1. INTRODUCTION

Lean Startup Methodology is seen as a concept used by a group of people which work on a new, risk heavy product, even if the group is working for a larger corporation. It should be noted that when approaching risk, instead of the company history, many existing organizations are indeed still startups. The development of new products is extremely important for new venture creation, yet the variability of new product development is staggering high (Gregurek, 2015). With that fact in mind, there are three fields where startups have a high risk rate:

a) Technical risk, known as product risk, in which the question being asked is: Can we produce it?
b) Market risk, known as buyer risk, which introduces the question: If we produce it will people use it/buy it?
c) Business model risk, which addresses the question: Can we make money off of it?

The question of which risk is dominant often arises and in the majority of the cases it is the customer risk, even though it has been put under product risk in academia. The reason behind this is the common misconception that people will be interested in the end product, with not enough research being done on the topic beforehand. If the assumption is made that demand indeed exists, companies are tempted to create a product without first doing the necessary research regarding the customers and their desires. That is indeed a huge risk due to making assumptions about customer behaviour.

Startup organizations are generally different on a case to case basis, but they have a binding factor of the tendency to focus on one aspect and disregarding others. According to Cizmic and Crnkić, startups are regarded as entrepreneurial organizations which research repetitive and scalable business models (Čizmić, Crnkić 2014). Startups in their creation and organization are inspired by creativity. The creation of such an organization is filled with risks. The bigger the risks, the bigger the profit in majority cases. With that, it's important to identify and analyze risks which are at the core of such activities. Startups are important on many levels, due to the hard and grueling process of starting a business from the ground up, in which many fail. The number of failed ventures is high, one third of them fail in the first year, while 50% cease to exist in the first five years (Shane 2008, Wise, 2013). That said, startup attempts lead to innovation, new work placement creation and overall increase in economic prosperity of a country. They build healthy, sustainable and competitive environments.

The goal of the paper is to show the necessity of looking at risks in creation of startups and recommend a model of managing risks which will in turn allow the creation of business models with decreased risk levels. Startup attempts and technological innovations through history have always been essential to economic growth (Crosby, 2000). Research is conducted on the basis of technology with the involvement of users/testers as a communication mean (Teece, 2000).

2. THEORETIC BACKGROUND

Economists use two simplified models (Thiel, Master 2014) to better explain the difference in approach to business: perfect competition and monopoly; in which there is a segmentation between national and innovation monopoly. While national monopoly comes to existence by getting a license from the government to be able to work in a certain area of expertise, innovation monopoly is created through the originality of the entrepreneur. Monopoly is what every company strives for. That said, even if a startup
obtains a monopolistic position on the market, it is not guaranteed to keep it. In a dynamic, creative business environment, competition is on every corner. Competitors will add new lines of product, decrease margins and add new services to attempt to take a share of the market. A startup which gets the lion’s share of the market is in most cases a engine of process. The achieved extra profit allows the creation of long-term plans and financing of ambitious R&D projects.

The topic of risky startup ventures is debated in academia in various spheres of research (McDougall & Robinson 1990; Zahra 2006). Entrepreneurs are overly confident about market entry and overestimate their chances of success (Cassar 2014). It is well known that a new startup venture is complex and that new product development, financial and organizational structuring is at the top of the list of tasks of the entrepreneur. Investments directed towards the technological industry add extra reasons for concern. The life cycle in technological industries are far shorter than the overall industry average and the hurdles for copying products are much lower. Entrepreneurs in technological industries are in very uncertain and ruthless development markets, where an increasing speed of innovation, product development, customer acquisition, communication and competitors growth is present – with other aspects being existent that can affect the chances of success (Göktan, Miles 2011.).

Academic literature provides a detailed overview of the characteristics of successful business startups and a well defined reasoning behind startup failures. McGrath (1995), which introduced innovation planning, highlights that its easy to make projections and plan in bigger organizations, but that management practices fall short in small, dynamic and insecure startups. Margaretta (2002) states that the quality of a business plan is essential when deciding about investment opportunities. Teece (2010) describes the business model as a tool with which entrepreneurs can find out if customers want or need a product and how much are they willing to pay. Chesbrough (2010) adds that business models are a source of potential advantage over competitors. Furthermore, Rajgopal (2003) states that business models add direction to the overall effectiveness of the venture. Business models are positioned in the cross section under strategic management research, as well as entrepreneurial research making them units of analysis of entrepreneurial ventures (Morris et al, 2005).

