The Scalable Startup: Customer, Business and Software

Jaakko Santala

Tiivistelmä – Referat – Abstract

A software startup building a business upon the introspective vision of an entrepreneur is subject to many risks. Customers may reject the product. The business model may prove infeasible. Software production may fail because a product needs to be quickly implemented with scarce resources.

This work examines how open-ended interviews with potential customers influence introspective hypotheses on important customer problems and planned software features. A research method based on the Customer Development methodology and the Business Model Ontology is applied to a real business idea.

Results indicate that for the business idea case studied, early customer interviews reduced all three aforementioned risks.

Risk of customer rejection was reduced by the exposure of problem hypotheses to real customer feedback. As a result some hypotheses were shown to be flawed, while also new previously unknown important customer problems were discovered. Customer risk was further reduced by the entrepreneur gaining knowledge on the domain of the customer.

Business risk was reduced by concretely identifying and describing the whole business model of the business idea. By constructing a business model a technology-minded entrepreneur was forced to hypothesize on important business considerations that could have otherwise posed risks for the future of the enterprise.

Software risk was reduced by the early identification of software features with negligible customer value. The interview data indicated that some planned features would be unimportant for customers. The feedback gathered provided directions for a more appropriate feature set for the planned software product.

In the context of market-driven software engineering Customer Development can be applied as a sales-oriented requirements elicitation method to develop minimal products that can effectively sold to a large number of customers.

Contents

1 Introduction

A software startup is born when founders decide to follow an entrepreneurial vision to start a business for pursuing an innovative idea. The aim of a scalable software startup is to sell productized software to the market at a profit. Such a startup will meet with success if the idea represents a real business opportunity. New technology venture success rates are dismal [Song08], which suggests that most ideas aren't real opportunities.

Research on opportunity development indicates that opportunities are not discovered, but rather made [Ardichvili03]. To make an opportunity work, understanding of technology is not sufficient. Startup founders must develop and understand the whole business model around their software [Oakey03]. Requirements engineering processes indicate a similar story. Cross-functional teams that address both technical and business aspects of software face less requirements rework in their development process [Hutchings95].

Literature on software requirements engineering has focused on cases where bespoke software is developed for a client. In this case the customer is known and available. For a startup the customers are many and initially unknown [Potts95]. Research on technology venture success factors indicates that intimate market and customer understanding are key for startup success [Park05]. Steven Blank has developed the Customer Development methodology to help startups identify their customers and learn from them [Blank12]. This methodology can be used to validate business hypotheses and to gain insight into compelling customer problems. Traditional requirements elicitation shares a similar goal, but with business considerations not being included in the picture. Osterwalder and Pigneur have introduced the Business Model Ontology for conceptually describing company business models [Osterwalder04]. This ontology can be used to tie together business and product requirements to understand the necessary interplay of software features and business considerations.

In this research a software business idea case is formulated into a business model by using the Business Model Ontology. Structured customer interviews are then conducted to elicit information about customer needs and desirable software solutions. The insight gained from the interviews is used to validate and update hypotheses involving the business idea.

This thesis begins by describing the business idea case in chapter 2. This is followed in chapter 3 by a discussion of scalable startups and the development of entrepreneurial opportunities. Chapter 4 identifies risks specific to scalable software startups. These are customer risk, business risk and software risk. The Customer Development methodology and the Business Model Ontology are the methods applied to control risks in this work. Chapter 5 describes the Customer Development methodology, and chapter 6 formulates the business model of the case according to the Business Model

Ontology. Chapter 7 describes the goals and design of the interview study. Content analysis of consumer and small business interviews are presented in chapters 8 and 9. Interview results and implications for the business idea case are summarized in chapter 10. Finally chapter 11 presents the general conclusions derived from this work.

2 Case

Businesses strive to form long-lasting mutually beneficial relationships with their customers. A long-time customer not only brings in revenue, but will often provide effective word-of-mouth marketing. The different schemes to induce customer loyalty today are ubiquitous. Branding for example is at the heart of customer loyalty.

Businesses habitually give special offers to their customers in exchange for repeat buying. Most large retail chains in Finland offer their own plastic customer loyalty cards. These are used to identify and store information of repeat buying, and to redeem perks rewarded for repeatedly buying from the same business. Recently also e-businesses based on deep discounting have emerged. Companies like Facediili, Groupon and Offerium postulate that when a large customer base can be enticed with a deep discount, some of those bargain hunters will become loyal customers. The losses incurred from deep discounting are then be made up by repeat buyers. The verdict on whether deep discounting leads to loyal customers is still out, but many businesses willingly discounting their offerings by 50% or more indicates that customer loyalty is a big deal for businesses.

2.1 Problem

Businesses want to find new customers, and to make those customer relationships long lasting. Rewarding is a commonly employed method for prolonging the lifespan of a customer relationship. Establishing a customer reward scheme requires infrastructure. Customers need to be identified over repeat visits, and buying behavior has to be tracked. Customers often forego signing up for a loyalty scheme because:

1. Signing up for customer loyalty program requires effort. Often signing up is not free. Lengthy paper or electronic registration forms need to be filled out, and possibly put into mail. The sign-up procedure takes time, and once a loyalty card arrives, it needs to fit in the wallet. S-Bonus and K-Plussa, the two most prominent customer loyalty programs in Finland both claim over two million card holders [Arantola03]. This means a large amount of Finnish consumers have two or more loyalty cards in addition to their many other cards for things like payments, identification and club memberships. If a card is lost or damaged, it needs to be replaced by the provider.

2. Customers need to change their behavior. Often that one card is at home at the wrong time. Redeeming customer perks such as deep discounts is often inconvenient. Usually it involves first printing a voucher at home, and then bringing that along when visiting the appropriate store.

3. Not all customers welcome tracking of their buying behavior [Arantola03]. For example,

prominent Finnish loyalty schemes Plussa and S-Bonus track grocery shopping to a large extent, and some consumers have expressed dissent about the fact that information on customer behavior is stored and dissected for the benefit of businesses.

In addition to customers potentially being adverse to loyalty programs, businesses cannot easily set one up. Investment in infrastructure is required, and especially small businesses take a bigger risk. A smaller market means that customers visit less frequently, and the behavioral change required from the customer is less likely to stick.

2.2 Technology

Smartphones are increasingly becoming mainstream items for consumers in developed economies. Large touch screens enable consumers to easily surf the web on the go, which means consumers usually equip their phone with mobile Internet. Cameras are standard, and NFC communication technology is being supported more and more. NFC stands for Near Field Communication, which is a standard for data exchange between small devices at a close distance (centimeters). In addition to smartphones, this technology is already used in a variety of consumer contexts such as passports. New handsets such as the Galaxy S III have NFC, and the iPhone 5 is rumored to offer NFC support. Prices of smartphones have downward pressure as manufacturers such as HTC and Huawei are introducing fierce competition to the market. For example, the Huawei Sonic is a smartphone with NFC features: at the time of writing (2012) this device costs approximately €100. The price differential compared to for example the iPhone is significant for consumers.

In summary, consumers are often equipped with a smartphone with the following features:

- Large display

- Mobile Internet

- NFC communication technology

2.3 Solution

Small businesses can acquire a standard customer loyalty product package. This includes a smartphone with a consumer loyalty application: these together form a customer identification device (CID). If a consumer wants to acquire benefits for repeat buying from a business, the only thing required is to register to a website. This can be quickly done for example with a Facebook, Google or Twitter account.

During the buying process the customer opens up a special web account from his or her smartphone browser and hands the phone to the salesperson. The salesperson then uses the CID to identify the customer by reading a Quick Response (QR) code from the screen of the customers phone. QR codes are 2D bar codes that can be used for visual data storage and transfer. If NFC is enabled on the

customer phone, the salesperson can perform the same identification more quickly by simply taking the phone close to the CID.

Customer visit information is stored and aggregated on a web server. Customers can use a web account to choose how much information is disclosed to businesses they have visited. When customers qualify for loyalty rewards, the salesperson can see this from the CID. Customers can also give their loyalty rewards to their friends, inviting new customers for the business.

A short summary of the benefits offered by the solution:

- Consumers can easily join a customer loyalty program

- Consumers can limit the amount of information disclosed to businesses

- Consumers don't need to carry extra loyalty cards

- Businesses can easily start a loyalty program at a relatively low cost

- Businesses can track effectiveness of customer loyalty programs

- Businesses can acquire new customers with reward gifts consumers can give their friends

3   Technology entrepreneurship

Current economic and technological developments are opportune for technology entrepreneurship. Governments of developed countries are aiming for widespread availability of high-speed Internet for households. Remote technology has enabled outsourcing of ICT jobs to countries with a lower cost of labour. Cloud computing is becoming commonplace, enabling scalable IT infrastructure for small businesses around the world [Oecd10].

The ongoing global financial crisis has forced developed countries to look for ways of restoring economic growth for the future. Low cost of labour allows developing economies to dominate traditional industries such as manufacturing. Therefore technology and innovation are seen as prime proponents for enabling the needed explosive economic growth. Amongst the developed countries, Finland is looking to support innovative small and medium businesses (SME) by introducing policies for supporting technology entrepreneurship [Res10]. Tax incentives for business angels and innovation research are planned. The Finnish Funding Agency for Technology and Innovation (TEKES) is directing more funding to innovative start-up companies [Tekes10]. Finnish start-up communities have been covered in the local media, and some companies have gained wide publicity. Rovio, the company behind the highly successful Angry Birds game, is a prime example of the financial success a start-up company can potentially generate.

The process of launching a technology startup is a risky endeavor however: a study of 11259 technology ventures in the United States shows that only 36 % were in business after four years [Song08]. A closer look at the different factors contributing to technology enterprise success is therefore warranted.

3.1   Disruptive innovation

Successful introduction of commercially attractive innovative technology entails both entrepreneurship and product innovation management. Research of technology entrepreneurship lies at the intersection of these two paradigms. A useful framework is provided in [Spiegel10]: "Technology Entrepreneurship investigates all questions related to the successful formation, exploitation and renewal of products, services and processes in technology-oriented firms."

In this definition, technology-oriented firms include both new and incumbent technology-based firms (NTBF's and ITBF's respectively). An ITBF has the advantage of established processes and organizational structures, which lends itself to incremental innovation in product development. A new venture cannot compete with incumbent firms on efficiency, so innovations are more likely to be disruptive in nature [Litan08]. Disruptive innovations change existing markets, whereas incremental innovations make existing products better and cheaper.

The framework in [Spiegel10] identifies three phases in the entrepreneurial process: formation, exploitation and renewal. Formation is the phase where entrepreneurs discover new technological opportunities to pursue.

3.2   Scalable technology startup

A specific niche in technology entrepreneurship, a technology startup aims at creating a profitable technology-based business irrespective of the resources currently controlled. Scalable startups specifically aim to find a repeatable business model that has low marginal costs. Low marginal costs mean that the total return on investment is not reduced when a business grows larger. For instance, Software as a Service (SaaS) on the Internet is a business with low marginal cost. Selling the service to an additional customer does not entail large extra costs per se. As such, scalable startups are attractive to investment looking for high returns in exchange for risk. Initial investments can produce significant profit when a scalable business proves successful.

Startups are typically operated by a small entrepreneurial team with only limited financial resources. For such a venture, the entrepreneurs' personal contribution is often seen as paramount for the success of a venture. Much of the early research on entrepreneurship focused on the qualities of the individual entrepreneur [Park05]. More recently it has been suggested that the components of the entrepreneurial process must be viewed as a whole. The first spark of founding a business is provided by the visionary entrepreneur, but it is the interplay of the founder, technology and the surrounding organization which determines the outcome of the venture (See Formula 3.1).

$$Process = \frac{(People + Technology)}{(Environment)}$$

Formula 3.1: The three components of the entrepreneurial process [Park05]

In some cases the personal aspirations of the entrepreneur may even be detrimental to success. The founder is often driven by interest in technology, which can lead to the commercial aspects of the venture being neglected [Oakey03]. The need to develop business management skills alongside technical expertise is paramount to success of a technology venture [Song08]. Nevertheless, the entrepreneur acts as the catalyst for both recognizing and pursuing an entrepreneurial opportunity. It is therefore also reasonable to ask how entrepreneurs recognize these opportunities.

3.3   Opportunity development

Technological advances may result in possibilities for innovation. If a related entrepreneurial opportunity exists, it means that an innovation can be leveraged to produce a financially viable enterprise. In practice opportunities arising from technology are often neglected. Academic inventors for example tend to ignore financial and marketing considerations in their work [Litan08]. This result seems fairly unsurprising, considering that people with academic backgrounds should be less attuned

to understanding commercial opportunities. Entrepreneurial alertness is suggested as a personal characteristic enabling entrepreneurs to find opportunities that others have not yet detected [Ardichvili03]. Entrepreneurs are more active in seeking opportunities as their livelihood is dependent on it. As in the case of academic inventors, an education also defines the entrepreneur. People who evaluate opportunities for a living are more likely to focus on the opportunistic aspects of technology.

Shane argues that *"opportunity discovery is a function of the distribution of information in society"* [Shane00]. Opportunities are recognized when individuals based on their idiosyncratic experience possess information that others do not have. In the case of technological opportunities, an amalgam of knowledge in appropriate technology, markets and customers is needed to identify a viable opportunity [Park05]. This speaks in favor of multidisciplinary entrepreneurial teams, as they should be better placed to integrate cross-disciplinary knowledge into an opportunity.

Forming a business from a potential opportunity is a process, with the initial opportunity recognition being followed by an iterative process of development and evaluation [Ardichvili03]. Practical opportunities are made, not found. Technology complements opportunities with new possibilities for value creation. On the other hand, opportunities are looking value for solving a recognized problem. The four different types of of opportunities exemplify this [Ardichvili03] (See Figure 3.2).
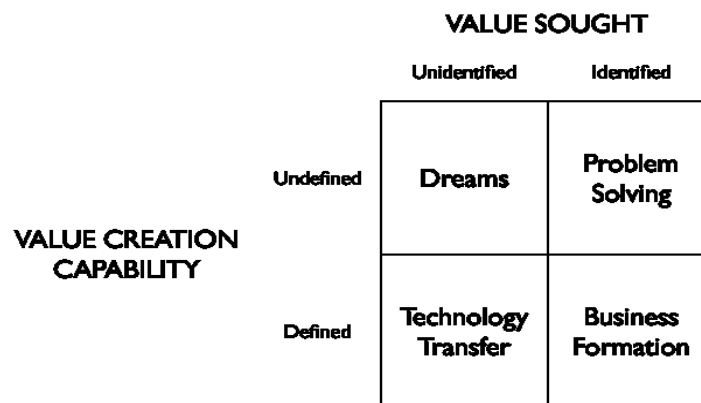
Figure 3.2: Four different types of opportunities [Ardichvili03]

The four different quadrants can be seen as representing the distribution of information in society. For example, academic inventors may pursue technology transfer for its own sake, with little knowledge of what value is being sought for actual customer problems. Similarly customer-oriented individuals can often recognize problems, but cannot complement this insight with knowledge of technology capability. The hypothesis arising from this is that attractive opportunities are found at the crossing of technological advances and recognized customer problems [Ardichvili03].

3.4   Success factors

The pursuit of a technology venture is a risky proposition. Development on the edge of technology requires specific expertise, making the necessary resources costly to acquire. High-technology industries are also highly susceptible to disruptive innovations, which renders the long-term future of any technology venture highly uncertain. This is supported by the fact that many established technology companies have been literally destroyed when new innovations have disrupted their markets [Moore95]. In the case of disruptive innovations, startups are well placed to compete with incumbent firms. Even with ample resources, product introductions in large companies often fail due to lack of customer understanding [Cooper99].

