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Reducing the Failure Rate of SMEs

Comparative Analysis of Excellence Management Systems: Six Sigma and Lean Start-up

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The purpose of the thesis was to identify a comprehensive list of factors, helping SMEs at early stage to survive and grow through innovation. In the developed world the failure rate of start-ups varies from 70% to 90%, even though there are a lot of resources available, attempting to guide SMEs to business success. Furthermore those SMEs, which manage to survive the start-up phase, come across the other challenge; they get stuck in the situation and do not scale. In most of the economies SMEs account for more than 95% of all the enterprises, therefore it is essential to reduce their failure rate.

In this thesis the qualitative research methodology was applied. Qualitative data was achieved through the case study of Gamevy. Gamevy was a start-up, which attempted to apply Lean Start-up methodology, when bringing a new gaming and gambling product to the market. Prior to that, in this thesis was accomplished a comparative analysis of two Excellence Management Systems: the Six Sigma and the Lean Startup, based on which the key-success factors in common were identified.

The qualitative research revealed that even the most impactful and globally acknowledged methodologies cannot lead SMEs to the successful growth through innovation, if the SMEs go too far from the core of the methodology and make a few critical mistakes. In the case of Gamevy following the Lean Startup, the main causes for the failure were (1) the lack of cross-functional team, which lead to unforeseen lack of skills and costs, (2) insufficient experimenting and testing, which lead to poor interaction with the right market, and (3) lack of structure and metrics, which lead to poor planning, scheduling and finally to the failure.

The author recommends for SMEs at early stage to implement innovation into their strategy, instead viewing it as a thing that must be done once in a certain period. SMEs should dedicate a bigger part of their time for profound planning. Profound planning should lead to precise identification of the problem, the cross-functional innovation team, the suitable environment for experimenting, the structure and the limits of the innovation intent and the clear and actionable metrics to measure the success.

Keywords	SME, failure, success, innovation, growth, Lean Start-up, 6 Sigma

Contents

Terms and definitions

Entrepreneur. An entrepreneur is an individual who runs a small business and assumes all the risks and rewards of a given business venture, idea, or good or service offered for sale. The entrepreneur is commonly seen as a business leader and innovator of new ideas and business processes.[1]

Excellence Management System. Quality and operations improvement systems all oriented towards process improvement" (Chiarini 2012).

Innovation. Creating and capturing new value in new ways (Patel H., 2009)

Small and medium size enterprise (SME). Entity engaged in an economic activity, irrespective of its legal form. The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euros, and/or an annual balance sheet total not exceeding EUR 43 million (European Commision 2003).

Start-up is a human institution designated to create a new product or service under the conditions of extreme uncertainty (Ries 2011)

Venture capital (VC). Start-up or growth equity capital or loan capital provided by private investors (the venture capitalists) or specialized financial institutions (development finance houses or venture capital firms). Also called risk capital.[2]

[1] Investopedia, 2017. *Entrepreneur*. [online] Available through: <http://www.investopedia.com/terms/e/entrepreneur.asp> [Accessed 30 April 2017].

[2] Business Dictionary, 2017. *Venture Capital*. [online] Available through: <http://www.businessdictionary.com/definition/venture-capital.html> [Accessed 30 April 2017].

1 Introduction

The failure rate of start-ups in 2015 reached a rate of 90%, despite variety of literature available aiding entrepreneurs to oversee the risks (Patel N., 2015). Reducing the failure rate of start-ups and SMEs in general is essential, as in most economies SMEs account for more than 95% enterprises (Tidd, Bessant 2013: 69). This high number represents vast variety of companies; from micro-business such as home established biscuit bakeries to high technology start-ups. Innovations as well as innovating organizations vary in scale, nature, degree of novelty, etc. (Tidd, Bessant 2013: 61).

