Early Product Design in Startups: Towards a UX Strategy

Laura Hokkanen(✉), Kati Kuusinen, and Kaisa Väänänen

Department of Pervasive Computing, Tampere University of Technology,
Korkeakoulunkatu 1, 33720 Tampere, Finland
{laura.hokkanen,kati.kuusinen,kaisa.vaananen}@tut.fi

Abstract. Startups often begin with minimal product versions to test and validate their product ideas as early as possible. Therefore, the first versions of the product need to be able to communicate the product idea to users in order to receive meaningful feedback. However, if user experience (UX) of the product is poor, users tend to concentrate on the disturbing user interface instead of the actual product idea. Thus, we suggest that startups should have a UX strategy from the beginning in order to understand their goals related to UX at different stages of product maturity. To this end, we conducted an interview study with eight Finland-based startups and 13 participants. Our results contribute towards understanding both needs for early UX design in startups as well as the restrictions for UX work that the scarce resources of startups induce. This work contributes to creating a UX strategy model for startups.

Keywords: User experience · Startup · Lean · User interface · Design

1 Introduction

Startups are known for their small resources and highly innovative products. The possibility to create software products for global markets seems to be open to everyone who has ideas and perseverance. Customer development model [1] as well as Lean startup method [10] have been introduced to help startups to find scalable business models. Aforementioned approaches suggest having close co-operation with potential customers while experimenting rapidly. Such practices aim at ensuring that the resulting product is profitable instead of building a product first and then trying to sell it. For design and development of products, processes and ways of working need to be adapted to the startup context which is characterized by scarce resources, time pressure and uncertainty [9].

The ability of delivering good user experience (UX) from the earliest product version can enable positive word of mouth advertisement [3] and keep interested people as users for longer. Regarding the UX design, the traditional major upfront user research and design that aims at a complete product design is not suited to the needs of startups: Due to the scarce resources, startups need to do "just enough" to test their idea without creating waste in the process. A startup might change the product drastically based on an experiment with end-users. This means that also the targeted user group can change which can make the conducted user research and other upfront work futile. While

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startups should minimize the time invested in the design work for early product versions, the UX design of the product still needs to have an adequate quality level to enable testing of the product idea [5].

In this paper, we present results of an interview study conducted to gain understanding of how startups approach UX design in their early product versions in eight startups in Finland. All the startups were building, or had recently built, first versions of their products. Through the interviews, we answered the following two research questions: (1) how startups start the UX design of their early product versions, and (2) which skills and resources help startups in achieving the desired UX in the first publicly launched products.

The rest of this paper is structured as follows. Section 2 presents related work considering startups, their development styles, and UX practices. In Sect. 3 we describe our study context and methods. Section 4 presents results including approaches, practices and resources for early UX design in startups. Section 5 gives discussion over the results and presents the final remarks for the paper.

2 Related Work

Software startups are characterized by both engineering and business concerns to a more extensive degree than established companies [11]. Those concerns include being young and immature, having scarce resources, operating with novel technologies in dynamic markets, and being influenced by divergent stakeholders such as investors, customers, partners, and competitors [11].

Customer development [1] and a continuation of it, Lean startup method [10] have been gaining attention as new entrepreneurial practices. Academic research on how well Customer development and the Lean startup method work is scarce but they have been widely adopted by incubators, accelerators and university entrepreneurship courses [12]. The Lean startup [10] suggests that by validating hypotheses of customer's problems startups find a problem/solution fit. After this the startup should validate what product would suite to the solution. Validation should be done by building minimum viable products (MVP) and measuring the key performance indicators when "getting out of the building" with the MVPs. This means validating with real potential customers.

