years of maturity. The interest amounted to 1800 GEL. There are projects like this even now, but before no one looked at the risks properly. I worked on the application on my own and submitted it to the city hall and it was approved – that is how we got the loan. People were lying about the purpose of the loan and they were using it for non-agricultural purposes.

I want to expand my farm now.

- What is your main source of income?
- What do you grow?
- How big is your land?

- Tell me about your farming operation? (size, crops and most profitable crops, margins, tech employed, market, value chain and players, history, average farm, tell me about Georgian Ag as a whole)
- Do you enjoy farming?
- What are some of the struggles you are facing as a farmer?
- Has anyone ever tried to help you before? How did that go?
- What's the biggest problem you have today and how do you solve it?
How would you like to solve it?
- Tell us about your neighbors. What do they grow? How successful are they?

Interview 5: Jemo Jiyashvili

I do not have any other choice. 3 of us are making a greenhouse. It is important to manage time correctly. If I grow and achieve success, others will too. I want to participate in a project.

People's mentality needs to improve, people need to learn how to identify quality products. Rich people are managing the market. Many people want to import the same products. Therefore, the price plummets significantly. There were times when there was too much watermelon, then eggplants, then cucumbers. If there are tourists, there is more seasonal demand.

I grow watermelon that is very profitable. Watermelon can cost 0.3 GEL per kg. You can grow a lot and the price is decent. Watermelon seedlings need big area to grow. One seedling needs 1 square meter. Watermelon grows once every 4 years. When you grow something the land is hungry afterwards.

The importer companies are competitive and have the pricing power. It is not balanced. Every year we harvest tomatoes in Georgia. Our tomatoes have good taste and quality so the price is stable. On the other hand, people cannot really distinguish between good and bad watermelon during purchase – that is a problem.

I think we should increase our productivity, because our land is extremely fertile. What we can grow here, cannot be grown everywhere. Poland does this much better. We have good land. People do not know how to grow bioproducts – they only know that manure is used as organic fertilizer. We could export these bioproducts abroad. We are healthy people because we grow healthy products. I can show you my land. Vegetables grow in stoney land here. We need to do some lab test on our soil. We need to move forward. Merchants do their own job. When you go to Lagodekhi market, everyone wants tomatoes.

I need support, no one has ever helped me. We had 16 tomato plants and we harvested 240 kg of tomatoes from them. It is local tomatoes. One plant had 20 kg of tomatoes. Last year there were too many pests, this depends on climate changes – I observe everything.

I planned everything, but there were so many pests in one day, they ate everything.

Projects should be accessible to people. Healthy products promotes our growth and progress.

A) the middlemen squeeze the margins from farmers

- Do you sell your products at a good price or bad price? If low, how much is it worth?
- How much mark-up do you sell your products for?
- How much do you think the final consumer buys your product?
- Do you think the middleman's wages are justified?
- What value do you think the middleman brings?
- What alternative arrangements can be made (rather than have a middleman)?

B) Farmers do not have knowledge of the market and the supply chain

- Do you know what is a fair market price for your product?
- Do you know who are the buyers of the middlemen?
- What is the end price of your product?
- Have you taken part in any training programs by FAO or other organizations?

C) They need knowledge of the market and the supply chain to do better

- Do you think if you had better knowledge about the market and the supply chain you would sell directly to the buyer?
 - If no, would you sell it if you did not have additional costs?
- D) They need access to affordable money
- Do you borrow money for farming?
 - If yes, what is the interest rate? Is it a good deal?
 - Who do you borrow from?
 - Why do you need the money?
- E) Small scale is a problem with respect to bargaining power and lowering costs
- Can you negotiate the price offered by the merchant?
 - If no, what would help you to increase your bargaining power?
 - Would bigger land help with bargaining power? Or lowering costs?
- F) If provided an opportunity, farmers would use technology
- Would you use better technology?
 - What kind of technology would you like to have access to?
- G) They would be willing to pick up digital/computer/smartphone skills if it improves their sales
- Do you have a computer or smartphone?
 - If no, would you pick up the necessary skills to use them if your sales prospects increased?

Other General Questions

- Tell me about yourself
- What do you do?
- What is your main source of income?
- What do you grow?
- How big is your land?
- Tell me about your farming operation? (size, crops and most profitable crops, margins, tech employed, market, value chain and players, history, average farm, tell me about Georgian Ag as a whole)
- Do you enjoy farming?
- What are some of the struggles you are facing as a farmer?
- Has anyone ever tried to help you before? How did that go?
- What's the biggest problem you have today and how do you solve it? How would you like to solve it?
- Tell us about your neighbors. What do they grow? How successful are they?
- Any other problems/pain points?

Interview 6 with Lali Gurashvili:

1. What do you do?

I have pigs. I feed them three times a day. I sell them when they are big enough. I also have a cow and calves. We take them to eat grass in the morning and at night we give them porridge and water.