Since the early 20th century there have been various attempts to improve efficiency in the factories and operations per se. Once business management was accepted as discipline, several theories have evolved to simplify and standardize business management as a concept and make processes around it efficient and measurable. Six Sigma and Lean Start-up are the most modern and the most adapted frameworks as of today.

Failure itself is a very generic term. In this thesis work failure is closing the business. More over the inability of SMEs to scale up plays an important role in this thesis work as well; it helps to keep focus only on the scalable SMEs and identify the right tools to solve their challenges to survive and grow. Based on this only those SMEs are the objects of this thesis work, whose owners or leadership team have an intention to grow through innovation. Small non-scalable businesses, such as local family hostel which is resistant to any change and growth opportunities, are not part of this thesis work. Furthermore, companies that aim for growth only through cost reduction are not the objects of this research too, since cost reduction is based on short term strategy, whilst growth through innovation, scaling up intentions and application of business excellence frameworks evolve around long term strategy.

Objectives and Scope of thesis

This research has two main objectives: firstly, to indicate the main reasons behind the failure at early stages of small and medium sized enterprises in the Western based business cultures, and, secondly, through a comparative analysis of two Excellence

Management Systems: the Six Sigma and the Lean Start-up, to identify the common key success factors. The Lean Start-up methodology was tested through a case study.

The theoretical framework for this research emerged from three fields of literature: books, scientific articles and academic white papers.

1.1 Research problem

Research problem of this thesis work is defined through SCQ analysis. SCQ stand for Situation, Complication, Question analysis.

1.1.1 SCQ analysis definition

In management consulting one of the main tools in developing key questions is Situation-Complication-Question (SCQ) analysis. Situation is a piece of information that is non-controversial description of stable conditions. Complication is a piece of information that altered the stable situation and created a problem that is currently being faced. Key Question (in this case referred as Research Problem) is the articulation of the most pressing need and that is implicitly raised by the complication statements (Management Consulting Institute, 2013).

1.1.2 SCQ analysis: High failure rate of SMEs in developed countries

Situation:

Currently innovation itself is a trendy term in most of the companies around the world. Innovations are being introduced daily in various industries and companies. Large corporations in this sense have an advantage, since they have allocated budgets and the resources for promoting innovation. Small and medium sized enterprises have relatively more flexibility to be innovative; however, they often meet a challenge of cash shortage and lack of people dedicating their effort and time.

In developed world SMEs comprise up to 95% of economic power. As per OECD (1993), in 1993 SMEs accounted for 60 to 70% of jobs in most OECD countries, with a particularly large share in Italy and Japan, and a relatively smaller share in the United States. In 2011 SMEs accounted for over 95% of the world business population and

constituted 60 – 70% of total employment. The same tendency remains up to this date (Edinburgh Group 2012).

Many business management excellence frameworks and tools have been created to manage the problem, including six sigma, lean six sigma, lean start-up, business plans, business canvas, design thinking, etc. Many successful companies, mostly big corporations, have implemented these management excellence frameworks and applied the tools.

Complication:
In past few years failure rate of SMEs fluctuates from 70 to 90%, dependently on a country and industry. Millions of start-ups are being started every year, and of those who survive, 96% remain small, i.e. these SMEs do not scale beyond $10 million of annual revenue (Gazelles Inc. 2014).

The number-one reason for failure, cited by 42% of polled start-ups, is the lack of a market need for their product (Griffith 2014). Besides, when SMEs are looking for growth through innovation, they often confuse innovation with creativity and ideas; in fact creativity and ideas themselves cannot be treated as equivalent to innovation, because innovation must create value that eventually would generate cash. Innovation is a step further from creativity and ideas; only these ideas that generate cash can be considered as innovation (Harvard Business Review 2015).

In SMEs established management excellence frameworks and tools do not deliver results as expected. The current academically approved approaches are focused around big companies. The problem is that SMEs are mistakenly seen as smaller versions of large corporations and therefore it is mistakenly assumed that same principles and management excellence frameworks will be applied successfully in both: SMEs and large companies (Saunila 2014). The current situation proves this assumption to be wrong. There is a need for an approach that would be oriented to SMEs and most importantly would be empirically tested and approved.

