

Customer Feedback Prioritization Technique: A Case Study on Lean Startup

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Abstract. Nowadays, a startup is being very popular and entrepreneurs are increasing day by day. Though we are watching many successful startups e.g. Dropbox, Amazon, Viber and so on, the list of unsuccessful startups is very long. Who is being successful they must have their own strategy, which they apply in their startup and get success. In lean startup strategy, the customers give feedbacks about the startup and the owner understands the demand of customers by collecting feedback from customers and provides service according to the feedback. On the other hand, all the feedbacks from the customers are not important for a startup project. So it is needed to separate or prioritize feedbacks which are needed to execute the startup project. But there are not sufficient techniques for prioritizing the feedbacks collected from customers. By conducting a systematic mapping study and a case study (interview and observation is used), we propose a technique which will be used to prioritize customer feedback in lean startup. This technique will be helpful for the startup projects to become successful.

Keywords: Lean startup · Customer · Feedback · Prioritization technique

1 Introduction

Software engineering is a specific domain in engineering where software is developed by following appropriate principles, procedures, and methodologies. From the very beginning of software development to maintaining of the developed product, all steps are covered according to software engineering, that ensures a solution that is reliable, usable, maintainable and meets the customer requirements properly. From the very first stage to the last stage of system development, it shows a systematic and disciplined way to develop the system properly. Moreover, customer support must be given after system publishing. Most of the time customer support is like as maintaining the system, fixing the bugs, updating

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system features according to customer demands [1]. Nowadays, people want to launch startup where those people are known as entrepreneurs. This enterprise could be a technology-based startup or anything else. But most of the time a large number of entrepreneurs and their startup cannot be successful. Eric the writer of the Lean Startup book, think that the number of unsuccessful startups is very high [3]. Again, it is mentioned 75% of startups is unsuccessful [2]. A startup starts with a unique idea and launches the new product based on the idea in a very uncertain condition. A startup is always started for the unknown customer and customer demands always changed [3]. The entrepreneur does not know that the customer will like the product or not. Nowadays, many entrepreneurs use a way to reduce the nonsuccessive ration of startup by using a methodology which is called 'lean startup'. The lean startup 100 methodology helps the entrepreneurs to test their idea to the customer by interviewing them in several ways. They able to justify their ideas before launching their product for the customer when the following lean startup. Customer feedback has played an important role in a lean startup [2]. To use customer feedback on startup is not a very old concept, but very effective for every startup project. If the startup able to fulfill the user or customer expectation, then the startup can be successful, though being successful is a continues process. If the customer is not satisfied with the service on startup, then it could be the end of the startup. A startup has not finished after publishing the product in the market because it may not meet the customer demands properly. When the customers use the product they may have some others demands which they expect on a startup product again, they may dislike some features and do not use those features which is a waste in the lean startup [2]. It is important to know the feedback of customers to be successful in the startup world.

At present, the customer feedback is not a new concept for ensuring the system usability and availability. But all the feedback from customers is not required to execute. It is needed to select the proper feedback for execution on startup service. Otherwise, the wrong feedback may be selected for execution. There are not sufficient resources to select the proper feedback or to prioritize the feedback which is given by the customers of startup. This could be a big problem when the number of the startup is large. So that the intention of this research is to propose a model for prioritizing the feedback of customers for making the system more usable. Therefore, we prepare the research question as:

RQ: *How practitioners prioritize customer feedback on lean startup?*

The rest of the paper is organized as follows. In Sect. 2 we present related work. In Sect. 3, research method that was used to data collection which is followed by results in Sect. 4. Discussion and conclusion presented in Sects. 5 and 6 respectively.

