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Business Model Implications of Technology in the U.S. Coffee Shop Industry

Master's Thesis in Management and Economics of Innovation

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Abstract

Digital technologies have increasingly been adopted by specialty coffee shops just like many other businesses in the past couple of decades. These technologies are being integrated into the different parts of the businesses to help coffee shops operate more efficiently. This is mostly done by reduced costs, increased margins, saved time and smarter usage of resources overall. Although digital technologies allow coffee shops to conduct their business in a better way, it is not known if the core of their business models has changed due to the increasing usage of technology. This study reveals the business model implications of technological developments in the coffee shop industry, and uncovers the changes on the Business Model Canvas of specialty coffee shops caused by digital technologies.

The data for this study is collected through a partner company, Odeko Inc., in the form of interviews, observations and company documents. The data is organized and analyzed by four main areas of interest; technology used in coffee shops, Business Model Canvas, opportunities, and barriers. Eventually, it is found that the usage of digital technologies does not have a direct impact on the majority of the nine elements of the Business Model Canvas; but rather acts as a supporting factor to help coffee shops conduct their businesses in a more efficient manner. The core of the coffee shop business remains the same in terms of the value that is being created, but the returns are being increased due to the integration of digital technologies. These supporting factors are denoted in the form of additional boxes within each element of the Business Model Canvas for clearer separation of what exists as a core factor in the business from what appears to be a supporting factor.

Additionally, future opportunities that can be created by digital technologies for specialty coffee shops and tech companies, and the barriers that could arise to prevent these technologies from being integrated into the coffee shop business are identified. The opportunities for coffee shops revolve around reaching maximum efficiency due to even further utilization of technology, and creating new revenue streams such as full robot cafes. There are also opportunities for tech companies to exploit in the rapidly growing coffee market, by fulfilling novel needs created by new types of tech-infused coffee shops. On the other hand, there are serious barriers for both coffee shops and technology developers such as high switching costs caused by established tech infrastructures, resistance to change caused by the people involved, and the need for human interaction since it is the fundamental value proposition of specialty coffee shops that is being threatened by more and more automation made available by technological developments.

Keywords*: Coffee shop industry, Business Model Canvas, business model innovation, digital technology, digitization, digitalization, digital transformation*

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Glossary

AI: Artificial Intelligence

Barista: A person who serves customers at a coffee shop

COGS: Cost of Goods Sold

E-commerce: The business of buying and selling goods and services on the internet

ERP: Enterprise Resource Planning

IoT: Internet of Things

Millennial: A person who was born in the 80's, 90's or early 00's

Mom-and-pop Shops: A small business that is owned and operated by a family

P/L: Profit and Loss

Path-dependency: Continued use of a product or practise based on historical preference, even if better alternatives are available

Payroll: A list showing how much each employee at a company earns

Persona: A particular type of character that a person has

PoS: Point of Sale

QSRs: Quick Service Restaurants

SME: Small- and Medium- Sized Enterprises

Startup: A young company founded in order to develop a unique product or service

Third Party Service: A service provided by a person or an organization that is less directly involved in a matter than the main people or companies that are involved

Word-of-mouth Marketing: Oral or written recommendation of a good or service by a satisfied customer to a prospective customer

1. Introduction

This section aims to provide background information on the coffee industry, as well as the purpose and context of this thesis. These are followed by the research questions to be answered by means of the project, along with the scope of the work and limitations.

1.1. Industry Background

Most of us have the desire for one thing in common; something that serves as the initial fuel that we need to be able to start the day; something that gets us going in the morning: Coffee. Since the discovery of the coffee berry in Ethiopia about 1200 years ago, coffee has been consumed by millions of people in many different ways. Today, there are 150 million daily coffee drinkers in the U.S. only, and the average American coffee drinker has 3 cups of coffee per day (Kelly, 2018). The $100 billion market for coffee is growing in all forms, and the number of cafes has increased 6% year over year (Odeko, 2019).

The way coffee has been sourced, produced and consumed has changed over the years. These changes led to the creation of a number of stages of the coffee business, namely waves. *The first wave* represents the mass adoption and consumption of coffee in the United States (Sharp, 2018). Having average quality beans sourced from specific continents and countries, coffee was basic, hot and cheap; made by the end customer using a filter and a press at home (District Roasters, n.d.). With the *second wave* of coffee emerging in the 60's, coffee was not a home drink anymore. Cafe culture started rising, and the concept of going out for a coffee was invented. External influence and exotic flavours entered the U.S., and the era of large coffee chains like Starbucks had begun (Sharp, 2018). With a variety of brews, bean quality was above average; and it was possible to know the region where the beans were from (District Roasters, n.d.). *Third wave* coffee, i.e. today's coffee, is local, crafted and luxurious. The goal is not mass-production; it is about building relationships, and sourcing local specialty goods (Sharp, 2018). Coming from a specific region or growing area, the bean quality is high, and the brewing process is offered as an experience to the customer by usage of special equipment and brewing techniques (District Roasters, n.d.). Now, it is widely speculated that we are entering into the *fourth wave* of coffee. Although what is to come for the coffee business is not exactly known, it is argued that the focus will be on people, and producers will be under the spotlight (Sharp, 2018). Very high quality, specialty and organic beans, directly and fairly sourced from small districts or individual farmers, available to the consumers anywhere they desire will be the main idea (District Roasters, n.d.). Coffee is seen as an affordable luxury by an increasing number of people; therefore, recognizing the efforts of coffee farmers will matter now more than ever (Sethi, 2017).

More people live in cities now than ever before, and they like going out for a coffee. According to the report of the Specialty Coffee Association (SCA), 46% of coffee consumption in the U.S. in 2017 was outside of the home (2017). Another report by National Coffee Association shows that millennials prefer specialty (gourmet) coffee over non-specialty coffee (2017). In fact, of all the coffee consumed in 2017, 59% was in the gourmet category, whereas 41% was non-

specialty. This means that people are willing to pay a higher premium for having gourmet coffee outside, i.e. third and fourth wave coffees; and this rapidly growing market is a great opportunity for both large coffee chains and local coffee shops.

1.2. Problem Definition

The growing specialty coffee market also indicates that there is a need for local businesses that have some economies of scale, i.e. similar efficiency standards as large coffee chains. In large companies like Starbucks, there are systems that take care of operational tasks like purchasing, pricing, marketing, and staff management; whereas many local coffee shops are still paper driven (Odeko, 2019). On the other hand, some SMEs are starting to use digital technology products increasingly, such as web ordering, proprietary tech or private-label apps, analytics tools, Point of Sale systems and HR solutions. They are able to avoid excessive orders and waste, also decrease out of stock levels thanks to accurate forecasts and artificial intelligence tools that are capable of ordering supplies in a smarter way. They can now conduct their business in a way that did not exist before due to technology, and get closer to having similar efficiency standards as large corporations.

Although the current trend is that the coffee business in general is transforming with digital technologies, it is not known if the core operations of small- and medium-sized coffee shops have changed due to the usage of these technologies compared to decades ago; which forms the basis problem for this thesis. Technology, for sure, helps make the job easier for all the stakeholders involved; but does it disrupt the business to make room for a new era of tech-based coffee shops? Does it, or can it, lead to business model innovation for local coffee shops? Are there any barriers to prevent this from happening?

Not every local coffee shop is using the current technological developments in the industry to the maximum, but technology in this ecosystem is at its very early stages of the diffusion curve, and is expected to spread rapidly. Therefore, digital technology is expected to lead to new opportunities for both tech developers and users; and create some challenges that will need to be overcome, which are also worth studying.

1.3. Purpose of the Research

The purpose of conducting this academic research is to investigate whether the aforementioned technological developments in the coffee industry change the way local coffee shops operate, and conduct their business to a remarkable extent.

In order to reveal the effects of integration of technology into the coffee business on the way local coffee shops operate, authors will be studying the improvements and changes on business models of coffee shops due to technology, if there are any. It will be investigated if business model elements of local coffee shops are subject to any changes in order for the businesses to fully utilize the opportunities created by technology.

In addition to that, based on the current examples of adaptation of technology by the coffee shops, the authors aim to reveal the further opportunities and barriers for tech companies that might want to operate in the coffee shop industry.

1.4. Research Questions

In order to accomplish the aforementioned purpose, this master's thesis aims to answer the following research questions:

- How does digital technology change the way small- and medium-sized coffee shops operate, and impact the key elements of their business models?
- Are the changes brought on by digitalization in the coffee shop industry strong enough to be classified as business model innovation?

1.5. Scope

Technologies studied in this thesis were categorized as digital technologies, which is mostly related to software applications. Implications of hardware technologies on business models of specialty coffee shops may or may not align with the findings of this report, and should be studied separately.

Also, since the way local coffee shops and large coffee chains conduct their business differs to a large extent, and this is a study focusing on SMEs, the results could change remarkably for large coffee chains in the U.S. or any other geographical region if the scope were to be shifted.

1.6. Limitations

This study was based on the specialty coffee market in the United States, and the respondents were chosen among this group. Therefore, the findings may or may not be valid for local coffee shops operating in other geographical areas than the United States.

2. Theoretical Framework

This section aims to provide sufficient knowledge on the theory and models used in order to evaluate and make sense of the empirical data presented in Section 4.

2.1. Business Model

There are a plenty of scholarly definitions of the term *business model*. Although the basis of these definitions seems to differ to an extent, most of the definitions revolve around the ideas of value creation and appropriation. However, the fact that there exists a variety of different views reveals that, despite its anticipated significance, the term is still fuzzy and being conceptualized (Al-Debi et al., 2008). The concept of business model started to become increasingly popular in the late 90's, and can be defined as the representation of how an organization intends to make money (Osterwalder, 2005), or a way to define the whole idea of how the organization creates, delivers and captures value (Osterwalder & Pigneur, 2009). A business model is considered to be a conceptual, rather than financial, model of a business, summarizing the construction of revenues and costs associated with the value that the business creates (Teece, 2009). According to Chesbrough and Rosenbloom, functions of a business model include articulating the value proposition, specifying the market segment and the mechanism of revenue generation, defining the structure of the value chain, estimating the cost structure and potential profits, describing the position of the firm within the network, and formulating the competitive strategy (2002). To be able to capture all of these elements in a single and simplified model, various business model frameworks were developed over time; among which the following will be used as the main framework for this thesis due to its nature of showing how each element connects with the others and clearly outlining the mutual relationships between the elements that allows for focusing on the most important aspects of a traditional business model.

2.1.1. Business Model Canvas

Originally developed by Osterwalder and Pigneur, the *Business Model Canvas* consists of nine building blocks showing how the organization creates and captures value (2009). These blocks are displayed in the graphical representation below, and cover four main areas of the business that are infrastructure, customers, financial viability and offer.

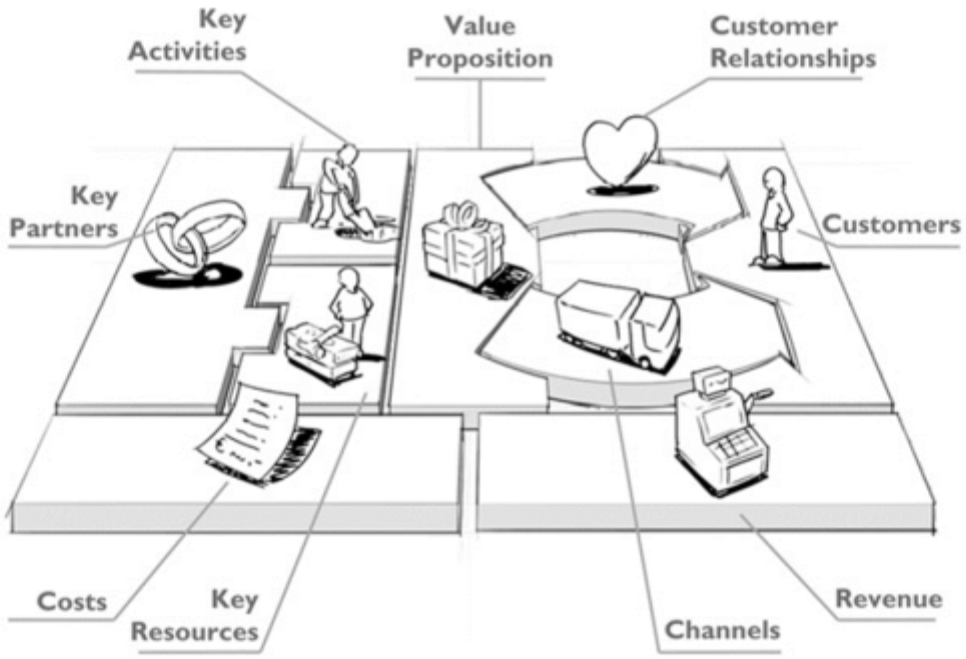

Figure 1: Business Model Canvas (Osterwalder & Pigneur, 2009)

Customer Segments: *For whom is the value created?* This block represents various groups of customers, individual or corporate, that a business intends to serve. The business needs to carefully evaluate which segments are the most important for their offerings, as well as which segments should be ignored. There could be more than one customer segment in a single business model. Examples of different customer segments include mass or niche, or segmented or diversified markets, as well as multi-sided platforms.

Value Proposition: *Which customer needs are satisfied?* This block represents the products or services that an organization offers in order to fulfill the needs of a specific customer segment. The value proposition is the reason why a customer chooses a company over the others, i.e. the unique selling point. Examples of different value propositions include performance improvement, satisfying a new set of needs that was not perceived before, offering customized products, cost or risk reduction, or creating similar value at a lower price.

Channels: *Through which channels does each customer segment want to be reached?* This block represents how an organization tries to communicate with their customer segments, and deliver the value proposition. Choosing the most appropriate channels in the most suitable phase of the customer journey (awareness, evaluation, purchase, delivery, after sales) is vital in order to bring the pain and the cure together. Examples of different channels include own and direct channels such as web sales, as well as own and indirect channels such as own stores. An organization can also choose to use partner channels, such as partner stores and wholesalers.

Customer Relationships: *What type of relationship does each customer segment expects the company to establish?* This block represents the kinds of relationships that an organization builds and maintains with its customer segments. Ranging from personal to automated, these relationships can be driven by various motivations such as customer acquisition and retention, as well as upselling. Examples of different customer relationships include personal assistance, self-service, communities and co-creation.

Revenue Streams: *What are the customers willing to pay for, and how?* This block represents the revenues that an organization generates by successfully serving each customer segment. The organization can generate revenues from one-time, transaction-based payments, or recurring payments; all of which may be subject to different pricing structures such as fixed or dynamic pricing. Examples of different revenue streams include asset sales, renting/leasing, commission fees, subscription fees and licensing.