The importance of customer insight for technology ventures is widely recognized in literature. Lack of knowledge about markets and customers has been identified as a contributing factor in failure of new technology ventures [Park05]. Technology plays only a supporting role in the creation of a successful venture. Once a market need has been identified, a suitable technology can be discovered to provide the solution needed. The need to continuously adjust in response to customer and market needs is highlighted as important to a successful technology enterprise [Park05]. Opportunity recognition of successful entrepreneurs suggests a similar procedure. Opportunities are recognized when a customer need is identified, and the solution is then improvised by using whatever technology is available for answering the need [Park05].

3.5   Unforeseeable uncertainty

Ability to continuously adjust based on new information is paramount for the success of a new venture. The entrepreneur is responsible for the initial hypothesis of a business opportunity. In reality this vision may or may not represent an attractive opportunity. In practice new ventures often end up serving a totally different market than the one they originally intended to target. For example the Java programming language was initially envisioned as being useful for programming small devices, but finally found a niche in web development [Bank95]. Initially Java was marketed to small device manufacturers as allowing programmable customization of household appliances. The small household device market had no compelling need for programmable devices, so the initial vision of the founders proved to be misguided. The idea of a portable programming language came from technical individuals, so it can be argued that their efforts were not aimed at answering actual customer needs. With perseverance and luck Java was able to find a suitable market, when the World Wide Web gained widespread popularity. Suddenly a need for an environment-independent language was created.

New technology ventures face significant risks arising from unforeseeable uncertainties [Loch08]. These factors, also referred to as unk-unks [Mullins07], are risks that by definition cannot be identified beforehand. In the beginning a new venture is based solely on hypotheses, so there is high potential for information gaps that are critical to the business. Management and product development

in new ventures should focus on discovering initially unknown critical factors as quickly as possible. Instead of simply following an initial plan set on stone, new ventures can follow procedures geared to improve the chances of discovering these unforeseeable uncertainties as early as possible. Unk-unks by definition can't be pinpointed beforehand, but knowledge gaps in venture hypotheses can be identified. Depending on the size and business impact of these knowledge gaps they should be given appropriate attention so that the uncertainties can be reduced [Loch08]. It is not possible to decide at which point all important unidentified uncertainties have been identified, but deepening domain understanding increases the probability of discovering them early.

One approach for discovering unidentified factors is selectionism [Loch08]. Several solutions to a problem are tested in parallel to find the most suitable one. This testing allows discovering unforeseeable uncertainties in an complex environment, i.e. where components of a potential solution cannot be tested in isolation.

Selectionism is used in different areas of new product development. For example, traffic-dependent websites employ selectionism by means of split-testing. Multiple versions of a website are deployed simultaneously and user traffic from different solutions is evaluated in parallel [Ries11]. A similar procedure is applied in the pharmaceutical industry for drug research [Loch08]. Several candidate solution molecules for a drug are developed in parallel. Usually one molecule is targeted as the main target of research, but if its development fails, other solution molecules can still be pursued without needing to start from scratch. The results from different lines of research can also be integrated during the development process.

When initial hypotheses can be radically adjusted, trial-and-error learning can act as a valid alternative for selectionism. Trial-and-error learning means uncovering unk-unks by iterating hypotheses based on feedback from failed trials [Loch08]. This procedure is suitable when hypotheses are very uncertain. Compared to selectionism, trial-and-error learning is better when the cost of adjustment is low, and selectionism would be too resource-intensive to set up.

The aforementioned story of how Java became a success is a classic case of using trial-and-error learning [Bank95]. The original concept was continuously reworked when past hypotheses proved false. The benefit of an iterative approach such as this is that the knowledge of the problem domain is elaborated, and hypotheses can be continuously improved with the benefit of hindsight.

4 Risk

One concise and popular definition of entrepreneurship is *"the pursuit of opportunity beyond the resources you currently control"* [Stevenson00]. This statement is coined alongside the idea that entrepreneurship flourishes with positivity and the celebration of success. Pursuing an opportunity without yet having the means to succeed is an optimistic way of saying that a certain amount of hubris is required to take on big risk in hope of a big reward.

Research on technology venture success has identified that a vital quality for an entrepreneur is the *"ability to evaluate and react to risk well"* [Kakati03]. Ignorance of customers, business fundamentals or sound software engineering are the three major risks that stalk a budding software enterprise.

4.1 Customer

Founders of startup companies act based on their vision. They've identified a crucial customer problem. There is a possibility to do things better than before. Software can be built for the purpose, and the market will discover it. Customers would be more than willing to pay for the solution. In the beginning these are all only hypotheses in need of real-world verification.

Customer risk is the danger that a product cannot attract enough customers to make profit. For startups these risks are of superlative significance. Startups dream up large customer interest for a novelty product. Founders and investors are betting their money on the dream materializing into actual sales. In the realm of software requirements the dream is knowing the necessary features to attract the market.

4.1.1 Introspection

Most requirements engineering literature is focused on a specific situation: contractual development of software where the interface between customer and developer is clear. In contrast, market-driven requirements engineering deals with situations where software products are developed for the mass market. There is no clear customer from whom to start eliciting requirements from [Potts95]. Instead baseline software requirements are typically invented inside the developing organization. These requirements are then validated by customers when the product is launched to the market [Keil95].

Introspection as a requirements elicitation technique has a significant context bias. Startup founders may not be domain experts in their intended target market. The needs of domain experts are in many cases unimaginable for requirements engineers [Goguen93]. As a general rule, software requirements based purely on introspection are inaccurate.

Requirements churn happens when software requirements repeatedly change throughout the software

development process. The later a requirement changes, the bigger the cost of implementing it [Brooks95]. A requirements re-engineering initiative at Digital Equipment Corporation (DEC) revealed that for their new products, an average 40% of software requirements defined in the starting phases later underwent churn [Hutchings95]. This led to project budgets being exceeded by 50% compared to industry averages. The reason for requirements churn at DEC was that the technical engineering department was isolated from real customer context. Software requirements were acquired from customers by business departments. Technical engineers mistrusted requirements handed down from business people, instead often choosing to alter requirements to fit their own technology interests [Hutchings95]. Lack of direct customer contact gives rise to requirements churn.

4.1.2 Indirect customer contact

It is widely accepted in software engineering practice that customer involvement is vital for both packaged and custom software development. But not all customer contact is equal. Software project management should pay close attention to what channels and techniques are used to exchange information with customers [Keil95]. These information exchange mediums are called customer-developer links: an expansion of requirements elicitation techniques [Goguen93]. Customer-developer links include things such as interviews, product support lines and trade shows.

Keil and Carmel studied the relationship between customer-developer links and software project success [Keil95]. They discovered that successful projects employed a wider variety of different customer-developer links to elicit software requirements than unsuccessful ones. Also, links that connected software developers and customers directly were associated with more successful projects.

A seemingly direct customer-developer link may actually be indirect due to an intermediary or a surrogate [Keil95]. An intermediary means a third party relays information between customer and developer. This happens for example when a sales department communicates requirements to developers. A surrogate instead is a customer who is not representative of the target customer population. An example is provided by an unsuccessful software project intended for the agents of a major airline [Keil95]. The project team focused exclusively on international agents, when the majority of target customers were in fact domestic agents.

4.1.3 Hidden customer value

The magic ingredient for market acceptance of a product is understanding of customer value. Value-based software engineering has recognized the importance of tracking stakeholder value as opposed to only project costs and schedules [Boehm03]. Elicitation of stakeholder value propositions is not straightforward, because stakeholder value may be hidden and revealed only through emergent experience [Boehm03].

Contextual inquiry is a method for gathering information on user experience in real situations

[Holtzblatt93]. Observing users in a natural setting opens the door to model emergent experience. The insights gained from contextual inquiry can be used to design solutions that more accurately model user value. However, startups attempting to create visionary software must recognize that the average user cannot imagine solutions outside their normal experience [Hippel86]. Lead user theory has proven that successful novelty products can be developed by identifying users who have needs ahead of their market segment. The needs of these lead users can be used to identify innovations that in the future will be desired by the whole market.

Startup founders are pretending to be lead users for the market they are targeting. Without appropriate domain expertise they may lack understanding of what real users value. To be able to deliver a creative solution with appeal to a market, startup founders need to immerse themselves in emergent user experience [Beyer94].

4.2 Business

The dot-com boom at the turn of the century has provided us with numerous cases of spectacular startup failures. An american startup called Webvan provides an illuminating example [Blank12, Loch08]. It set out on a a vision to offer consumers online ordering of groceries with same-day delivery to the front door. Sounds like a decent idea to the layman, and venture capitalists thought so too: Webvan raised $10 million for building the business, with later investments ballooning the total to $393 million.

The business plan of Webvan was professionally executed. An easy-to-use website, highly automated distribution centres and efficient logistics for deliveries. Marketing spending was raised around the launch date to insure customer demand. Customer demand materialized, but not to the extent predicted by the business plan [Blank12]. Marketing forecasts had for example indicated that Webvan would receive approximately 8,000 orders daily, when in reality the real number proved to be around the 2,000 mark. The company had no procedure for quickly changing plans, and instead proceeded to keep up the same massive spending it had already used to build the business to a massive scale. The inevitable bankruptcy of Webvan was a result of a flawed business plan executed to perfection.

Core expertise in a software startup is likely to lie in the software domain. In such a case it is a danger that the business model and marketing of the startup are not sufficiently accounted for.

4.2.1 Business model innovation

Consumerization of information technology has facilitated innovation in business models. Never before have so many services been offered for free. Google, Facebook and other successful enterprises are capitalizing on value that is alien to traditional sales business. Many startups are using these successes as an excuse to ignore the main question: *'how will this business make money?'*

Majority of dot-com enterprises established at the turn of the century did not focus on profits, some even stating that they "are a distraction" [Shama01]. For these companies business goals were based on a grand vision: the company would not make profit unless it practically owned a market. Startups that plan to make money shouldn't try to emulate market leaders: everyone knows Facebook, but what about Friendster, Google Buzz, Yahoo! Buzz and others? Survivorship bias causes the effect that if somebody makes it, everybody knows it.

Software engineering is often incorrectly assumed to happen in a value-neutral setting. Value-based software engineering specifies a research agenda to incorporate value considerations into software development [Boehm03]. A software project can be successful based on traditional accounting of time and cost, but still at the same time unsuccessful on creating stakeholder value. This point is very important for packaged software. Stakeholder value translates to sales, which balances the cost of software development.

Research on applying of value-based software engineering to combine software and business is emerging. Gordijn and Akkermans have presented an ontology for modeling the value constellations of e-commerce business models [Gordijn01]. This e^3 value ontology uses software engineering techniques such as UML diagrams and use case maps to model and evaluate how business value is created in a multi-actor network. An ontology such as e^3 value is useful for communicating business goals within a cross-functional team [Gordijn01], which could be a founding team of a startup. The weakness of this ontology is its use of engineering diagrams to describe an essentially fuzzy system. A startups business model and especially customer value propositions are hypotheses subject to change. Therefore it makes sense to use simple constructs to model them.

4.2.2 Marketing

When a software-based company is conceived, there are usually software-minded founders behind it. These individuals should have an idea on how to successfully manage software production. But most of the time their understanding of marketing and sales processes is very limited.

Multiple studies have identified marketing experience as a significant success factor for new ventures [Kakati03, Song08]. Lack of market orientation is also identified as a source of failure in packaged software engineering [Carmel95a]. For a scalable startup the productization of software is essential. Market placement and product differentiation are vital for market-driven software success. This means marketing input needs to be available for determining software requirements [Carmel95a, Hutchings95]. A requiremnts re-engineering process at DEC identified the need for marketing deliverables for system requirements, and listed the following inputs [Hutchings95]:

- Marketing messages: how customer perceives the solution compared to alternatives

- Channels: strategizing how the product will be distributed and deployed

- Communications: planning the media end events to induce buying

- Pricing: the chosen solution must include the dimension of how much customers are willing to pay

A startup that fails to address the above-mentioned marketing decisions is facing an uphill struggle against competitors that do. Marketing is tightly linked with the formation of a sustainable business model.

4.3   Software

Software exhibits properties that make it especially attractive for startups aiming to innovate. Technologically software is at the bleeding edge: whatever the new gadget or service, usually software is used in one form or another to deliver its capabilities. Software is highly malleable, which means prototyping and product modification are very cost-effective compared to traditional manufacturing. Factories also cannot replicate products with close to zero marginal costs, but software shops can.

Unique difficulties are also characteristic of software. Changeability comes at a price: the more successful a software product is, the more it must change with the passage of time [Brooks95]. Once a software product becomes embedded in user experience, customers start to stretch the boundaries of its features. The feature requests start pouring in. As software grows, the complexity in its essence becomes apparent [Brooks87]. Managing and estimating software creation is difficult for this very reason. No two software processes are alike, and so especially for innovative software cost and time estimation can easily become an exercise in futility.

4.3.1   Time-to-market

When a startup begins software development to pursue an opportunity, there is usually only a limited time before competitors will exhaust the market with a substitute product [Carmel95a]. This is the window of opportunity for a startup. It dictates that software needs to get to the market rapidly, while at the same time differentiating from competitors. Startups also often face financial constraints which necessitates developing a product quickly before money runs out.

Organizations with serious time constraints may be forced to start cutting corners in their software development process. This means that resources, functionality and quality will be squeezed [Sawyer-99]. Software requirements will need to be prioritized based on a proper balance of cost and delivered customer value. However, the norm in market-driven organizations has been that requirements are managed on an ad-hoc basis [Sawyer99]. In these cases an abstract product vision often acts as a guiding principle, making the software development process less predictable.

Factors that have significant impact on time-to-completion for packaged software development were identified by Carmel [Carmel95b]. Both technological and non-technological factors were evaluated, and the study found three significant factors: software complexity, team cross-functionality and team independence. The impact of software complexity to development time is well known [Brooks87].

Cross-functionality of teams was based on software teams assessing their experience on the following areas: software design, programming, project management, quality assurance, marketing and sales and finance and accounting. Increased team cross-functionality decreased time-to-completion. A similar result was apparent in a study of technology venture success factors, which pointed out that founding teams with both industry and marketing experience were more likely to succeed [Song08].

Team independence somewhat surprisingly lengthens time-to-completion [Carmel95b]. Independence in this context means the involvement of top management in the software development process. This means that the involvement of top management in software development processes helps ship software products in less time. One interpretation of this result is that market-driven software development processes with integrated management activities (such as sales and marketing) are more likely to be successful. The impact of team cross-functionality supports the same conclusion.

4.3.2 People

Entrepreneurship folklore is abound with stories of the lone hacker who lays the groundwork for a revolutionary innovation. Individuals such as Mark Zuckerberg, Steve Wozniak and Linus Torvalds made massive personal contributions to the revolutionary innovations they worked on. Similarly a software startup will typically rely on a few good software engineers to get the job done. Success often hinges on whether these individuals are dedicated and willing to burn midnight oil for the simple reward of delivering groundbreaking software.

Packaged software teams show distinct differences compared to custom software teams [Carmel98]. This stems from difference of success factors between the two software classes. Custom software success is typically measured by user satisfaction, quality and cost. This focus on measurable progress makes custom software teams attractive to individuals who seek stability and structure [Carmel98]. Conversely, packaged software is successful when sales and profits soar as the result of favorable customer perception and wide market adoption. Instead of a cost-cutting exercise, packaged software production is a high-risk proposition with potentially big rewards. In the packaged software industry, developers are more willing to work long hours on sheer determination [Carmel98]. When a programmer is also a startup founder, financial risk-reward is tightly coupled.