We also have chicken for the family and we consume their eggs.

We also have ducks.

I help my husband, Romani with packaging the corn and wheat for sale.

I also work as a nurse at the hospital. I have a 24 hour shift every 4th day. I work 48 hours every 8 days and get paid 245 GEL per month.

2. What are the prices for your animals and what are your costs?

Price depends on the size of the animal. 1 year old calve will sell for 1500 GEL, while 1 year old pig will sell for 700-800 GEL. We sell to the middlemen. They specify the prices and we cannot negotiate with them.

There are several meat stores in Lagodekhi. They are the only customers and we have to sell to them. All of them agree on the prices for our meat in advance and offer us exactly the same price.

They buy meat from us for 9-10 GEL per kg and sell it for 14-15 GEL per kg (meat with bone) or 17 GEL per kg (meat without bone).

I would not mind selling to other customers and transporting the meat myself if the price offered was better.

3. What is your main source of income?

The cow is more profitable because the pig needs to be fed. A cow that is tied to a tree in the backyard will eat some grass on its own. In addition, if it is a big cow and gives you milk then financially, we break-even, the cow is self-sustaining. By selling 1.5 kg of cheese I can pay the Menakhire (someone who takes cows during the day in the fields for grass) for the entire month. I can also use the proceeds from selling cheese to buy food for the cow. The cow is in the fields with Menakhire for the entire day and it is very important for them to walk around. As a result of walking, their hooves are strengthened and cleaned so they will not get a disease from dirt. The cow will give one calve per year and the calve is being fed by the cow's milk.

It is difficult to find a good cow. In order to buy another cow, it requires me to have 2500 GEL at once and I never have that much.

In my shed for pigs and cows I can have 50 pigs or 20 cows and 25 pigs.

4. What are some of the struggles you are facing as a farmer? Ask for 3

1. The biggest problem is sales. I sell my meat for coins – too cheap.
2. I do not do cost accounting but if I did, I would not be left with a penny of profit. It is a loss for me.
3. I do not sell corn and wheat because the prices are too low. I prefer to feed it to my animals or use it for the family.

5. Tell us about your neighbors. What do they grow? How successful are they?

- a. Ask if they are incentivized to see them succeed (will be our way of seeing how willing/likely customers will be to spread business through word of mouth)

Neighbors grow watermelon just like us. If we cannot sell all the watermelon then we feed it to the cows and pigs.

My neighbors mostly use some hybrid food full of hormones for the pigs that is not good for health and the meat does not taste good. My cows and pigs get only organic food. However the price for my cows and pigs and my neighbors' is exactly the same.

6. What is the nature of the relationship with your partners (suppliers, buyers, end consumers, etc?)

We only have 3-4 buyers and they are the owners of the meat stores in Lagodekhi. Platform is a good idea. If I could sell the meat on a consistent basis I would not work at the hospital. I would rather grow the pigs and the cows. I would rather do this then sell wheat and corn.

What do you do?

I am involved in Agricultural activities. We grow everything, vineyard, vegetables. Some of it is consumed by the family and the rest is sold. We do not grow corn and wheat because our land is not so big. Big land requires a lot of money to rent it. We used to rent the land but it did not make sense due to high cost and not having the necessary equipment. I also grow fruit trees, cherry, hazelnuts, plums, figs, etc. If I have extra fruit then I sell it but last three years there were a lot of freezes and the trees did not give much fruit.

What is your main source of income?

Whatever vegetables I sell is the source of my income. Now I am growing reddish, then I will grow tomatoes and cucumbers and for fall I will grow grapes. I grow different things based on the season. We are not eligible for pensions yet. I will be eligible when I am 60 and my husband will be eligible when he is 65.

How big is your land?

Half a hectare

What do you do during the day?

I was in the vineyards for 2 days to clean it from grass - I burned the grass and took out the trash. I need to clip the vines and attach them to the scaffolding. I need to take care of the vegetable garden and clean it from the snow and water it. I also planted some coriander, parsley and other spices. I make food for myself and my husband. I do the laundry and clean the house. The oil prices are going up and we do not have enough finances.

What are some of the struggles you are facing as a farmer?

Lack of access to financing and increased oil prices

We have a market on the side of the street and that is where we sell our produce. We also sell it in the Bodbis Khevi market, we use the taxi to transport our products. However we do not go to that market anymore because someone else bought and made the prices to rent a spot really high. For a really small spot, they might charge you 10-15 GEL per day. The prices have been really high for 2 months already. It used to cost 2-3 GEL before.

We sell our produce to the merchants from the street. Some of them come from Tbilisi, some from the West and then they sell it to the wholesalers. Some of our neighbors are merchants too and they have a van.