Key Resources: *What key resources do the value propositions require?* This block represents the resources and assets that are necessary in order for an organization to operate. These resources can be leased or owned by the organization, as well as acquired from key partners. Examples of different key resources include physical resources, intellectual resources, financial resources and human resources.

Key Activities: *What key activities do the value propositions require?* This block represents the crucial activities that an organization needs to do in order to make the business work. Depending on the type of business, these activities vary from company to company. Examples of different key activities include production (mainly for manufacturing firms), problem solving (mainly for consultancy firms) and platform/network related key activities such as developing and maintaining the payment system of a platform (mainly for technology firms).

Key Partnerships: *Who are the key partners, and what do they provide?* This block represents the network of partners and suppliers that help an organization make the business work. Companies can get involved in partnerships in many ways, such as creating joint ventures for new businesses, strategic alliances between competitors or non-competitors, or supplier-buyer relationships for sourcing necessary materials. Examples of different motives for having key partners include reduction of uncertainty and risk, access to specific activities and resources, or leveraging economies of scale.

Cost Structure: *What are the essential costs that exist within the business model?* This block represents all the costs related to the operations of an organization. Although it would be safe to say that every business wants to minimize their costs in order to eventually maximize profits, some organizations put more emphasis on costs than others; which creates the distinction of cost-driven (minimum cost) and value-driven (premium value) companies. Examples of different cost structures include fixed or variable costs, economies of scope and economies of scale.

2.1.2. Business Model Innovation

According to a report that is published by the Economist Intelligence Unit, new business models are more favorable than new services and products for obtaining competitive advantage (Amit & Zott, 2010). The report states that how companies do business is often more important than what they actually do (Economist Intelligence Unit, 2005). Henry Chesbrough argues that the same technology would yield a number of different returns if commercialized in the same number of different ways (2009). In fact, the data shows that more than half of the Fortune 500 companies that are younger than 25 years old are business model innovators (Johnson, 2018).

> "A mediocre technology pursued within a great business model may be more valuable than a great technology exploited via a mediocre business model."
>
> (Chesbrough, p.355, 2009)

Business model innovation (BMI) can take many forms, such as improving the value proposition (the product as a service/outcome, the product as an experience, trust premium, free offerings etc.), changing the operating model (supply chain acceleration, direct distribution, low cost etc.), or coming up with a new business system architecture (person to person, serial, open etc.) (Lindgardt et al., 2009). In order to stay relevant and competitive in the long term, companies must be constantly exploring new opportunities and new ways to execute their business, while also exploiting their existing methods of value creation.

However, business model innovation is not easy. Changing the business model design can bring a much higher risk considering the potential for disrupting the current business. For large and established companies, being able to manage this transition is critical to survival. This is one of the areas where start-up companies have the advantage due to their ability to iterate and adapt their business model rapidly, since they are already in the process of designing an initial business model. This explains why most disruptive innovations originate from start-ups or small and isolated teams in large firms (Frössevi & McCarthy, 2018).

Identifying the Need for BMI, and Six Questions to Ask

Business model innovation challenges the foundations of the core business of an organization; hence, there exists the aforementioned potential for disruption of the existing business. This risk renders timing one of the most important elements of business model change. But how can an organization tell if it is the right time for business model change? Frössevi and McCarthy list some indicators of the strategic need for business model innovation as follows (2018):

- Increasing share of appropriation in the industry by other players
- Transformation of what customers seek or how they buy due to technology
- Declining margins in the industry or commoditization
- Deterioration in innovation and share of revenue from new products
- Altering of value proposition for customers due to invention of new sources of appeal
- Selection of alternative offerings by target customer segments
- Internal resistance to options that cannibalize the core business

If one or more of these indicators are existent within an organization, it might be the right time to start thinking about changing the business model. Raphael Amit and Christoph Zott put forward six questions to ask while coming up with a new business model (2012):

- What customer needs will the new business model address?
- What novel activities could help satisfy those needs?
- How could the activities be linked in novel ways?
- Who should perform the activities? What novel governance arrangements can be found?
- How will value be created for each stakeholder?
- What revenue models can be adopted to complement the business model?

2.2. Digitization, Digitalization and Digital Transformation

SAP's report compiled in 2017 by Peter Johnson, from Marketing Strategy and Thought Leadership, highlights some key facts about changes and opportunities on different industries. For instance, innovative brands get appreciation from their customers approximately 9 times more compared to the ones that are not innovative, 51% of job activities can be automated and replaced by machines, and by 2019, 50% of all industries will package their offerings based on subscriptions or pay as you go models (Johnson, 2017). In other words, there is a heavy influence on almost all industries based on digital technologies and this makes BMI through digitalization and digital transformation inevitable.

However, the terms digitization, digitalization and digital transformation are confusing and an extensive search has shown that, in the literature, the terms digitization and digitalization are frequently used for one another. Bloomberg (2018) states that in reality, those two terms have different meanings. Therefore, it would be wiser to define these three terms properly first.

Digitization should be used to refer to a straightforward action; taking analog data or information and converting it into a digital format such as converting handwritten documents into scanned papers and storing them in a hard disk (Bloomberg, 2018; Savic, 2018).

On the other hand, *digitalization* is defined as "the fundamental changes made to business operations and business models based on newly acquired knowledge gained via value-added digitization initiatives" (Schallmo & Williams, 2018). This term stands for a more complicated definition and focuses on "automation of business processes and operations" (Savic, 2018). Savic (2018) also defines three phases for the digitalization process:

- Initial phase - when single operations or processes are automated
- Mid phase - when related processes are automated and joined together
- Complex phase - when multiple systems that support business processes and information flows are integrated

Further, *digital transformation* is described in the academic perspective as a broader term than digitalization; "creating a completely new business model, by using modern information and

computer technologies" (Savic, 2018). Savic (2018) underlines that some existing digital services such as mobile apps, artificial intelligence (AI) or cloud computing analytics only develop existing businesses other than changing its core. Therefore, those are actors for digital business optimization rather than digital transformation.

One of the vital claims about digital transformation and its effects is made by Alspach (2018); 85% of the current businesses will be affected by the digital transformation by 2027 and the doubt of employees about losing their jobs, statuses and such will bring up a resistance to change against digital transformation.

A brief summary is made by Savic (2018) on digitization, digitalization and digital transformation which can be seen in Table 1 below.

	Digitization	**Digitalization**	**Digital Transformation**
Focus	Data conversion	Information processing	Knowledge leveraging
Goal	Change from analog to digital format	Automate existing business operations and processes	Change company culture, the way it works and thinks
Activity	Convert paper documents, photos, microfilms, LPs, films and VHS tapes to digital format	Creation of completely digital work processes	Creation of a new digital company or transformation to a digital one
Tools	Computers and conversion/encoding equipment	IT systems and computer applications	Matrix of new (currently disruptive) digital technologies
Challenge	Volume *Material*	Price *Financial*	Resistance to change *Human resource*
Example	Scanning paper-based registration forms	Completely electronic registration process	Everything electronic from registration to content delivery

Table 1: Digitization, digitalization, and digital transformation (Savic, 2018)

These relatively new trends with digital technologies are important due to the changes they are facilitating and the opportunities they are creating.

2.3. Network Effects

In order to begin with the definition of the terms *network* and *network effects*; a literature search has been made. It showed that, there are many articles about network effects, also called network externalities, however, one of the simplest definitions of this term is made by Belleflamme and Peitz (2016). First, they describe the term *network* as “the group of users making the same decision” and add that “the network effects exists if users care about participating in such network or are interested in the usage of others”. DiMaggio and Garip (2012) describe this phenomenon as “[network externalities] operates when the value of a practice depends on the number of prior adopters”. In short, *network effects* is a term to describe the appreciation of others to a network or a community.

Today, it can be argued that the exploitation of network effects is critical in the coffee shop industry. Some tech developers benefit from network effects, for instance by marketing their products to certain in-use technology bases – like Point of Sale systems. The increasing number of coffee shops using such bases attracts tech companies to develop their products accordingly. Therefore, network effects seems to be important for explaining the direction that the industry is going towards.

In the 1980s, network effects gained more importance in economics and became vital to explain the lock-in effect of certain firms and technologies and their successes (Arthur, 1989). Eurich and Burtscher (2014) explain the lock-in effect as being dependent on a supplier or a vendor for a vital service for the business and being incapable of leaving that service without paying a substantial amount of money, or having an inconvenience during such a process. This substantial amount or inconvenience caused by such substitution is called switching cost (Burnham et al., 2003). Switching cost is defined as a one-time cost and it can be formed in different ways like monetary, time, effort or psychological (Burnham et al., 2003). These costs further yield to another phenomenon - resistance to change due to initial denial. Shimoni (2017) also denotes that resistance to change is an attempt of individuals to protect themselves from a change, and this follows a process with stages of initial denial - resistance - gradual exploration - eventual commitment.

Katz and Shapiro (1985) explain the success of network externalities by both direct and indirect effects of the network; such as a larger network implies a greater value and dominant technologies create a basis for the development of more complementary products for this specific area. To provide examples, many authors refer to landline phones and thereafter to the cell phones. As more users became a part of these Information and Communication Technologies, the customer base hence the size of the network got extended and started to offer more value for new potential customers and developers; and as a result, the value of getting access to that network has increased (DiMaggio and Garip, 2012). As technology developed further, new examples have occurred. DiMaggio and Garip (2012) also state that the internet provides many examples; social networking sites like Facebook or auction sites like eBay and many more. Because of the number of users or the customer base, those sites are attractive for newcomers to the network or the people who want to get access to such base.

3. Methodology

This section aims to describe the data collection process during the compilation of the thesis. First, the design of the research and the partner company will be mentioned, which will be followed by the data collection methods used for the research. Then, how the data is analyzed will be explained.

3.1. Research Design

This study is designed as a qualitative research based on interviews in the form of speech, and observations and company documents in the form of text. Most of the data was collected through phone and face-to-face interviews, rendering this study an interview study. Interview data was complemented with on-site observation data and company documents. The authors have worked together with a partner company, Odeko Inc., in order to shape and frame this thesis work, and get access to the aforementioned interview data.

Partner Company

Odeko is a startup company based in New York, USA, working with Artificial Intelligence (AI). The core of their business is improving the ordering habits of coffee shops of different sizes by using the forecasting tool that they have developed. Currently, the company is able to estimate the needs of a certain coffee shop within a period of 7 to 14 days by 5% error. This enables the coffee shops to focus on their main tasks instead of tracking out of stock levels, reorders etc., and more efficiently run their businesses.

3.2. Research Method

The method of this research is structured as a sequence of data collection through interviews, company documents and observations, and the analysis of the data collected.

3.2.1. Data Collection

In order to collect empirical data on how digital technology changes the way local coffee shops operate, the authors worked in parallel with the partner company and some of their clients. The focus was put on the business model change, and how usage of technology impacts the existing business models of small- and medium-sized coffee shops. The choice to focus not only on Odeko's technologies, but digital technologies in general that are used by these coffee shops, was motivated by the idea that a broader perspective would lead to utilization of this study by more companies and industries. The empirical data was collected through interviews, company documents and observations.

3.2.1.1. Interviews

The interviews were formed as semi-structured interviews, having previously set questions for each type of interviewee with the flexibility to move the interview on to different directions as there were opportunities to obtain some more useful information (Easterby-Smith et al., 2015). The interview questions were designed with the principles set by Rob Fitzpatrick in mind, such as asking about specific events that occured in the past and talking about customers' problems instead of Odeko's solutions (Fitzpatrick, 2013). The interviewers tried to avoid asking leading questions wherever possible. A list of topics to be covered were created before coming up with the questions, to be able to keep talking about the relevant subjects. Both of the authors took part in all of the interviews, and as one was responsible for asking the questions, the other one was responsible for taking notes. Still, voice recordings of the interviews were made upon permission from the interviewees. The authors then fully transcribed these recordings in order to clearly reflect everything the interviewees said with as little bias as possible. Preset questions had some follow-up questions with respect to the answers given by the interviewees, and some of these follow up questions were also preset while some others were spontaneous. All of the interviews have been held in the language of English, and the average duration of an interview has been recorded as 30 minutes.

Interviewees

Selection of interviewees for this study was based on different types of customers that Odeko has, and their respective persona models. Among a handful of different personas, two types were identified as the most appropriate since these two had to interact with technology the most to deal with their daily tasks, and were the most accessible. Persona I represented an executive working on the corporate side of a coffee store, caring about analytics and optimization; and Persona II represented a coffee store manager mainly focusing on operational challenges rather than strategic objectives. The selection was motivated by the idea that implications of technology differs depending on the context of its usage, i.e. the level of impact technology has or will possibly have on how each of these personas handle their day to day tasks is different due to the nature of having different responsibilities. 4 interviews with people who align with Persona I, and 5 interviews with people who align with Persona II were conducted. These interviewees accounted for a total number of 66 locations spread over 6 different states.

Additionally, the authors had 15 video interviews with an Odeko executive, Melih Onvural, to get a better understanding of their customers and industry. These interviews were not used as the main empirical data for this study, but helped the authors set a stronger foundation for the thesis instead. The authors also had a brainstorming interview with a BMC professional, Person D, who has been training various companies on making proper use of the Business Model Canvas, in order to set a better foundation for the business model implications and changes on coffee shops caused by technology.

Interviewee	Persona Type	Number of Interviews	Number of Locations	Number of States
Melih Onvural	-	15	-	-
Person A	II	1	30	6
Person B	II	1	5	2
Person C	II	1	18	2
Person D	-	1	-	-
Person E	I	1	13	1
Person F	II	2	5	2
Person G	I	1	18	2
Person H	I	1	5	2
Person I	I	1	30	6

Table 2: Overview of interviewees

3.2.1.2. Company Documents

Besides the knowledge acquired directly from Odeko employees through emails, video calls and on-site meetings, some other resources from Odeko such as the pitch deck that is presented to potential investors, and the persona cards that represent the types of customers have been used. The information in the investors' deck was gathered from a separate research conducted by Odeko earlier; and has mainly been used to set the background for this research, and show the reader how coffee industry is growing year over year based on numbers and that there is a great potential for technology to be fully integrated into the business. The persona cards have been used in order to shape the interviews and create an appropriate set of questions. Being a highly confidential document, the investors' deck was not included explicitly in this report.