Teams developing packaged software tend to be more cohesive than custom software teams [Carmel98]. They exhibit a higher degree of jelling, which improves their collective productivity [DeMarco99]. As such, a startup will typically consist of a small group of people, tightly woven together. Research on packaged software teams points out that smaller teams are more effective [Brooks95, Carmel97]. This result is attributable to communication costs and general group dynamics such as social loafing. The need for startup founders to develop cross-functional competencies is clearly evident. A small team is effective, and a startup will have to integrate knowledge of different disciplines to effectively develop software.

Management must account for the unique qualities of packaged software teams. Individuals with these teams place higher demands on management in the form of rewards and freedom [Carmel98]. Packaged software developers often view software processes as stifling creativity, when instead inspired individual efforts are needed [Bach95]. Agile methodologies have identified the importance of people over processes. Packaged software development is a prime example of this principle at work.

4.3.3 Process

Traditional product development employs a waterfall process for taking a new product to market (See Figure 4.1). Product engineering is run as a sequential process, and marketing and sales activities are synchronized with launch [Blank12]. The complete process of developing, marketing and selling a new product is both time-consuming and expensive, and so the risks of following an initially flawed plan to the end are significant.
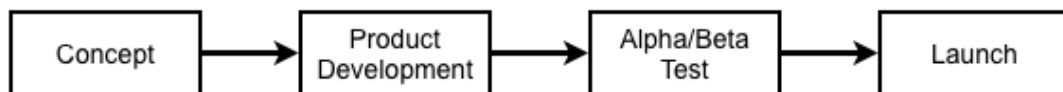
Figure 4.1: Waterfall process of product development

The waterfall process exhibits the same characteristics in the context of software engineering. Using a strictly serial process for software development also denies some of the advantages that software gains from its malleability: the ability to make changes quickly with relatively small cost. A process model suitable for packaged software needs to take into account its unique properties and risks.

Carmel has explored software process models in the realm of packaged software development. Five qualities for a suitable process model are listed [Carmel95a]:

1. The model must have built-in customer involvement

2. The model must accommodate rapid development

3. The model must incorporate cross-functional inputs

4. The model must be highly iterative

5. The model must incorporate methods to reach near zero-defect products

Agile methodologies promise to deliver on many of these constraints: iteration, rapid development, high-quality software and built-in customer involvement. Incorporating cross-functional input means inclusion of disciplines such as marketing and design in the development process [Carmel95a]. This need for cross-functionality is neglected in current software processes. Agile methods are no exception, as their background is in bespoke software development. Dzamashvili-Fogelström et al found a disconcert between market-driven product development and agile methodologies, and postulated that

agile methodologies should not be applied as-is for market-driven software development [Dzamashvili10]. Agile software processes start from an assumption that the customer-developer relationship is clearly defined. Feature requests flow from the customer, and are fulfilled by development. A problem is pointed out with agile features being prioritized by the value delivered to the customer. This means that commercially attractive requirements will surpass other important features in priority, leading for example to product architecture being neglected [Dzamashvili10].

4.3.4 Feature creep

Packaged software needs to appeal to a large number of users. It is intuitive to assume that to please a larger amount of users, a wider set of features are needed. This conclusion is maybe not totally warranted, but software products do tend to accumulate more features with the passage of time. This phenomenon is called feature creep. It is in the nature of software that it must change or become progressively less useful over time [Brooks87]. Feature creep delays the delivery of a software product and increases production costs.

Feature creep is especially dangerous for startups. First of all it is the number one inhibitor for time-to-completion [Carmel95b]. Addition of new features further increases software complexity and risks introducing defects [Carmel95a]. Beyer and Holtzblatt highlight the importance of not confusing design with a list of features [Beyer94]. Addition of a single new feature is not likely to turn a product failure into a compelling solution.

5 Customer Development

Steven Blank has developed a customer-centric methodology for starting a new venture [Blank12]. Customer Development is an iterative process in which acquisition of customer understanding is interleaved with product and business development (See Figure 5.1). Blank emphasizes the differences of established and startup companies. A startup company is a temporary organization in search of a repeatable business model. Having found such a business model, a startup can transform into an established company focused on business execution.

Product development in a startup company is unique. In the beginning there are only hypotheses on what constitutes a successful business, and a startup should look to validate these assumptions with real customer contact as early as possible. As exemplified by the literature on opportunity development, initial hypotheses often require significant rework to meet up with 'real' opportunities [Ardichvili03].
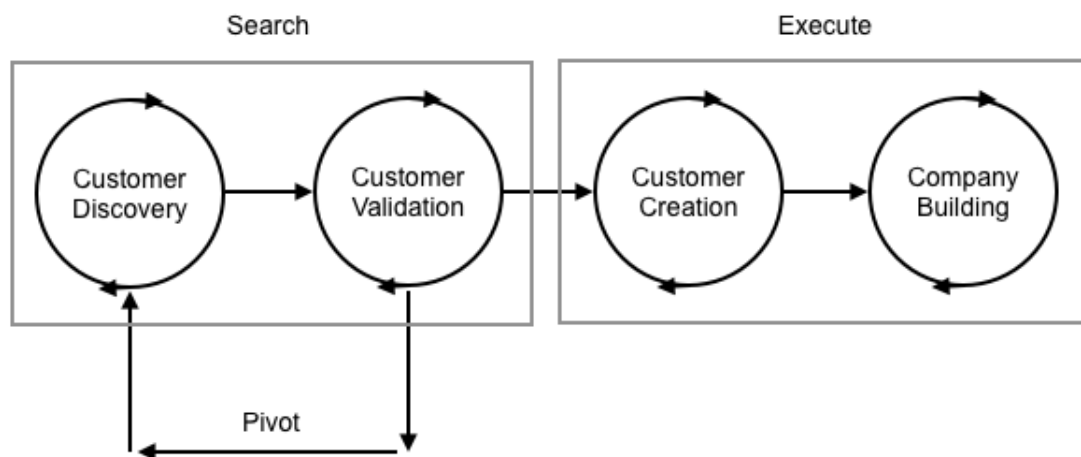
Figure 5.1: The Customer Development Process [Blank12]

The first phase of Customer Development, Customer Discovery, focuses on validating business and product hypotheses with customers. Customer validation is then a phase to validate that the sales process can be replicated to consistently sell at a profit. The following two phases, customer creation and company building are focused on execution, as a startup company transitions from a learning organization into an execution-oriented company. The ultimate goal of Customer Development is to transform an initial entrepreneurial vision into a sustainable, scalable business. It postulates that a startup succeeds by first developing intimate understanding of customers and their problems. This insight is then used to develop a compelling solution that customers are willing to pay for.

Within Customer Development, entrepreneurial opportunity development is formulated into a pro-

cess by means of Customer Discovery (See Figure 5.2). To start the process, hypotheses critical to the business are first stated and recorded.
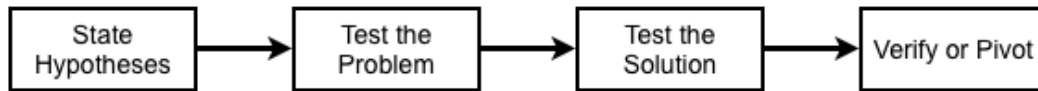
Figure 5.2: The Customer Discovery Process [Blank12]

These assumptions are then tested by interviewing customers on the field. The aim is to first validate that assumptions about customer problems are real. Field interviews are not performed only to verify assumptions, but to also understand the customer in depth. Interviews are complemented with gaining an understanding of customers relevant routines and workflows.

Once sufficient understanding of customer problems has been attained, problem solutions planned by the startup are validated with more customer interviews. Finally the solution is verified to make sure it can act as a basis for a profitable business. If not, the Customer Discovery process is iterated by re-formulating hypotheses based on newly attained customer insight. Use of Customer Discovery enables a startup to address customer risk.

5.1   State hypotheses

As a first step, hypotheses regarding the business model are formulated and recorded. Blank suggest using the business model canvas [Osterwalder10] for this purpose. This canvas is a simple graphical template for documenting a business model. The business model canvas is based on the Business Model Ontology developed by Osterwalder [Osterwalder04]. This ontology provides a rigorous framework for all the building blocks of a business model. It is analogous but more concrete compared to the business model canvas. This makes it also suitable for elaborating business concepts for entrepreneurs with a background in technology. Documenting hypotheses using this ontology is covered in the following chapter.

In Customer Discovery the business model hypotheses are complemented with experiments that can be used to test each hypothesis in turn. This can for example be in the form of questions to ask customers, or market research data to validate an assumption. It is important that all the different aspects of the business model are accounted for, since otherwise an entrepreneur may neglect business areas that are beyond his or her core expertise. In the case of technology ventures, this also highlights the importance of attaining business management skills in addition to technical know-how [Oakey03].

5.2   Test the problem

Customer Discovery places high value on learning from customers. After the hypotheses have been stated, Blank suggests having 50 interviews with prospective customers. These interviews are aimed at eliciting several types of information:

1. Importance of customer problem or need the venture is looking to address

2. Understanding of customers important problems, daily routines and workflows

3. General market knowledge

Interviews are aimed to elicit as much information as possible from the customer on things that matter. It is argued that for an attractive opportunity, customers have a related compelling problem or need. As initial hypotheses of a new venture often miss the mark, it is paramount to gather domain knowledge on the customer.

Hidden customer value presents a unique challenge in this regard. Blank does not define exact methods for eliciting information on customer routines and workflows, but states that one should *"Know the customer you're pursuing so deeply they think you're one of them."* [Blank12]. Beyer and Holtzblatt describe a very similar scenario with Dan Bricklin inventing the spreadsheet: *"Creativity comes from putting the technologist in the middle of the users' problem."* [Beyer94]. Customer-Centered Design is a method developed by Beyer and Holtzblatt that actively involves real users in the product development process [Beyer94]. Users are observed acting in their natural setting, and participate throughout product development to build a product that is both innovative and attractive to users. Customer Development and Customer-Centered Design could be used together to achieve a more rigorous discipline for testing the problem. The challenge with combining these two methods would be keeping an eye open for business opportunity, while still finding the right solution for the customer.

When real customer insight is gained, a new venture can later adjust hypotheses toward the correct direction. In this sense opportunities are genuinely "made" based on continuously elaborating customer understanding.

Customer interviews should avoid focusing on the entrepreneurial vision, which can confound objective feedback [Mullins07]. The purpose is not to sell a product, but to elicit as much information as possible. As an example, Customer Discovery suggests using a problem-solution presentation for validating and learning about important customer problems (See Table 5.1). First the customer is presented with problems that are hypothesized as being important. This is followed by presenting how the problem is being solved today, and how the entrepreneurs visionary service or product plans to solve it better in the future. At every point, open feedback from the customer is invited. The purpose is to assess the entrepreneurial vision while at the same time gaining a deeper understanding on what motivates the customer.

Customer problem	How solved today	How could be solved better
When working long hours there is less time to do household chores	Household chores focused on weekends	Hire a housekeeper to come in once a week

Table 5.1: Example of a problem-solution presentation

5.3 Test the solution

After the interviews have been completed, all customer information is reviewed. In order to move forward in Customer Discovery, feedback should indicate that the venture is targeting an important problem affecting a large number of potential customers. If not, hypotheses need to be adjusted, and the process of testing the problem re-iterated. Adjustment of hypotheses is based on combining the customer understanding with the entrepreneur's instinct. Blank states it being unlikely that a startup will hit a compelling problem on the first try.

Each round of problem testing leads to the hypotheses being updated. After arriving at a compelling customer need, Customer Discovery moves on to testing the solution the venture is planning to build. This means validating the business model with regards to customer value propositions.

A new round of interviews with the previous interviewees are arranged to elicit information on the proposed solution. A high-level outline of the solution is presented to the customers. The presentation can be complemented with product mock-ups and prototypes. Feedback on the solution is then elicited in the form of open-ended discussion. Customer Discovery places significant emphasis on validating products by probing customer interest on buying them. If the solution doesn't generate marked interest at this stage, it signals a product that could be difficult to sell in the general market. The interviews should therefore try to probe for buying signals from customers, and to verify assumptions on product pricing.

During the interviews customers may also indicate that more features are needed to make a product "complete". Since new ventures have scarce time and resources, a minimum viable product (MVP) should be the goal of product development. Customer Discovery should look for the minimum number of features that are sufficient to sell to as many customers as possible. The engineering effort in adding extra features to sell to only one additional customer is often not worth the investment. Therefore interviews at this phase should look to identify the most compelling features, and leave out the rest.

After the interviews the newfound knowledge is again used to review and update business hypotheses.

5.4 Verify or pivot

At this point intelligence has been gathered on both the customer and the interest on the solution be-

ing planned. Hypotheses have been updated. The business model is re-evaluated to decide whether it represents an viable business opportunity. The startup founders should critically review the following questions to decide [Blank12]:

- Have we found a product that fits the market?

- Do we know who our customers are and how to reach them?

- Can we make money and grow the company?

If the founders decide they have found a viable opportunity, the venture can move on to later stages of Customer Development. Next steps would be to validate the sales process and then start to build a real company. If the opportunity however does not seem right, Customer Discovery should be re-iterated by again adjusting the hypotheses based on customer information. Opportunities are grown, not planted, and so the founders should assume to pivot multiple times [Blank12]. The iterative nature of Customer Development is such that founders may actually stumble on a totally different opportunity than what they originally thought.

6 Business Model Ontology

In order to understand how a prospective startup aims to succeed, a holistic look at the business is required. One cannot assess the potential of a business idea without understanding how different elements of a venture aim to work in concert. A startup mitigates business risk by first defining a business model. This forces would-be entrepreneurs to deal with all aspects of business. One definition of a business model is provided by Osterwalder et al. [Osterwalder05]:

"A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, to generate profitable and sustainable revenue streams."

Historically there has been no single definition of a business model. Since the purpose is to have a holistic view of how a business operates, there should be a standard way of modeling a business. Osterwalder and Pigneur used an extensive literary survey to identify the fundamental elements of a business model and then combined these into the Business Model Ontology [Osterwalder04]. This ontology dissects a business into nine elements that are split inside four aspects of a business: product, customer interface, infrastructure management and financial aspects. These are covered in more detail in the remainder of the chapter. The Business Model Ontology contains a great deal of terminology which is not documented here for the reasons of brevity. Whenever an attribute value is shown in capitals within this chapter, its definition can be found in Appendix 1.

6.1 Product

In the Business Model Ontology, a product comprises everything that the firm offers its customers. A product is a set of value propositions, each one offered to distinct target customer segments. Product innovation is made tangible with a value proposition: it is the unique value offered to customers that differentiates from competitors.

In the Business Model Ontology, a single value proposition is a set of offerings. Offerings are described textually, complemented with attributes for value reasoning, life cycle, price level and value level.

The business model of the study case has two value propositions (See Figure 6.1): a smartphone customer loyalty application for consumers, and a customer relationship management (CRM) system for businesses. The offerings associated with these value proposition can be seen as high-level software requirements. These were derived from the solution associated with the business idea case (See Section 2.3).