UX, defined as "*a person's perceptions and responses that result from the use or anticipated use of a product, system or service*" [6], has become an important competitive advantage in e-commerce [2]. UX is commonly divided into practical-oriented and hedonic dimensions [4]. Basically, UX development consists of activities related to gaining understanding of the user and the context of use, designing and developing for good UX, and evaluating the resulting outcome [6]. UX design has roots in human-centered design (HCD) [6]. HCD starts with thorough user research and design activities which are followed by design iterations. Similarly to software processes, startups generally do not afford to follow rigorous methods for UX development. However, little is known about UX development in startups. May [8] describes lessons learned from applying lean methodology in a startup and recommends planning the UX activities from early on. Klein [7] presents lean startups light weight methods for UX work. Finally,

Hokkanen and Väänänen-Vainio-Mattila [5] reports that lack of UX expertise hinders the startup from collecting useful feedback from users.

3 Methods, Research Context, and Participants

To gain insights of startups' approaches on UX design for early product versions, we conducted a semi-structured interview study with eight startups. One to three entrepreneurs from each startup took part in the interview. The eight interviews were conducted by one researcher and they lasted between 50–90 min. Each interview session consisted of questions aiming to understand the state of the startup after which their current goals and work practices were discussed. The focus of interviews was on UX related practices and motivations. However, activities such as product and business development were also covered on a high level to understand their effects on UX design. The interview data was analyzed from written transcripts of voice records. The analysis was done by iterative thematic coding. Main themes were first established based on interview questions. Sub-themes emerged from the data.

All the eight startups were small, employing one to six persons, and creating one single software product. Table 1 presents characteristics of both the startups and the interviewees. The startups are numbered from ST11 to ST18, to differentiate them from the startups in our previous study [5].

The interviewees were all working full time in their startups. The majority of them (H04, H05, H07, H08, H09, H10, H13) had a university degree in ICT related subjects. H04 and H13 had majored in Human-Computer Interaction (HCI). Two of the interviewees had their educational background in design, H01 in visual arts and H06 in visual design. H11 and H12 were finishing their bachelor's degree in mechanical engineering at the moment of the interview. H02 had a bachelor's degree in international business. H03 had not continued studies after the secondary school. Regarding the gender of the interviews, all were males except H01.

All the startups except ST15 were currently actively developing a product version. ST15 had completed a pilot project with a customer. ST14 had launched their first product version over a year ago and it was building a renewed version of their product for which they were redesigning the UX. Other startups were in more similar states. Startups ST13, ST16, ST17 and ST18 were preparing a release of an early product version for users. Startups ST11, ST12 and ST14 were currently collecting user feedback of their early product versions. Two startups (ST15, ST17) currently had no UX related expertise in their team. Other startups had at least one person with expertise on HCI or design. Despite all the startups had found people interested in their product, none of the companies had steady revenue streams. Proof of scalability of the business model was still unestablished.

Table 1. Summary of the participated startups and interviewees. CEO = Chief Executive Officer, UXD = User Experience Designer, B2B = Business to Business, B2C = Business to Consumer, SaaS = Software as a Service.

Startup	Interviewees	Company established (year)	Size of startup (persons)	Product	Market
ST11	H01 (CEO)	2013	1	Online market-place	B2B, B2C
ST12	H02 (CEO), H03	2014	6	Online market-place	B2C
ST13	H04 (UXD)	2014	4	Online community and market-place	B2B, B2C
ST14	H05, H06 (CEO)	2014	2	SaaS for pet owners	B2C
ST15	H07 (CEO), H08	2011	2	Automation software	B2B
ST16	H09 (CEO)	2014	5	Mobile sports application	B2B, B2C
ST17	H10, H11, H12	-	3	Mobile personal finances application	B2C
ST18	H13 (UXD)	2015	3	Mobile social application	B2C

4 Findings

4.1 Approaches to Early Product Versions

All interviewees described that they had started with an early product version that was minimal and restricted or very restricted on functionality compared to their vision of the product. Startups were familiar with the Lean startup concept of MVP but only ST16 used the term to describe the product version they were currently building. All the startups approached product development in a lean way: They implemented only the core functionalities to gain feedback instead of building the complete product at once.