3.2.1.3. Observations

While on a field trip to the office of Odeko in New York City, USA, the authors have gotten the chance to observe the daily operations of various coffee shops. In addition to the interviews that have taken place during this visit, it was possible for the authors to observe how coffee shop

workers interact with their customers and use digital technologies for running their tasks more efficiently. This enabled the authors to have a clearer view while filling in the Business Model Canvas for an average local coffee store. The authors became part of the observations as interns for 6 weeks, which allowed them to work as if they were employees of Odeko, serving the same customers. They took notes of each observation they made, which added up to a total of 18 observations; but not all of them ended up being directly used. However, it should be noted that there might be some bias in this data towards a certain type of coffee shop culture, since the study was conducted in a specific geographical region concerning specific types of coffee shops.

3.2.2. Analysis

The data collected through the interviews were fully transcribed into a document to be used in the Empirical Findings section of this paper. The transcription was done directly and transparently, in order to avoid any potential bias on the raw data. Then, these raw data were gathered in a single spreadsheet in order to have a better comprehension of all of the information. Specific questions that were asked to get specific answers were included in this spreadsheet as well, so that the authors could have the visuals of what was said in response to what question. Data from the observations were put in a separate file for triangulation, and used in order to validate or strengthen some of the arguments from the interviews. Data collected through company documents were not kept in a separate file, since these were not directly related to the business model implications of digital technologies and the Business Model Canvases in the coffee industry. These findings were mainly used in order to get a better understanding of the coffee business and the industry, and set a stronger foundation and background for this study. The main data source for this paper has been the interviews with representatives from a number of coffee stores, and people from Odeko. The goal of the data collection has been identifying how the way local coffee shops and SMEs conduct their business has changed due to new digital technologies, and if this change has been remarkable enough to have an impact on their business models.

After collecting the data, the authors have coded the data into four main groups based on the types of questions they asked and the patterns that became visible based on the answers that the respondents provided. These groups are named as; technology used in coffee shops, Business Model Canvas, opportunities, and barriers. The raw findings were also presented under these groups in a tell-show-tell format (Golden-Biddle & Locke, 2007), which was chosen for transparency purposes so that the readers could review the data and infer for themselves. After grouping the data, the authors have evaluated the findings with the lenses introduced in the Theoretical Framework section to see how they relate to the elements of the Business Model Canvas, i.e. matching each data point with the appropriate element of the BMC, and merged previous findings in the literature with their own. Finally, a new Business Model Canvas was created to emphasize the role of technology in coffee shops. The items that do not directly impact the business, but act as a supporting factor for improving the business, were denoted in additional boxes in each of the nine elements of the Business Model Canvas.

4. Empirical Findings

In this section, data from interviews, observations and company documents is presented. The data is categorized in the order of technology used in coffee shops, Business Model Canvas, and opportunities and barriers created by further development of digital technology in coffee shops; and presented in a tell-show-tell format.

4.1. Technology Used in Coffee Shops

Coffee shops are benefiting from technology in daily routines to a great extent. These technologies are mentioned during the interviews and presented under this section in order to further evaluate how these technologies affect the Business Model Canvas of a coffee shop.

1. See how Person A, B, C, D, F, G, H and I mention the usage of Point of Sale (PoS) systems and the rationale for that in coffee shops respectively:

> "Our PoS system has gotten fancier and more user-friendly with technology... It has some excellent reporting, so I have access to all of the less used cases as an example."

> "We use Square (PoS) of course."

> "I started working in a coffee shop where we were taking orders from customers with the PoS."

> "You have a number of companies like Clover and Square, and a bunch of others that are coming with new tablets that work at the register. So that was a very captive market with very old school technology and very non-modern technology. You know, very old fashioned. These disruptors came in and they tried a lot of things to make it as easy as possible for people to switch over. One of the reasons was pretty convenient because their system was so much more convenient than the old cash register. The second one was also to come at a very low cost or a cost that you could offset very quickly."

> "So technology-wise for coffee shops we currently use Square in our shops, the PoS."

> "We use Square as a PoS, it has a good and easy-to-use interface. It can be used to control your items (inventory wise), resources (like an HR app) and so on. We use Square as a PoS system and it helps us with its time cards in the dashboard to see schedules of bartenders and their shifts. We use it also for invoicing. Therefore it provides us an overview of inventory and labor management."

> “We use Square for our PoS. It is a point of sale system called Square and they go and take all the transactions and they register them. They're pretty good on KPIs and stuff like that. It's nice because it just takes data, I mean obviously just like as we sell throughout the day and just really quickly puts it into reports which we can search through. And basically, just have a history for basically infinity as long as we're open.”

> “We have our PoS, it's Square. And I would say that's probably the one that even though it's kind of the most basic, gets used the most… I also know that we do such things through Square like we can basically send out an email to anyone who's come through, and used their credit card and Square has their email and we can reach them that way too. I do feel Square helps us a lot.”

These imply that with the advent of technology, the Point of Sale (PoS) systems are widely used in coffee shops and people think the interface is easy-to-use as well as the quality and the features that it provides to its owners. Furthermore, PoS systems offer convenience in coffee shops for a reasonable price and in return, workpeople are able to create reports and have an overview of their stores in terms of labor and inventory.

2. See how Person A, G and H denote that different companies, software and tools integrate with the PoS systems in a coffee shop respectively:

> “Odeko uses our internal data through Square and then, they order my pastries or adjust our schedule based on the transactions. With this smart ordering, if we're selling one item and we're selling out consistently that's one thing that would trigger their system to order that specific item. If it is a hot seller so we would get more in the area of running out less often.”

> “Another software that we use is Restaurant365 which also uses the data coming from Square.”

> “And then both of those systems [PoS and Shopify e-commerce] are tied into my ERP. So the sales and the transactions will automatically go into the system and actually like feed it in.”

These imply that PoS systems both provide and use data to and from others to work on and creates an opportunity for other companies for developing new tools based on the integration with PoS systems.

3. See how Person A and H imply the advent of digital technologies, data analysis has been developed and gained importance in business field:

> “Analytics have come a long way. I'd say that's probably the most useful part of the tech in our specific business model. I mean the value of that for me is making

> a decision with the data in front of me instead of what I've been saying or digging through… It is in the easiest to read format, so I can make a decision saying let's drop this item because it's not financially worth it. But here's where the tech comes in and it's really just having the numbers in front of you to make an informed decision on what you're carrying or not carrying or selling or not selling."
>
> "Based on technology, we can tell which type of product our customers enjoy the most, and push it more or maybe add some more of the similar type of products. So, it's a better customer experience overall, and a better product offering."

This suggests that with the technology being used in coffee shops and specifically with the data analysis tools, decisions are based more on a rationale other than the gut feelings of the workpeople.

4. See how Person A and H talk about Odeko and about its usage of different data sources around the coffee shop environment:

> "Odeko has taken over our pastry orders using their computer projections based on sales. Past sales, taking into account weather, government shutdowns etc., anything that might affect our business. And before that we had standing orders that were adjusted as necessary, manually by the managers."
>
> "We use Odeko on the pastry food ordering and to review the performance of our cafes. The AI uses our historicals and then automates the actual ordering of the pastries."
>
> "Obviously, having something like Odeko really helps us to improve our efficiency, cut down on waste as well. And really streamline that whole operation."

This implies that with the incremental development of technology, systems communicate with each other and allows for further analyses and new systems and services to be developed.

5. It is also proved by the data team that Odeko creates value for the coffee shops which use its AI ordering services with a reduction on the wastes of locations by 50%, followed by 12% reduction in food costs and a 4% reduction in total COGS (Odeko, 2019). This implies that data analysis, which is possible because of the technology used in coffee shops, allows to a better economic performance for the locations.

6. See how Person A and C mention about digital technologies to create possibilities for a better way of communication, system control and an overview respectively:

> "Most of our vendors these days have an online ordering platform. You're not making a phone call or sending an email these days. You're going on and

clicking the number or whatever item you want. It's easier to track if something goes wrong. You have the invoice pulled up right in front of you, and you know it's easier to find out where in the chain, something that won't eat if you will."

"Technology used in our cafes allowed more accurate tracking of costs. One of the things that was happening, there was missed money with the things that weren't really tedious to reconcile and it helped managers to have a better control over the things that they were being charged for from vendors and from our internal distribution. That improved the COGS a little bit. They were able to capture a lot of double invoices for things or things that they were no longer paying for different services that were on auto pay."

This suggests that with the technology used in communication between coffee shops and vendors, it is possible to see a clearer communication, easier ways to have an overview on the system and less errors depending on human factors.

7. See how various web-based programs, software, services and their benefits are mentioned to be used in coffee shops for different purposes by Person C, H and I respectively:

"When I started we were on all Google Drive and that's how the roastery organized their orders for the day. That's how they knew. They would make roast reports for X amount of coffee bags. They make task lists off of that. At that time, our accounting team would go in and build an invoice based on the Google Sheets for the orders… And then about a year and a half ago, if you had to make a change into an order, which happened all the time, it was creating a whole new invoice. So we created a custom order portal through Salesforce and that was supposed to tie into the CRM pieces of Salesforce. Before, that was taking like a day a full day of work for the accountant or like somebody in the accounting team."

"We use Google Sheets and Google Docs a lot to communicate between our commissaries and our cafes. So the way we work is, the cafe managers will input what they want to order two days in advance and so they'll constantly be updating it for 48 hours and then like it in advance and then the commissary will get the sheet and then they'll use that to actually produce what is needed. So that's the commissary side… We do have an ERP that we're using and we also have VERPs (Variable Envelope Return Paths) - NetSuite"

"I feel like the technology probably helps us the most. Just in terms of like helping us really have the most accurate picture of everything that we're doing at a glance so that we can quickly spot trends, spot areas that are a little out of whack, and come up with solutions for how you can tighten things up. I know like Tableau, and what we do with Tableau is crazy because we have so many different vendors, we have so much different data coming from Square, coming

> from Paycom and it basically collects all that so we can see cafe by cafe where the breakdowns are, where we're spending too much, what are our most efficient items, how can we push those a little more."

These suggest that many coffee shops benefit from various kinds of services on the market and they use them for many purposes like communication, spotting the trends, finding out where they lack and simply to be competitive on the market while making their daily operations easier and more effective.

8. See how Person B, H, I mention about using software especially for Human Resources (HR) needs in coffee shops respectively:

> "We are in the process of bringing in our HRS, so HR software which is onboarding benefits and everything like that. WhenIWork was a good way to forecast labor."

> "The other is myHR information system which is my human resources like system where I do all the payroll out of. So we use WhenIWork, it's a scheduling platform for the baristas. So what they do is they will input their hours and when they're going to work and they can trade shifts and sign up for, like, three hours and then that system then feeds into namely which is myHR like system that we trust is like payroll now and then. So when I work at, the baristas use it automatically that goes into memory and then from namely that is connected to my ERP to parallel get input into the accounting and the like, general ledger. So then we process a payroll like every week."

> "We have a lot of, like HR services which are web-based. We use Paycom which is pretty great. Do scheduling, time cards, promotions... We use Track Star with new systems which is good."

These imply that the complexity of tracking employee performance and work hours of a coffee shop is an obvious inconvenience and there are many solutions on the market to support and remove this, which are preferred and used by coffee shops.

9. See how Person B, C, E, F, H, I mention about using different software or technology as an assistive function for their accounting and finance needs in coffee shops respectively:

> "We are using one [software program] for costing. I forget the name of it but a costing software so you can figure out your COGS for your items"

> "Maybe a year and a half ago we moved away from print books which is what and how they used to do all the accounting. And we moved to Plate IQ to scan invoices and a platform called Restaurant365 just sort of manage a lot of the

costs at the store level in general. So it kind of like it can instantaneously create your P/L for that time. It can show you sort of admin costs."

"I'd say in terms of accounting, technology changed the most, like invoicing."

"It may be a very long period of time before you ever need to hire an accountant now because technology can do a lot of this work for us."

"We also use an invoicing module called xtraChef. It automates the reading of the invoices so it can either be scanned on a phone or scanned into a computer or email and then xtraChef will download the invoice and input into our ERP - NetSuite and then next we will process the actual invoices again once a week. My team will go through and a per and I like improving which ones to go out and then the team will actually make the payment. So that's kind of how the employees get into the system."

"We do a lot of stuff on Tableau as well, so looking at P/Ls, compiling, how much we're spending on food, labor, miscellaneous costs, the production costs for the cups, lids, beans and everything. And you know, kind of comparing that to what we're making in the cafe as well, and having a percentage breakdown so we can see what areas we can tighten up a little bit, or which areas maybe aren't as efficient."

These suggest that with the help of technology and the software in the market, coffee shops are able to remove the need to hire an accountant in the first place. Following, they still benefit from these services to make their finances and accounting less time consuming, effortless and efficient.

10. Note that Person B, F, I mention social media as a way to get in touch with customers and building out brands from it:

"The aspirational brand was very much developed through social media, which is a technology product. The brands particularly use some heavy social media were very happy. I mean social media was the big one. The whole idea of retail for them was, it would be a profitable billboard with by which to display this brand which will be multi-channel. Our channels contain activations at music festivals, partnerships with fashion brands but mostly I would say the vast majority would be social media."

"Our primary source of marketing is social media. A large part of marketing contains just social media, the posts of the company to support the customers but the campaigns are really social media friendly and in terms of the way of the design and the exciting vibrant pink colors. We want to take a picture because the composition it just looks so great. I would definitely say that with technology it

> helped to pull customer base which is more social media friendly crowd and which would tend to be more millennials than anything else, absolutely."
>
> "We don't really use too much advertising. I think a lot of advertising just comes from word of mouth and I think social media does a really good job of helping to kind of push that out."

These illustrate that social media has a vital role as a part of technology used by coffee shops in terms of marketing. It seems to be the main channel for marketing and the method of communication with the customer base.

11. See how Person C, D, E and H mention about using digital payment systems, e-commerce solutions or channels respectively:

> "That e-commerce part will replace the Salesforce order portal. So that instead of manually entering the orders that customers can do that so they use technology and that type of apps I guess to add to shift some of the manual work to customers… Also, the preference from customers has really shifted and they sort of expect to be able to see a catalog on their phone and order that way."
>
> "One coffee shop takes every single possible credit card, Apple Pay, Samsung Pay and so on. You basically come with your watch or phone, you put it on the device, take your item and go; it takes a total of about 15 seconds. The other coffee shop only takes cash. You have to dig out your cash, give it to the person, the person has to enter it in the register, put the money in the cash register, take out the change, count the change, give it back to you and then you end up with a bunch of coins dangling in your pocket, your receipts and all that stuff. It takes like one, two, three minutes, which is more than a lot of people in a hurry would want to spend on something like this.
>
> "And we do have an e-commerce platform…The most tangible and impactful application of "tech" in coffee shops is web/app ordering like at Starbucks. Everyone in the food and beverage industry is trying to figure out the best way to benefit from pre-ordering (and delivery) apps. Ticket sizes grow by around 20% when people order online/in-app. "
>
> "We use Shopify for our e-commerce for our web sales."