CUSTOMER LOYALTY APPLICATION ON SMARTPHONE				
Offering	Value Reasoning	Life Cycle	Price Level	Value Level
Join a customer loyalty program	USE, EFFORT	CREATION	FREE	INNOVATIVE INNOVATION
Loyalty schemes stored on phone	USE, EFFORT, RISK	USE	FREE	INNOVATION
Give gift rewards to friends	USE	CREATION	FREE	INNOVATION
Privacy protection	RISK	USE, TRANSFER	FREE	INNOVATIVE INNOVATION

CUSTOMER RELATIONSHIP MANAGEMENT (CRM) SYSTEM				
Offering	Value Reasoning	Life Cycle	Price Level	Value Level
Hardware/Software package for tracking repeat purchases	USE, EFFORT	USE, PURCHASE	MARKET	INNOVATIVE INNOVATION
Customer retention with loyalty programs	USE, EFFORT	USE	MARKET	ME-TOO
Customer acquisition with gift rewards	USE	CREATION	MARKET	INNOVATION
Aggregated customer data	USE, EFFORT	USE	MARKET	ME-TOO

Figure 6.1: Value propositions of the study case (See Appendix 1 for terminology)

6.2   Customer interface

Customers are at the heart of any successful business. In the Business Model Ontology, the customer interface describes all aspects of customer relations: who the target customers are, how they are reached and what kind of relationships the business aims to form with them. This part of the business model is analogous to the marketing deliverables identified as being critical for packaged software requirements engineering [Hutchings95]. In this manner the Business Model Ontology can act as a starting point for defining necessary marketing activities for a startup.

6.2.1   Target customer

Target customer is a customer segment that the business directs value propositions to. Exact definition of the target customer allows tailoring value propositions, marketing and sales to accurately meet the needs of customers. A customer is identified by a set of criteria that are usually geographical or socio-demographic in nature. Value propositions of the study case are targeted at three customer

segments: smartphone equipped consumers, stores with internet connectivity and store chains/franchises (See Figure 6.2). Sales processes are hypothesized to be different for a store chain and an independent store, which is why they are represented as unique target customers.
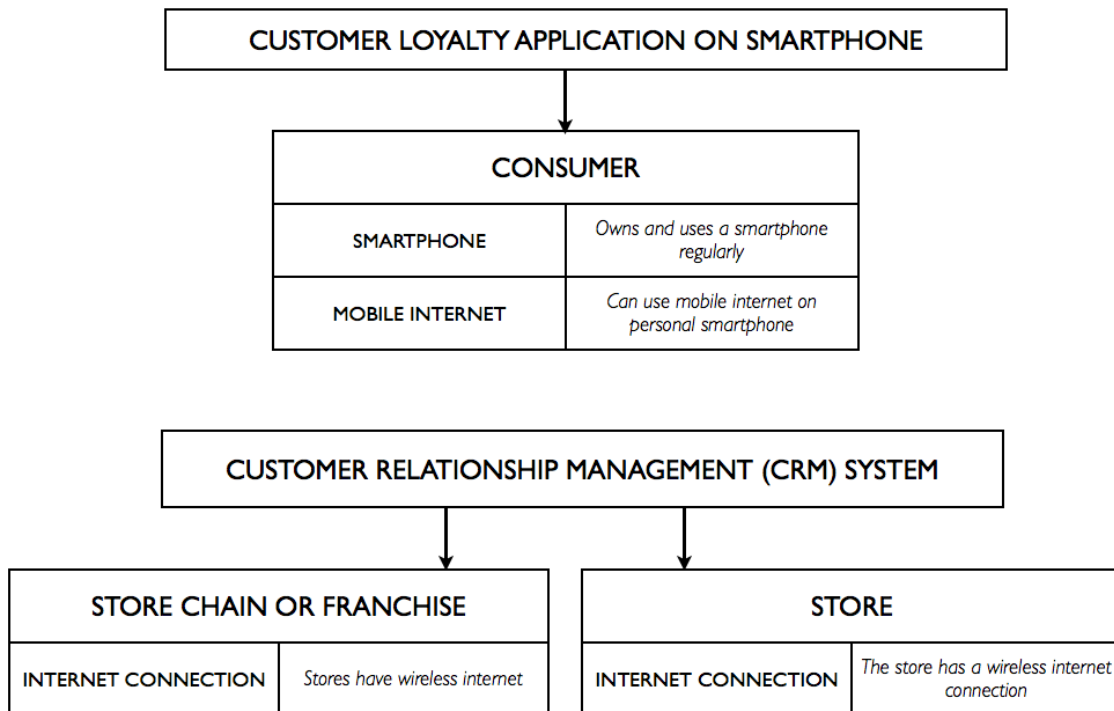
Figure 6.2: Target customers and value propositions

6.2.2 Distribution channel

Value propositions are delivered to target customers by means of distribution channels. A distribution channel is composed of specific marketing tasks: in the Business Model Ontology these are called links. A link of a distribution channel can also be part of a value proposition: this highlights the fact that marketing can be an essential part of the value a business delivers. Social networks are good example of services where marketing is an essential part of the value proposition: existing users often market the service to new customers by inviting them. At the same time, increase in the number of users in a social network makes its value proposition more attractive.

The two value propositions of the study case have totally different distribution channels. Consumers learn of the application by seeing advertisements in a supporting store (See Figure 6.3). They make the decision to start using the application by opening up a promotional website. After they have signed up for the service they can get support for privacy issues from the same place. New consumers are enticed by gift rewards that entice friends of an existing user to start using the application.

Distribution channel of the CRM system to stores is based on a traditional sales process, where a salesperson is the main actor in creating awareness and getting customers to sign up (See Figure 6.3). Technical support is handled by a support person.

Link	Customer Buying Cycle	Actor
Store advertisements	AWARENESS	Store manager
Application website	EVALUATION	-
Give gift rewards to friends	PURCHASE	-
Privacy protection on website	AFTER SALES	-

CUSTOMER LOYALTY APPLICATION ON SMARTPHONE → CONSUMER

Link	Customer Buying Cycle	Actor
Sales call	AWARENESS	Salesperson
Sales meeting	EVALUATION	Salesperson
Pricing negotiation (for chains)	PURCHASE	Salesperson
Technical support	AFTER SALES	Support person

CUSTOMER RELATIONSHIP MANAGEMENT (CRM) SYSTEM → STORE CHAIN OR FRANCHISE, STORE

Figure 6.3: Study case distribution channels (See Appendix 1 for terminology)

6.2.3 Relationship

Businesses strive for long-lasting and mutually rewarding relationships with customers. In the Business Model Ontology, a relationship is maintained with target customer segments. The purpose of a relationship is to promote a value proposition for the target customer. From the perspective of the business, a relationship with a target customer produces some sort of value for the business.

The Business Model Ontology states that relationship with a customer is based on a mechanism: the customer gains something from the relationship, which is why it is maintained. The benefit of concretely modeling customer relationships is obvious for business strategy: the aim of all business activities should be to move customers in with acquisition, and to make customer relationships as lasting and profitable as possible.

In the study case business, consumers can quickly and easily sign up for loyalty programs that bring them benefits in the form of discounts and rewards. This is the relationship mechanism for customer acquisition (See Figure 6.4). Similarly, the customer relationship is easy to keep up. The smartphone application travels with the consumer and it can be used whenever a suitable store is visited. If a consumer is worried about privacy, information disclosure can be fine-tuned or the consumers whole account cleared. No relationship mechanism for add-on selling is included in the business model of the case.

Customer Equity	Acquisition		Retention		Add-on Selling
Description	*Least effort to join a loyalty program*		*Loyalty programs are carried along with no effort, and loyalty rewards are accumulated on a personal web account. Privacy protected.*		-
Mechanism	*Start using application by only opening a webpage, no registration required initially*	*Customer loyalty rewards rewardable to friends*	*Notifications on smartphone when loyalty rewards accumulated*	*Choose what information to share with stores*	-
Reasoning	USE, EFFORT	USE	USE, EFFORT	RISK	-
Customer Buying Cycle	AWARENESS	AWARENESS, PURCHASE	USE	USE, TRANSFER	-
Function	BRAND	BRAND	-	TRUST	-
Channel	Store advertising, Website	-	-	Website	
By	Store manager	-	-	-	-
Target Customer	CONSUMER		CONSUMER		CONSUMER

Figure 6.4: Relationship with consumers in the study case (See Appendix 1 for terminology)

6.3 Infrastructure management

One of the most important factors in a startup business success is effective execution. Importance of business ideas is often exaggerated when in reality competencies and capabilities within the business are the most important indicator of success [Song08]. In the Business Model Ontology infrastructure management deals with the resources of the business and how these are deployed to deliver value propositions to customers.

6.3.1 Capability

In order to deliver value propositions, a business needs to use its capabilities to produce and deliver them. A capability is defined as *"repeatable patterns of action in the use of assets to create, produce, and/or offer products and services to the market"* [Osterwalder04]. The value-creating capability of a firm can be based on tangible assets, intangible assets or human resources. Tangible assets are physical things like computer hardware, while intangible assets could be brands, intellectual property and so on.

Smartphone application development is a vital capability for the study case startup (See Figure 6.5). Developers and designers are needed to build and maintain the application. The application needs web infrastructure to function.

Smartphone application development			
Resource	Description	Type	Actors
Smartphone application development team	Team capable of developing both web infrastructure and smartphone applications	HUMAN	Mobile developer, Web developer
Layout design	Design of smartphone application layout	HUMAN	Graphics artist
Web infrastructure	-	TANGIBLE	Web hosting company

Figure 6.5: Study case capability example

6.3.2 Value configuration

In order to deliver a value proposition a business needs to perform certain activities. This set of activities is called a value configuration. Value configurations can be of different types based on the type of value delivered: value chains, value shops or value networks. A value chain is about building products: taking inputs and producing output in the form of product. Value shops are service-oriented configurations, where customer needs are first determined and then a customized service is offered: consultation falls in this realm. Value networks connect customers together. This could be contract negotiation for instance.

For their execution, activities rely on actors and resources. Activities involved in the creation, marketing and delivery of a value proposition are primary activities. Others are support activities. The value configuration for delivering the smartphone application is a value network: it facilitates the connection between consumers and stores (See Figure 6.6). The value network infrastructure is maintained with software development.

Activity	Store advertising	Consumer account management	Smartphone application development
Description	Gaining customer attention by store advertisements	Registering an account, ending an account, managing privacy settings	Development and maintenance of smartphone application for consumers
Level	PRIMARY ACTIVITY	PRIMARY ACTIVITY	PRIMARY ACTIVITY
Nature	NETWORK PROMOTION AND ACCOUNT MANAGEMENT	SERVICE PROVISIONING	NETWORK INFRASTRUCTURE OPERATION
Resources	Partner stores	Technical support, web site	Smartphone application development
Actors	(As in resources)	(As in resources)	(As in resources)

CUSTOMER LOYALTY APPLICATION ON SMARTPHONE

Figure 6.6: Sample value configuration for a value proposition (See Appendix 1 for terminology)

6.3.3 Partnership

Businesses form partnerships to complement their own capabilities. Implementing some operations internally can be too costly or risky, and partnerships can help a business attain necessary resources while focusing on its own key strengths. A partnership is part of a value configuration, and involves a set of agreements involving actors outside the business. An agreement is complemented with a reasoning as to why it is beneficial for the business.

The study case example illustrates how a partnership will be used to acquire resources for graphics expertise (See Figure 6.7). Strategic importance of the partnership is moderate (3): the brand of the business needs to be clearly communicated on the website, the smartphone application and advertisements. The graphics artist does not compete at all with the business, so degree of competition is 0. The graphics artist needs to be quite involved in activities related to marketing and software development (4). A graphics artist can be substituted with another quite easily (5), although this is an example of a hypothesis. The assumption here is that a graphics artist could easily replicate the work of another should a particular partnership come to an end.

Partnership with graphics artist							
Agreement	Description	Strategic importance (0-5)	Degree of competition (0-5)	Degree of integration (0-5)	Substitutability (0-5)	Reasoning	Actors
Visual design	Outsourcing of layout design and graphics work	3	0	4	5	ACQUISITION OF RESOURCES	Graphics artist

Figure 6.7: Example partnership in the study case

6.4 Financial aspects

The value of a business model lies in its potential for sustainable profit. Financial aspects of the business model include cost structure and revenue streams: these are summed to assess the profit the business aims to create.

6.4.1 Cost structure

The cost structure of a business is a set of accounts. Costs accrued from a single account are represented by monetary sum and percentage of total costs. The study case example in Figure 6.8 is lacking exact sums, but otherwise illustrates the building blocks of measuring cost structure.

Account	Description	Sum	Percentage
Software development	Web and mobile development	-	60%
Logistics	Installation and delivery of hardware package	-	10%
Sales	Sales activities	-	20%
Technical support	Management of technical problems	-	10%

Figure 6.8: Study case cost structure

6.4.2 Revenue model

For profits a business relies on revenue streams that are collected from the value propositions offered to customers. This set of revenue streams is called the revenue model. Revenue streams are linked to offerings and links related to the value proposition.

In the case study example all revenue is accrued from customer stores: first by selling a product package to track customer loyalty, and then charging a monthly fee for customer data storage (See Figure 6.9). In the example revenue streams are estimated as percentage of total revenue, when in practice revenues need to balanced against costs with exact monetary sums. Such analysis is not done here.

The benefit of concretely modeling revenue streams is obvious. Often the pure joy of innovation confounds the basic requirements for creating something sustainable. Social entrepreneurship for example is an emerging phenomenon, but without proper revenue and cost accounting such ventures may fail to attract the resources they need for sustainable operation.

CUSTOMER RELATIONSHIP MANAGEMENT (CRM) SYSTEM

Revenue stream	Description	Offer	Link	Pricing Method	Stream Type	%
Hardware+Software package sales	Device for identifying customer form their phone, and software for registering customer repeat buying	Hardware/ software package for tracking repeat purchases	Software sales from webstore, Pricing negotiation	MARKET	SELLING	50
CRM system subscription	Monthly subscription fees from CRM system subscription	Customer loyalty data storage & access	Software sales from webstore	MARKET	LICENSING	50

Figure 6.9: Study case revenue model

7 Customer interview study

Literature on entrepreneurial opportunity development indicates that business ideas require development before becoming sustainable businesses. Customer Discovery presents a framework for developing and validating business ideas with the help of customer feedback. In order to test the Customer Discovery process in practice, the process of testing the problem was applied to the business idea discussed in this paper.

Testing the problem implies interviewing real customers regarding assumptions of important customer problems the business aims to solve. The business tested here targets a market with two distinct customer segments: small businesses and consumers.

7.1 Goal of the study

Customer Discovery places emphasis on business founders "getting out of the building" to interview and test their hypotheses on customers' problems. A key question to solve is do people care about the problems that the business aims to solve? If they do not, testing the problems should bring the founders new ideas on problems that actually matter to customers.

The main goal of the study was to apply problem testing to a real-life situation while observing the process for meaningful insights. The hope is that observations from the study can be used to better understand the process of Customer Discovery, and its potential usefulness for developing business opportunities in a cost-effective manner.

7.2 Study design

Initially an entrepreneurial idea is based on solving customer problems that the business founder perceives as being important. This study hypothesizes interviewing customers will have an impact on the introspective perception of the founder. This impact will also then carry into the original idea, changing perception on important product features for instance. The question this study aims to answer is:

"How will interviewing customers impact an entrepreneurs' introspective hypotheses on important product features?"

The approach chosen for this research was to conduct a case study of using open-ended interviews to validate and explore a business idea with potential customers. Case studies are fitting for research when the aim is to study a contemporary phenomenon in a real-life setting [Yin09]. The boundaries between an entrepreneurs introspection and the insight gained from customers is not clear for the research question of this study. This is because different entrepreneur personalities could make

different conclusions on a certain business idea after interviewing the same people.