2 Related Work

The concept of using customer feedback on startup is not very new idea, where one of a principle of a lean startup is 'Learn', which may compare to customer

feedback [3]. Every startup can improve its level when they use customer feedback properly on a startup project. To find out the areas of improvement can be identified from the feedback which is given by different customers [2,4]. Using feedback in a startup is not a very old idea, for this reason, there are insufficient resources to work with the customer feedback, mainly how to use the feedback properly. According to the search result of different database about the topic of this work, the researcher cannot find any method or framework which is suggested to prioritize customer feedback for a lean startup. But everywhere it is said that the feedback from customers is important for the improvement of startup. In [16] represents a model for lean startup. Opti4Apps [17] a development model, which is mainly user-centric feedback revealing approach, for lean development to achieve high software quality for any startups. By conducting semi-structured interviews from three Finnish software companies, this [18] paper shows benefits, challenges and some recommendations for practising lean startups. Focusing on the customer satisfaction, an Axiomatic Design [19] is proposed for verifying the customer needs for lean startups.

3 Research Methodology

In this research, two research methods have applied. First one is a systematic mapping study and the second one is a case study. The case study is conducted based on the data which is found in first research method. The overview of research methodology is given in Fig. 1.

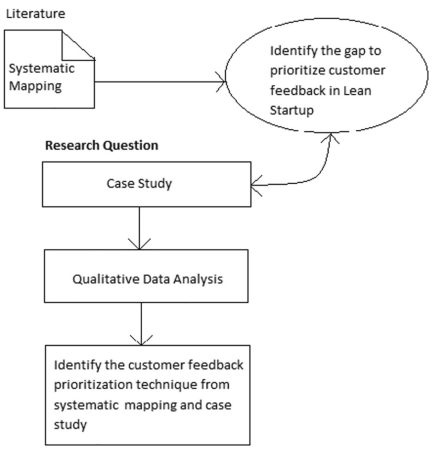

Fig. 1. Research overview

3.1 Systematic Mapping Study

The systematic mapping study is used in this research to find out the related research work and reduces the possibility of research bias. According to Kitchenham [5], a systematic map is a method that can be conducted to achieve an overview of a particular research area. The Systematic mapping study is used to identify the current study of the research area. It is used to find out research gaps to contribute in the research area. The following steps are proposed in the systematic mapping study [5,6].

3.1.1 Sys-Map Step 1: Definition of Research Questions (Research Scope)

In the systematic mapping study, the research question is the main key factor rather than in a systematic review [8]. The research question has to manipulate in such way that reflects the main and secondary goal of the systematic mapping of the study [5,6]. This is essential to identify the quantity and related works and result according to the research questions [8]. Following these guidelines, the researcher has specified a research question (RQ) in the field of the lean startup project.

3.1.2 Sys-Map Step 2: Formulation and Execution of Search Queries (All Studies)

The search string has to make according to research scope. The search strings are used to find the primary studies from digital sources or databases. The purpose of this search strategy is to identify and formulate search terms, define search process and resources to be searched [5,6].

Search Strategy- Lean Startup, Customer, Feedback and Prioritization have multiple dimensional contexts. It is observed that, multiple studies stated a keyword in different terms and values. Therefore, snowballing approach [9] is performed to manipulate all possible related keywords. Search strings are specified systematically drawn through the following steps:

- All the possible keywords are recognized by looking over titles, abstracts and index terms of studies.
- Relevant papers are identified by scope area and intervention in terms of research question [9].
- Thesaurus is used to find synonyms for keywords.
- Search strings are specified systematically by using Boolean operators such as AND, OR etc.

Search Strings- (“Customer” OR “Customers” OR “User” OR “Users”) AND (“Feedback” OR “Feedbacks”) AND (“Prioritization” OR “Priority” OR “Prioritize”) AND (“Lean Startup” OR “Lean Start Up”).

Both manual and automated search is conducted for this research. Different websites have searched for finding out relevant resources.

3.1.3 Sys-Map Step 3: Screening of Studies (Relevant Studies)

To find out the relevant studies inclusion and exclusion criteria is used in this research. Those papers are included which are relevant to the research question, those papers are not taken which are not relevant to the research question. The following steps are followed to find out relevant studies:

- The primary studies written in English and not to be duplicated.
- In the second step the title and abstract are used to find relevant studies. If those are not clear, then introduction and conclusion section could be acknowledged.
- The relevant studies that are in full text and clear those should be included. If they are not available (either digital or printed copy), then they should be excluded.
- The relevant studies should be included which are matched with the research area.