These denote that many coffee shops invested in online channels, e-commerce and digital payment systems in their stores. Interestingly, some manual work during the transaction is transferred to the customer side in this way.

Technology or Service Used	Benefits	Example(s)
Point of Sale (PoS) Systems	● Good system overview, inventory and labor tracking ● Reporting with pre-defined KPIs	"PoS system(s) has some excellent reporting." "It provides us an overview of inventory and labor management."
Odeko	● Less capital tied up by inventory ● Complex data analysis for better accuracy on sales forecasts ● Lower level of waste ● Lower COGS and total costs	"Past sales, taking into account weather, government shutdowns etc., anything that might affect our business." "Reduction on the wastes of locations by 50%, followed by 12% reduction in food costs and a 4% reduction in total COGS."
Web based programs	● Instant changes, edits that saves time for employees ● Quicker communication in between different functions of the company ● Spotting trends	"Before [web-based programs], that was taking like a day a full day of work for the accountant or like somebody in the accounting team." "We use Google Sheets and Google Docs a lot to communicate between our commissaries and our cafes."
HR Software	● Tracking of benefits and payrolls of employees ● Forecasting labor needs ● Following up with the working hours in a dynamic environment	"Do scheduling, time cards, promotions…" "WhenIWork [HR software] was a good way to forecast labor."
Accounting and Finance Software	● Better tracking of costs, invoices and payables ● Less need for an account at early stages	"We scan invoices and a platform manages a lot of the costs at the store level at general." "It may be a very long period of time before you ever need to hire an accountant now because technology can do a lot of this work for us."
Social Media	● Helps to develop brands ● Acts as a marketing channel and facilitates word-of-mouth marketing	"Brand was very much developed through social media." "Our primary source of marketing is social media."
Digital Payment	● Increased ticket sizes	"Ticket sizes grow by around 20% when

Systems	● Shifts some of the manual task to customers ● Time saver for transactions	people order online/in-app." "Instead of manually entering the orders that customers can do that." "You basically come with your watch or phone, you put it on the device, take your item and go."

Table 3: Summary of technologies used in coffee shops

The above is a summary of technology used in coffee shops, their benefits for its users and quotes implying these benefits and aims to clarify what is mainly presented in this section.

4.2. Business Model Canvas

In order to create a general Business Model Canvas for local coffee shops, and see how technology impacts their business models, information from various coffee shops was collected. This information has been presented in this section, in the form of different elements of the Business Model Canvas. The information includes both how a coffee shop traditionally operates, and how technology impacts, improves or changes the way that these operations takes place.

4.2.1. Customer Segments

1. See what Person B and H think about the impact of technology on their customer segments respectively:

> "The brands particularly use some heavy social media were very happy. So, definitely attracting a younger, savvier customer. I think it was very much baked into the DNA of the brand to being attractive to those kinds of people, and they used social media to amplify that message."
>
> "I would say we are targeting a little bit younger customers, more of the young professionals. But I would say it's the same customer base overall."

These show that using technology can help coffee shops attract specific types of customers; in this case, younger ones. However, this does not necessarily mean that they are redirecting their focus to new customer segments. If the brand is already targeting these people, they will naturally use the channels that these people use, and be where they are.

2. See how Person C, F and G define their customer segments respectively:

> "Specialty coffee has a reputation of being very popular with younger people, and the values of specialty coffee tend to align with values of millennial consumers

around transparency, craft quality, experience and so on. When you look at the overall customer segment data, specialty coffee is more popular with millennial customers, and they are more comfortable with apps and things like that. Our customer segment data doesn't skew so much towards millennial, it's a pretty even distribution across ages, which I think is unusual."

"I would definitely say that technology helped pull customer base which is a more social media friendly crowd, and which would tend to be more millennials than anything else, absolutely. You know it is interesting that compared to Starbucks, I've been a line manager at Starbucks cafe as well, at Starbucks I was seeing a crowd maybe from 25 year-old to 50 year-old and beyond. It was really an older, adult kind of crowd at Starbucks. Definitely some kids were there as well, but for most of our locations, it really contrasts with that, because if you walk into any cafe, I would say the average age is between 25 and early 30s max."

"It's the nature of specialty coffee, it aims for younger people. Also, millennials are aimed with specialty coffee."

These show that a younger customer segment is in the nature of third and fourth wave coffee; but technology also helps draw a younger customer base due to the fact that millennials are more comfortable with technology products.

4.2.2. Value Proposition

1. See how Person D and F define the value proposition of a coffee shop as "social gathering" respectively, and position quality of coffee in the real value proposition of a coffee shop:

"When you're going to a coffee shop, the real value proposition is not the coffee. It's rarely the coffee. Unless you're in Italy, or you're in a place that does some very fancy, very complex and really good coffee, coffee is just a black tar liquid that gives you caffeine. Most of the time, it doesn't taste that great to begin with. It's not made really well, and it's more of a commodity than anything else. It's more of a social experience, or a work experience if you want to sit somewhere with Internet and work. Those are closer to value proposition than the actual coffee itself. If you look at most of the successful ones, at least here on the East Coast, and I think quite a lot on the West Coast as well, they're successful because of the atmosphere they provide, the ability to connect with other humans, the convenience they provide. Then very rarely the coffee itself."

"It offers the opportunity for someone who wants an office space. They need a place in town and get some work done, and they pop into a coffee shop. It's also great for people who are looking to connect with a friend, and want a comfortable environment that is not a restaurant or a bar; especially 18 to 21 year-olds who cannot go to a bar or something like that, and are looking to hang out with their friends at around 7-8 pm."

The first quotation implies that the quality of coffee served in a coffee shop rarely matters, and most places make similar quality coffee. Therefore, the need that is satisfied for the customers is usually not the good quality coffee. The real value that coffee shops in the U.S. offer for their customers is the convenience and the environment they provide for human connection. The second quotation also suggests that a coffee shop is more about the environment than anything else, and becomes of high significance for people who cannot use any other substitutes.

2. See how Person D explains what the value propositions of different types of coffee shops are:

> "If you look here in the U.S., particularly on the East Coast, when people go to a Starbucks, they don't really go for the coffee. What they go for is a form of convenience because they have a specific space that is large enough, and somewhat quite enough that they could work there if they need to. You go for a conference, you may go to socialize, you may go to spend time, or you go for a lot of these things. Coffee just happens to be the excuse. The driver would be coffee but it's not necessarily the value proposition in that case. If you go to any Starbucks, and ask every single person sitting there what they think about their coffee, nobody is going to tell you this is amazing coffee. Most people don't really care about their coffee, they just get it because it's a habit."

> "If you go to a mom-and-pop shop, coffee could be something that you look forward to, but it's still not going to be the main reason why you go to that specific one. You go to that specific one because the employees there are really nice to you, or because it's funky, or because of the people you're going to meet there."

The first quotation suggests that the need that a large coffee chain location satisfies for their customers is a place to work or socialize, instead of the quality of coffee itself. The second quotation implies that the quality of coffee may be more important for a local coffee shop, but it still is not the main reason why customers would pick one over another. The factors that render a local coffee shop competitive are things like human interaction and positive environment.

3. See how person C elaborates on the value proposition of a coffee shop:

> "In the 80s and early 90s, there was a little bit of a crisis for developing a pipeline of coffee drinkers, because millennials in general were raised on juices, sodas, energy drinks and lots of other things. So it wasn't necessarily given that you'd get into your late teenage years and you would start drinking coffee, then you went to college and you needed a coffee, or you started a job and you need a coffee and that's the pattern. So, it's the way that Starbucks built its empire. You still have coffee that you're selling to people, but you're also having blended, smoothie-like drinks, strawberry-green things, things with whipped cream and so on. Some things have coffee in them, and some things don't. Those things are very popular and act as a gateway to other beverages."

> “I think generally, they are places that people spend time with other people. It creates a little bit of human connection, either sharing coffee with somebody, but even if it's just me picking up coffee on my way to work, I have a five minute conversation with somebody behind the register. I think that people innately want to connect with other people, and it creates some kind of space. There is definitely a convenience factor, and on-the-go lifestyle factor; but I think that there is a human element that people find valuable. And coffee shops are often the centers of activity in neighborhoods, and generally improve the quality of life for the entire neighborhoods. “

> “Coffee is the beverage that helps you feel sharp in the morning, it’s one thing, but there's the social element that is equally as important, or probably more important. On some level, you don't need coffee, right? You could just wake up and go to work. People could buy coffee and make it at home all the time, many people do. It's unusual to not have a way to make coffee at home. So it's not like a need, it’s a want.”

The first quotation suggests that people don’t necessarily go to a coffee shop to drink coffee. They, especially millennials, also go for other beverages since they were raised this way. The second quotation implies that a coffee shop is a place to socialize, spend time with other people and do some activities. The third quotation implies that coffee is not really the center of attraction in a coffee shop, and the human connection element is the main value proposition.

4. See how Person D stresses the importance of having a good value proposition:

> “Unless you are in an industrial area and you are the only coffee shop within a 10 kilometre radius, you are most likely in an area where there is competition with no differentiator. It means that anybody can come up with anything even slightly better than what you do, including just being 10 cents cheaper, or having wider front doors, or having a little bit better lids, and they take all of your customers. Just like the horse race analogy; horses are going to run for a number of laps at a very high speed, and the one that wins in the end wins by one centimeter. It's the same in business. If two businesses are pretty much identical with the same value proposition and everything, the one that will win over the other one is the one that has a tiny bit more value proposition than the other one. It doesn't have to be ten times better. It has to be one centimeter better.”

This implies that having an even slightly better value proposition than its competitors is crucial for a coffee shop to remain competitive.

5. See how Person D compares two slightly different value propositions:

> “One coffee shop takes every single possible credit card, Apple Pay, Samsung Pay and so on. You basically come with your watch or phone, you put it on the

> device, take your item and go; it takes a total of about 15 seconds. The other coffee shop only takes cash. You have to dig out your cash, give it to the person, the person has to enter it in the register, put the money in the cash register, take out the change, count the change, give it back to you and then you end up with a bunch of coins dangling in your pocket, your receipts and all that stuff. It takes like one, two, three minutes, which is more than a lot of people in a hurry would want to spend on something like this."

This shows how technology can help improve the value proposition of a coffee shop by, e.g. allowing customers to choose from various payment methods; and how being slightly better than competitors can make a big difference.

6. See how Person D gives examples of value propositions that technology makes possible:

> "Every single time somebody comes in with their phone in their pocket, and they have Bluetooth on, and if they opt in to that kind of service, you capture their Bluetooth address as soon as they enter the store. You associate what order they just placed with the Bluetooth address. You do this for three, four, five times. Once you know what their preferred drink is, what time they arrive and all of that information, the next time they come, by the time they arrive at the register, the coffee is already in front of them. They don't even have to wait in line. They just have to pick it up and they are done."

> "For mom-and-pop shops, speed is not the experience people are looking for. People are not coming to just pick up their drink, and have everything automated, and basically talk to a robot. They're looking for human connection. In that case, it would make much more sense to have something like a point system where points accumulate as people come, like a loyalty card, but they don't even have to take out their phone to do anything. It's automatically added to their account."

The first quotation shows how technology, specifically retail analytics, can create value that would not be possible to offer without it for coffee shops where people might want to be in and out as quickly as possible; i.e. large chains. In addition to making the process fast and seamless, technology can also help create better, personalized product offerings. The second quotation shows the same impact for coffee shops where people are looking for human connection and relationship; i.e. local shops.

7. See what Person H thinks in terms of how technology changed their value proposition:

> "I would say that we're still addressing the same needs. I think if there's anything different, the only thing that has been improved is that service is quicker. So it's providing the customer better experience and making them happier by making their drink quicker, and providing them with what they want to consume. Based on technology, we can tell which type of product our customers enjoy the most,

> and push it more or maybe add some more of the similar type of products. So, it's a better customer experience overall, and a better product offering."

This suggests that technology has allowed coffee shops to improve their offerings in terms of product range and service speed by reviewing data, even though it hasn't directly changed the needs that they address.

8. See how Person I explains their value proposition and the role of technology there:

> "I don't really know if technology necessarily is a centerpiece of what we're solving for the customer. I think it helps in the sense that, if technology takes some of the more administrative tasks off the bar, it frees up our mental space. Then I think we can better devote that mental space towards providing hospitality. And maybe that's the need that we're able to meet more with technology. But I wouldn't say that technology itself helps us meet that."

> "I think what we really provide is just a person to person interaction that's really positive, and hospitality. And I think the less that we have on our plate that's kind of involved and tied up, just like figuring out scheduling, or keeping track of time cards; the more that we can focus on making sure that we provide a hospitable environment for our guests."

> "I know that most of the people who come here every day don't necessarily come here every day just to get a cup of coffee. They come just to talk to someone and have that interaction. And I think technology helps us free up the mental space to be hospitable and provide a really positive human to human interaction."

These imply that the value proposition of this coffee shop is providing a hospitable and positive environment for their customers, and technology helps them focus on doing it by taking on the administrative tasks.

9. See how Person B thinks differently in terms of value proposition of a coffee shop:

> "I don't think that anything is particularly essential other than quality of beverage, which I think would be really hard to automate to some extent. And then relationship, but not everyone needs that. One coffee shop might prioritize having really high quality beverages, and the other might prioritize providing a nice environment for their customers to chat or socialize. Right now, the ones that I care about are definitely the experience ones."

> "Other than picking the right music or a good Square interface, I don't think technology is impacting the experience. Yes, having somebody like Odeko making sure that things are well stocked, and the grab-and-go doesn't look bad,

> and things like that are important, but I'd say to a lesser extent in terms of value proposition."

This shows that the value proposition can remarkably vary from coffee shop to coffee shop, and technology might remain insufficient in creating a valuable experience for customers who don't need the relationship factor. However, it still exists as a supporting factor.

10. See how Person C explains the shift in wholesale customers' needs due to technology:

> "For wholesale customers, it used to be that they would want to pick up a phone and make an order that way. Now, the preference from customers has really shifted and they sort of expect to be able to see a catalog on their phone and order that way. So the idea of what is good customer experience or service has shifted away from answering emails and phone calls to an intuitive app, or a web portal, or something that people can order out of."

This implies that technology shapes the needs and expectations that customers have, and coffee shops need to offer new value propositions such as proprietary apps or web platforms to address these needs and meet customer expectations.