Teece (2010) states that the early business model is usually far from ideal and is always changed during the process of the formation and growth of the venture, while Shirky (2008) makes the argument that having ideal business model isn’t essential to success, arguing that flexibility is the most important factor. He states that the entrepreneur has to be able to adapt and change the business model according to the situation in the venture.

Ries (2008) argues that most failures of new ventures are based to the lack of customer communication. He emphasizes the need for customer feedback throughout the new venture creation process, stating that a new venture requires in-depth understanding of their potential customers and their behaviors. Looking from the demand side, we observe that customers want a solution that is fitting to their needs (Teece, 2010). Additionally, these customer needs should be fulfilled as fast as possible, due to the nature of high-tech sectors in which competition barriers to entry are low.

Investments based on technology should focus on short term goals and not get caught up in other, more traditional industry investment approaches. They should be flexible due to short life cycles. That requires that the entrepreneur makes fast decisions and creates a minimum viable product (MVP) for the market, with fast testing and iterations with potential customers. This allows him to understand the market even before entering it with a product.

3. LEAN STARTUP METHODOLOGY

The term “lean” was first introduced by Krafcik (1988) in his paper “Triumph of Lean Production Systems”. Lean manufacturing or lean production, is a multi-dimensional approach that incorporated various managerial practices, including just-in-time, work teams, quality systems, cellular manufacturing, supplier management and so on. The core idea is that these can be entwined to create a streamlined, high quality system that produces at the pace of customer demand with little to no waste
(Shah, Ward, 2003). It combines the principles used by Toyota and training within industry (TWI), which was a training program introduced by the United States Department of War in 1940s – compensating manpower by fast tracked internship programs that lasted 40 hours.

Toyota Production System (TPS) is structured around two main concepts: just-in-time and “autonomation” which stands for intelligent automation (Ohno, 1990). The idea behind TPS is that in the case of perfect production flows, there is no inventory; customer value features are the only product features shipped to market, making for a simplified product design, which puts effort only into the features the customer values (Naylor et al., 1999).

According to Karlsson and Ahlstorm (1996) lean production covers everything in an organization starting from product development to its distribution to end users. They mention that the lean manufacturing or lean production system is consisted of lean product development, lean supply chain, lean procurement and lean distribution. The focus for lean startup methodology falls under the lean product development aspects.

Lean product development offers the potential to decrease the development cycles and increase the quality of the end product. It incorporates several interrelated techniques including supplier involvement, cross-functional teams, concurrent engineering, and integration of strategic management of each development project. Lean startup methodology has set out to expand on this approach and incorporate “agile software development” principles alongside creating new key concepts for new ventures to incorporate in their business daily practices.

3.1. NEW STARTUP VENTURE

A new venture is a process of organizing a new organization, in which four variables are taken into consideration:

1) individual,
2) environment,
3) process
4) organization (Gartner, 1985).

A new startup venture can be defined as a business unit which is searching, obtaining and holding an advantage over the competition, while using its resources (Oviatt i McDoughall, 1994).

Throughout the last decade, new studies have emerged on the topic of creation and shaping startup ventures, with theoretical guidelines and empirical research focused on different fazes. The process of creating new startups happens in a set order: a new idea is formed, a legal entity is formed, financial support is found, employees are hired, and so on. Vesper (2010) states five key attributes for founding a startup: idea, product, necessary technical expertise, contact within the industry and users.

Individuals must overcome three major obstacles in the process of self-employment: aspiration, preparation and input (Katz, 1990). Aspiration is needed by the entrepreneur, that is, a real sincere urge to be self-employed. Preparation is important to understand where and what amount of time should be put – be it raising funds or doing market research. Input is important as the individual has to work for very little or no financial incentive and has to be able to dedicate long hours for the venture to even be created, which is by no mean a guarantee of success.