The prices they offer are sometimes good and sometimes bad. We cannot sell it at the prices that we want, we are price takers. Tomatoes were priced favorably this and last year. We determine prices based on the knowledge about what would be the prices for that on the market. I am not always sure in advance which vegetables will sell at a good price and which ones will not. Mostly tomatoes and cucumbers sell at a good price. Merchants add 0.4 to 0.5 GEL on kg when they sell it to the wholesalers.

Tell us about your neighbors. What do they grow? How successful are they?
Ask if they are incentivized to see them succeed (will be our way of seeing how willing/likely customers will be to spread business through word of mouth)

Most neighbors grow tomatoes and cucumbers. Some of them have greenhouses and they sell it for a good price because it is off season. They also have a bigger land and all the equipment necessary.

How can an outside force (business, government, natural event) improve your economic outlook? Ask for three minimum

Government does not care about people, the oil prices are constantly rising. They should give us oil so that the farmers can breathe.

What is the nature of the relationship with your partners (suppliers, buyers, end consumers, etc?)

I have the local tomato seeds myself as I harvest it. No one has local tomatoes anymore, they have the hybrid breed. The hybrid seeds are very expensive and I do not even know what types of breeds there are. My son bought 500 hybrid seeds for 150 GEL. It was tasty and it is a standard tomato and can withstand transportation. We used to go to grape picking places with a van and sell those tomatoes.

We have a chemicals store nearby. One bag of chemicals costs 70 GEL.

Interview 7 with Nazi Khozrevidze:

Location: Batumi

A) the middlemen squeeze the margins from farmers

- Do you sell your products at a good price or bad price? If low, how much is it worth?
- How much mark-up do you sell your products for?
- How much do you think the final consumer buys your product?
- Do you think the middleman's wages are justified?
- What value do you think the middleman brings?
- What alternative arrangements can be made (rather than have a middleman)?

B) Farmers do not have knowledge of the market and the supply chain

- Do you know what is a fair market price for your product?
- Do you know who are the buyers of the middlemen?
- What is the end price of your product?
- Have you taken part in any training programs by FAO or other organizations?

C) They need knowledge of the market and the supply chain to do better

- Do you think if you had better knowledge about the market and the supply chain you would sell directly to the buyer?

Of course, I would rather sell it to the store. I used to transport products myself, I used to package them in boxes.

- If no, would you sell it if you did not have additional costs?

D) They need access to affordable money

- Do you borrow money for farming?
- If yes, what is the interest rate? Is it a good deal?
- Who do you borrow from?
- Why do you need the money?

E) Small scale is a problem with respect to bargaining power and lowering costs

- Can you negotiate the price offered by the merchant?

I cannot negotiate

- If no, what would help you to increase your bargaining power?

Nothing, because they will buy from someone else for the price they want.

- Would bigger land help with bargaining power? Or lowering costs?

Regular onions cost 7 GEL and green onions cost 14 GEL. I sold lettuce for 4 GEL.

F) If provided an opportunity, farmers would use technology

- Would you use better technology?
- What kind of technology would you like to have access to?

G) They would be willing to pick up digital/computer/smartphone skills if it improves their sales

- Do you have a computer or smartphone?
- If no, would you pick up the necessary skills to use them if your sales prospects increased?

Other General Questions

- Tell me about yourself

- What do you do?

Unemployment is a big problem. That is why we built a greenhouse. We grow strawberries, lettuce, cucumbers. We have 600 square meters. I financed it through a grant application – 80% was grant money. However we struggle with sales and have huge losses. Afterwards we added 300 square meters to the greenhouse ourselves.

There is a problem with seeds – it is really expensive. Herbicides and pesticides are very expensive. They sell for twice or thrice the original price.

Equipment is also a problem, especially getting access to the ones from the US and Germany. I do everything without equipment and technology.

We need more support from the government. Some people do not even have 20% of finances for the total cost of the project to start anything.

We filled out an application to buy land and build a greenhouse. We had to have a business plan and do cost accounting. It was a competition. We passed through 4 stages – it was a program financed by the Ministry of Agriculture. They had judges and lot of control. They brought and built the greenhouse and I constructed the irrigation/water system.

Most of these programs are corrupted by nepotism. I applied 4 years ago as well but did not get funding. Then I found a facebook post by the Ministry of Agriculture and I commented on it saying that they only fund based on nepotism. This resulted in a bit of scandal and I was granted the funds.

- What is your main source of income?
- What do you grow?
- How big is your land?
- Tell me about your farming operation? (size, crops and most profitable crops, margins, tech employed, market, value chain and players, history, average farm, tell me about Georgian Ag as a whole)
- Do you enjoy farming?
- What are some of the struggles you are facing as a farmer?
- Has anyone ever tried to help you before? How did that go?
- What's the biggest problem you have today and how do you solve it?
How would you like to solve it?
- Tell us about your neighbors. What do they grow? How successful are they?
- Any other problems/pain points?