Case studies can provide insightful qualitative data in situations when drawing a distinction between observations and environmental context is difficult [Yin09]. Each customer interview can provide useful information on developing a business idea, but only in relation to the idiosyncratic experience of the customer. Although observational patterns may emerge, every individual possesses unique views. The entrepreneur must act as a filter, deciding what information is generalizable and beneficial for developing a viable business. Customer feedback cannot be completely separated from the conclusions that at entrepreneur makes from them.

This study purposefully set out to observe the whole process of "testing the problem", declining to decide beforehand what the desirable experimental parameters for observation would be.

7.3   Research method selection

Hypotheses on important customer problems were formulated based on the product solutions the business would offer its customers (See Chapter 6.1). The value propositions describe three customer problems for both consumers and small businesses (See Table 7.1). The customer problems listed are directly related to planned software product features, and derived from customer problems associated with the business idea (See Section 2.1).

Consumers	Small Businesses
Joining a customer loyalty programs requires too much effort	Information on individual customer behavior cannot be gathered or used for any benefit
Keeping track of loyalty memberships is difficult and the benefits are unclear	Customer loyalty is profitable but small businesses lack means to induce it
Customer loyalty programs compromise privacy	New customer acquisition is difficult and its effectiveness is difficult to assess

Table 7.1: Hypothesized customer problems

Open-ended interviews were chosen as the inquiry method both for understanding customer problems and validating the hypothesized business solution. This is the approach suggested by the Customer Discovery process [Blank12]. The benefits of using open-ended interviews for exploring and validating a business idea have also been recognized by Mullins [Mullins07]. He suggests using open-ended interviews to explore novel business ideas that are fraught with uncertainty.

The advantage of open-ended interviews over questionnaires is that they do not constrain feedback. Innovative business ideas are threatened by things the entrepreneur does not know he doesn't know. Pre-made questionnaires prepared by the entrepreneur will not bring these unk-unks to light [Mullins07]. As a general rule, questionnaires can be used to glean information quickly when the topic of

inquiry is clearly known beforehand.

Direct observation can be used with or without interviews to explore customer processes in their actual context. Methods that can be used include participatory design, ethnography and field research [Beyer95]. The advantage of such observation is that it is not constrained to only spoken expression. Interviewees' self-reported descriptions of events can deviate significantly from reality. This has been shown to apply for example in situations where interview subjects describe how they work [Beyer95]. Self-expression of the interviewer also plays a large role in what information can be acquired. In an open-ended discussion it is up to the interviewer to find the appropriate questions to ask.

Lack of direct customer observation is a shortcoming of the study method chosen for this research. The business idea being studied targets small businesses without the entrepreneur having intimate domain knowledge on them. This is bound to influence not only the hypotheses, but also the design of the interview. Some questions may be incorrectly formulated because the domain of the customer is not understood properly. Asking the wrong questions means wasting time. On these grounds it would seem to make good sense to combine customer observation with open-ended interviews. If domain knowledge is lacking, interviews can be preceded with observation to come up with a suitable interview design.

Depending on the context, direct customer observation may require ample time. A researcher needs a long enough time frame to become aware and properly accustomed to the processes of the customer. For a scalable startup with a scarce resources it is imperative to be able to quickly understand the problems of a large market. In such a case in-depth research may not be feasible. Rapid ethnography is one method that can be used to gather in-depth contextual data in a restricted time-frame [Millen00]. In this method time reduction is achieved by intensely focusing research questions and sampling information-rich study subjects.

The focus group method is another alternative for eliciting feedback from potential customers. It has a history of being applied for packaged software development [Goguen93, Keil95]. Inquiry is performed by hosting a group discussion with a small number of relevant interview subjects. The composition is usually eight to ten people plus a discussion facilitator. Focus groups provide a quick method for acquiring feedback and qualitative data on a research question [Kontio04].

Situational factors play a large role in focus groups. Social dynamics are even more prominent in influencing the discussion than in individual interviews. The facilitator needs appropriate skills for keeping the discussion in the research area. Composition of the group may influence how participants choose to express themselves in discussion. Opinions formed in a group discussion are often based on a consensus. It is therefore challenging to develop genuine new insight with this method.

The lead user method involves using a special type of focus group to discover commercially viable innovations [Hippel86]. People on the leading edge of their industry are recruited as discussion participants. These 'lead users' are people who may have identified important future trends in their

industries. The hypothesis is that when such a group comes together to develop an innovation, it will be one desired by a large market in the future.

Large companies such as 3M have successfully applied the lead user method for the development of innovations [Hippel99]. Customer Discovery similarly recognizes the importance of earlyvangelists, people who have recognized a problem early before the general market [Blank12]. The difference between lead user theory and Customer Discovery is the responsible party for innovation. In lead user focus groups the users innovate, whereas in Customer Discovery the entrepreneur does it with the help of customers.

Large organizations can effectively employ lead user theory, as they have resources to run a relatively heavy focus group process, and also production capabilities to create the product that customers come up with. Conversely small startup entrepreneurs are looking for a product they know they can make. After all, an entrepreneur is the catalyst for the product vision, and takes on bigger personal risk than a corporate employee.

A summary of different research methods choices is presented in Table 7.2. The use of open-ended interviews for this research is supported by the central role the entrepreneur has in the initial business idea. One-on-one interviews are easy to organize on-site, making the setting natural for the respondent. An open-ended dynamic discussion allows the entrepreneur to become a domain expert by focusing on current points of interest. However, without observational research the attained domain expertise will be of more superficial depth.

Method	For	Against
Focus groups	• cost-effective [Kontio04] • quick gauge into general opinions	• respondents are out of their natural context • influenced by group dynamics [Kontio04] • not conducive to innovation: group represents market average
Lead user focus groups	• combined knowledge of multiple innovators can be leveraged [Hippel86]	• respondents are out of their natural context • influenced by group dynamics • time-intensive
Observation	• reveals tacit information [Beyer95]	• time-intensive depending on the case [Millen00]
Questionnaires	• quick to implement • results easy to interpret	• constrained • does not reveal unknown unknowns [Mullins07]
Open-ended interviews	• researcher has dynamic control over discussion • natural setting	• does not reveal tacit information • interpretation of results difficult

Table 7.2: Research methods for entrepreneurial opportunity development

7.4   Interview structure

The business idea targets two customer segments in consumers and small businesses. Therefore two separate interview templates were designed. The first part of each interview template consisted of an ordered list of questions that the interviewer asks the subject. These are included in appendices 2 and 4 for small businesses and consumers respectively. The second part of each interview consisted a problem-solution presentation. They can be found in appendices 3 and 5.

One interview was planned to take approximately 20 minutes in its entirety. Recording open-ended information while maintaining a conversational discussion places an unnecessary burden on the interviewer: therefore using a recording device for this type of interview is preferable, and one was acquired for conducting the interviews. Eight consumers and six small businesses were interviewed for the study. The Customer Discovery process suggests conducting 50 interviews for each customer segment [Blank12]. The origin of this number is not made clear, but possibly it is backed by subjective experience of the author.

For the purposes of this research it was concluded that the number of interviews suggested by Customer Discovery would be excessive. Research sample sizes under 20 are suitable when in-depth interviewing is used to clarify situations in social reality [Crouch06]. A small sample size is sufficient to demonstrate what impact customer discussion has on introspective entrepreneur hypotheses.

For the first part of the interview the first few questions of each template were chosen as easy warm-up questions to put the interviewee at ease at the beginning of the discussion. These question numbers are marked with parentheses in the appendices. The purpose of warm-up questions is to get the interviewee in a right state of mind for answering more difficult questions [Mullins07]. Starting an interview with a very difficult question may make the respondent uncomfortable, which may then also limit the scope of future answers.

All questions following warm-up were intended as open-ended explorative questions. This means that the interviewer could allow the discussion to sidetrack into directions that could provide previously unknown insights. This approach is appropriate when unknown unknowns are a target of inquiry [Mullins07]. It was expected that some respondent answers would be short. For these cases some pre-thought prompting questions were included for the purposes of enticing more feedback. In the interview templates these are numbered as sub-questions.

Sub-questions 4.1 through 4.5 in the small business template (Appendix 2) are an example of prompts. If a question about customer acquisition does not generate much response from a small business owner, the interviewer can then ask separately about advertisements, Internet marketing and so on. Depending on the interview the prompts might not be needed, or the interviewer can even introduce new ones if interesting directions of discussion are discovered along the way.

In the second part of each interview template a problem-solution slide was shown to the interviewee from a laptop computer screen (Appendices 3 and 5). The slides were revealed one line, one box at a

time from left to right. This means that for each hypothesized customer problem, a respondent would be first shown the problem description, then a hypothesis of the current solution to the problem, and finally a future solution according to the business opportunity being studied.

After revealing a boxed statement to the respondent the interviewer would each time stop and ask for interviewee opinion on the statement. Here the interviewer probes whether the respondent thinks the statement is accurate. If the opinion turns out to be no, the interviewer can then make follow-up questions to understand why, and also what statement would be more accurate for the customer.

7.4.1 Small business template

Warm-up questions included asking the name of the business, the number of employees and net revenue last year. These were followed with three open-ended questions (questions 4, 5 and 6), each addressing a hypothesized customer problem.

Question number 4 probes how the business currently does new customer acquisition. Elaborating sub-questions aim to better understand how the business operator perceives customer acquisition on a more general level. Sub-question 4.4 queries into the use and effectiveness of deep discounting. These discounting schemes have been very successfully sold to small businesses as a means to acquire customers, and the question aims to understand how small businesses have made the choice.

The concept of customer loyalty is explored in question number 5. The purpose is to understand how important it is to small business owners, and how they have sought to induce it in the past.

Means to track customer behavior are queried in question number 6. Here the aim of the interviewer is to gather intelligence on how small businesses currently track customers, and how they use the information for business benefit.

After these questions the problem-solution slide is presented. It addresses the problems of customer acquisition, customer loyalty and customer behavior tracking again, but now from the perspective of the planned business opportunity.

7.4.2 Consumer template

The first questions numbered 1 through 4 were intended as warm-up while still gathering important information. Since the consumer-side of the business idea targets smartphone users with mobile Internet, it is first established whether the interviewee has these in place. The interviewer then asks in what customer loyalty programs the respondent is currently enrolled in. If necessary, memory is exercised by prompting on a few common Finnish loyalty programs (questions 3.1 through 3.3).

The consumer is then asked to check what loyalty cards are currently being kept along. This way the interviewer can get an understanding of the current loyalty program behavior of the consumer.

Questions 5 through 9 are intended as broad explorative questions to explore consumer attitude toward loyalty programs. Problem and solution hypotheses relating to loyalty program joining, friend

recommendation and behavior tracking are each addressed separately. When appropriate, the questions are worded so that they describe a possible situation the consumer could encounter in real life. For example in question number 5 the respondent is first asked to imagine entering some store on a whim. The situation is then made more concrete by asking on what its line of business could be. When the interviewee is now able to imagine the situation, the interviewer then asks a question about joining a loyalty program at this specific imaginary store.

After exploring general attitudes, the interview then moves on to the problem-solution slide. It is presented in exactly the same fashion as was discussed previously for small businesses.

7.5 Recruiting interviewees

Customer Discovery suggests an ad-hoc process for interviewee recruitment early on: basically using close contacts to acquire as many interview opportunities as possible [Blank02]. It is suggested that high-level decision makers should be left out of the problem testing process. High-level decision makers are individuals who have the power to make large investment decisions on whatever the prospective business aims to sell. Since financial decision makers represent a good sales opportunity for a business later on, approaching them with only guesses of a solution may waste a potential sales lead. Gathering the interview sample in an ad-hoc manner will influence the resulting feedback, but it is possible that the large sample size suggested for Customer Discovery will mitigate the problem [Blank12]. Customer Discovery doesn't address possible bias problems that may arise from a skewed interviewee sample.

For this study two distinct groups of interview subjects needed to be recruited. Consumers are everywhere, and so the risk of wasting a sales lead did not exist for this group. Recruitment for consumers was done by contacting friends, acquaintances and also strangers. Close friends are usually easy to persuade for an interview, but total strangers may decline interviews for different reasons. A regular consumer usually has no direct incentive for participating, and may be generally unwilling to donate time for an interview. The approach for recruiting strangers used in this study was to find places where people usually have to wait: at stores prior to opening and spaces where long waiting times are habitual. When approaching a stranger for an interview, the purely research objective of the interview was mentioned right from the start. For this study the consumer sample was quite evenly distributed between friends, acquaintances and strangers.

Small businesses were recruited in three different ways: phone calls, e-mail and visiting a business on-site. The daily deal service Groupon was used to search for businesses that indicated willingness to use and pay for innovative customer acquisition. The profitability of Groupon marketing is disputed, so businesses using it represent a segment where innovative marketing discussion could be welcomed. Phone calls proved to be effective method for recruiting interviewees. Two contacted businesses had used Groupon recently, and mentioning this seemed to influence interest in an interview positively. However, in these cases the interest in marketing discussion was probably also due

to the fact that both businesses had been established quite recently.

Compared to phone calls e-mail was fairly slow. Getting a response took in some cases multiple days, and some businesses did not reply at all. In the end one interview was agreed with e-mail. Instead directly visiting businesses to ask for an interview provided mixed results. Recruiting business owners who were acquaintances provided good results, and three interviews were organized like this. Instead a stranger entering a store to ask for an interview on marketing did not fare very well. More than one individual declined an interview in this setting. Physical visits have the problem that they may not reach the business owner, but instead a hired employee. In this regard phone calls have a distinct advantage, as the appropriate person can usually be looked up by examining publicly available business contact information.

7.6   Conducting interviews

Interviews were conducted on-site between July and September 2012. Small business interviews were conducted at business premises, whereas consumers were interviewed at any suitable quiet location. The length of a single interview was estimated beforehand to be approximately 20 minutes, but in reality the longest ones spanned around 40 minutes. A single interview was conducted in English, but otherwise Finnish language was used. Some small businesses presented difficulties for proper discussion flow, as interviews were in some cases interrupted when interviewees needed to attend to their customers.

All the interviews were recorded either with a laptop or with a small recording device. Interviewees were asked beforehand for a permission to record with the promise that discussion material as such would remain confidential. Proper research practice dictates that one should not use recording devices if they make subjects uncomfortable, or make the interviewer unable to focus on the interview properly [Yin09]. This proved to not be a problem: both parties were at ease with the interviews being recorded. Operating the recording device was effortless, and it allowed the interviewer to properly focus on discussion instead of taking notes. The tradeoff is that transcribing the recordings later requires significant time and effort. Technical problems may also cause valuable interview information being lost, so interviewers using recording devices should be vigilant in quickly backing up the recordings.

Proper interview technique plays a part in acquiring as much open-ended feedback as possible. Customer Discovery places emphasis on business founders conducting the interviews themselves, as they are the ones who may need to revise their business assumptions: direct feedback is best for this purpose [Blank12].

The interviewer should take extra care to avoid selling ideas to respondents. This is especially dangerous when the entrepreneur is the originator of the business idea and at the same time conducting interviews to validate it [Mullins07]. To remain objective the interviewer should avoid becoming personally attached to ideas, and instead be on the lookout for any threats that could derail a business

opportunity. A clear danger sign is if interview questions take on a leading tone. Asking *"Don't you think this is a good idea?"* is very different from *"What comes to your mind regarding this idea?"*.

Choosing the appropriate words when asking a question is essential for trying to maximize the amount of actionable feedback. One common mistake is to ask a question that is most easily answered by simply yes or no [Mullins07]. The entrepreneur doing the interview is trying to elicit deeper meanings behind customer motivations, which requires more than just validation. The danger of falling into yes or no line of questioning is especially relevant for the problem-solution presentation. Here the interviewee is asked to validate simple statements. A good approach here is asking the respondent to describe the thoughts and feelings a certain statement evokes. This personalizes the discussion and makes it difficult to answer only with a very short yes/no statement [Mullins07]. This approach was followed in the interviews with good results.