3.2. DEVELOPMENT OF A NEW PRODUCT

New product development is usually a multi-step process, which starts with the idea development and moves ultimately to the commercialization of the product. The desired product and type of innovation infers how complex the process of product development will be (Gregurek, 2015).
An incremental innovation in which only a certain feature is added on to an existing product may not even require a full NPD process (Zahay et al., 2011). On the other hand if we look at a radical innovation, it can require a full development process. We will look at the customer as part of the NPD process, but first we need to explore the steps of the process to understand where the customer fits in. Typically, NPD consists of generic five-stages (Crawford and Di Benedetto, 2000):

- Opportunity spotting and selection
- Generation of concept
- Critical evaluation of concept
- Development of product
- Product launch

This five-stage model overlaps with others in NPD literature, including the ones by Song and Montoya-Weiss (1998), Urban and Hauser (1993), Johnne and Snelson (1988), while Cooper and Kleinshmidt’s (1986) stage gate model provides a more in-depth approach touching on seven stages of new product development. We will look more closely at Crawford and Di Benedetto (2000) typical five stage model;

- **Opportunity spotting and selection** is the first faze that uses the current customer as a source of information regarding the needs of the market to create the initial new product idea. Crawford and Di Benedetto (2000) describe this stage as the creation of new product opportunities through spinout of existing products. Potential customers are essential to evaluating the attractiveness of the market and assessment if there is place for a new product or not.

- **Generation of concept** is the second faze in which the information collected from opportunity spotting and selection is applied into the initial product concepts. The customers are used to provide technically oriented feedback and to narrow down the possibilities, pinpointing the most attractive concepts.

- **Critical evaluation of concept** is the third stage in which a clear vision of a concept is needed, provided by the previous stage. The concept needs to be accepted by customers and should be the most promising solution. This stage sees concepts solving problems or providing additional options to customers regarding a existing solution.

- **Development of product** sees the transition from concepts into product development. The concepts are fine tuned and molded into products and services. The requirements of technologic development and market need must be reviewed again and tested on potential customers (Urban and Hauser, 1993).

- **Product launch** is the final stage in which the product is manufactured on a large scaled and is sold. The marketing starts to be the largest financial investment, followed by the operations department. Even if the last stages were done correctly, there is a possibility the product not meeting the demand on the market. It should be taken to heart that even due to this being labeled as the last stage, it should not be viewed as that, but as a beggining (Merkas, 2015). In this stage the largest quantity of feedback is recieved and can be used for constant iterations and changes on the product (Crawford and Di Benedetto, 2000).

The addition of customers to the new development process is considered a sucessful way of creating new business opportunities (Yu & Hang, 2010). Companies are often started by proactive entrepreneurs which react to customer needs.
3.3. STARTUP PLANING

Academics often associate this high failure of new ventures to the lack of precision planning in advance. Academics argue that a systematic approach to venture business planning will yield superior performance. On the other hand there’s a growing opposition stating that new ventures should be focusing on speed, flexibility and continuous learning (Brickmann et al., 2010).

There are two theories behind new venture planning, the discovery theory business planning and creation theory business planning (Alvarez & Barney, 2007). There is a fundamental difference in these two approaches, the discovery theory punishes the entrepreneur’s capability to follow a set business plan if he/she decides to drastically change the strategy of the new venture compared to the initial plan, while the creation theory praises the entrepreneur for being flexible and learning while doing.

Harrison et al. (1994) propose that managers view business plans as an end rather than a mean. It is common practice in the business that the entrepreneur puts a lot of effort into the complexity of a business plan with no real intention of further implementation, rather to impress venture capitalists, banks and other sources of capital. Additionally, entrepreneurs have a distorted vision of the world, an incomplete picture that produces a simplistic analysis, which could lead to false conclusions in their analysis.

Learning in new ventures is a consequence of actions taken by the entrepreneur and as such, should be approach by a scientific framework. Harper (1996) used the Popperian model.

The model, when applied to new venture context, states that the initial start of the entrepreneurial process is when the entrepreneur locates a problem for the customer. He makes a set of hypotheses, aiming to solve the problem of the customer. These hypotheses are tested in the marketplace and in turn validated or discarded. The process usually continues through several sets of hypotheses, due to the uncertainty of the market. Additionally, even at the point of validation the entrepreneur is faced with a new set of minor problems, making the process an infinite loop. This process highlights the never-ending cycle of entrepreneurial learning and evolution to stay competitive in the market (Steiner L., 2007).