4.2.3. Channels

1. See how Person B and F stress the importance of social media for a coffee shop:

> "Social media is the big one. We serve the need of caffeination, but the need is built from an aspirational brand, and the aspirational brand is very much developed through social media, which is a technology product. Other channels I guess are, activations at music festivals, like an activation at Coachella. We did a couple of partnerships with a fashion brand, we were having these very nice jeans. But mostly, I would say, the vast majority would be social media."

> "Our primary source of marketing is social media. A large part of marketing contains just social media, the posts of the company to support the customers. The campaigns are very social media friendly in terms of the way they are designed, and the exciting vibrant pink colors."

These show that technology has created channels such as social media for coffee shops to reach their customers and develop their brand, and these channels overtook channels that were previously being used such as events that allow for physically reaching out to customers.

2. See how Person G thinks channels are changing with technology:

> "I would say not the customer segment but who uses the mobile app might be changing; therefore, the channels that we reach our customer segments."

This suggests that usage of different technologies impacts the channels that coffee shops use to communicate with their customers. However, it does not have a direct impact on the choice of customer segments.

3. See what Person H says on how technology creates new channels:

> “We have an e-commerce platform. We can also tell who's buying at our store and who’s buying on our website, by a unique customer ID.”

This means that technology has created new platforms such as e-commerce for coffee shops to reach and communicate with their customers, and made it easier to track customer behavior.

4.2.4. Customer Relationships

1. See how Person D and F tell stories of human interaction and relationships in the coffee store, and exemplify applications that help local coffee shops establish connections:

> “There's one coffee shop by me that does something really cool. They have a little board on the wall where people can offer a drink to someone. They say, for example, I'm giving a five dollar credit for the next new parents that are coming. So, when they come, they can claim that five dollar credit to get a free coffee. Or some people do it for somebody who has a bad day, or they do it for friends.”

> “Depending on the coffee shop, anywhere from 20 to 50 percent or more of your customers come in every day, or five days, or four days a week. Meeting these people every day, you're interacting with them and I'm seeing that interaction, that brief two to three-minute interaction at the register, creating friendships there. People I see, baristas being invited to weddings and invited to baby showers, celebrating birthdays of customers... My customer just invited me last week on Thursday to come to her birthday celebration, and having that human interaction at the register creates that entity, also helps feed the business.”

These suggest that local coffee shops tend to establish highly personal relationships with their customers. This is how they build loyalty and form their customer base.

2. See how Person D stresses the difference between local and chain coffee shops in terms of customer relationships:

> “All of this goes into the difference between the customer relationships that you have between a mom-and-pop coffee shop where you have very high touch, to a Starbucks where you have very very low touch customer relationship. And they're trying to get to as low touch as possible.”

This suggests that chain coffee shops are aiming to decrease the level of interaction with their customers, and get it as low as possible by automating serving processes using apps and

screens; whereas local coffee shops are aiming to establish a personal relationship with their customers, and get to know them.

4.2.5. Revenue Streams

1. See how Person D approaches different types of revenue streams for a coffee shop:

> “For a traditional coffee shop, the revenue stream is very simple. You sell coffee, you get paid. It's a one-off transaction. If you want to explore different types of revenue streams, you have to look into things like subscription and membership. There is a number of companies who have tried that, not very successfully so far. You could look at three way revenue, where you basically build a specific type of partnership with somebody who will pay your customers their coffee. In exchange you provide them with some visibility, so basically sponsoring. Sponsoring goods, sponsorship is the kind of revenue that you can add to a revenue model.”

Although most coffee shops operate based on one-time payments that are transaction based, some other methods of creating revenue such as subscription and sponsorship could also be implemented.

2. See what Person B thinks on how technology impacts revenue streams of coffee shops:

> “I can't really say that anything drove revenue. We were in talks to creating an order head platform, which would be the obvious way to drive revenue using technology, but we didn't get there.”

This implies that technology products do not have a direct impact on a coffee shop’s revenue streams. There were some methods to do this, but they were not prioritized by this coffee shop, which suggests that creating new revenue streams through technology was not an urgent need.

3. See how Person G and H see technology and various ways it can help create and improve revenue respectively:

> “Technology is all around us by making everything more efficient. From a revenue standpoint, if you compare a faster PoS with a slower PoS (4 years ago we had a slower one), I can move customers faster in the line and I am getting more revenue. It is improving our revenues and cutting costs at the same time. Also, I am less likely to lose customers because of the long queues.”

> “I think it improves the value of the company. I think it's helping the margins. It's cutting down on payroll in terms of total percentage to sales. We’re tracking waste and efficiency. We’re ensuring profitability in stores. We can track down to exactly what's going on, what's driving the change in profit/loss, and what the big expenses that are flowing through from the prior period are. I think it's a way that we have been able to increase the value of our company.”

These show that, although not creating new revenue streams, technology can impact revenues to a great extent by improving margins, optimizing in-store processes, and helping coffee shops serve their customers in a better way.

4.2.6. Key Resources

1. See how Person B and C talk about their human resources:

> “The store manager would order the items, and then usually put them away with the help of staff and baristas.”

> “Coffee people tend to be more artistic… A lot of them are writers, and actors, and musicians, and they like the flexibility of the schedule.”

The first quotation means that baristas not only spend their time making coffee, but also take part in organizing the stores, which renders them a valuable asset for a coffee shop along with store managers. The second quotation implies that human resources for a coffee shop tend to be unique compared to other industries, therefore important and hard to replace.

2. It is observed that local coffee shops have around 4-5 employees working in store at a time, and that team is responsible for everything that happens during their shift at the coffee shop. Along with making beverages and organizing the store, they also interact with customers and talk to them, meaning that they are the ones delivering the actual value proposition of a local coffee shop, which is human connection. This implies that they are one of the most valuable assets of a local coffee shop brand.

3. It is observed that having a physical store is one of the founding components of delivering value to local coffee shop customers. Therefore, having a positive coffee store environment that is convenient and also allows for working (good internet connection, moderate level of noise) is very important in terms of physical key resources.

4.2.7. Key Activities

1. See how Person D mentions some coffee shops that don’t serve coffee at all:

> “You have some "coffee shops" that have been opening here in New York that only serve tea. And they seem to be fairly popular. You have some that offer the bubble tea, the Japanese or Vietnamese bubble tea. And those are very popular as well. And there is no coffee at all there, they don't serve it.”

Having coffee shops that don’t necessarily embrace making coffee as one of their key activities strengthens the argument that coffee shops are less about serving coffee and more about social gathering and convenience of having a place to work at. This is what defines a “coffee shop”.

2. See what Person H says on how technology leads to new key activities:

> “If a customer is buying both on our e-commerce platform and in the store, we can provide them with a coupon, discount at shops, or something like that; and we know that they're a loyal customer as well.”

This shows that different platforms require different actions to be taken, and technology has led to the creation of new key activities.

4.2.8. Key Partnerships

1. See how Person D brainstorms a possible application of technology to increase the number of key partners for a local coffee shop:

> “The coffee shop could have a partnership with the local laundromat. So whenever you go to the laundromat, as soon as you start your wash, there could be an app or a tablet or something in there, and you can order your drink. By the time you get to the coffee shop, your drink is there, ordered by the laundromat.”

This shows how technology can help improve key partnerships for coffee shops.

2. See how Person D exemplifies two different partnerships that has taken place between a coffee chain and large technology companies:

> “Starbucks would have cards that you could take on the counter, and these cards would give you free apps, apps that are usually paid, but they would give you a card with a redeem code that allows you to get a free app. What does that do? It gave Apple more people accessing their apps, so they got more traffic, more visibility, and more engagement. It gave Starbucks a key differentiator from the other coffee shops that were competing with them, because nobody else was offering free apps, free music, and things like this.”

> “Every time you would go to a Starbucks, you could sit down and have free Wi-Fi. Ten to twelve years ago, when free Wi-Fi was something rare, that was pretty cool. But you knew that every time you go to a Starbucks, you would have free Wi-Fi. Google was not really making any money in this, Starbucks was not really making any money in this, but what was happening is that Google was getting its word out as a brand, as a service provider, as an ISP, and Starbucks was offering a special perk to their users. True definition of business development is building a long term mutually beneficial value. It does not need to have dollar amounts attached to it.”

These show that technology renders partnerships possible that would not have been thought of earlier, such as giving away free apps since there were no apps. And a partnership does not need to include an exchange of currencies between parties; the point of the partnership is creating mutual value that can take different forms such as visibility and differentiation.

3. See how Person B explains the way they choose their partners:

> “For us, they are all pretty much legacy partners. They did implement some technology. Some built ordering platforms that were easier to use than others. Some people we still converse through email. And I can't say that the use of technology was a key deciding factor in choosing any of the partners. However, the number of our key partners increased through adopting more technology.”

Here, it can bee seen that technology does not directly impact the choice of key partners. On the other hand, by definition, the more technologies from different companies a coffee shop uses, the more key partners they have. Therefore, usage of technology increases the amount of partnerships, hence acts as an improvement factor.

4. See how Person C sees the impact of technology on key partners:

> “For the roastery piece, it still is very much a production center, and you take the orders and you make them to order. So there's a production aspect of it, and endless supplies to produce them like bags and labels and all of that. And there has been incremental additions to that. Those key partners are still the same, but as the company has scaled, they've needed either equipment or technology or both to sort of be able to scale and minimize errors. So, I wouldn't say that it's necessarily replacing - it's addition.”

Again, this suggests that technology has led to an increasing amount of key partners, but not directly replaced existing partners.

5. See what Person H and I think about the role of technology in key partnerships respectively:

> “It's more of an automation thing. We automatically send our suppliers the P.O. (purchase order) based Odeko's formula, and then they ship the product with less interaction. I think it's easier for them. They're just getting a P.O., not any mail, work and so on. I think we're saving our vendors time and money as well.”

> “It hasn't really changed who we work with, but I think it's probably improved our relationships to some degree. It also helps making sure that we're partnering with people who really fit what we're trying to do; and also tracking invoices, and making sure that payments are done on time. And I guess that definitely helps our relationships with our partners. But I wouldn't say it necessarily affects who we partner with, it’s just like keeping the relationship more positive.”

Technology has a supporting role in keeping partnerships healthy, by helping coffee shops track their numbers and make informed decisions about who they are partnering with. It also saves partners such as suppliers time, money and effort. However, it does not have a direct impact on the decision of which partners to choose.

6. See how Person G chooses key partners for their coffee shops:

> “Among our key partners, we’ve started to see more tech companies nowadays, such as Square, Odeko, and Restaurant365. In the last decade, we used to have only paper goods suppliers, dairy suppliers and so on. Now, we have started to see those people among others.”

> “Our vendors that couldn't adapt their technology to us, who didn't follow up, they faded away - we’ve stopped working with them or we’ve changed them. Even if the new suppliers’ prices were a bit higher, in reality, the old ones costed us more to work with them because of the transaction costs - incorrect invoices, telling what's wrong, checking orders manually and so on.”

The first quotation shows that technology leads to an increasing number and variety of key partners. The second quotation implies that technology has some sort of impact on the choice of key partners, since the coffee shop would go for other partners if the existing ones cannot keep up with the technologies that the coffee shop is using.

7. See how Person F exemplifies their key partnerships:

> “We have some partnerships with some designers; for instance, one of our recent collaborations was with Versace, in which we used their customer base and announced that through social media. In the week of the campaign, on Sunday, we doubled our sales, and that business generated a lot of hype and social media engagement.”

This shows that even if the partnership itself is not related to technology, products of technology such as social media can help maximize the yields from that partnership, such as boosting sales and generating word of mouth.

4.2.9. Cost Structure

1. See how Person D approaches the cost structure section of a Business Model Canvas:

> “I tell people who come to my workshops not to include any of the standard business expenses in the cost structure. So, just bundle that as standard business expenses. What you want to put in cost structure that really matters is all the things that are very specific and unique to you, and to what you are doing.”

Since many businesses would have similar types of expenses, it makes a lot of sense to denote these in one group as standard expenses, and highlight the unique expenses.

2. See how Person D breaks down standard and unique business expenses for a coffee shop:

> “A standard coffee shop will have its supplies, everything from the coffee beans to the cups, and stirrers, and paper towels, and napkins, and all that stuff. It will have payroll, every business has payroll. It will have standard business expenses like electricity, rent, all of that stuff.”
>
> “The things that are different could be events that you plan at your coffee shop, and specific software for doing things that are non-traditional. It could be pretty much any expense that is non-traditional for all other coffee shops.”

These are examples of different types of expenses for a coffee shop, and are used to develop the cost structure section of the Business Model Canvas in the Discussion section.

3. See how Person B, F, G and H explain their approaches to the expenditures associated with technology respectively:

> “Perhaps you could make an argument that the costings that we're using are helping to drive down cost, because we wouldn't find an item that was too expensive and could justify any kind of price in the cafes or drive it down. WhenIWork was a good way to forecast labor. So labor spent, I could argue that the use of that gave us a way to reduce costs there.”
>
> “There is definitely some expenses or costs of using services like Square or whatever. But I do think it is necessary cost, absolutely. The technology allows us to optimize our time. Look at Odeko for example. There is a fee associated with using a service like Odeko, but ultimately, once we are operating, Odeko frees up time for managers, so they don't have to place orders. And this is one of the things that we do use. They all either allow us to prevent losses, or optimize the way we use our time, or tell us how to use our time differently. I would imagine technology is making things less expensive. Say you need something for a period time of year whether you are a small or a top operating a single cafe; it may be a very long period of time before you ever need to hire an accountant now because technology can do a lot of this work for you.”
>
> “From the cost structure standpoint, as long as it’s spent on technology, you don't mind what you’ve spent. We are just spending 30 seconds now for the works that took 4-5 hours before, and saving from employee hours, so cutting down the total costs again.”
>
> “I would say on costing we've gotten better, and improved margins. For the most part, the cost has gone down overall. Where we're spending more is the upfront implementation pay, so the actual license. But then we make that money back quicker because of the increase in sales and margins.”

These imply that the costs related to technology helps coffee shops reduce their other costs, including standard business expenses, and improve margins; therefore can be considered as an improving factor in the cost structure.

4. See what Person C says on how technology is changing their cost structure:

> "Instead of investing in an extra person to answer those emails and calls, maybe you would put money into developing an app with a user interface."

This means that coffee shops should be investing in technology products that replace labor for certain operational tasks, since these products are starting to be requirements that create value for customers.

4.3. Opportunities

During the interviews, some future opportunities about using digital technology and transformation of old-school approaches with the advent of technology and discussions about why it is important rose incessantly. What is already being used by coffee shops is presented in Section 4.1., and possible areas of development which might be effective on the business model of a coffee shop in the near future are presented in this section.