Interview 8 Romani Gurashvili:

1. What do you do?

I can sell wheat for 0.5-0.6 GEL per kg during the season from the fields. However, if I store it at home, I sell it for 0.8 GEL later. The cost of growing the crops is based on the oil prices.

I also use my traktor to cultivate the land for other people. I usually charge 30 GEL for the hectare but as the oil prices increase, I charge 40 GEL.

The customers are mainly merchants who come to my village with trucks or vans. Some of them sell in Tbilisi or outside Georgia. The cows and pigs from Georgia used to be sold to Iran but not anymore because of the pandemic.

Price of wheat in the open-air market is 1.20 GEL per kg while I sell it for 0.8 GEL.

I do not sell corn and wheat anymore because the cost per hectare is 2000 GEL and it is not profitable.

I also grow organic watermelon but it does not make sense to sell it because the price is the same as for the inorganic watermelon.

My pigs are also organically grown but the price for my pigs and my neighbors' pigs that are fed hormones is the same. I have no incentive to sell my organically grown crops and pigs.

If the price for the organic produce was higher on the market I would grow my business and sell more.

2. How big is your land?

I rent 2 hectares of land and I have 0.5 hectares of my own land. I got the land from the government after the fall of the Soviet Union.

3. What are some of the struggles you are facing as a farmer? Ask for 3

I cannot even understand and explain on my own. Whoever invested in growing corn, all of them had a loss in the fall. There has been no rain so my harvest of corn was half of what I expected. Because of lack of the rain the pests are eating the fields and crops. Even though the supply was much less this year, the price still did not go up because the merchants have a lot of power over controlling the prices as they are colluding.

4. Tell us about your neighbors. What do they grow? How successful are they?

- a. Ask if they are incentivized to see them succeed (will be our way of seeing how willing/likely customers will be to spread business through word of mouth)

Neighbors have pigs but they do not grow their own corn or barley to feed them. They feed the pigs with hormonal food so their pigs become the size of my pigs in 3-4 months instead of 1 year. He cannot profit either because he does not grow the food for the pigs and has to buy it. He makes 100 GEL per pig every month.

5. What is the nature of the relationship with your partners (suppliers, buyers, end consumers, etc?)

I bought some ducklings, 25 of them. They just started laying eggs. I can sell each duckling for 4-5 GEL and it is a delicacy in the capital.

Interview 9 with Taia:

1. Tell me about yourself

I sold part of harvested wheat to a merchant who arrived with a car. The price was 0.65 GEL per kg but some people sell it for 1 GEL per kg. The prices used to be lower: between 0.3 and 0.5 per kg.

We do not have good land and our harvest was not as good. People who have good land had a harvest of 4-5 tons of wheat per hectare.

We usually keep 3 tons of wheat for the family and we sell whatever is left.

I also sold corn and little bit of all kinds of vegetables.

My husband, Jemali usually takes the vegetables, corn and wheat and sells them in the streets of Lagodekhi (town 15 minutes away from Matsimi – my village). Sometimes he sells it to small vegetable and fruit stores. At other times the owners of the stores come to our home with their own transport and we sell our crop to them. For us it is better when we do not have to transport the crops ourselves. We prefer to sell directly from our home. I wish I knew what was the exact demand so that I could grow my crops accordingly.

I do not have a phone.

2. What is your main source of income?

We are old and we are on a pension and that is our main source of income.

3. What are the costs of your inputs and who are your suppliers?

Suppliers are the agricultural stores in Lagodekhi and Kabali market (1 hour away). The chemicals are extremely expensive. If I want to grow corn or wheat using 1 hectares of land, the cost is really high. You are left with the 4th of the profits. If there is a drought than I incur a loss.

I account for my costs but I do not count my and my husband's labor as a cost. I have land and I always need to have that ready for growing crops so I do not count my labor as a cost because I have to work either way.

4. What do you grow?

Corn, wheat, hazelnuts, cabbage, watermelons, tomatoes, cucumbers, and eggplants.

5. How big is your land?

2.5 hectares. I rent 2 hectares that yields 2 tons of corn and wheat. We do not hire any labor.

6. What are some of the struggles you are facing as a farmer? Ask for 3

1. Land cultivation is a huge problem – if you are too late then you will not have any harvest.
2. We are too dependent on the weather as we do not have irrigation for the land we own.
3. Price is a huge problem – it is too low. However, bigger farmers may make better profits because they have more land and irrigation. If I knew that there was higher demand for my harvest, I would rent more land and grow more crops.

I would buy a phone and subscribe to internet if I knew I could make more revenue as a result.

Interview 10 Zaza Nikvashvili:

Vegetables have a good price if you sell them off-season. If you can harvest them earlier than the usual season, you can sell it for a higher price. However in order to do that you need a greenhouse.

The most demanded vegetable is tomato. Even tomatoes of lower quality are sold. Cucumber also has a relatively high demand.

The agricultural sector and the overall economy are not supported by the government. We do not have possibilities to export.