One benefit of open-ended interviews is that they can result in a discussion that flows naturally. Still it is important to keep in mind that one side asks questions and the other answers them, as this is the distinguishing feature compared to normal discussion. When a person is thoroughly thinking before answering a question, it will often take a surprisingly long time. An inexperienced interviewer may interpret this as being the result of a poorly worded question. The impulse to jump in and clarify should be resisted, as valuable thoughts may remain unknown if the interviewer tries to control the interview too much. Interview subjects will usually ask for a clarification if they do not understand a question [McCracken88].

8 Consumer interviews

Eight consumers were interviewed to gauge the appropriateness of the hypothesized problems and solutions. To better understand how different consumer clusters relate to customer loyalty programs, interviewee subjects were categorized into different consumer types based on their interview responses. This consumer typology and an overview of interview results is presented in section 8.1. Consumer reactions to the problems of joining a loyalty program, keeping track of memberships and privacy loss are analyzed in sections 8.2, 8.3 and 8.4 respectively.

8.1 Overview

Shopping behavior is in large part determined by the psychological profile of a consumer. The gratification of internal needs unrelated to actual purchases play an important role in shopping decisions made by consumers [Tauber72]. Typologies can be used to cluster consumers into groups with similar internal motivations.

The seminal work on consumer typologies by Stone divides consumers into four differing types [Stone54]:

- The economic consumer

- The personalizing consumer

- The ethical consumer

- The apathetic consumer

Stone interviewed 150 housewives residing in north-west Chicago on their shopping attitudes, and discovered distinct groups among them.

Economic consumers approach shopping in an utilitarian manner. Their attention is focused on issues related to the buying process itself. Attributes such as product price, quality and variety are important, with the purpose being to optimize the shopping experience.

Consumers of the personalizing variety value social experiences associated with shopping. They value relationships and highly personal customer service at the stores they frequent. Because of this they may for example favor small stores over large ones.

One group of consumers makes shopping decisions on moral grounds. These ethically oriented consumers want to support important issues with their spending. In the study of Stone many ethical consumers reported supporting small businesses because their purchases would directly support business owners instead of large retail chains.

Apathetic consumers do not enjoy shopping as an experience. They seek to minimize the time they spend on it, and are often indifferent of brands, pricing and social interaction related to shopping.

Consumer culture has changed much since the Stone study was conducted in 1954. In another influential research Tauber has suggested that shopping motives arise from a number of personal and social factors [Tauber72]. These factors can be split between satisfaction gained from shopping activities and utility gained from the purchases itself. This model provides an explanation for the rise of recreational shoppers in modern consumer culture.

Recreational consumers are people who derive great satisfaction from activities related to the shopping experience itself [Guiry06]. This can for example mean spending leisure time at stores simply to familiarize oneself with shop products and atmosphere. During Stone's day recreational consumers were most probably rare individuals, and represent an opposite to apathetic consumers. Today the consumerism ideology is for many an important pastime, source of enjoyment and even a factor in self-definition [Guiry06].

Consumer response to the hypothesized problems was acquired from the interview transcriptions and summarized for an overall indication of consumer perception. Consumers were further categorized into types based on their interview responses. The results are summarized in Table 8.1.

■ = Consumer indicated the problem as being important (green)

■ = Consumer recognized the problem, but did not consider it to be especially important (gray)

■ = Consumer indicated the problem does not exist or is not relevant (black)

	Joining a customer loyalty program requires too much effort	Keeping track of loyalty memberships is difficult and the benefits are unclear	Customer loyalty programs compromise privacy	Consumer Classifications [Stone54, Guiry06]
Consumer A	green	green	gray	Ethical, Economic
Consumer B	gray	green	black	Apathetic
Consumer C	green	black	black	Economic
Consumer D	black	green	green	Economic, Recreational
Consumer E	black	green	black	Ethical
Consumer F	gray	black	black	Apathetic
Consumer G	gray	black	black	Apathetic
Consumer H	green	green	black	Apathetic

Table 8.1: Importance of hypothesized problems for consumers

8.2   Joining a customer loyalty program

The interviews clearly showed that consumers represent different shopper types, and this in turn mediates their opinions of customer loyalty programs (See Table 8.1). Consumers were assigned a shopper type based on overall opinions acquired from the interviews. This typology provides a useful framework for analyzing interview results. Shopping motives of individuals are complex phenomena, and people may exhibit characteristics of many types in different areas of their shopping [Tauber72]. Similarly they may also exhibit attributes which do not fall under some particular shopper type segmentation [Solomon99].

Intuitively apathetic consumers should be most aversive to loyalty programs, as they view shopping as simply a chore that needs to be done. Instead recreational shoppers perceive shopping as fun, and most likely welcome side activities associated with it (such as joining a loyalty program).

Economic consumers are looking for the best value in exchange for money, and they are likely to see price benefits from loyalty programs as an important incentive for joining. Shoppers with ethical or personalizing motives are most likely to decide on a loyalty program irrespective of the benefits, unless they align well with their internal needs. Ethical consumers could for example see supporting small businesses as a bonus, while personalizing shoppers might welcome tailored customer service.

Consumers in the study fell into two general groups in their relation to customer loyalty programs. Apathetic consumers reported little desire to join customer loyalty programs. In their own opinion buying was only influenced by the genuine need for something, and for this reason they saw less reason to accumulate customer benefits by being loyal to a business. More recreational consumers instead had more loyalty cards in their wallet, and also perceived a problem of keeping track of their customer benefits.

Joining customer loyalty programs was seen as being a hassle by most, but still a reasonable trade-off for getting benefits. Apathetic consumers F and G indicated they would forego joining a customer loyalty program for the simple inconvenience of the process.

The importance placed on the ease of joining a loyalty program varied between different consumer types that were interviewed. Consumer D for example exhibited characteristics of being both an economic and recreational shopper at the same time. This meant that having to work for joining a loyalty program was neither inconvenient or unimportant: *"Benefits, special offers. I benefit something from being a customer. .. Its a kind of service in which you have to be in, if you are smart."* For this consumer type joining a loyalty program was not a problem even if it was difficult: they would join anyway, disregarding the effort required.

Some interviewees instead were clearly apathetic in some areas of their shopping. Consumers F and G saw their shopping as being purely on a need-to-have basis. They kept loyalty cards to major Finnish grocery chains in their wallet, but indicated they would carefully assess their needs before entering a new customer loyalty program. *"I don't want to fill out all kinds of papers (to join), I'll*

just pay a few euros extra". For these consumers the ease of joining was clearly a factor. They did not however see it as a problem for themselves, specifying they would make a rational decision based on the situation. These consumers said their decision to join would be linked to benefits gained on the spot; getting what they were buying cheaper, or benefits for something they could well imagine buying in the future.

The inconvenience related to disclosing personal information was a factor that consumers reported as relevant, especially by more apathetic consumers. Since even the most apathetic consumers had some loyalty memberships, it seems that maintaining privacy was mainly a rationalization for being aversive to loyalty programs in general. Privacy can act as a socially acceptable reason for foregoing benefits that one would be 'stupid not to accept', even though the consumer could in reality simply be indifferent. The interviews showed that even though some respondents reported privacy as a concern for joining, it had not influenced past decisions to join loyalty programs that had offered good value.

Ethically oriented consumers A and E also described loss of privacy as being a negative factor, but one that was seemingly rationalized with programs that were otherwise alluring. The term 'customer loyalty program' was commonly used for wording the interview questions, and this possibly played a role with consumers being averse. Consumers tended to attach negative marketing connotations to the term itself. In the minds of the respondents it seemed to evoke images of cold corporates trying to covertly influence their customers. Being asked about the term 'customer loyalty program', Consumer F for example described it as *'Kind of makes me feel repulsive, ties customers to a store or a chain, marketing method to keep customers...'*

All consumers saw physical loyalty cards as a nuisance related to joining. For some it was a reason for being aversive to joining yet another one, and for others it meant they could not keep all their loyalty cards with them. Recreational shopper D reported carrying along a separate pouch for loyalty cards. From this perspective the problem of joining was relevant for everyone. For recreational shoppers the cards introduced an inconvenience, while apathetic consumers could consider it as a possible deal breaker.

New ideas and trends in loyalty technology were discovered during the interviews. A number of interviewees were excited about using their drivers license as a loyalty card. The Finnish drivers license contains a barcode with the social security number of the holder. A few businesses operating in Finland such as Motonet and Stadium currently allow using a drivers license as a loyalty card, and this was mentioned by a few interviewees. Similarly a system for using the SIM card of a mobile phone for identification is an emerging technology in Finland, and one respondent wondered if it could be used by stores to identify customers in the future.

From the consumer perspective the inconvenience of joining a loyalty program appears to be real and worth solving. A customer loyalty program with effortless enrollment without extra physical artifacts would alleviate many customer pains expressed in the interviews. Especially for apathetic consumers the difference would seem to be significant. However, in this case the loyalty program

would need to target the interests of the consumer very accurately. The interviews indicated that apathetic consumers had specific categories of products that they loyally bought. For one it was cameras, for the other it was kitchen apparel.

Based on the interviews, technology ideas involving cards consumers typically carry with them (such as a drivers license) could be even more attractive than the ones involving identification with a smartphone. Such innovations could reach a very large market segment.

8.3   Keeping track of memberships and benefits

For a consumer the benefits of a customer loyalty program usually involve some kind of advantages compared to regular customers. Most currently existing loyalty programs employ separate physical cards to identify their loyalty program members. Perks include general discounts and price cuts for certain products or large purchases. Businesses may also offer faster and more personalized customer service compared to normal customers. Based on the interviews the value gained from current programs is controversial.

Multiple consumers reported being unable to understand the benefit schemes in their loyalty programs. Consumer H specified being part of the S-Bonus loyalty program without being able to specify what good came of it: *"The programs should simpler"*. A commonly-held perception was that not being part of a loyalty program would mean paying for the discounts of others. This leads to a situation where consumers expect to be penalized, and take on a loyalty membership so they won't be at a disadvantage. Another interviewee reported not remembering his loyalty memberships, and probably *"not getting much benefit from them"*.

The apparent complexity of many loyalty programs is partially explained by businesses competing for the same customer base. When one business introduces a loyalty program in an openly competitive market, competitors are likely to respond in kind to counteract it [Dowling97]. If customer loyalty program benefits are easily compared, consumers can more easily choose the best one. This is not beneficial for businesses, as it increases price competition resulting in reduced profit margins [Downling97]. This could be one the underlying reasons why loyalty schemes commonly extend between business areas, such as retail stores also offering credit card services. When benefits are interlinked and difficult to compare, customers will find it difficult to evaluate alternatives if they are consider switching their allegiance. This can result in a form of customer loyalty.

Respondents C, F and G reported having no problem with loyalty benefits. At the same time they were also the ones who had the fewest memberships. Their consumer profile was apathetic and very utilitarian. The reason they had no problem with loyalty program benefits was because they would not join a loyalty program that presented no immediate value.

Cross-selling tended to be associated with loyalty memberships. It means selling additional items on top of other purchases. Offers such as 'buy three, get one free' is an example of this. A typical method used for cross-selling to loyal customers is offering discounted products, usually by means of

directed marketing. This can be in the form mailed offer catalogs, targeted e-mail or special in-store discounts. Some reported this as being helpful for finding new buying opportunities, while others found it impersonal: *".. I'm not looking for offers, but for things I need"*. Recreational buyers are looking for new things to buy, whereas more utilitarian shoppers want offers only on things they would buy even without any benefits. Some apathetic shoppers indicated they would welcome marketing, but only if it closely reflected their areas of interest.

The inconvenience of carrying physical loyalty cards was felt by many. In more than one instance consumers reported negative experiences where they had missed on a benefit simply because they did not have a suitable membership card with them at the time of purchase. Consumers A and D both expressed frustration with the fact that they could not use an ID card (such as a drivers license) to identify themselves as qualifying for a benefit: *"You must be able to find my information based on my name!"* A typical behavior for a consumer was to keep only the most important cards in the wallet, and taking along other cards only when having a specific benefit in mind. Some businesses employ loyalty stamping cards that are good for a special offer after a number of purchases. These are not loyalty programs per se, and the consumers seem to treat them similarly. These cards are usually the ones that get lost, aren't kept in the wallet or simply do not accumulate enough stamps to be ever redeemed.

The interviews indicate that a significant amount of loyalty benefits may actually go unredeemed. Introducing a service that would allow customers to better redeem their loyalty perks could increase loyalty program costs for businesses. If the amount of unredeemed benefits is significant to businesses, they may actually be uninterested to offer customers improvements in this area.

From the consumer perspective loyalty benefits are problematic. The interviews indicate that complexity results in apathetic consumers not joining a loyalty program, and the ones who join may not understand the benefits. A successful loyalty program should be simple and also address utilitarian buyers differently from impulse buyers. Benefits need to be more personalized for people who approach shopping in a rational manner.

8.4   Conceding consumer privacy

Most businesses start loyalty programs not only to invite longer customer relationships, but also to accumulate customer intelligence for developing the business. Customers can be identified and their shopping behavior modeled in great detail. These models of customer behavior can then be used to design and evaluate marketing programs. Inventory control, product placement and direct marketing are good examples. Consumers can view that such intelligence results in disadvantegous reduction of privacy for them [Arantola03].

Majority of interviewees did not view the disclosure of personal information or shopping behavior as a problem. Some described it as being a natural trade in exchange for getting loyalty benefits. *"Regular business"* was an attribution made by one person. Multiple people felt their customer data

wouldn't pose a problem even if it leaked into public view: *"Nobody is interested in my shopping behavior.. it might be different if I was a public figure."* Consumers A and D perceived the reduction of privacy as discomforting, but still had enrolled in many different loyalty programs.

Personal information can be used for harmful purposes if it is compromised. Interview subjects reported trusting their existing loyalty program providers to handle this information in a secure manner. "*I am more willing to disclose demographic information than personal information"* was the opinion of one interviewee. Anonymity in a loyalty program was seen as value-adding, but not of paramount importance.

Some consumers were interested in observing their own shopping behavior, and suggested that it would desirable to be able to easily view it for their loyalty programs. They reported that certain loyalty programs do send monthly reports on shopping and accumulated benefits, but these are not disseminated to be helpful for the consumer. A loyalty program that did this could help solve an important customer problem.

Based on the interviews it seems that customer privacy is not a relevant problem for customer loyalty programs. Consumers expect a level of security in the handling of their personal information, but otherwise are willing to disclose personal data in exchange for loyalty benefits. Therefore the hypothesis of privacy being a relevant customer problem appears to be flawed.

9 Small business interviews

Six different small businesses were interviewed for the study. Overview of these interview is presented in the section 9.1. This is followed by an analysis of the feedback gathered on hypothesized customer problems. Response to problems of customer tracking, customer loyalty and new customer acquisition are analyzed in sections 9.2, 9.3 and 9.4 respectively.

9.1 Overview

Lines of business that were interviewed varied between services and products including sales of groceries, books, coffee and sports. The problems businesses tackle are defined by their offerings, the types of customers they attract and the industry constraints they operate under. A very important goal for the interviews was to understand how various types of businesses differed in their perception of the hypothetical problems. Summary of the interview results is shown in Table 9.1. The results were scored according to how interviewees responded to the problem slide presentation (See Appendix 3).