Sull (2004) built a similar model, which he divides into three steps; formulating a working hypothesis, assembling resources, design and run experiments. In the first step of hypothesis formulation the entrepreneur conceptualizes a model, which defines the market opportunity, the financial requirements to pursue that opportunity and the value created if successful. Within this step a business plan could be used, but it is important to consider that there are multiple variables in the market, which can never be fully predicted due to the subjectivity of human nature. Before being able to test the working hypothesis, entrepreneurs need to acquire the resources needed. In step two Sull (2004) highlights the need for raising enough money to finance the next experiment, instead of over raising and hindering future performance of the firm. He states that the company moral could be tampered with if a large equity share is given out at a early stage, also argues that raising money from the wrong sources could be fatal for a new venture.

The last step the design and experiment states that the entrepreneur has to put their plan in action through field research, be it customer research, prototyping or closed beta. After the results of this stage the entrepreneur has to have high state of objectivity if the results are negative. He should be able to revise their hypotheses or give up on the new venture all together if he sees there is no opportunity in the proposed market. Having a quality investor pays dividends at these stages, because they could give experienced advice and guide you towards the light.

These authors showed the need for the entrepreneur to test and revise the hypotheses, but it was highlighted in the early 2000s in lean startup methodology, which focused specifically on new venture creation.
3.4. CUSTOMER INVOLVEMENT

Both academia and practice have been gaining an interest in customer involvement in new product development and innovation. Organizations can learn through customer involvement, while adding a new voice for customer requirements and needs (Prahalad and Ramaswamy, 2004). Customer’s come from various backgrounds and providing a very broad skillset, which the company can capitalize on and implement in their daily product development tasks. Involving the customers in new product building has become a staple in technology SMEs (Lilien et al., 2002). Further, listening to customer needs bolsters innovation and helps create a clear picture of market needs. Resource dependence theory states that the customer needs and experiences can be used as a resource that the company is implementing to develop a new product and is essential to the success of the product (Pfeffer, 1987). This critical resource can be accessed through the customer involvement in the process of product building (Gruner and Homburg 2000). We can see in the new product literature that there is correlation between customer oriented ventures and higher new product performance (Atuahene-Gima, 2003).

Use of customers and involving them in new product development projects is considered a strategy to create new business opportunities. Companies are moving more and more from a responsive culture to a proactive culture, highlighting market strategies in the business strategy much more heavily (Yu & Hang, 2010). This aim of a proactive market oriented culture is to locate unmet needs of the customers and provide solutions, which in turn create future businesses (Eisenberg, 2011).

There are multiple ways of collecting information from customers, including face-to-face meetings, personal interviews, focus groups, and surveys. Additionally, electronic interaction channels and early prototype building are new alleyways of communication with customers. Through social media the company can build an environment in which the customer feels his contributions being weighted out and respected, making a community in which customers and companies work together to deliver a better product. The early prototype, also known as a minimum viable product (MVP) is used to gain access to potential customers, also known as early adopters.

Successful customer integration and involvement depends on finding right candidates who are capable of delivering input, which contributes value to the business. These customers are called lead-users or early adopters (Hippel, 1986). They are the first batch of customers, who enjoy getting into new projects and products while in development and contribute to the business with their input. Prior studies suggest that early adopters have very different motivations and knowledge than the venture (Shah, 2006). They experience products from a different, user centric perspective, which could discover problems the developers of the new product looked passed. (Merkas, 2015) found that the early adopters opinions are most important when evaluating a new product within a venture. Early adopters have a market influence; usually being tech savvy bloggers – and can push for the adoption of the product through their networks (Hienerth and Lettl, 2011). They are able to contribute via suggestions, testing and feedback, and can even be participants in the development process and co-creation of the new products or services.

4. RISK IN LEAN STARTUPS

Risk approach in lean startups is used in the framework bounderies of lean startup methodology. The founders of 'lean startup' are Ries (2011) and Blank (2006). Blank (2006) is a serial entrepreneur who created the customer development methodology, building a model for new ventures to test and revise their hypotheses through customer interaction. Blank proposes a balance between product development and customer interaction, which in turn improves overall probability of the new product or service being used. Ries(2011), a former student of Blank introduced the bestseller “The Lean Startup” which commercialized the concepts that Blank was teaching and added new value to the frameworks. Additionally, adding on to the Lean Startup conceptualization were Furr, Ahlstrom (2011) and Cooper, Vlaskovits (2010). The method has gotten almost a cult like following in the IT industry and is
subsequently being introduced to various other industries. The lean startup methods were adopted from lean manufacturing, the production philosophy that was introduced in Toyota.