3.1.4 Sys-Map Step 4: Developing Classification Scheme (Key Wording Using Title, Abstract and Index Terms)

Classification schemes are used to shape the objectives of our research. According to Kitchenham [7], key-wording is done in two steps. First, the researcher read the title and abstract to find the keywords and concept that reflect the contribution of research also reduce the time and effort. This is the foundation level of classification scheme. Second, if abstract and title is not clear, then the researcher read the introduction and conclusion to take a depth knowledge of papers in detail.

3.1.5 Sys-Map Step 5: Data Extraction Process and Mapping of Studies (Systematic Map)

After completing classification scheme, the related study was mapped according to plans of classification scheme. The studies are listed and from all of those listed studies, the duplicated studies have been removed.

3.2 Case Study

Qualitative research is an approach which is used to understand the phenomenon and to solve the 'how' or 'why' problem. Qualitative research helps to know the background reason, opinions and motivations. The purpose of this research is to provide such a way for startup projects so that they able to identify a statistical data of customer feedback prioritization methodology.

In this research, the exploratory single case study is used. As exploratory case study is more appropriate where in-depth and detail knowledge is not available [10]. Participation and structured are two types of observation. In participation, researcher needs to involve with the selected case and in structured researcher need to look from outside of the selected case [10,11]. The researcher involved with the team to perform the participatory case study. In this process,

the researcher has got a depth understanding about the process because the researcher has become a part of the daily routines, events, rituals and interactions with the company [11].

3.2.1 Sampling

The startup company, which is investigated named it as Alpha. Because that startup company does not want to publish their name in this research. The Alpha company only provides the team structure of the feedback collection team and customer feedback decision making team. That is shown in following Table 1 The customer feedback collector collect feedbacks from customers once in a month using email, phone calls, Skype. After collection of feedback the team makes known the lead engineer. They discuss about the feedback in meeting where three to five members include based on the feedback types. The CEO and the lead engineer must attend at the meeting. They discuss about the feasibility of the collected feedback. Then they make decisions which feedback needs to implement first and which is not needed to implement at all.

Table 1. Different teams of alpha

Team name	Team member
Customer feedback collection	1
Customer feedback decision	Not fixed (Usually 3 to 5 including lead engineer and CEO)

3.2.2 Interview Design

This is the most common format of data collection in qualitative research. According to Oakley, qualitative interview is a type of framework in which the practices and standards be not only recorded, but also achievable, challenged and as well as reinforced [12]. Most of the qualitative research interviews are either semi-structured, lightly structured or in-depth [13]. In this research the researcher conducted a semi-structured so that the interview section could be more flexible and follow up questions can arise. The researcher has some predefined questions for the interview.

3.2.3 Data Collection

The researcher performed four working day participatory observation case study to find the answer to our research question. After getting in-depth knowledge about the research area, the researcher also performed semi-structured interviews with the feedback collection team and with the leader of the feedback decision making team. Overview of this single case study is given Table 2.

Table 2. Research activity

Activity	Participants	Focus area
Observation	Customer feedback collection team Customer feedback decision making team	Focus on customer feedback, feedback collection process, feedback priority process
Interview	Customer feedback decision making team leader	Challenges to collect feedback, decision making to implement the feedback

Six types of data collection technique proposed by Yin [15]: documents, archived records, structured interviews, direct observation, participatory observation and artifacts. Firstly, the researcher performed participatory observation to get data. After gathering knowledge and data, reviews some demo email document where the feedback collection team asks for feedback to the customer. The researcher maintains a notebook to write down daily observational data so that those can help future linkup between our findings. Data also collected from some demo email document. During this observation on of the researcher maintain communication with team leader over the phone call and face to face discussion to know more about customer feedback prioritization techniques they have used in their lean startup. Secondly, a face to face semi-structured interview with the team leader was performed which lasts for 30 min. The interview topic covers the feedback prioritization technique, where customer feedback is given priority first, how to set the value of customer for startup and some follow up questions.