In recent years, there has been the boost of literature around innovation, start-ups and SMEs. Despite all information available and broad possibilities to learn, the failure rate of start-ups remain around 70-90% and over 90% SMEs who are in business for more than 5 years still struggle to grow (Gazelles Inc. 2014).

Key question

Through the analysis of management excellence systems, can the common key indicators be identified that help to reduce failure in SMEs?

2 Literature review

In order to identify the reasons behind the failure of the SMEs at the early stage and determine the common key success drivers that would serve as general guidelines for any SME, first it is important to define SME, review literature around the development of SME management and innovation, and finally review and compare two excellence management systems: the Six Sigma and the Lean Start-up.

2.1 Small and medium sized enterprises in this research

Small and medium-sized enterprise (SME), according to official recommendation by European Commission (2003), is an "entity engaged in an economic activity, irrespective of its legal form. The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million." The main factors determining whether a company is a SME are the number of employees and either turnover or balance sheet total.

Table 1. Small and medium-sized enterprise (SME) as per European Commission

Company category	Employees	Turnover	or	Balance sheet total
Medium-sized	< 250	≤ € 50 m		≤ € 43 m
Small	< 50	≤ € 10 m		≤ € 10 m
Micro	< 10	≤ € 2 m		≤ € 2 m

Small and medium-sized enterprises (SMEs) have an essential role in maintaining strong economic growth. The main concern of SMEs is to develop various relationships crossing organizational boundaries in order to improve the performance, gain and strengthen competitive advantage, and most importantly, to enable market flexibility (Berglund 2007: 51). However, SMEs face a challenge of sustaining their performance in the long term (Saunila 2014: 4). As per M. Saunila (2014), on general basis, companies that perform better today are also more plausible to perform better in the nearest future, as most likely currently successful companies are capable of generating

and implementing new knowledge, which allows them to determine their position in the industry.

In the United States of America there is no universally accepted definition of SME, even within the U.S. government. SMEs in the United States vary in size and represented in all sectors of economy. SMEs in non-farm sector include firms with fewer than 500 employees and non-employer companies. According to this definition, 99,9% of businesses in the USA in 2006 were classified as SMEs (US International Trade Commission, 2010).

Here it is essential to identify and emphasize the difference between start-up, SME (small and medium sized enterprise) and SB (small business). There is not a universal agreement in regards of all these three terms, and thus this thesis work will follow the guidance provided by Steve Blank (2013). Start-up is a temporary organization designed to search for a repeatable and scalable business model. Start-up by its definition is supposed to seek for growth and reach the level of large corporation. Founder of a scalable start-up does not aim just to be own boss; it aims to have a significant impact on the current market. This is a critical difference between start-up and small business, which only aims independently own and operate, organize for profit, but not to dominate or disrupt in its field (Blank 2013). SME in this case comprises start-ups and SB's, but as for this research, SME definition involves only scalable start-ups as well as small businesses that have been in market for more 5 years (thus not a start-up anymore) and aim to overcome growth challenges through innovation.

2.1.1 Characteristics of scalable SMEs

SMEs vary in size, industry and goals. Even though start-up by its nature should be scalable, Steve Blank (2013) distinguishes 6 types of start-ups and only one type among them is scalable. These six types of start-ups are: scalable, lifestyle, small business, buyable, social and inside a large company.

Scalable Start-ups are led by entrepreneurs and their venture investors, who are aspired to build. From the very beginning the founders believe that their vision can change the world. The priority is given for the game-changing idea, whilst earning for living comes secondary. These start-ups require risk capital to fund their search for a business model, and attract investment from venture capitalists (Blank, 2013). Unlike

small-business entrepreneurs, interest of any start-up is in creating equity in a company that eventually will become publicly traded or acquired, generating a multi-million-dollar payoff. Thus, the goal of scalable start-up is to find repeatable and scalable business model and then acquire more venture capital to fuel rapid expansion. The challenge, however, is that 9 out of 10 potentially scalable start-ups fail (Gazelles Inc., 2014).