1. See how Person C and F thinks why technology is a vital opportunity to canalize the labor and the workforce in business development:

> "In general, coffee people are like entrepreneurs and the certain coffee businesses and the types of people interacting to work in the coffee shops are not generally scientists. They are not thinking about the process that you'd go through or tend to go through to develop the process. They tend to be more artistic and it's a very much an industry that builds its work for some people who are focused on doing something else. That may change a little bit but there are career jobs in coffee now and if people can really get into it, they can stay in it but a lot of them are writers and actors and musicians and they like the flexibility of the schedule. They like a morning schedule rather than a night time schedule that's whether not bartenders or restaurant servers or something like that. There's a lot of variation from one business to the next in terms of how savy you're on finances, how savy you're on technology... I think it's more of a situation that people don't know what they need and there's a lot of manual work that goes into it. That kind of events can constrict how company grows because it can be difficult to have energy to think about growing your business or trying a new thing if you're still reconciling your paper delivery for four locations and something called off on all of those things. I think one of the things that is very challenging for small businesses now in places like New York, in urban areas where there's a lot more regulation around wages, paid time-off, paid sick time like there's a lot of things about their labor and that's really challenging. So

> typically for all of the coffee shops, the only thing they talk about is COGS or labor costs and that means sometimes they can't get to talk about what they're selling how to get more customers and so they can use technology to lessen their brain on those things and more on building their business."
>
> "The technology allows us to optimize our time. Look at Odeko for example… Odeko frees up time for managers, so they don't have to place orders. And this is one of the things that we do use. They all either allow us to prevent losses, or optimize the way we use our time, or tell us how to use our time differently. I would imagine technology is making things less expensive."

These suggest that in the coffee shop environment things can be distracting for the owners or managers. Technology is identified as a tool to unleash the potential of a coffee shop and enabler of working on business development rather than drowning in daily operations and problems.

2. See how Person H adds on the previous one to underline the importance of technology for being competitive in the market:

> "I'd say the market as a whole kinda like forced us to base on efficiency. So we started using such newer digital technologies sort of a couple of years ago and we got to the point where it was a work requirement to keep up with the competition and to keep up with this day and age to improve the margins to improve the overall experience for the customer. We needed to do this and I think you'd still not have the technology and still be successful I just think it's just harder."

This implies that digital technologies provide new opportunities to facilitate the daily routines of smaller coffee shops and letting them stay in the game and still be competitive by forcing them to emphasize on efficiency and business intelligence with usage of technology.

3. See how Person B, G and H imply the opportunities about inventory management for coffee shops respectively:

> "Odeko's technology is very powerful for inventory counting. On the other hand, inventory management, is one of the things that no one likes to do that is always under optimized."
>
> "About 2 months ago, I would definitely say we are lacking in inventory counting. It takes a lot of time for us. Now, we have solved that problem with Odeko but still, behind the counter, we are lacking a lot about inventory management I'd say."

> “I think another big technology would be inventory management, so not carrying too much or too little in terms of quantity and also the variety; ensuring the efficiencies. Holding on too much inventory is like holding on too much cash in inventory as working capital.”

These highlight about one of the opportunities that Odeko provides to coffee shops in terms of inventory counting. Besides inventory counting, inventory management is still an issue and stands alone as an area of development and future opportunity.

4. See how Person C argues mobile apps providing an opportunity to facilitate communication:

> “Using picture inclusive menu on a mobile app, sort of give an expectation of what you would get and also, there are several places in our portfolio, particularly on campus at Columbia University, where one of the things we learned was we introduced like a bottled cold brew and they said that it was common amongst a lot of international students because it actually cut down on some of the amounts of talking they had to do and they were quite self-conscious about their English or they didn't have enough language to ask questions about what they wanted. So I think there is an opportunity for the technology and the apps to actually be a more inclusive menu. If you think even just like how typically Chinese restaurants you know what have pictures of what they were because it showed they you know it gave the customers like this is maybe I know what it looks like but I don't know what it's called. And so that same thinking is in play and I do think that it's one of the things that specialty coffee hasn't really thought about very much when it comes to language barriers within their actual spaces. So that could be a benefit to having those kinds of apps.”

This implies that mobile apps may provide an opportunity for coffee shops to remove language barriers especially where the customer segment contains an international population. Also, it may cut down the transaction costs at the payment desk. Besides decreasing the transaction costs and removing language barriers, mobile apps can also offer an opportunity for better communication by showing what customers will get in return of their payment. Therefore, it may help coffee shops to express themselves better to their customers.

5. See how Person C and F denote the lack of integration of the systems used in the coffee shops respectively:

> “I think right now one of the things that is tricky for coffee businesses is there are still a lot of systems and these different systems, they don’t talk or they don’t measure in the same sort of way.”

> “I would like to see the modern technology communicate with each other more. We only have a PoS system and a scheduling system and those two don't communicate. I'd like my scheduling system communicates with the sales data

> and so in order to assess my labor, with the sales I just want to make sure that I know I'm trying the amount exactly as needed and it's a spreadsheet for me personally. So we need to see technology that's communicating with each other more effectively or at all would be fantastic. I am aware of something especially for these smaller cafes and this is technology does not communicate well together so you end up eating a bunch of different tools to accomplish different needs. When you compare that tool to a massive company like Starbucks, where they have built a lot of their systems internally, they can build kind of systems that communicate with each other and whatnot but that's usually not the case in these smaller shops and these smaller shops using a variety of tools to accommodate a variety of objectives and the tools don't really communicate."

These quotes underline both importance and lack of integration among services and systems in a coffee shop environment. In addition to that, they imply the difficulty of finding the right tools for coffee shops on the market due to the integration issues. Therefore, these point to an opportunity to develop a new service which solves integration issues of coffee shops.

6. See how Person F adds on the previous one, and comments on the need that more integration is needed for daily operations of smaller coffee shops:

> "We place orders with emails. We don't have an inventory system that is communicating with Square PoS immediately or in a way which is efficient. The way which we receive orders today is; Square system knows that we have X amount of something on hand and we order with a gut feeling. In Starbucks for example, they have a more efficient system which gets input from the PoS system and inventory management system at the cafe and places an order after that. So if the cafe orders 20 yoghurts and sells 20 yoghurts the system will automatically know that the coffee is out of inventory to be able to warn the mobile ordering system. That's a great example of a system that just communicates really really well together and you know as a manager if you want to look at your system and say okay what am I out of, what consistently we're running out, all of that's available within the system, then they all come up a scheme of things."

This suggests that integration of systems is vital for smaller coffee shops in order to make better decisions and fulfill a certain level of service quality.

7.See how Person E thinks in a similar manner with Person F and mentions about IoT as an opportunity that can be used for integration in coffee shops:

> "I also have locations that are doing twelve hundred dollars a day or less, and we lose money on waste, and deliveries are difficult to schedule, inventory is hard to track. One of our locations is selling on Seamless [online ordering app], and I didn't know about it, and Odeko has been tracking the inventory there; but

> because it's in Square [PoS], they haven't been tracking anything that was sold through Seamless, which just messes up the whole system. I really like the whole IoT concept for inventory versus integrating it with a PoS, and then consolidating suppliers into a single delivery. That's smart, basically. You know, it's not just waste, it's the countability. I think IoT is fixes a lot of human error. And everything else is contingent upon somebody being involved; and the more people that are involved in something, the more mistakes there will be. So, if you're running an amazing business, if you're passionate about it, and you have a system that works, and you subscribe to it, and everybody who works there subscribes to it, these aren't problems. But most businesses don't operate in that way. In Starbucks or McDonald's, they've already worked out the kinks. They made their system idiot-proof for staff, and they minimized the room for human error at every step. And that's where a lot of small businesses struggle, unless you have incredible management. And that's rare."

This implies that IoT seems to be an opportunity for coffee shops as a solution for better inventory tracking, removing human errors in the system, cutting down the costs with such examples like better delivery schedules and/or consolidated shipments, removing wastes, and also for better integration between the systems and services. Furthermore, it is believed that IoT can provide a room for better operations especially for the daily operations of smaller coffee shops.

8. See how Person B mentions about the lack of relationship management apps and as an area of opportunity:

> "In relationship management there's like a billion tools but none of them are great. So like how do you own your social media presence? How do you know if you're doing well? Or how do you respond to it in one channel rather than having a Yelp page, it's a nightmare. So having a good reputation management software, specifically for cafes could be an opportunity. There's a lot that are built for doctor's offices but not really our use case."

That suggest that coffee shops are lacking of a tool where it can be used for relationship and brand reputation management. There seems to be a lot of apps that can be used for that purpose but they are unable to meet the demands of the coffee shop market.

9. See how Person B talks about a whole new coffee shop concept that is being operated by android robots and robotic arms:

> "I think to some extent there will always be a coffee shop and somebody goes and wants to sit down and have a talk with the barista. But I think a lot of the cases, especially in a city like New York where everyone is on the go, they don't need the barista, they don't need a place to sit down, they just want a beverage and they want to go. So, you know, I would say that - have you heard of Cafe X?

> It's in San Francisco. The full robot cafe. I could see that being a good use case for a lot of consumers. So you know I don't think that anything is particularly essential other than quality of beverage which I think would be really hard to automate to some extent. And then relationship, but not everyone needs that."

This implies that for some areas like New York, where life is fast-paced and busy, robotic cafes provide an opportunity for faster transactions, quicker serve times and with all that still offering fresh beverages.

10. It is observed that managers or employees who have the chance to communicate with other coffee shop chains' managers or employees don't hesitate to suggest or recommend the tools and services that they use in their daily routines. This further yields coffee shops to use similar tools and services and then induces and gives rise to new service and tech companies to position themselves to develop for such a customer base. While small coffee shop chains join to a form of network, in terms of different key technologies such as certain PoS systems, at the same time they increase the value of this network due to increased number of people using the same system. This is important for a reason; it increases the value of certain technologies, like aforementioned PoS systems, and pushes new tech developers to launch their products being capable of working with a certain base and therefore provides new opportunities like developing such bases and benefiting from network effects to dominate winner-takes-all market in that case.

4.4. Barriers

During the interviews, as well as the opportunities, some barriers to adoption of digital technology on coffee shops were mentioned. This section presents those arguments.

1. It is observed that aforementioned network effects yield to some barriers such as switching costs and lock-in effects. See Person D mentioning how switching costs are creating barriers for coffee shops to change or adapt their systems:

> "One of the systems, I think it's Square, they have a special terminal that if you buy it outright it will cost you, depending on the model, anywhere between four hundred and a thousand dollars. And then if you are using their services in the monthly subscription, after X amount of months, you get the cost of that machine reimbursed to you. So basically you know that your cost will only be time and effort to switch to a new system, that's it. After the first onboarding process that helps take all of the products they have and create for them in the new interface, they're much more likely to adopt it because it's very easy to switch... And then, what creates friction is lock-in. If they are used to one technology and that technology is very difficult to move out of because they have invested a lot of time, a lot of energy, a lot of money; and they can't export data, they can't export anything from it, or take anything out of it, usually you have a strong lock-in and you just can't change easily. So, lock-in factor is one thing that draws limits. The

> more frictionless you can make the experience, the easier it is for them to just jump in and start using it. Often enough, people hate old technology, but they're too afraid to switch out of, or away from it."

This suggests that barriers are created with the lock-in effects of the technology previously used and with the integration of it to the new systems. In other words, barrier is created by the path-dependency due to previously used systems and in the adoption of new technology, the painful switching processes or experience for coffee shops from old ones to the new ones which also creates barriers due to hesitation of coffee shops on adopting new systems.

2. It is also observed that some previous apps or services provided for coffee shops were not a good fit for their structure of operations or systems. This was either because of these services lacked meeting their demands or integration with the used systems. Then, such experience further created a hesitation for coffee shops and now this implies that a barrier does exist about switching to a new software or using a new service and it can be associated with the following; resistance to change.

3. See how Person E implies resistance to change as being a barrier for adaptation to technology:

> "Barriers to change is a very strange phenomenon, because it's not based on reason at all. It's a very emotional reaction. But I deal with it all the time when I try to make changes in terms of the technology we use, and I'm sure if you haven't dealt with it, you will when you work with restaurants and cafes. People will do the wrong thing forever. They don't care. So I'd say that there's some difficulty in talking people into changing their ways. And there's a reason that if you're in sales for a company, you put a lot of work in to get somebody to change what they're doing or what they're ordering."

This illustrates employees create a barrier for a company that tries to deliver their service for coffee shops. It also suggests that, even though a recently introduced method is making the life easier for such SMEs, it can fail due to being unable to convince colleagues.

4. See how Person F, H and I mention human interaction being a barrier to change with technology in coffee shops respectively:

> "You're seeing a lot of customers, depending on the coffee shop, anywhere from 20 to 50 percent or more of your customers come in every day or five days or four days a week. Meeting these people every day you're interacting with them and I'm seeing that interaction, that brief two to three-minute interaction at the register creating friendships there. People I see, baristas being invited to weddings and invited to baby showers, celebrating the birthday of customers... My customer just invited me last week on Thursday to come to her birthday celebration and having that human interaction at the register creates that entity

also human interaction helps feed the business… When you have something like mobile ordering where you can just place the order, show up at the coffee and it is waiting for you, a lot of that is removed and I think the trick is going to be is feeling which customers prefer interaction and when those customers come to pick up their orders there needs to be some sort of touchpoint like a conversation, how are you doing because otherwise you're not going to do that build that relationship. Actually the customer is coming for that, so customers do want just a location experience."

"Yeah I would say that's the hardest part is that human interaction. What we feel is a reason why we're so successful is that we've created a very cool environment where people want to come and be like a part of the culture and sit down and enjoy it. It's a very like trendy cool environment with, so I think that part will never change. I can't see automating the ordering-by process or the drink-by process I think, like that imminent interaction -talking with the customer exactly what they want. We also sell some different macha and sell stuff that maybe not as well known or not as mainstream so when a customer comes in it's not like they're just ordering a coffee and they know what they want. So it's us there's a lot of back and forth and talking with them on what do you normally enjoy. Like what are your tastes and we can recommend a product."

"I know that most of the people who come here every day don't necessarily come here every day just to get a cup of coffee. They come just to talk to someone and have that interaction. And I think technology helps us free up the mental space to be hospitable and provide a really positive human to human interaction. I don't really know if there will ever be a technological replacement for that. Even if you could carry out basically every function of a coffee shop with technology, I think it would still be missing probably one of the main and more covert driving factors that brings people here."

This implies that technology has such a barrier like human interaction, especially in the front end of the business. Therefore, digital kiosks, order apps and similar solutions are faced with the challenge of overcoming the need of human interaction.