3.2.4 Data Analysis

The data are collected from different data sources. But that data can not be understandable by the reader. Well organized data help the reader to understand the context or the purpose of research clearly [14]. Both researcher documented the result of the interview together. We used qualitative data analysis technique which is called thematic data analysis technique. Both researcher revisited the recorded interview multiple times and triangulate this with the data which is collected in observations. Using mind mapping tools (e.g Xmind) our findings are

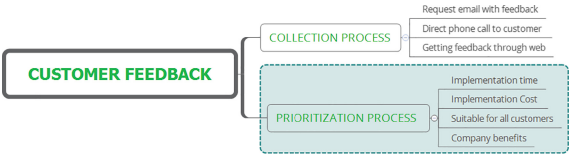

Fig. 2. A map of customer feedback

mapped for better visualization (See Fig. 2). The research question is mapped by several research methodologies and steps. Every step is mentioned in Table 3.

Table 3. Mapping of research questions to research methodology

Research questions	Research step	Research methodology
How practitioners prioritize customer feedback on lean startup?	To identify the techniques of feedback prioritization, which is collected from customers on a lean startup project?	Systematic mapping Case study Qualitative data analysis

4 Results

In this section, the results are reported along with categorization based on the research theme. The findings from observation is outlined. An overview of different findings is listed in Table 4.

Table 4. Findings from case study

Dimensions	Findings
Feedback collection	Email; Website; Phone calls; Online calls
Feedback priority	Team meeting; Customer value; Implementation time;
Techniques	Implementation cost; Suitable for all customers

The team usually uses emails, websites and talks to customer for collecting their feedback about the service customers are used. The team notes down all the collected feedback and documented those feedbacks to discuss in the meeting. When the sufficient feedbacks are collected, then they decide to call a meeting to discuss and make decisions about collected feedbacks. In the meeting, minimum three to five members are present. In every meeting the CEO and the lead engineer must be participating. In our observation, we have found that the feedback collector team presents the collected feedbacks in the meeting and make acknowledged the team about the customers and customer's feedbacks. At the meeting the members discuss various issues about the collected feedbacks and make a decision to implement customer feedback based on the value of customer in this project, the implementation time of feedbacks and the implementation cost.

4.1 Feedback Collection Process

The feedback collection team where the minimum member can be only one, the team collects feedbacks from customers in every month. Most of the time they use email for collecting feedbacks from their customers. They ask their customer about the service they are using through email and they note down the feedback given by the customer even if the customer does not reply they also note it down. The website is also used to get feedbacks from customers. They ask their customers about the services through the website. Sometimes they use phone calls and Skype calls depends on customers choose. If customer wants to give feedbacks over voice call only then they use this process.

4.2 Feedback Selection

Feedback selection is an important part for every startup. This startup team is always concern about customer's comments and feedbacks. When the feedbacks are collected from customers, they call a meeting to discuss about collected feedback. In this meeting they select the feedbacks from all of the collected feedback. The CEO, engineer head and other members discuss about the feasibility of collected feedbacks. They give priority the customer value, the development time and cost of feedbacks, the necessity of feedbacks for all customers than a single customer, the business benefit of collected feedbacks for this project is important. Measuring all of those issues they select feedbacks to be implemented from all feedbacks which are collected from customers. The startup project controller thinks that, those customers who are using their service more than others; they are most valuable customer for this project. They always give priority to those customers and give priority to their feedbacks for future release. If the customer has social value or brand value, not a prime user of this project, they also rated as a valued customer for this project. Those feedbacks are not selected which are more costly and take more times to be implemented. This is an important issue for giving priority or prioritizes the customer feedback. If the customer feedbacks take more time that must be a cause for increase cost. So they discuss the possible implementation time and cost of feedbacks before select feedbacks. If the collected feedbacks are not adding any value for all of the users or a maximum number of users then those feedbacks are not selected. They think that, their startup should be comfortable and useable for all of their targeted customers. If feedbacks are demanded by a customer which is not important for others at all, they skip this feedback of that customer for that time. They store this feedback for future; it may be used in the future, but not at this time.

Their main purpose to make profit from the market using their project. If any feedback does not meet the purpose of the project or does not profitable this feedback is not accepted at this meeting. It is observed that the selection of feedbacks must depend on the above issues. At that meeting they ensure that the selected feedbacks will add value for their project for a long run. After this feedback selections meeting the selected feedbacks are delivered to the development team for implementation.