The supply is higher than demand, that results in lower prices. Farmers with smaller land do not make much profits. Those farmers that have bigger land in Marneuli region, make more profits and overall they have more money.

Fertilizers, herbicides and pesticides are expensive. They are imported from Europe and Russia.

Herbicides and pesticides are ineffective.

For those who have bigger land, the cost of inputs is not as bad due to economies of scale.

In Khornabudi village, there is a British-Indian farmer. He has a hazelnut garden on 600 hectares. We are building an irrigation system for him. A lot of farmers work for him.

Georgian farmer is hardworking but his work is wasted because there is no support from the government.

Turkish tomatoes are sold for 5-6 GEL per kg because they are off-season. Georgian farmers have to sell their tomatoes for the offered price otherwise they will rot. The farmer does not know how to navigate this environment. Everyone is trying to grow something but they do not forecast or plan what to grow or how much.

You need the money in the winter to survive. But if you only earn 5000-6000 GEL by selling produce during the other seasons, this is not enough. It is unclear how much out of 5000-6000 GEL per year is profit.

You have to take a loan from the bank to survive and that is why the villages are being emptied because everyone is moving to the cities.

Appendix 2: Retailers' Interview

Interview 1 George Jashiashvili (Agrohub-Grocery Store Director)

1. What are the problems you face with the procurement of agriproducts?

The main problem starts with the fact that we need a quality product. Finding the quality of products we need is extremely difficult. There is not enough volume of quality products. If I want 100 kg of apples I cannot find it. There is a shortage of supply of products that I need.

The farmer only cares about harvesting and storing his produce. So he wants to sell 30 tones of potatoes at once. But I can sell that much potatoes in one month, I need daily supply. However, a lot of farmers do not have a storage unit and they cannot and do not supply daily. A lot of times the farmers use too much chemicals to grow their produce, including fertilizers and pesticides. They do it because they want to grow a lot and sell more. A lot of times I do not buy from them because of this - I am looking for a higher quality and produce that is better for health. I have people who check specifically for quality - quality control team.

In this country we lack professional knowledge about growing quality products. We do not have infrastructure. There is not even enough storage units if the farmers wanted to rent them. They do not have equipment either. Often they do not have irrigation - government should help. The farmers have high cost but usually they do not even calculate costs.

When we buy potatoes, we select the high quality ones- usually 15% of the potatoes purchased are high quality. 30-40% is very small and we do not sell that. I select good products and that is costly.

Stable supply of products is a problem, someone will call and say that they have this much of something and I either buy or not. Sometimes it is a farmer and sometimes it is a merchant or a middleman. If the farmers had the cooperative and guaranteed consistent supply of products, that would be great. The main problems in this sector are lack of knowledge and the supply chain.

Merchants are ripping off the farmers because they will get a higher profit if they purchase for a low cost. A lot of times my suppliers will bring quality products for the first delivery and by the third delivery the quality is no longer good. They lack knowledge, education and infrastructure.

End consumers do not have the education to distinguish good and bad quality products. There is no certificate that will show that a product is organic. We have been educating the end consumer about how to eat more healthy and it has been working. For certain products I have low margins but for the others I have a high margin and it balances out. The vegetables and fruits are easily perishable and that is a cost for me.

I have very small and many suppliers. I find sellers in the market, in Kakheti, Kartli, etc. I work both with merchants and the farmers. Sometimes the merchant will collect quality products and sell it to me.

I do the transportation of the products. I am not sure if I have the best suppliers. A lot of times I want a certain product but can't find it. One summer we did not sell watermelons for example for this reason.

Interview 2 Giorgi Khomeriki (Category manager at Nikora):

Grocery Store Nikora

When I was at McDonald's:

The Georgian farmers do not have any obligation from the government or any regulation around farming practices. They are not required to obtain any kind of quality certificate or do the lab tests of the soil. Therefore international organizations such as McDonald's that operate in the Georgian market have a lot of problems regarding their procurement.

Only some of the suppliers have quality certificates. For example they might have a certificate for one hectare of land out of the 30 hectares they have in total. I think only five of our suppliers at McDonald's had a certificate.

A lot of the farmers in western Georgia started growing blueberries, and they sell it in Europe this is mainly financed by USAID. They imported 1.5 million seedlings from the Netherlands.

Time at Nikora:

Standardization does not exist in terms of visual properties of the produce- the farmer does not have the resources to make this happen in terms of the size or the weight of the produce. The produce comes from second or third hand. The market needs calibrated produce, without any visual damages.

The middlemen go to the regions and they calibrate their produce- for example most of the potatoes are not appropriate to sell it in the store while smaller and larger potatoes are appropriate for restaurants.