ST14 had built a product version first for their own use only. ST15 developed a safety critical product that needed a certain level of quality to be usable and they had started with building a simulation of their product. At the time of interviews, startups ST13 and ST16 were preparing for a closed trial of their product with invited users. Startups ST11, ST12, ST17 and ST18 were building or currently had a version accessible to anyone.

All the startups were endeavoring towards achieving various goals with their early product versions. Via early product versions startups expected to receive overall feedback (ST11, ST16, ST17), get better understanding of their potential customers or users (ST16, ST18), and see how users would use their product (ST18). Startup ST14, which was replacing the underlying technology mainly for improving UX, considered it very important to test the technical viability of the product. Other goals were to get a proof of interest in the product to convince potential partners or customers (ST15, ST16) or to start receiving revenue (ST14). Testing the product idea was the major concern for startups when building the early product versions. Startups looked for validation of the product idea but also for specific features and visual design.

4.2 Design Practices for Early Product Versions

Decision-Making Process. The question of what to include and what to exclude when building an early product version is crucial. Startup team's vision combined with their skillset defined what was done. ST12 had made a feature list for the whole product. Priorities where decided together with the whole startup team by choosing "*the minimum ones so [that] this service can work*" (H02). Also, in ST14, ST15, ST16, and ST17, the interviewees described using their own vision while deciding on the contents of the early product version. In ST14 and ST17, the startup team iterated user interface (UI) ideas by exchanging ideas and sketching them, after which one of the members implemented the sketches as working software. ST16 had approached the design decision by what they need to communicate with the product and then thinking of how to realize it. ST11 consisted only of one person (H01) and she alone designed and implemented the early product version based on her ideas and skills.

The products of ST11, ST12 and ST13 had customers in B2B and B2C markets. All of them prioritized the B2B customers' needs in the early product versions and wanted to get feedback from them. H07 showed images of UI to their pilot customer to gain feedback on their UI design and then developed it further. ST18 had an idea of what their product would be in five years and H13 described the first early version to be the smallest possible core part of it: *"Well, this [product version] that we are building now is as simple as it can be. Basically you can't even do anything with it."*(H13). ST17 was mainly concerned about the functionality at the time of the interview and the plan was to make the product visually more attractive later.

Practices for Understanding Users. Talking with people was the most common way to gain feedback for product improvements but it required finding the right people to talk with. Four of the startups (ST12, ST13, ST15 and ST16) had contacted potential customers and users face-to-face to show the UI design and ask questions of it. H13 had conducted a major user research study on their product as part of his thesis work, and

the startup had utilized those results in their product development. ST11 and ST17 had little or no contact with end users. H01 had discussed with her acquaintances about the product idea but she mainly trusted on her own experiences on working with people who are potential users. In ST17, the team had discussed with their friends but they had not gained much value for product development from these discussions since their idea seemed to be too vague for their friends to relate to it. ST12 had eight test users that they contacted directly to get feedback on improvements in the early product version. ST14, that had had the first product version available for users for some years, had received feedback by asking their customers and web page visitors to answer surveys. ST12 had recently been contacted directly by people who had difficulties using their product.

Interviewees from startups ST11 and ST12 said that the quality of UX had an effect on collecting user feedback: If UX was poor, each user had to be explained that the product is incomplete. In such cases startups gained feedback mostly by asking feedback and comments from users personally, which required plenty of resources. Startups ST13, ST17 and ST18 considered that UX is important when validating the product idea. Startup ST14 believed that good UX would create competitive edge and that they should put effort on it before investing on marketing.

4.3 Relevant Skills and Resources in UX Work in Startups

Table 2 presents skills and practices that had helped the startups to design and implement UX of their current or earlier product versions. Finding the minimal implementation that would communicate the product idea and provide value to users was seen to be most important. This included choosing only what was necessary for the early product version.