■ = Business indicated the problem as being important and was seeking a solution

■ = Business recognized the problem, but was not actively seeking for new solutions

■ = Business indicated the problem does not exist or does not require a new solution

	Shopping behavior of individual customers is difficult to track or assess	Customer loyalty is profitable but difficult to induce	Means for acquiring new customers are expensive and difficult to evaluate	Line of business
Business A	■ green	■ green	■ green	Sports centre
Business B	■ green	■ black	■ grey	Organic food store
Business C	■ black	■ black	■ black	Antiquarian
Business D	■ grey	■ black	■ grey	Book store
Business E	■ black	■ green	■ green	Cafeteria
Business F	■ black	■ black	■ black	Cafeteria

Table 9.1: Importance of hypothesized problems for small businesses

One aim of Customer Discovery is to find a market where the problems fit [Blank12]. Interviewing a multitude of businesses allows to test if the hypothesized problems are real and if they apply across different lines of business. For this reason a larger sample size would have provided results with more breadth.

Small businesses typically operate with a few key personnel, and their perception defines what problems are important to solve. Their approach to marketing was often based on their professional background. The majority had not studied marketing, but instead employed different ad-hoc marketing methods, learning by trial-and-error. The longer the business had been operating, the more firm were the attitudes on what means would work for marketing.

Businesses A, B and E had operated for a fairly short time, and this was apparent in that they were still actively seeking answers to the marketing problems described by the hypotheses. These businesses had experimented with Groupon, which is indicative of their willingness to invest in novel marketing schemes. Established businesses were more committed to their existing approaches, and often saw the hypothesized problems as something that they had already addressed based on their business environment. It was also apparent the small business operators were very busy. The everyday managing of business took up the majority of their time, and so marketing was something that they addressed on the side.

More than one respondent indicated that there were insufficient resources for marketing. Good resources in general were seen as difficult to acquire. Good customer service personnel were deemed invaluable and scarce. The general consensus was that customer behavior was difficult to influence, some even going as far as saying that customers behave as they do no matter what.

The interviews indicate that the hypothesized problems as stated are only somewhat appropriate for small businesses. Interviewees found the conceptual framework and terminology of customer relationships alien, and during the interviews they were often unable to perceive what possibilities customer loyalty programs could offer. This problem arose because prior to the interviews the researcher had no relevant domain knowledge on the everyday thinking of small business owners. As stated by Customer Discovery, a business founder should know the customers as well as they know themselves [Blank12]: after a round of direct interviews with small businesses, the researcher is now better equipped with suitable domain knowledge.

Lack of small business understanding was vividly illustrated by one question intended as warm-up. Question number three for small businesses involving yearly net revenue was visibly uncomfortable for some respondents. It was wrongly assumed that this question would be easy to answer, when instead interviewees were perhaps embarrassed by not being able to confidently state their own financial figures. Another possible explanation is that asking income-related questions was going against cultural and social norms for casual interaction.

In order to attract better feedback in future iterations of Customer Discovery, the statements should be re-formulated in a practical language that small business owners could better relate to. Formal

marketing terminology should be changed to simple natural language. The interviews generated information on how the problems and solutions should be altered so that small business owners would relate to them on a practical level. New ideas on what problems and solutions would be relevant to small businesses are included in section 10.1.

9.2   Tracking customer behavior

Many large Finnish retail chains currently track the behavior of their customers. This is achieved with loyalty programs where consumers willingly disclose their information in exchange for benefits. Data on customer behavior can then be used to measure and test the effect of business operations. One example is tracking the effectiveness of a discount. Businesses can observe whether a reduced price makes customers buy enough to make the price cut feasible. Big corporations can afford large investments in infrastructure to make such customer tracking possible, whereas small businesses usually simply choose not to track their customers in any systematic way.

The interviews showed that all small business owners placed high value on personally engaging with their customers. At each business there was a clear striving to create a feeling of welcome for the customer. Owners revealed that the key to this was the unique atmosphere and authenticity of their business. some saw the idea of tracking customer behavior as going against these principles: *"It would be against our general attitude."* There were exceptions to this rule, with business A for example employing hired customer service personnel. This business saw great value in tracking customer behavior, and plans were being made to invest in a system to provide this. The size of the business clearly had an effect for seeing value in customer behavior tracking. The smaller the business, the more value was placed in purely human customer relations: *"First of all it is remembering the customer...what he ordered last time."*

Another variable that influenced perception of customer tracking was the profile of a typical customer. One cafeteria described their customers as being directed by purely feelings: *"Customers visit on a whim...we go by the feelings of the customer".* Business D commented that their customers were so wildly different that categorizing them would be next to impossible. Such sentiments were accompanied by feelings that tracking customer behavior was not very relevant for business.

Businesses A and D did part of their sales on the internet. They reported being able to track customer behavior in this area of their business. When asked to clarify it became apparent that the businesses did not currently use this information, and data availability was dependent on a third party that provided the internet sales. This meant that only limited data was available, and it was not used at all.

A general conclusion based on the interviews is that small businesses do not see a need for a customer tracking system. This is either because it wouldn't solve important problems or small businesses cannot yet understand the benefits. Customer Discovery suggests that in this situation one should try to find small businesses that have realized the need for customer tracking ahead of the general mar-

ket [Blank12]. These 'earlyvangelists' can verify that a business opportunity has a verifiable base on real customer need. If small businesses on the leading edge of technology still do not see the need for customer tracking, it would indicate that the hypothesized problem does not warrant solving.

Business A was actively seeking a solution to build customer loyalty, and revealed having already contacted contractors for suggestions. They had identified a need to make regular customer service more effective at the counter. Similarly they saw it as a problem that with changes in customer service personnel, regular customers would no longer be identified at the counter. The business had an online reservation system in place, and they were considering how to extract customer behavior information from it. Business A was unique among the respondents in that hired employees were crucial to its operation. This also explains their unique need for customer tracking, and indicates that mid-sized businesses could find the problem of customer tracking more relevant in general.

Business A would be an ideal earlyvangelist candidate for validating a solution to the problem of customer tracking. Other small businesses did not see the problem and could not imagine related business opportunities. This indicates that the problem description is either inaccurate or too far in the future for an average small business. The interviews indicate that a more suitable problem statement would be the desire for authenticity that all small business reported.

9.3   Inducing customer loyalty

All small businesses believed that customer loyalty was a result of accommodating customer service, authenticity, and unique atmosphere that their own business provided. More than one business mentioned that exceeding customer expectations was something that was conducive to loyalty. Business D also mentioned that having a local monopoly was important. Customers will not travel a long distance just for the sake of being loyal to a certain business.

Some business owners had improvised solutions for building loyalty. A number of businesses offered stamp cards to their customers. These are paper cards that are stamped at the time of each purchase, and can be redeemed for benefit after the customer accumulates a certain amount of stamps. Known loyal customers were given discounts on an ad-hoc basis. Small business operators get to know some of their regular customers personally, and loyalty was considered to be a part of this friendly relationship. Businesses were carefully observing what kind of a relationship each customer would prefer: *"Some regular customers want to come in and talk, and others just want to browse"*. Businesses A and C reported organizing social events for the customers to build a community around their customer base. By their account such friendly gatherings offered opportunities to personally engage with their customers, and this would result in an atmosphere conducive to loyal customers.

Businesses did not measure customer loyalty. They could not for example assess the effectiveness of stamp cards, but used them anyway in the hope that they bring about loyalty. *"Some customers want those kinds of trinkets, and others don't care"* was the answer of one business operator when asked about their stamp cards. Owner of business D made a comment that well characterized the prevalent

view of customer loyalty: *"Some customers will hate you no matter what and others will love you just because they like your face".* The prevalent opinion of small businesses was that they would offer their best face for customer service, and customer loyalty would follow.

An important insight gleaned from the interviews was that small business owners make a lot of decisions based on their feelings. Marketing is not done by the book, but rather by choosing things that 'feel right'. This has important implications for selling products to small businesses. Feeling-based decision making also supports the idea that real customers should be asked to validate problems. Only the problems that small businesses feel are important matter for selling them a solution. Based on the feedback generating customer loyalty is something small businesses feel strongly about. But the problem and solution must address the personal authenticity that small businesses strive for. This is the competitive differentiator between small and large businesses.

9.4 Acquiring new customers

The problem hypothesis for small business customer acquisition was that it is expensive and difficult to track. The interviews provided mixed feedback for this. In some cases businesses were able to track effectiveness of customer acquisition, although they did not do it systematically. Small business owners preferred customer acquisition methods with low monetary costs, preferring to develop their own solutions to marketing problems.

Paper advertisements were unanimously seen as being expensive. Some businesses had used them, and more than one indicated that it was a good idea to provide a cut-out discount coupon that the customer could bring along to the store after seeing an advertisement. This allowed small businesses to track how many customers a paper advertisement would generate. The general opinion was that the cost-benefit ratio of paper advertising was not good. Many interviewees reported instead favoring distribution of self-made paper advertisements to nearby areas.

Internet marketing was seen by most as being good for getting new customers. Facebook pages were perceived as analogous for company home pages: *"You must be in Facebook nowadays..you must be seen there."* The attractiveness of Internet marketing lies in its relatively low set-up cost. When the cost of marketing is low, businesses seem to pay less attention to its effectiveness. Interviewed owners did not analyze traffic coming to their Internet outlets, and they were unable to estimate its impact for new customer acquisition. None of the respondents perceived this as being a problem.

Businesses that had used Groupon for new customer acquisition were intentionally recruited for the interviews to learn about motivators for new customer acquisition. The success this deep discounting scheme has enjoyed with small businesses well illustrates the importance of feeling-based decision making. The benefits of using Groupon for customer acquisition are emotionally satisfying. Small stores can quickly attract a large amount of customers and revenue. Calculating the price of Groupon marketing requires data-driven analysis which can only be done after-the-fact. The more customers a Groupon campaign generates, the more immediate losses it usually generates. One criticism

presented against Groupon is that customer acquisition through it is unlikely to result in loyal and profitable customer relationships [Mitaru11]. Of the three businesses interviewed that had used Groupon, none had data on the loyalty of customers they acquired with it. All businesses however suspected it was not high.

Business F was operating a franchise. The owner expected customer acquisition innovations to come from the franchise company, and was not very interested in the hypothesized problems. In the case of marketing innovations to franchises the target of a Customer Discovery interview should be the franchise operator. Customer Discovery clearly states interviews should target decision makers [Blank12], because their feelings are the ones that matter for selling a product.

There was a clear consensus on what was the best way to acquire new customers: recommendations given by satisfied customers. This was seen as flowing naturally from the atmosphere and customer service small businesses sought to provide. Established businesses saw new customer acquisition as less of a problem, whereas new entrants felt it was currently more of an issue for them. The interviews indicate that new solutions to the problem of customer acquisition would be welcome. In the mind of small businesses the proof of effectiveness becomes relevant as the cost of acquiring customers increases.

The suggested future solution for acquiring customers was the only solution in the problem-solution presentation that generated marked interest with small business owners. The solution suggested that loyal customers of a small business could send recommendation offers to their friends. This way the business would gain a credible recommendation that would likely result in a new customer visit. The recommendation offer would be some kind of a redeemable perk, for example discount on a certain product.

The reasoning behind this solution is that word-of-mouth marketing is very effective, and a recommendation by a friend is much more credible than regular marketing. All respondents were intrigued by the idea, with businesses A and C and E indicating it would be worthwhile to implement.

10 Results

The interview study provided a practical example on how to mitigate business, customer and software risk in the early stages of a software startup. Entrepreneurs can launch startups based on business opportunity hunches. Introspective ideas are especially prone to the aforementioned risks.

To combat these risks the entrepreneur conducts open-ended interviews with future customers. By engaging in open discussion with customers the entrepreneur gains domain knowledge for understanding the customer point of view. The discussions validate and expand the thinking of the entrepreneur to make sure that the business idea is developed into a viable business opportunity.

Implications that the interviews pose for the business idea are discussed in section 10.1. This is followed in section 10.2 with suggestions on how the Customer Discovery process should be continued.

10.1 Business idea

Customer feedback had a big impact on introspective problem hypotheses formulated for the business idea case. The results are summarized in Tables 10.1 and 10.2 for consumers and small businesses respectively.

Consumer interviews proved that improved privacy would not make a customer loyalty program more attractive. This insight mitigates first of all software risk, as implementing needless privacy features would be wasteful. Further it seems that consumers would find easy joining and simplicity as compelling features for a customer loyalty program. Using a smartphone may in fact be too complicated for joining, as consumers appreciated that for some existing loyalty programs the use of a common ID card was sufficient. This scheme would also allow targeting a larger market than consumers who own a smartphone.

Consumers also recognized the difficulty of getting benefits from loyalty programs. The discussions led the entrepreneur to more carefully consider the nature of current loyalty schemes. Offering clearly identifiable benefits may not be desirable for small businesses, as it would make it more easy for consumers to compare businesses based on factors like price. This could increase competition. It could also be that a large amount of redeemable loyalty program benefits currently go unredeemed, and easier tracking would allow consumers to better capitalize on them. Small businesses might be against this, although more interviews would be required to verify this hypothesis.

Feedback from the interviews hints that consumers might want to get more information on their own purchases, but further interviews would be required to validate this hypothesis. This could be a potential idea for a new solution.

Consumer problem hypothesis	Insight gained from interviews
Joining a customer loyalty programs requires too much effort	• Real inconvenience for consumers • Solution would have biggest impact for apathetic consumers • Consumers would welcome using a common ID card for loyalty programs (such as a drivers license)
Keeping track of loyalty memberships is difficult and the benefits are unclear	• Relevant problem • Influences decision of apathetic consumers to join a loyalty program
Customer loyalty programs compromise privacy	• Not a problem for consumers • Consumers would instead want to track their own purchases

Table 10.1: Feedback on consumer problem hypotheses

Discussions with small businesses showed that the entrepreneur did not have enough domain know-ledge to come up with suitable problem hypotheses. Feedback was confounded by the fact that small businesses found the marketing terminology used in the interviews foreign. The problem statements should therefore be stripped of these terms, and future interview templates should be pilot tested to ensure they are fully understandable for the target group.

Even with the terminological handicap the interviews clearly showed that the data-driven customer relationship management is not something small businesses desire. Instead a small business customer relationship solution should focus on helping personal engagement and community building.

Interest in the proposed future solution for new customer acquisition proved that generating word-of-mouth marketing is a a relevant problem for small businesses. This is an example of a feature that clearly warrants implementation.

Small business problem hypothesis	Insight gained from interviews
Information on individual customer behavior cannot be gathered or used for any benefit	• Not a relevant problem • Small businesses value personal engagement with customers over running a data-driven business • A market may exist for medium-sized businesses
Customer loyalty is profitable but small businesses lack means to induce it	• Small businesses want to build customer loyalty with personal engagement and community building • Marketing terminology related to customer relationships was inappropriate for interviews
New customer acquisition is difficult and its effectiveness is difficult to assess	• Marked interest for future solution • Monetary cost of new customer acquisition a major factor

Table 10.2: Feedback on small business problem hypotheses

10.2 Customer Development

Applying the process of testing the problem revealed that important problems were identified for consumers, but not for small businesses. The revenue model of the business idea is based on small businesses paying for a solution, which means their important problems absolutely must be identified. Therefore the problem statements and the business model should be updated to better reflect the improved customer understanding gained from the interviews. This should be followed by a new iteration of testing the problem.