There are serious problems in the supply chain- the storage and fridge facilities are underdeveloped. A lot of people have big fridges but they don't know how to use them. They do not have a business plan. For example grapes are not stored in Georgia- however they are stored in Armenia. I have people in the two main open markets of Tbilisi (Dezertirebi and Navtlugi) that will make purchases for me whenever I need it. We have contracts with the companies however we don't have any contracts with individuals. We have contracts with the aggregator companies. Sometimes merchants will come from the regions as well and we buy from them. For example I will ask them to bring me a sample of their produce. Then I check the sample according to the quality book that specifies size, color, and etc. It is easier to meet with them in person because sometimes they don't even have a cell phone.

A lot of people approach and ask to sell produce but everyone has their own price- We choose based on price. However a lot of times the same type of peaches will have different prices. They are unable to deliver products on time. We import produce during off seasons- we have main importers.

Things should be digitized for example there should be a common database. It might be useful for me to use my own storage. There are stores that only care about low prices and they do not care about the quality. For example, Ori Nabiji does not care about the quality. We have a huge operations cost as other big chain stores do.

Some stores might have their own guy who goes region by region and looks for the right produce, however the price is still being regulated by the market.

If there is a digitalized database, access to the produce is so much easier. There was one season when the farmers were throwing peaches into the rivers because the price was too low.

Price for potatoes could be anywhere from 1 to 5 Georgian lari and it is being imported without any control. Starting from October to April we import tomatoes from Turkey-also other produce. Some farmers have green houses and they can supply us off season. In addition during this season tariffs are imposed on imports.

If the price is good, then I can organize transportation myself, I will compare it to other available prices. It depends if I will have a guaranteed quality when they get to the place and want to buy the produce. The farmers should categorize their produce based on quality. Nicora has the resources to go to the villages and buy produce locally. In case of McDonald's, they do not have a car. They need produce delivered to them. We lack knowledge, people do not know how to use storage facilities or proper transportation. The farmers have an informational gap and that is why they have to sell for sub optimal price. It's so sad that there is so much waste. I think when you're selling produce you include the possibility of waste in the price so you actually sell it for a higher price.

Interview 3 with Fresco:

- I talked to their Commercial Manager
- They only work with established local distributors (there are 300 of them)
- She didn't seem to want to work with foreign distributors
- All contracts are signed for about 1 year and terms vary depending on distributor
- If local farmers want to sell something, then they need to work with distributors directly
- What problems they face? She said it's all good. They have all produce that they need and there is no particular thing that they need.

Interview 4 with Madagoni:

- Levan (+995 557 1111 69), who was referred by Lia from Madagoni
- They have 22 stores and a few restaurants
- The biggest problem is inflation
- they work with locals, with both farmers and distributors
- they sign contracts ahead of time (for 1 year) and then see if it's worth keep working with them
- key requirements: low price and good quality
- pre-orders depend on type of produce that they order (e.g. meat 2 days ahead of time, fresh only 1 day a head) but in general it seems that they make orders on a daily basis (for vegetables it's about freshness vs good daily price)
- the orders happen over the phone
- they use APEX software to figure out the stocks and what to order

Interview 5 with Giorgi:

Head of Procurement at Ori Nabiji (formerly worked at Carrefour for 8 years) Ori Nabiji has 285 stores across Georgia (70-80 in regions, the rest in Tibilisi)

- They have storage both in regions and in Tibilisi, but it's very limited

- They deliver the products themselves - The sales start in the morning
- The reserves should not be longer than 1.5 days (or goes bad)
- Demand varies by product; sometimes things get sold in first half of day
- The goal is to sell everything within 1 day
- The goal is to have an 80% stock level (for instance, if they think they will have to sell 120 kg of bananas, they will buy 100 kg; otherwise risk of spoilage)
- Everyday individual stores make an order (e.g. 10 tons of bananas, so he sends people to find bananas at night)
- Ideally we need to get an order to buy things 2 days in advance because it's too stressful and hard to buy things when you have a few hours to buy
- There are stable suppliers of produce - 80-90% of produce is bought on the market;
- About 10% comes from resellers, but the retailer tries not to work with them as they charge higher prices. Instead they buy the produce directly from first hands on the market
- Two of the biggest markets where farmers can sell directly to big organizations: "Desert" market next to Dynamo stadium and Naftluhi which has trailers. everything is sold in tons; won't sell to regular people
- These market also have a lot of international suppliers from Turkey, Russia, Israel, Kazakhstan, Egypt, Cyprus
- Giorgi has people on these markets that scout prices and quantities to understand supply and demand
- They don't want to buy ahead of time because of complexities during storage (temperature, spoilage, etc) and taxes (lots of dumping and not paying taxes)
- Official buying is not convenient for both parties: contract has to be ahead of time, need to pay taxes (while others won't), payment typically happens a bit later (too long for suppliers), and there is risk of over supply on that specific date

Appendix 3: Experts Interview

Interview with Javier Sanzalvarez – Food and Agriculture Organization

Problem in Georgia is linked to internal consumption. 85% import of corn. There is huge agricultural deficit. They need to be able to compete with Turkish and Russian products.