For the sake of comparison, there other five types of start-ups, according to Steve Blank (2013), entrepreneur and Silicon Valley legend. They are the following:

1. Buyable start-ups: acquisition targets. These start-ups usually acquire crowd or angel funding instead of venture capital.
2. Social Start-ups: Driven to Make a Difference. Usually organized as a non-profit, but being ran as pro-profit or hybrids. Their goal is to make the world a better place, not to win over big market share.
3. Large-Company Start-ups: Innovate or Evaporate. Corporations that attempt to apply start-up practices and look for new business models.
4. Lifestyle Start-ups: Work to Live Their Passion. Entrepreneurs of these start-ups do no aim to earn living or change the world as their primary goal. Running the start-up is of a certain kind is their passion.
5. Small-Business Start-ups: Work to Feed the Family. These start-ups are the source of living.

2.2 Business failure and business success in SMEs

It has been generally estimated that start-ups fail between 80% and 90% (Revzin 2015, Patel 2015). Furthermore, the average life span of many SMEs is five years (Jones 2009: 5). After three years of initial setup only around 50 percent of SMEs are still running the business. Therefore, it safe to assume, that common story of SMEs is the one where many have gone but only a few have succeeded.

Most of SMEs are rather young companies. Despite theoretical advantages of SMEs to innovate, even 90% of start-ups fail in a few years (Neil 2015). Statisticbrain.com[3]

[3] Statisticbrain.com provide statistics and market research on business, consumers, sports, financials, and demographics. According to MyWot, Siteadvisor and Google safe browsing Statisticbrain.com is a fully trustworthy domain, which in geographical terms, mainly focuses on

(2015) claims, that within first year 25% of all start-ups fail and by year 10 the rate of start-ups failure reaches already 71%. More detailed information can be found in Table 2, *Start-up business failure rate in 10 years period of time*. Regarding industries, most of start-ups- failures happen in (1) finance, insurance and real estate, (2) education and health and (3) agriculture industries (Statisticbrain.com 2015).

Table 2. Start-up business failure rate in 10 years period of time.

Year	Percent Failed
Year 1	25 %
Year 2	36 %
Year 3	44 %
Year 4	50 %
Year 5	55 %
Year 6	60 %
Year 7	63 %
Year 8	66 %
Year 9	69 %
Year 10	71 %

Success and failure in every company are defined differently and a clear unified definition of business failure does not exist. Business failure usually is defined by its consequences, such as organization mortality, exit or death, organizational collapse, bankruptcy, decline, closure, sell-off, bought for asset value or customer-base only (Ropega 2011: 477; Jones 2009: 5). Dependently on goals of the company, the failure can be considered the situation where certain profit has not been earned or a certain problem has not been solved. In any case, failure leads to discontinuance of the business or/and its primary purpose. Despite the situation, where failure is defined accordingly to its consequences, it must be noted, that failure is a process, which has origins, symptoms and possible preventions (Ropega 2011: 477).

Silicon Valley, which is a technology hub located in San Francisco, California, United States of America, promotes the Lean Start-up approach “Fail fast, fail often” (also referred as “Fail cheap, fail often”, “Fail early, fail often”, etc.) (Kastelein, 2012). The main purpose of this approach is to embrace the failure as a tool for learning and

USA. Source: Easy Counter, 2015. *Statisticbrain.com.* [online] Available through: <https://www.easycounter.com/report/statisticbrain.com> [Accessed 14 June 2015].

experience. It is also assumed, that fast failure enables entrepreneurs to recognize business that is moving towards the failure and thus it encourages on moving to the new business ideas instead of exploiting *zombie-kind-of* business (Kastelein, 2012). This attitude would explain the high failure rate of SMEs (in this particular example referred as start-ups) from a positive perspective. However, failure by any mean cannot be seen only as a positive matter. Firstly, because every failure costs: either entrepreneurs themselves or the other investors pay for it; secondly, with every new failure it becomes harder for the entrepreneur to earn the credibility and convince the others about the idea; thirdly, from a human perspective, every failure is new challenge to accept mentally: no one wants to be the one that actually fails (Caroll, 2014; Asghar, 2014).