Putting this into a new venture or startup context, we can define waste as any activity, which blinds the entrepreneur in his search of a business model, market fit and customer base. When looking at the lean startup methodology it can be seen it has connections to other management approaches like “Agile Software Development” and “Lean Manufacturing”.

Agile software development was introduced in 2001, representing a new approach, which focused on adaptive, evolutionary, early delivery development. The concept is known for flexibility and speed, often being used in development teams (Martin, 2002). The case company is using Scrum, an agile software development framework for managing product development. Lean Product Development applies lean principles to product development, a cross-functional activity trying to uncover unnecessary waste in the production flow.

4.1. PROBLEM SOLUTION FIT

The problem solution fit focuses on finding out if the new value proposition we create about a product need is correct. It consists of the creation of the initial new value proposition, collecting interviewees, proposition validation or perseverance. Additionally Blank incorporates a market evaluation in this stage.

Maurya (2012) suggests using three criteria while validating the problem proposition; need, viability, feasibility. Further, he suggests using different interviewing and observational techniques while validating the set new value proposition.

The initial value proposition is built around solving an existing problem. There is a set of generalizable rules which are seen throughout LSM literature regarding the problem proposition building; focusing on building a must have product, solving real problems for customers, picking an area about which your passionate about. Blank (2006) states that the entrepreneur should channel his core values and beliefs while building the first new value proposition, also adding that the entrepreneur should have clear basic mission which he is trying to achieve with the said new venture. Further, Blank (2006) includes various assumptions in the hypothesis creation and highlights the need of understanding the customer problem, a mockup version of the proposed product, research of competition, research of pricing points, potential demand and market size. The new venture should not move further in the three-step process without successful validation of the problem solution fit.

4.2. PRODUCT MARKET FIT

In the second stage the entrepreneur has validated the new value proposition and is confident that there is a problem worth addressing. In this stage the venture creates a minimum feature set proposition with which it can approach customers and iterate according to the feedback (Andreessen, 2007). The build-measure-learn feedback loop and the MVP are applied in this stage.

The MVP is used to test the minimum feature set and through it the entrepreneur can get better insight into the customers ideas. Ries (2011) argues that learning about customers can truly start at this phase of the lean startup process, arguing that many people are unaware of problems until they have a solution in hand. Furr and Ahlstrom (2011) add that it is important to understand if the customer is willing to buy the product and how much he is willing to pay for it. Blank (2006) ads that order purchases are the highest validation the venture can receive.
Lean methodology is becoming more and more popular in the startup world, due to giving a new way of approaching risk. The academic contribution of this paper is to see how important and useful is the LSM for a startup venture, while highlighting the contribution of customers in the whole process. The difference between a traditional strategic plan and LSM is in the fact that the hypothesis is actually checked before it is put to work. The entrepreneurial challenge is constructed of negating the traditional management thought process which consists of over planning and lack of communication with potential customers. Planning is a tool which only functions in a state of market stability and calm. In a dynamic environment like today, entrepreneurs should be focused on direct customer communication through hypothesis building. Lean Startup Methodology defines information gathering through the 'build-learn-measure' loop (Reis 2012). This highlights the ongoing validation that is seen in LSM, which could be the most important factor of successful early venture performance.

To minimize risks, the focus should be on validating as much information in the loop as possible. This will allow for clear, consise decision making. Surprisingly often, new ventures are created with a blindfold on, trying to hit a target in darkness. LSM as a tool helps remove that blindfold and decrease risk dramatically for new ventures. That said, it is a relatively new concept which needs to be qualitatively measured over a longer period of time. This is a interesting field in which academics can find out if the methodology is indeed a revolutionary part of new venture performance and risk elimination or not.

REFERENCES

38. Pfeffer, J. (1987) "A resource dependence perspective on intercorporate relations." In M. S.
42. Ries E.: Lean Startup, Mate d.o.o., CIP 858125, 2013.