In many cases, intermediaries are taking advantage of the farmers. Could use Qatar, Emirates and other closer countries to export to.

Aggregators are okay if they can provide an added value. This is not really the case, many aggregators are buying very cheap and selling very expensive. You cannot sell directly to the, there is always going to be issue with transparency, the smaller the farmers are they have less bargaining power. At the same time, the processors are in real need of good quality products. Many investors are working on a limited level of capacity – they do not manage to get raw products.

Farmers are trying to get the best price. There is a lot of cheating, it is a bit of a wild west. All the farmers are producing the same things and that is why prices are too low.

Interviewee: Natalia Okroshvili (Traktor)

The videos of our application had 2,000,000 views.

Then we had the idea to create tractor- we wanted to increase the volume of production and increase information regarding chemicals used in agriculture.

We started with the creation of agriproducts store in Georgia (the first one on the market), we had included the instructions on proper use for each product and the safety instructions as well.

There is no database in Georgia where you would have information on different chemical products and the instructions on use. We were taking the photos of the products ourselves and we were translating the information about the products from the original. We had more than 1000 products on the online website called Kalo.ge.

We did not need to create a physical store. The buyer could get the product without leaving their home. The website included help from an online Agro expert, help on farming, understanding the different diseases and an online consultation. Running this website was extremely costly and it required huge amount of resources. We had to collect information and translate everything during a year instead of two months as anticipated.

We had good relationships with our suppliers we were like distributor. We were buying the products based on the order and we were delivering it to the farmer. The suppliers did not have information on their supplies so we had to call at all times and figure out if they had the ordered product in storage or not-this was a nightmare.

One of the main problems was the Georgian post-they were unable to deliver the products on time. We were working with a lot of different transportation companies however none of them could do the job well. Sometimes we even subsidized transportation of products. We wanted to move to a digital model but it didn't work out. The operator had to register manually every transaction and delivered product.

One of our problems was that we couldn't define the right segment who should have been our customer. Initially we wanted to target the larger farmers but they did not need our service because they already had their own channels to import the necessary raw materials they needed for their farms.

The right target audience for this product is small and middle sized farmers. Middle sized farmers can be considered as starting from 50 hectares to 400 hectares and there is probably 50 farmers like that in Georgia. One hectare costs around 1000 GEL.

The user had trouble trusting products bought over the Internet. 9 out of 10 farmers were saying you cannot teach me how to do farming better. In one year we had 50 loyal users. But most of them still prefer to see the product in person.

Traktor.ge and the application was created afterwards and in one year we had 15,000 users. A lot of the farmers did not have access to Internet and or did not have smartphones. There were some unique users as well not all of them were loyal. We also had information on the weather and this was the most used feature of our application. The application and the website were used almost equally but they had different users-almost no user used both. Nowadays the application does not exist anymore but the website the original website exists. The application was free so it could not generate enough revenues to cover the costs associated with running this application. We had the application for three years. We were able to support the finances for this application through different projects. We invested around half a million in this project. We had an attempt to import the different raw materials such as small trees. We could not agree on how to continue the business and all of the different paths required huge amount of investment. Part of the shares were bought up by a different company and everything was united under Kalo. This product was much more interactive. There's only a website now. We were the first Agri products store, the first application, however, the user was not informed and this was our main problem. We educated the farmers a lot. I think there is agricultural marketplace but you have to pay for it to use it.

We had a project with DSL-local telecommunications company. We did not achieve much because the farmers were not interested in acquiring smartphones and paying for Internet-this problem does not exist today anymore. The Internet packages back in the day were much more expensive and the notebooks or the laptops were much more expensive as well.

Teimuraz Gvetadze, Lecturer at Akaki Tsereteli State University

1. What do you do? What is your focus of study/work?

Doctor in Finance, currently teaching in []; more than 10 years working experiences in Finance and Accounting, also had some lecturer experiences in other universities.

2. Based on your understanding, how competitive are Georgia agricultural crops in the local market (e.g. grocers and restaurants)?

Georgian products are of good quality and nutrients, however not stable in quantity of supply from season to season. Georgian products are a bit more expensive because of higher cost and lower productivity.

3. How does the Department of Agriculture aid Georgian Farmers

Both EU and Georgian government has provided support such as additional finance to farmers.

4. How have Georgian farmer determine which crops to harvest and does their crop selection ever change and if so why

Farmers tend to cultivate existing crops they used to grow, because of land types (e.g. large portion of lands are in mountain areas.)

5. From your perspective what is the best recommendation to improve Georgian farmers profit margin

They need support from government and knowledge.

6. Based on your understanding, what are the struggles that Georgia farmers are facing?

Small scale, low productivity, lack of modern technology for growing, transportation and storage.