For the consumer side of the market, the hypothesis about privacy being a problem should be removed. The two remaining statements are appropriate, and could act as a basis for a solution. The possibility of developing a technology to read common ID cards should be evaluated, as it has wider market appeal and consumer sentiment toward it was shown to be very positive. It could also be less costly to implement. Another argument for common ID cards is that NFC is unlikely to gain widespread popularity in the very near future, as both Apple and Nokia have chosen not to support the technology in their latest smartphones. The new EU drivers license being introduced 2013 may offer possibilities for easier electronic identification, and would need to be studied further.

Small business problem hypotheses should be completely reformulated in a language familiar to small business owners. Since the solution involving friend recommendation gifts generated marked interest, one appropriate problem statement could focus on the problem of generating word-of-mouth marketing.

Customer data-analysis and loyalty programs are concepts small business owners do not like, and instead a proposed solution could instead focus on enabling personalized communication and feedback between customers and small business owners. Such a solution could for example facilitate querying a store for a product without visiting, making an order to pick up later or sending customer feedback directly to the small business owner. Updating the problem hypotheses also entails making appropriate changes to the business model.

For the studied case it was shown that Customer Development proved very effective for disapproving flawed problem hypothesis. In the the mind of the entrepreneur the problems of the customer may seem obvious, but as stated in Customer Development, *"no business plan survives first contact with customers"* [Blank12].

Business opportunity development in a startup is an iterative process. In the beginning the business plan includes only guesses. In order to make better guesses the entrepreneur needs to learn from the customers, and incorporate this learning into a business model that gets better with every new bit of acquired information. This was clearly shown to apply for the studied case. Flawed hypotheses were rejected by customer feedback. Customers brought to light new ideas helpful for business opportunity development. The entrepreneur accumulated domain knowledge and was forced to critically evaluate introspective hypotheses based on customer feedback.

Interviews allowed the entrepreneur to gauge buying intentions from real customers. False confidence in a hypothesized solution is quickly erased, as proved to be the case for the consumer privacy solution. Positive customer feedback instead reinforced confidence that a product could be sold, as was shown with the word-of-mouth marketing solution for small businesses. This is the major difference between Customer Development interviews and other methods that can be used to develop products in cooperation with users. Customer-Centered Design for example attempts to understand the user in order to develop the right product for the user. With Customer Development the main purpose is to develop a product that the entrepreneur can effectively sell to the user.

When the exact same software product can be effectively sold to many customers, the business is said to scale well. This is why the entrepreneur needs to be actively involved in collecting data from customers. If the entrepreneur limits the interviews to only collecting data on user needs, the end result could be a very good custom solution, but still not a scalable business opportunity. The study case showed that the initial planned solution could have been possibly sold to one business which recognized the hypothesized problems. Customization of the product would still have been required, and only to better serve one particular customer.

Customer Development offers a sales-oriented approach for discovering product requirements. In the software engineering world requirements are understood to represent user needs. The lesson of Customer Development is that for packaged software, those requirements should equally represent sales and marketing needs.

11 Conclusions

A software business idea was conceived by the author from the idea that consumers find current customer loyalty programs offered by businesses to be inconvenient. A hypothesis was crafted that consumers would appreciate using a smartphone to manage their loyalty program memberships, and small businesses could benefit by being able to track the behavior of their customers. The recent introduction of NFC technology provided a possible solution for easily identifying customers at store counters.

Launching a software business based on an entrepreneurial vision such as this is fraught with risks. Customers may reject the product if they do not recognize the benefits similarly to the entrepreneur. Even if customers appreciate the product, the business fundamentals may prove infeasible for a sustainable company. Software development in startup usually lacks processes and instead relies on key individuals. Unless software features are closely linked to important customer needs, a startup may waste valuable resources by implementing features that prove irrelevant when a software product is introduced to the market.

Research on entrepreneurial opportunity development indicates that good business opportunities are not conjured from thin air. Instead technological business opportunities are made when customer needs are first understood, and then a suitable technological solution is found to solve that need. In the past, lack of customer and market understanding has been a major contributor to startup failures.

Every novel business idea has a large degree of uncertainty built within. The development of a sound entrepeneurial opportunity requires identifying business-critical unknown factors as early as possible, and quickly adjusting the business idea as new information is uncovered. Customer Development is a methodology to mitigate major startup risks by developing customer understanding alongside business development. Customer Discovery is the first stage of Customer Development, and it entails first verifying that a planned business opportunity is real. Customer problems and solutions critical to the business idea are concretely stated, and then tested by interviewing customers in their natural environment. The business idea is reworked until feedback clearly indicates a sound business opportunity has been found.

The Business Model Ontology provides a framework to record all important hypotheses of a business model. When used in conjunction with Customer Development it can be used to keep track of hypotheses underlying the planned business. Construction of a holistic business model ensures that all aspects of the business are planned for.

This study tested the aforementiond software business idea to understand how conducting Customer Discovery by means of customer interviews would impact an entrepreneurs' introspective hypotheses on important product features.

For the studied case a number of problem and solution hypotheses were shown to be incorrect. The business idea conjectured that consumers would be wary of customer loyalty programs because of privacy, but this was shown to not be the case. Also, small businesses were not concerned with being able to track their customers in a technical manner, which meant that all three hypotheses involving small businesses were inaccurate to varying degrees.

Re-iterating a business idea with Customer Discovery requires that new ideas are first discovered. A number of such ideas were found with the interviews. Consumers indicated they liked existing customer loyalty solutions where common ID cards could be used for identification. Instead of desiring more privacy, some consumers instead indicated they would desire a solution that would allow them to more easily track their own purchases.

All small businesses saw personal engagement instead of tracking with technology as the appropriate way to induce customer loyalty. New ideas would still be required to formulate these facts into new problem and solution hypotheses. For future Customer Discovery iterations it would be beneficial to conduct direct customer observation in addition to interviews, as it could lead to more ideas being generated on possible problems and solutions.

Generating word-of-mouth marketing was recognized as an important problem for small businesses, and the solution offered for this purpose was seen as appropriate by a number of interview subjects. As a beneficial side-product of the interviews, the entrepreneur gained valuable domain knowledge on the customers. As a result, the entrepreneur is now better positioned to formulate hypotheses that target customers could better relate to.

In this specific case conducting a round of Customer Discovery prior to starting software development provided a number of advantages. If the product had simply been developed as first planned, it would have been extremely difficult to sell to small businesses. While consumers still could have appreciated the product, unnecessary software features would have been implemented to fulfill the imaginary need for better consumer privacy. Instead of spending costly resources to fully re-engineer a product, in this case business development could now proceed with re-formulation of hypotheses and a new round of interviews with customers.

For software engineering Customer Development represents a sales-oriented approach to eliciting software requirements. It is a form of high-level requirements elicitation, where the main purpose of software features is to facilitate a minimal product that can be effectively sold. As a final note it can be said that an important advantage of using Customer Discovery is the conversion of false optimism into true confidence. Verified signals of customer acceptance allow an entrepreneur to purse an uncertain venture on a firmer footing.

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Appendices

Appendix 1. Business Model Ontology taxonomies

Value Reasoning	The reason why the offering could be useful to the customer.
USE	Use of the offering provides value for the customer in the form of answering a customer need.
RISK	Allows the customer to reduce a risk. Insurance contract is an example of an offering that reduces risk.
EFFORT	Reduces customer effort in some aspect. Making things easier and cheaper fall into this category.

Table 11.1: Reasoning of an offering

Life Cycle	The stage of the value proposition life cycle where an offer produces value for the customer [Osterwalder04].
CREATION	Value is produced when the offering is created. An example is user-customizable products.
PURCHASE	Value is produced when the customer makes a purchase. An efficient buying process is an example.
USE	Actual use of the value proposition.
RENEWAL	Stage where customer renews a value proposition. Upgrades, loyalty offers are examples of this stage.
TRANSFER	Ending the use of the value proposition. Trading a product for something else is a good example.

Table 11.2: Stage of value proposition lifecycle

Price Level	Price of the value proposition compared to competitors.
FREE	Self-explantatory. Open-source software for example.
ECONOMY	A more attractive price for customers than with most competitors.
MARKET	Price comparable to competitors.
HIGH-END	High end of competitor prices. For instance luxury goods.

Table 11.3: Price level of value proposition

Value Level	Value offering compared to competitors.
ME-TOO	Offering does not differentiate from competitors significantly. Products competing solely with price for example.
INNOVATIVE INNOVATION	Combines a competitors offering with an innovative improvement. For example cereal boxes with toys inside innovate with regards to regular cereal.
EXCELLENCE	Value pushed to an extreme. Hand-made mechanical watches opposed to digital ones.
INNOVATION	A revolutionary innovation: essentially a product that has no competitors yet. As an example, introduction of the credit card revolutionized payments.

Table 11.4: Value offered compared to competition

Customer Buying Cycle	Phase in the customer buying process.
AWARENESS	Gaining the customers attention, getting the customer to evaluate the value proposition and creating brand awareness. Advertising for example.
EVALUATION	Providing the customer detailed information on the value proposition. Most sales activities fall under this category.
PURCHASE	The buying transaction. This phase can be contract negotiation for instance.
AFTER SALES	After the buying transaction. Activities like product support.

Table 11.5: Customer buying cycle

Customer Equity	Value that the business attains from a customer relationship.
ACQUISITION	Creating a new customer relationship.
RETENTION	Increasing the lifespan of a customer relationship.
ADD-ON SELLING	Selling more to existing customers.

Table 11.6: Customer relationship equity

Function	Which function the relationship mechanism serves.
PERSONALIZATION	Building a relationship by answering the indidvidual needs of a customer.
TRUST	Establishing trust with a customer, meaning that customers know what to expect from a customer relationship.
BRAND	A mechanism aimed at building a distinctive brand.

Table 11.7: Function of relationship mechanism

Activity Level	Level of a value configuration activity.
PRIMARY ACTIVITY	Activity directly involves creating, marketing or delivering a value proposition critical to the business model.
SECONDARY ACTIVITY	Other than primary activities.

Table 11.8: Activity levels in a value configuration

Value Chain	Activities associated with delivering a product.
INBOUND LOGISTICS	Receiving, storing and disseminating inputs to the product.
OPERATIONS	Activities that transform inputs to a product.
OUTBOUND LOGISTICS	Activities related to collecting, storing and distributing the product the the buyer.
MARKETING AND SALES	Inducing and providing means for a buyer to buy the product.
SERVICE	Providing service or enhancing the product.

Table 11.9: Value chain configuration stages

Value Network	Value created by linking customers together.
NETWORK PROMOTION AND CONTRACT MANAGEMENT	Inviting customers to the network and managing activities related to network contracts.
SERVICE PROVISIONING	Managing existing networks and billing.
NETWORK INFRASTRUCTURE OPERATION	Maintenance and running of physical and information infrastructure.

Table 11.10: Value network configuration stages

Value Shop	Activities that seek to determine customer needs to deliver value. Service-oriented value propositions.
PROBLEM FINDING AND ACQUISITION	Discovering problems to be solved and finding solutions.
PROBLEM SOLVING	Generating and evaluating alternative solutions.
CHOICE	Choosing among alternative solutions.
EXECUTION	Communicating, organization and executing a solution.
CONTROL AND EVALUATION	Measuring and evaluating the solution for the problem.

Table 11.11: Value shop configuration stages

Agreement Reasoning	Why the agreement is beneficial for the business.
OPTIMIZATION AND ECONOMIES OF SCALE	An agreement optimizes business operations. Outsourcing for example can be used to optimize costs with regards to a activity.
REDUCTION OF RISK AND UNCERTAINTY	A partnership that reduces certains risks for the business.
ACQUISITION OF RESOURCES	Using a partnership for resources that the business cannot easily acquire for itself. Expanding to foreign markets with the help of a partner for example.

Table 11.12: Partnership agreement reasoning

Pricing Method	
FIXED	Self-explanatory.
DIFFERENTIAL	Pricing that is determined by dynamic factors, such as customer characteristics, product features, or volume.
MARKET	Pricing based on market conditions.

Table 11.13: Revenue stream pricing

Stream Type	
SELLING	Exchanging a product or service for money.
LENDING	Lending something for a period of time for a price. Bank loans for example.
LICENSING	Selling or lending the right to use something. Different from selling and lending in the sense that a license can be potentially sold an unlimited number of times.
TRANSACTION CUT	Selling the activity of making and organizing a deal between parties.
ADVERTISING	Promoting something publicly for a price.

Table 11.14: Revenue stream type

Appendix 2. Small business interview outline

(1.) Name of the business:

(2.) How many people does the business employ:

(3.) What was your last yearly net revenue:

4. What methods do you employ for new customer acquisition:

     4.1 Advertisements:

     4.2 Internet:

     4.3 Other:

     4.4 Have you employed Citydeal, Groupon, Offerium or Facediili for marketing your business:

          4.4.1 What benefits have you aimed for:

          4.4.2 What benefits have you gained:

     4.5 What comes to mind when thinking about customer acquisition specifically in your industry:

5. What does customer loyalty mean to you:

     5.1 What is its significance in your own industry:

     5.2 What methods do you use to increase customer loyalty to your business:

          5.2.1 Benefits for loyal customers:

          5.2.2 Advantages for large purchases:

6. How does customer behavior influence your business operation:

     6.1 What information do you on customer relationships:

     6.2 What means do you use to acquire information on customer behavior:

Appendix 3. Small business problem statement slide

PROBLEM	SOLUTION TODAY	FUTURE SOLUTION
Shopping behaviour of individual customers is difficult to track or assess	Focus on observing customer masses	A customer loyalty program can be joined by using a mobile phone. The business gets information on shopping behaviour through the loyalty program
Customer loyalty is profitable for a business, but inducing it is difficult	Focus on good customer service and unique quality products	Offer customers benefits for loyalty. These benefits can be accumulated and redeemed with the customers phone
Means for acquiring new customers are expensive and their effectiveness is difficult to evaluate	Acquire new customers with advertising, special offers and recommendations of loyal customers	Loyal customers get 'recommendation gifts', that they can give to their friends

Appendix 4. Consumer interview outline

(1.) Do you own and use a smartphone:

(2.) Does your smartphone have mobile internet:

      (2.1) Model of the phone:

(3.) What consumer benefit-, loyalty- or membership programs are you currently enrolled in:

      (3.1) Plussa:

      (3.2) S-Bonus:

      (3.3) Stockmann:

      (3.4) Others:

(4.) What membership cards do you have with you right now:

5. Imagine entering a small business store on a whim: this business is previously unknown to you. What merchandise or services could this store be offering:

6. Now imagine you decide to buy something. At the counter you are offered a possibility to join a customer loyalty program. What does this make you think:

      6.1 Do you join the customer loyalty program:

7. Now picture a friend of yours, someone you frequently exchange messages such as e-mail or SMS with. You receive an e-mail from this friend, recommending a small business and offering an opportunity to join their customer loyalty program.

      7.1 Do you join the customer loyalty program:

8. What comes to mind when you think of customer loyalty programs:

9. What do you think of the customer loyalty programs gathering information on your buying behavior:

Appendix 5. Consumer problem statement slide

PROBLEM	SOLUTION TODAY	FUTURE SOLUTION
Customer loyalty programs are beneficial, but joining them is not easy	When I feel that a customer loyalty program offers me great benefit, I will join despite the effort required	I can join a customer loyalty program by opening an application from my smartphone, and showing it at the store counter
Customer loyalty memberships are difficult to keep track of and the benefits are unclear	I keep the most important customer membership cards in my wallet	I can see all my customer loyalty memberships and benefits from my smartphone
Customer loyalty programs gather intelligence on my personal information and shopping behavior	I trust that customer loyalty programs employ my information responsibly and ethically	I can decide whether my personal information is disclosed to a loyalty program I'm in