Table 2. Skills and practices that startups found useful in creating UX for first product versions

Skill or practice	Startups
Graphic design skills	ST11, ST12, ST13, ST15
Feedback collection	ST12, ST15, ST17
Producing minimal implementation that brings value to users	ST12, ST13, ST15, ST16
User testing	ST12, ST13, ST14
Usability theories or heuristics	ST12, ST13, ST14
Recognizing good UI solutions from other products and mimicking them	ST13, ST14, ST17, ST18
Social skills	ST17
Iterative process	ST16

Startups ST13 and ST18 had all the necessary skills and resources to do UX work so far since they both had UX experts in the founding teams (H04,013). H02 would have

acquired services to evaluate and improve UX if they had had money for it (H2). Interviewees from ST14 believed that having had skills to do user tests would have helped them. In ST17, they considered that their team had coped with UX so far but they were not prepared to analyze and utilize user feedback they would receive in the future. In ST11 the lack of implementation skills caused problems in providing desired UX.

5 Discussion and Conclusions

All the startups had adopted an approach of starting with a limited product version based on some studies and own hypotheses, and then iterating the version with real users and customers. Good UX was considered important for the product's success. None of the interviewees said that the innovation and uniqueness of the product alone would make the startup successful. Instead, the way in which the startup was able to deliver the solution was what mattered. The process of getting from an idea to a great product was perceived to require experimentation and feedback outside of the company. Of the interviewees, only H04 and H13 who had background in HCI were able to compare different means of gaining understanding of users and evaluating the UX.

As our study is based on interviews of 13 entrepreneurs from eight small software startups based in Finland, it naturally is limited to a narrow part of startups. However, considering that the related research on startups in general – and especially on UX work in startups – is very limited, our study offers new insight both for the academia and for startups. Future work on the topic of UX work in startups is required to build better practices for startups to design UX for early product versions.

Creating good UX from early on enables startups to collect meaningful feedback and gain positive attention even with restricted implementations. In addition to this, startups need some expertise for collecting and utilizing feedback. The limitations in resources and skills in a startup could be overcome by developing a feasible strategy to understand users and design UX that communicates the product idea and desired UX from early on. Based on our results we will start to form a UX strategy model to guide startups in gaining user information and designing UX.

References

1. Blank, S.: Why the lean start-up changes everything. Harv. Bus. Rev. **91**, 63–72 (2013)
2. Cyr, D., Head, M., Ivanov, A.: Design aesthetics leading to m-loyalty in mobile commerce. Inf. Manag. **43**(8), 950–963 (2006)
3. Füller, J., Schroll, R., von Hippel, E.: User generated brands and their contribution to the diffusion of user innovations. Res. Policy **42**, 1197–1209 (2013)
4. Hassenzahl, M.: the interplay of beauty, goodness and usability in interactive products. In: Proceedings of HCI. Lawrence Erlbaum Associates, vol. 19, no. 4, pp. 319–349 (2004)
5. Hokkanen, L., Väänänen-Vainio-Mattila, K.: UX work in startups: current practices and future needs. In: Lassenius, C., Dingsøyr, T., Paasivaara, M. (eds.) XP 2015. LNBIP, vol. 212, pp. 81–92. Springer, Heidelberg (2015)

6. ISO: 9241-210:2010. Ergonomics of human system interaction-part 210: human-centred design for interactive systems. International Standardization Organization (ISO). Switzerland (2009)
7. Klein, L.: UX for Lean Startups: Faster, Smarter User Experience Research and Design. O'Reilly Media, Inc., Newton (2013)
8. May, B.: Applying lean startup: an experience report: lessons learned in creating & launching a complex consumer app. In: Agile Conference (AGILE), pp. 141–147. IEEE (2012)
9. Paternoster, N., Giardino, C., Unterkalmsteiner, M., et al.: Software development in startup companies: a systematic mapping study. Inf. Softw. Technol. **56**, 1200–1218 (2014)
10. Ries, E.: The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses. Random House LLC, New York (2011)
11. Sutton, S.M.: The role of process in a software start-up. IEEE Softw. **17**, 33–39 (2000)
12. York, J.L., Danes, J.E.: Customer development, innovation, and decision-making biases in the lean startup. J. Small Bus. Strateg. **24**, 21 (2014)