7. Based on your understanding, how do farmers sell their products? Do they have to sell through a middleman? What is the biggest barrier preventing Georgian farmer from selling directly to local market (e.g. grocers and restaurants)?

Due to small scale and low production of each farmer, they have to sell through middlemen.

8. Are middleman regulated by government? Do they need to obtain a license?

I am not aware.

9. what do you think are the advantages and disadvantages of exiting middlemen system? How can the system be improved?

Due to small scale, middlemen helps to consolidate products and deliver to market.

10. What ways do you think technology can help Georgian farmers?

Yes I think so, however it may take a few years. Government is increasing the internet coverage and young people is returning to the villages which could bring back more knowledge.

11. What are some of the successful business models you have seen among Georgian farmers?

Some farmers start to focus on other products with longer storage period and higher profits such as honeys, wine, water and nuts.

12. In your opinion, what are some of the critical success factors for Georgian farmers?

N/A

13. Who else do you recommend we speak with and can you connect us?

N/A

Appendix 5: Financial Projections

Key Assumptions

- All the projections are based on the Georgian market
- Labor is extremely cheap in Georgia, however, we will pay above the market rate
- Labor includes software developers, administrative staff, management, and sales force.
- Some of the developers might be from other developing countries.
- An annual growth rate of 10% for COGS and other cost items is assumed.
- Customers are acquired via direct sales channels as well as traditional and digital media.
- We assume on average 40% annual growth rate for a number of customers.
- Net Cash Flow assumes that we receive revenue and recognize costs within the same accounting period.

Percentage of Revenue	2022	2023	2024	2025	2026
	Revenue Source 1	93%	96%	98%	98%
Revenue Source 2	7%	4%	2%	2%	1%
<i>Total Revenue</i>	100%	100%	100%	100%	100%
COGS 1	66%	47%	35%	35%	31%
<i>Total COGS</i>	62%	45%	34%	34%	30%
Gross Margin	38%	55%	66%	66%	70%
Operating Expenses					
Sales and Marketing	24%	16%	11%	9%	8%
General & Administrative	7%	6%	5%	4%	4%
<i>Total Operating Expenses</i>	30%	22%	16%	13%	12%
Net Operating Margin	8%	33%	50%	53%	58%

Figure 8: Income Statement with Net Cash Flow

Percentage of Revenue		2022	2023	2024	2025	2026
Revenue Source 1		93%	96%	98%	98%	99%
Revenue Source 2		7%	4%	2%	2%	1%
<i>Total Revenue</i>		100%	100%	100%	100%	100%
COGS 1		66%	47%	35%	35%	31%
<i>Total COGS</i>		62%	45%	34%	34%	30%
Gross Margin		38%	55%	66%	66%	70%
Operating Expenses						
Sales and Marketing		24%	16%	11%	9%	8%
General & Administrative		7%	6%	5%	4%	4%
<i>Total Operating Expenses</i>		30%	22%	16%	13%	12%
Net Operating Margin		8%	33%	50%	53%	58%

Figure 9: Percentage of Revenue and Margins

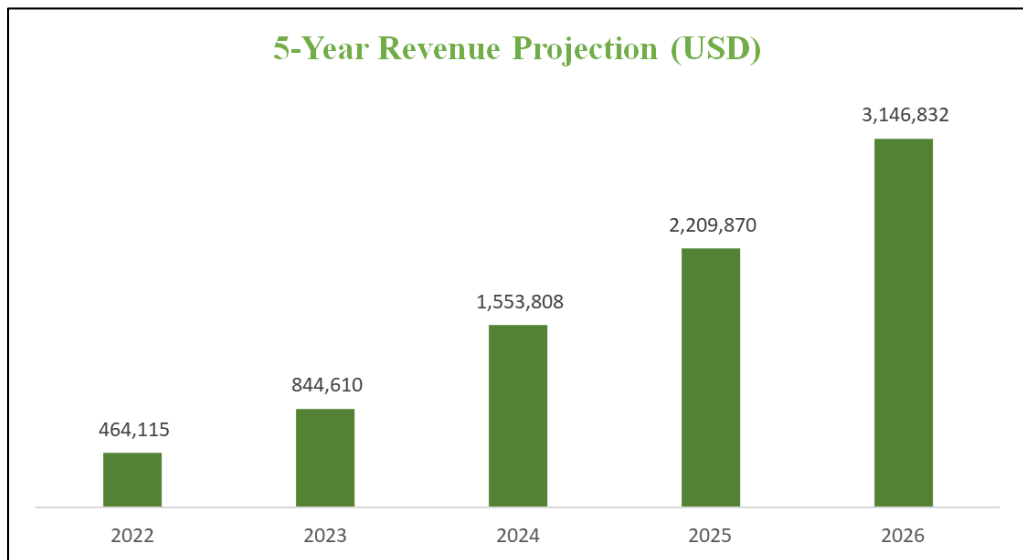


Figure 10: 5-Year Revenue Projection

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