5. Results

This section aims to relate the theories introduced in the Theoretical Framework section to the data presented in the Empirical Findings section, and discuss how these findings can improve the theories and frameworks that are previously developed. The Business Model Canvas will be the main focus, and the authors will highlight how technology changes the Business Model Canvas of coffee shops. Opportunities and barriers of using technology in the coffee shop industry will also be examined, and connected to the Business Model Canvas.

5.1. Technology Used in Coffee Shops

The data presented in the previous section showed that coffee shops use different technologies depending on their daily routines. Our discussions and interviews with the partner company Odeko and the coffee shops showed that the leveraging of the network effects is quite important. It is important for tech companies during the development of their products because it plays an active role while choosing which platform the product will be compatible with. This is a question to be sorted out for many of these companies. On the coffee shop side, they work with the base that is compatible with both their current systems and the ones that have the most variety in terms of add-on offerings. Therefore, main technology systems to be used by coffee shops, like PoS systems, act like a base for that network, rendering network effects important for both sides in their decision making processes.

As stated by many of the interviewees, digital PoS systems seem to be having the top priority for these shops. Such systems replace old cash registers by being attractive in terms of having an easy-to-use user interface both for the workpeople at coffee shops and customers, offering frictionless onboarding process and being specialized for the occasion. As coffee shops start using digital PoS systems, they are able to track customers and transactions and also create a database of them. Moreover, they create detailed and specialized reports for their stores which further facilitates coffee shops to make decisions, and with some add ons offered; they are able to track their resources, labor, and facilitate the scheduling of them. Comparing the service fee and benefits that these PoS systems provide, stores are satisfied with the usage of such technology and some even can't think about a life without them now. Therefore, it is wise to say that a PoS system lies in the heart of a coffee shop.

On the other hand, besides the basic tasks that PoS systems perform, it is possible to imply that some coffee shops are not satisfied with the add-ons provided and therefore they look for the market for other solutions and use some other software and tools for different requirements. In other words, PoS systems are still far away from offering a complete solution package for their users. However, as mentioned above, PoS systems are outstanding in terms of keeping track of transactions and customers and creating a database for them consequently. Therefore, integration with PoS systems is crucial. Besides the PoS providers, any third party service developer offers new products compatible with the most used PoS system such as Odeko which offers their inventory tracking service compatible only with Square and Toast - the most used

digital PoS brands - for now. It is possible to say that those brands are in a dominant position due to the integration concern for the industry.

It is mentioned that with the development of digital technologies, better data processing takes place. For example, as Odeko does; considering multiple variables such as weather forecasts, sales history, holidays and such helps to make better estimations on the sales forecast. In addition to that, to be able to see the performance of different products instantly, facilitate decision making for managers and to have a basis on the rationale, data processing through digital technologies is vital.

As interviewees stated and authors observed, coffee shops benefit from the partner company Odeko and its technology in terms of inventory counting. Some use it for pastry orders only and others use it for almost every single item in their inventory. Not only better estimates, this technology assists coffee shops with decreasing the waste and tied capital to the inventory.

Technology used in coffee shops help them in communicating with vendors, having a better system overview and control over the processes. First of all, it decreases the transaction cost between the vendors and coffee shops by offering systems where the purchase order is visible and trackable by both parties. Secondly, it gives a better sense of happening within the company and uncovers what is really used and beneficial and then act based on that piece of information. This yields to a decrease in the cost by removing the errors such as double invoicing or paid but not used services for instance.

One can think that specialty coffee shop chains constitute of smaller number of locations and the communication between them is easier. However, it is mentioned that communication is also a huge issue for these companies and they make use of technology for that purpose. Especially web-based applications mentioned a lot to meet this particular need due to being accessible by many people at the same time.

Again, as interviews and observations suggest in the previous section, coffee shops use technology intensely for different purposes. For example, other than the traditional 8-hour businesses, in quick service restaurants (QSRs) tend to have more rotation of the employees. That creates a complexity to track their schedules, performances, payrolls and benefits. Therefore, Human Resources applications can be named as one of the most important priorities for such QSRs.

Financial tools and accounting applications are also mentioned where technology matters a lot for coffee shops and which is mentioned repeatedly during the interviews as presented in the section above. Such digital technologies assist coffee shops to see their financial status at any time, to create Profit/Loss reports instantaneously, to spot where they are lacking, to manage payrolls and invoicing. Coffee shops benefit from such tools for decreasing the COGS and spotting the errors such as payments for unused services or double invoicing a vendor. This is vital for the environment that QSRs operate because they work with multiple suppliers for their baked goods, paper goods and pasty for instance and sometimes they get deliveries every

other day. All of the deliveries invoiced separately and keeping the track of them without any errors seems to be possible with the help of technology. Besides being a trustable and error preventing technology, financial tools and accounting software also allow saving time for coffee shops. As mentioned by the interviewees, it is possible to scan invoices by a smartphone camera and it will be scanned afterward, which implies an accountant doesn't need to type in all of them one by one to a system and spend hours on such work.

Interviewees also mentioned about the usage of social media as an instrument of technology and its assistance to the marketing function. One of the highlights from the interviews is word-of-mouth marketing playing a huge role for smaller coffee shop chains compared to the bigger ones such as Starbucks. Their primary source of marketing is suggested as social media and they work intensely on getting the attraction of their customers through that channel and spread their presence with the help of technology. It is believed that there is a positive correlation between the number of customers reached through social media and the number of people visiting a physical store or an online channel of a single coffee shop chain.

Having said that, it is also possible to claim that online channels play a key role in the daily lives of coffee shops. Not only the websites and e-commerce solutions like Shopify and Salesforce add-ons but also mobile payment systems such as Apple Pay and Samsung Pay gained a lot of importance for the transactions. Starting with e-commerce, it allows coffee shops to generate new sales channels, reach out to the locations where they do not operate with a physical store and as a result stay competitive in the market. Digital payment solutions, on the other hand, they both increase the average transaction size by 20% as mentioned by Person E during the interviews and allows coffee shops to perform transactions quicker which is followed by serving more and more customers at a given time. Furthermore, mobile apps that are developed by coffee shops suggested being helpful for communication purposes as well. As Person C implied, it provides easiness by picture catalogs and also removes the necessity to pronounce some difficult to say beverage names. This is more important where the population contains a substantial amount of international people such as university campuses and the international students.

5.2. Business Model Canvas

The data shown in Section 4.2. has been used to fill out a Business Model Canvas for coffee shops. The nine elements of the Business Model Canvas were merged with additional blocks that represent the impact of technology on how coffee businesses operate, and how technology supports them. These are shown in boxes in the complete Business Model Canvas in Figure 2 below and Appendix B.

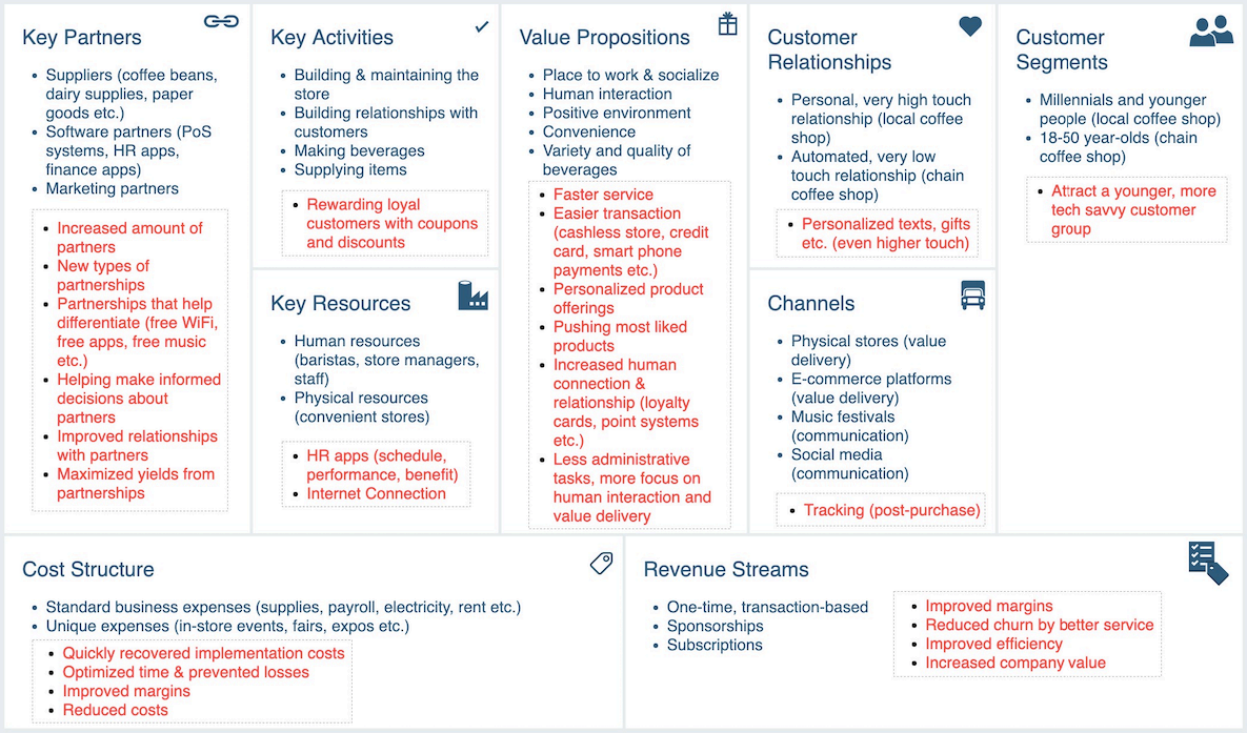

Figure 2: Business Model Canvas for coffee shops with the support of technology

As suggested by Person D, one can start filling out the Business Model Canvas for a local coffee shop starting either from the 'Value Proposition' or 'Customer Segments' block. Looking at the data collected, the main customer segment for a specialty coffee shop is selected as millenials, which are generally defined as young adults of ages 18 to early 30s. To contrast, the scale for ages of customers of chain coffee shops usually go up to 50. Specialty coffee is associated with younger people, and the role of technology here is that it further helps attract a younger customer segment since these people are more comfortable with technology.

The main value proposition for coffee shops in general turned out to be the convenient space that they provide for people to work, and the positive environment that allows for socializing and human interaction. The variety and quality of beverages seem to be more important for local coffee shops than chain coffee shops, and they are a part of the value proposition, but they don't come to the forefront as the main attraction. Technology does not directly impact any of these value propositions; however, it helps deliver the values in a better way to a great extent. With the help of technology, coffee shops are able to offer easier transaction such as cashless stores in which customers can pay with their credit cards, smartphones or watches, and faster service overall. They can track customers' behavior to develop personalized offerings for each customer, and push most liked products more to both create more value and better capture it; since this would make customers happy in the sense that they get more of the products they love, and also allow coffee shops to cut down waste on products that are not doing so well. Local coffee shops can also develop tools to increase human connection and relationship such as loyalty cards and point systems that are mapped to the customers' smartphones, so that the customers can effortlessly be rewarded for their loyalty. Finally, operational tools that are

technology products help coffee shops focus more on the interaction with their customers, delivering value for them and making them happy, by taking on the administrative tasks and allowing them to worry less about business-related problems.

The most important channel for a coffee shop to reach their customers is the store itself, since it's where the value created and delivered to the customer, and appropriated by the company. Besides the physical store, albeit not being used as the main channel, some companies also have e-commerce platforms to reach and deliver value to their customers; which is a technology product, therefore made possible by technology. Such platforms allow companies to track their customers' behavior and offer better post-purchase services, which potentially leads to creation of additional ways to capture value such as personalized offerings based on similar items of purchase. The main channel that coffee shops communicate with their customers has been found to be social media. Almost all of the awareness and evaluation phases of channels is being conducted through social media, which, again, is an allowance created by technology. In addition to social media, companies also tend to go for activations at music festivals and similar events, and communicate with their customers in such settings; in which they usually aim to convert customers through directing them to their social media channels.

The way coffee shops establish relationships with their customers has been found to be highly dependent on the type of the enterprise. Local, specialty coffee shops tend to go for high touch, personal relationships with their customers, and encourage them to also build such relationships with other customers. Some examples were given as baristas' going to the birthdays parties of customers, and having customers that offer drinks to each other. On the contrary, chain coffee shops try to go as low touch as possible with their customers, and automate every possible step of the process such as having customers use apps or screens, and allow them to come in and out as quickly as possible. Here, technology seems to be something that works in favor of chain coffee shops, but not local stores, since they are looking to be manual on this side.

The main revenue stream for coffee shops is found to be selling beverages and food, which means it's a transaction based, one-time payment. Some companies also go for subscription-based payments, or seasonal and temporary sponsorships. Although technology does not directly create other types of revenue streams for such enterprises, it helps them improve their efficiency and margins to a great extent. Better and faster service, meaning less queue time for the customer, leads to reduction of churn, and eventually increases the value of the company.

Specialty coffee shops have two crucial key resources; physical and human resources. As put forward earlier, the main values to be created for customers at local coffee stores are providing a positive environment that is convenient to work and socialize. The company should have a store that fulfills these needs; having qualities like good internet connection, comfortable level of noise, design that leads to positive feelings, and a good vibe in general. To accompany this, the other very important resource is humans, which is particularly unique in the coffee business since the characteristics of these people tend to be on the artistic side, and they are looking at their job as doing art; which means that these resources are hard to replace. They usually have more than one job description, e.g. baristas both making beverages and organizing stores, and

are the ones interacting with customers, which is an important part of the value delivery process. Technology does not play a crucial role here at the moment, except for things like HR apps and internet.

Key activities of local coffee businesses are highly related to the resources mentioned above. Building out a convenient store and maintaining it would be one key activity that is part of value creation. The store constantly needs to be fresh and full of energy, so that it radiates the positiveness that customers are looking for; and also provide good working conditions, hence requiring maintenance of electricity and internet. Another key activity is supplying the items and actually making the beverages that are not necessarily coffee. As argued by Person D, there are “coffee shops” which do not serve coffee at all; therefore, the authors have included this factor in the Business Model Canvas as beverages in general. A key activity that turned out to be even more important than making beverages is building healthy relationships with customers, since local coffee shops are found to be more about social gathering for customers than having beverages. One thing here that relates to technology is that different platforms require different actions to be taken; hence there are some key activities that are unique for companies which also operate on e-commerce platforms. An example is tracking and rewarding loyal customers with coupons and discount codes, which is an activity that exists as a result of technology products.