5 Discussion

In every startup feedback is very crucial for the improvement of the startup project. The customers of startup project give feedbacks after using the service provided by the startup. In this research it is agreed with the startup project team that feedback plays a very important rule for the improvement of startup, but the most important thing is, the necessary feedback should be identified by the project operator. This also agreed with them, that every startup has its own way to identify those feedbacks which are important for the improvement of startup, in other words, every startup prioritizes their collected feedbacks which are collected from customers in their own way. Most of the time few techniques for prioritizing feedback matched with each others. After the observation by the researcher in this research, the researcher categorized the feedback prioritize technique in two major parts. The first one is related to the project and the last one is related to the customers. Which is related to the company that may be called as Look At Them process or LAT process and the second one may be called as Look At Me process or LAM process. After the categorization of the feedback prioritization process, the researcher proposes a new process which is depended on LAT and LAM process and named this new process as Look At Star process or LAS process.

5.1 Look at Them Process or LAT Process

The researcher are observed that, the startup project team always concerned about their customer. They try to listen them and try to provide service as their customer demand. They collect feedback from their startup user or customer for implementing those feedbacks. This agreed that, when the feedback is collected from customers the value of the customer for this project should be noted. The customer value depends on the type of startup project. The project team decides which customers are valuable to them. Again, the feedbacks may not be taken even if those are given by the valuable customers when those feedbacks are not usable for most of the customers of startup project. If those kinds of feedbacks are selected which may be used by a few of the startup's customers that may be costly for the startup, because most of the time that kind of service may not be profitable for startup project. When the feedback does not come from valuable customer, but that may be used by most of the customers in this project, then that kind of feedbacks may be taken for implementation.

5.2 Look at Me Process or LAM Process

Feedbacks are collected from customers and implemented for using by customer on a startup project for making profit and ensure the stability of the startup project. This is identified from the startup project team that, if the feedback takes much time to be implemented, most of the time that kind of feedback should not be taken for implementation. If that kind of feedback is taken, then it may be a reason for the expenses of extra money, which may increase the

cost of startup project. It would be a good idea when those kind of feedbacks is taken for implementation which may be implemented within a short time. The implementation time is directly related to the cost of the startup project. Those kinds of feedbacks should not be selected which have no relationship with the startup goals, though it is from valuable customers.

5.3 Look at Star Process or LAS Process

LAT and LAM process are divided the feedbacks into two major parts. Now to make feedback prioritize, it is needed to make a scale for LAT and LAM process. The scale has a maximum value of five stars. When the feedbacks are divided into LAT and LAM, that time those feedbacks must be given a start mark where the maximum start is five. After dividing and giving stars to all feedbacks then all the feedbacks need to be sorted according to their star, where the most given star feedback will be placed at number one. Then the implementation team will look at the stars of the feedback for future execution.

6 Conclusion

The summary of all activities and the outcome of this research is discussed in this section. The main purpose of this research is to find out the prioritization techniques of customer feedback on lean startup. These techniques will be helpful for the startup projects to become successful. When the technique will be used in the lean startup project, the time and cost will be reduce of startup. The systematic mapping study and case study methodology is used in this research. The following sections are the summary of the findings of research question:

The gap of research is found out through systematic mapping study. The research question is established after the systematic mapping study. The relation between customer and lean startup is described in different studies. It is also described that the feedback of customer is most important for the lean startup project. It is found that there is not any proper technique used to prioritize the feedback of customers for future execution, which is motivated to find out a prioritization technique of customer feedback.

The case study methodology is used in situations when the depth knowledge of any research area is not available. According to the research question the depth knowledge of this research area is not sufficient. So case study needed to conduct for this research. Interview and observation are used to collect data for this research. By conducting interviews it is identified that, the investigated company has used their own process to prioritize the customer feedback for their startup project. When they prioritize feedback they consider that is that customer value, time and cost of implementation feedback, the suitability of feedback for all customers. The researcher proposes a new technique for prioritize customer feedback after conduction interviews and observation. Where in the first phase it is needed to use LAT and LAM process and in the last phase it is needed to used LAS process.

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