Traditional key partners for coffee shops include suppliers for coffee beans, dairy products, paper supplies and so on, as well as some marketing partners such as clothing brands. Even though technology does not replace any of these key partners, or directly impact the choice of partners, this is one of the blocks where the help of technology products are seen the most. The more tech-related products a coffee shop uses, the more key partners they have; e.g. using Odeko’s products would make Odeko a partner for that coffee shop. Therefore, coffee brands have a lot more key partners now. The types and variety of partnerships have also increased along with the number of partners, from local laundromats to tech-giants like Apple and Google, helping coffee shops offer different types of value to their customers such as free coffee, WiFi, music, apps etc., and differentiate from their competitors. On the other hand, internal technology products help coffee shops track the numbers and data coming from their suppliers, and help make informed decisions about who they are partnering with; hence indirectly impact the choice of key partners. Another benefit is that it can save time, money and effort for partners, e.g. easing the supplying process for suppliers, therefore improve the relationships with partners. And even if the partnership itself does not exist as a result of technological developments, technology products can help maximize the yields from that partnership due to the existence of platforms that allow the parties to reach a great number of customers in order to announce their partnership and market it with very little effort.

Standard business expenses for a coffee shop include supplies such as coffee beans, paper supplies like stirrers, cups, napkins, and towels, dairy products like milk and yoghurt etc. It also includes payroll, electricity, rent and so on. All of these are bundled as standard business expenses in the cost structure block of the Business Model Canvas. Other than these expenses, there are unique costs for each company such as events that they organize. If a coffee shop is

using technology products, there are also costs associated with these products. However, it was found that coffee shops don't mind spending money on technology products, because they either reduce their overall costs or improve their margins. They can cut down on payroll by replacing labor with technology, or optimize their time and prevent losses. Implementation costs for technology products are quickly recovered as well, since technology is found to be making things for coffee shops less expensive in general.

As put forward, technological improvements can be added to the Business Model Canvas as supporting factors. But can one say that this is business model innovation? Is business model innovation relevant here? Looking at the indicators of strategic need for BMI that are introduced in Section 2.2., we can say that the most relevant indicators for the coffee shop industry are the transformation of what customers seek or how they buy due to technology, and a selection of alternative offerings by target customer segments. End customers want an in-store experience as seamless as possible, and a variety of payment options. Business customers have unique needs, which can only be met by scalable applications of technology. If a company can't satisfy their customers by catching up with the latest technology, they are bound to lose their customers to alternative offerings. The new Business Model Canvas for coffee shops with the addition of support of technology manages to address these needs, along with novel activities that are unique to technology that should be performed, such as development of new platforms and offsetting costs associated with them. Therefore, it can be argued that there is some level, but not a lot of business model innovation here; which naturally took place over time due to the requirements and side effects of using technology products.

These tech-related changes in the business models of specialty coffee shops can be considered mostly as digitalization processes, since the goal is to automate existing business operations and processes. Manual work processes such as inventory counting and sales tracking are being digitalized by technologies like Odeko and Square, and the focus is on information processing. The tools used are connected IT systems and computer applications, which are shown to the users as simple dashboards and user friendly interfaces. The main challenge as stated by coffee shop managers is the cost of application of these technologies, which is easily recovered due to the savings created. Since some coffee shops are still paper driven, there might be a need for data conversion to rewrite analog information in digital format; which implies that there is some sort of digitization included as well. However, it would be safe to say that there is no remarkable digital transformation in this case, since there is no major change in how coffee shops operate in the core as put forward earlier.

5.3. Opportunities

As presented in Section 4.3, interviews implied that technology is a huge opportunity to use resources in an accurate way and developing business. Furthermore, it is also mentioned that it is a tool to become competitive in the market for specialty coffee shops. Therefore, future opportunities gain more importance for the coffee shops and soon, they are expected to affect their work doing styles.

Interviewees from the coffee shops implied that Odeko's tool is beneficial for inventory counting and solving a lot of problems for them. However, they also stated that inventory management is another area of opportunity. They are lacking with this topic, and work is dependent on personal initiatives and their gut feelings rather than comprehensive analysis with the help of technology and which makes it unoptimized.

Mobile apps seems to be another area of opportunity. They can remove language barriers between the customers and the coffee shops by providing multi language in-app support and can convey a better sense of what customers will get in return of the transaction performed. Therefore, it can be beneficial to attract foreign people, especially those who have lower level of English and therefore hesitate to ask questions by facilitating the communication for them.

One of the biggest opportunities for the coffee shop industry is about the integration of all the digital tools and software that the stores use. In other words, the communication in between the PoS and the HR software to forecast the labor force that will be needed on a regular Saturday for instance seems to be missing. Not only that, many other needs in terms of integration needs are specified like apps not measuring the things in the same way and therefore a need of human touch in many areas of the operation.

One specific problem is described as the lack of communication between Odeko, the PoS system and online orders through a website. Odeko not being able to track those sales through the online channel yielded into a wrong forecast for that single location and it shows the importance of integration between the systems for a store. For that reason, IoT is suggested as a control system for a location because of the possibility that it can provide a more sensitive and broader approach for data collection rather than using a single source of data. Therefore, IoT applications might be a good opportunity to be applied in smaller coffee shops.

As presented in the Section 4.3, brand management and reputation apps for coffee shops are suggested to be improved. Even though there are many released apps on the market, they are not specialized for the coffee shop industry and people are lacking those apps. It can be an area of development.

A completely different area of opportunity mentioned by Person B is presented in Section 4.3 as android robots and robotic arms. Such a concept is offered for regions where the pace of life is quite high and customers are looking for quick transactions rather than the communication with a barista or convenience of the place. Therefore, it is wise to say that even though human interaction has a vital point for specialty coffee shops, such stores are also needed in crowded and fast-paced cities and it provides an opportunity with a whole new concept for the industry.

5.4. Barriers

Three main challenges related to using technology in specialty coffee shops have been identified based on the data presented in Section 4.4. These challenges are categorized as switching costs, resistance to change, and the need for human interaction as shown in Chart 1.

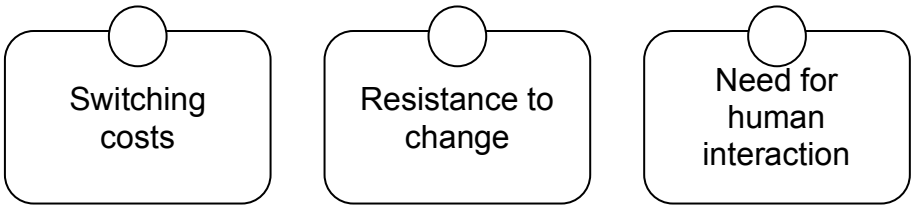

Chart 1: Challenges related to using technology in specialty coffee shops

Switching costs is one of the major challenges that appear at the very early stages of new technology implementation. Although a company knows that the technologies they are using are outdated and need to be replaced with more recent ones, the fact that they have all of their data in the current system they are using creates a strong lock-in effect. This leads to very high switching costs due to painful switching processes that require a lot of resources in terms of time, effort and money. What new technology companies should do here is making the switching process as effortless as possible, and providing a frictionless experience for coffee shops during this process; so that they can immediately jump in and start using a new technology with no deterioration in their data history.

Another prominent challenge related to implementing new technologies has been found to be the internal resistance to change. Just like most of the organizations, coffee businesses tend to do things the old way, since changing the way people do their work is a very difficult task. Even though how they are solving certain problems is completely wrong or can be improved to a large extent by various applications of technology, employees don't want to change their ways of working, and will keep doing the wrong thing for a long time. This challenge is particularly important and hard to tackle, since the phenomenon of resistance to change is not exactly based on logic and reasoning, but emotions.

The final challenge has been identified as the need for human interaction, and is very specific for specialty coffee shops. Human connection and interaction is a very important part of the established value proposition for local coffee shops, and trading this off with faster service by usage of various technologies such as digital kiosks and order apps seems to contradict with what customers are expecting from their local coffee shops in the front end. What most customers are looking for is a back and forth dialogue with their barista, and environment that provides them with a lot of human connection overall. Technology can automate and optimize almost every aspect of the business, but at certain points like this, it might be eliminating one of the main driving factors that make people come to local coffee shops. What tech companies can do here is improve the back end of the business, and leave the front end as manual as possible.

6. Discussion

As presented in the previous sections, coffee shops in the U.S. use many different types of technologies to conduct their businesses. These technologies are mainly used to help people in the coffee business make more informed decisions, save time and cut costs overall. For instance, HR apps help coffee shops to catch up with the dynamic environment by following the payrolls and benefits of employees; accounting and finance softwares save money and time by detecting errors like double payments and speeding up the processes with such capabilities like scan and pay invoices. Many more examples do exist for the usage of technology in the coffee shop environment and their benefits.

However, despite vastly improving the way daily tasks are dealt with, technology does not directly impact the core of the business model elements of local coffee shops. Although crucial metrics like efficiency and service speed are remarkably higher thanks to technology products, coffee shops are still addressing the same need at the core, which is providing an environment that is suitable for human interaction and work. Yes, the quality of coffee and unique methods of brewing are far more important for specialty coffee shops than large chains, but they still are not at the core of the value proposition. 'Customer Segments' remains the same as well, which is mainly millennials for specialty coffee shops. One of the biggest changes on the Business Model Canvas is on the element of 'Channels', due to the shift from physical connection points to e-commerce platforms and especially social media. Another big improvement is on the Partnerships, since technology allowed coffee shops to take part in more creative partnerships that don't necessarily revolve around money but things like visibility and differentiation. Costs are reduced to a great extent as well, and it was found that coffee shop managers don't hesitate to invest in technology products since they know the returns on these investments don't take too long to become apparent. On the other hand, the standard business expenses still remain the same. Margins are improved, churn is reduced and company values are increased; but the main source of revenue remains - selling coffee and beverages. Customer relationships at local coffee shops are not impacted that much either, since a big part of the value proposition for these types of shops is human interaction and communication. This is the other way around for larger chains like Starbucks, since they use technology to further reduce interaction or even eliminate it by things like ordering apps and screens. 'Key Activities' and 'Key Resources' also remain almost the same, except for novel ways of rewarding customers like personalized coupons that are made available by customer tracking and analytics.

Since there is a clear distinction between what already existed in the business models of specialty coffee shops decades ago, which still forms the basis of the Business Model Canvas, and what technology allows them to do better, the authors decided to denote the improvements in the BMC caused by technology by adding a separate box on each element of the BMC. This helped make the distinction between what the business is actually built on, and what works as an improving factor to help better conduct the business. The integration of the separate boxes that represent the improvement factors in each element of the Business Model Canvas is the main contribution of this study to the literature.

Another contribution of this research is showing that coffee shops are not using the full range of opportunities offered by digital technologies and determining these further opportunities as well as the barriers. In the not too distant future, new changes are expected to be seen in the business model of these coffee shops and these will impact the elements of the business model both in its core and as supporting factors like the current changes. For instance, new inventory management software or services can affect the core of the 'Key Partners' element of the Business Model Canvas by being an intermediary between a coffee shop and suppliers. In other words, other than multiple suppliers in the 'Key Partners' element, one might see one consolidated supplier which is a service or software, which changes the core of the 'Key Partners' element. On the other hand, the development of new software for integration of current systems would be a supporting factor for the 'Key Resources' element, and would fit in the box that denotes the supporting factors since this type of software would not be a key resource per se. Having switching costs or resistance to change as barriers for these changes might be considered preventive factors, but they do exist since the early stages of the introduction of digital technologies; and therefore it is not expected for them to be complete inhibitors after all this time. Hence, in short, it is possible to say that in addition to the current ones, we expect to see both vital changes and new supporting factors in the Business Model Canvas of coffee shops in the near future.

7. Conclusion

The main goal of this research was to reveal the impact of technology on how coffee shops, mainly local and specialty ones in the U.S., conduct their businesses daily; and see if there are any changes in the way they operate caused by the usage of different technologies. The tool to compare and contrast the coffee industry with and without the help of technology was chosen as the Business Model Canvas, since it would be an appropriate way to see all branches of a business. As a result, it was seen that most small- and medium-sized coffee places are still operating in the same way they were decades ago. However, although technology does not change the core of the business, it helps optimize many aspects of the business by providing tools to make better informed decisions, save time, cut down on costs and so on. Consequently, the authors conclude that technology does not directly replace the ingredients of any of the nine elements of the Business Model Canvas for specialty coffee shops, but it does play an important role in all of them as a supporting and improving factor. As a contribution to theory, additional boxes that denote the improving factors of each element of the Business Model Canvas were integrated into the original canvas by Osterwalder and Pigneur developed in 2009.

Another conclusion is that although there are many technologies that are being used in the coffee industry right now, there are still areas that can be improved by the addition of new types of technologies. The addition of these technologies would further innovate the business model of specialty coffee shops in the same way as previous technologies did, and be added to the Business Model Canvas as supporting factors. The list of opportunities these technologies may provide is very long, extending from inventory management tools to completely robotic cafes. However, there are also obstacles that can get in the way of implementing these technologies; which are mainly the switching costs, resistance to change, and the need for human interaction as a major part of creating value for specialty coffee shops.

As a result of this study, the research questions that are identified in the beginning are answered as follows:

RQ1: *How does digital technology change the way small- and medium-sized coffee shops operate, and impact the key elements of their business models?*

Digital technology helps coffee shops run more efficiently in every aspect of the business, and acts as a supporting factor for each of the nine elements of their Business Model Canvases. But for the most part, it doesn't directly change or replace the core of their business models.

RQ2: *Are the changes brought on by digitalization in the coffee shop industry strong enough to be classified as business model innovation?*

Business models of coffee shops are impacted over time to an extent as inevitable byproducts of technology applications, which means that there has been some level of business model innovation. This change was not initiated with the intentions of strenghtening the business models per se, but caused by the side effects of integration of different technologies.

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Appendix A

Interview Questions

1. Can you walk us through a regular working day of yours?
2. What are the challenges you need to overcome daily? What are your biggest problems?
3. What kind of technologies do you use daily?
4. How do these technologies change the way you conduct your business? What do you do differently due to the existence of these technologies?
5. What need do you think your coffee shop satisfies for your customers?
6. Who are your customers and how do you communicate with them?
7. How would you describe your relationship with your customers?
8. Which companies or services are vital for you to continue conducting your business?
9. What are your most valuable assets as a specialty coffee shop?
10. What do your cost and revenue structures look like? How does technology impact them?
11. Where are the technologies you use lacking? What is the technology that you dream about, or you wish existed?
12. There's more and more technology gearing towards AI ordering, like there's a self ordering panel at McDonalds, you put your order in and you just go and pick it up. So what are the limits of technology, and where will the human element continue to matter in creating this experience? What do you think technology cannot replace in the coffee store?

Appendix B

Business Model Canvas for Coffee Shops with the Support of Technology