Business success, as the opposite of the failure, is mostly defined by its consequences too. Companies already at early stages set the goals and accordingly with those after a certain period it is concluded if the company has succeeded in reaching its goals. As this thesis work is focused on SMEs that in the broadest sense attempt to introduce innovations, the business success here is therefore seen as success in bringing up the innovation and thus managing to scale up through innovation.

2.2.1 Reasons behind the failure of SMEs

Failure at SMEs as a process that has a beginning and the end (i.e. roots and consequences) has been analysed by various researchers. There is myriad of attempts to classify and unify the reasons, which drive SMEs into a business failure.

As per start-ups' owners, the main reason for failure is the lack of a market need for their product (Griffith 2014). The other obstacle for success is bad timing and focus on idea instead attempting to tackle customers' problem (Barai 2015, Gross 2015). The researchers of innovation in SMEs recognize poor management skills as most common reason, which leads to a failure. It recalls such reasons as lack of experience, lack of team work and partnership, inability to embrace a change (Jones 2009), accepting the behaviours of large companies (Saunila 2014) and ignoring the essential factors through the innovation process in SMEs (Berglund 2009).

Statisticbrain.com[4] (2015) statistically proves assumptions of Saunila (2014), Jones (2009) and Berglund (2007), and indicate lack of competence as the main reason of start-ups' failure (46%). Lack of competence comprises such factors as emotional pricing (i.e. pricing that was decided based on emotions instead of focusing on more credible factors such as pricing of competitors), living too high for the business, non-payment taxes, no knowledge of pricing, lack of planning, no knowledge of financing, no experience of record-keeping. The second main reason (30%) of failure, is the unbalanced experience or lack of managerial experience, which stands for poor credit granting practices, too rapid expansion and inadequate borrowing practices. 11% of failure is caused by lack of experiences in line of goods or services, i.e. carrying inadequate inventory, no knowledge of suppliers, wasted advertising budget. Remaining 1% of reasons for failure include neglect, fraud or disaster (Statistic Brain 2015).

As already recognized, SMEs accepting the behaviours of large companies is one of the main reasons that cause failure. Often SMEs (small and medium size enterprises) are considered as smaller versions of big companies, where, for instance, instead of separate marketing department, there is just one person responsible for marketing tasks in the SME. However, there are distinctive differences between large companies and SMEs. SMEs differ from larger firms by governance structure, for example, personalized management with little devolution of authority. SMEs compared to big companies have resource limitations in terms of human capital as well as finance, and therefore SMEs usually have smaller number of customers that they depend on. SMEs usually operate in more limited markets (Saunila 2014).

On a positive note, SMEs have the ability to innovate more effectively and develop new products more rapidly than larger firms (Berglund 2007). SMEs tend to be more flexible than large companies, due to their flat and flexible structures, high innovatory potential, reactive mentality, and informal, dynamic strategies. Tangible products will be more readily adopted in SMEs than intangible ideas and management practices. Due to distinctive differences between small and medium sized enterprises and large companies, the theories and tools that are used to manage large companies, might be not at all applicable for SMEs (Saunila, 2014). Ability of SMEs to innovate and deliver

[4] Statistic Brain is safe, trustworthy and broadly used platform for statistics. It provides its users with data and statistics related to several categories such as business, education, demographics, etc. More: http://www.statisticbrain.com/about/

new products at competitive prices enables SMEs to meet growing customers' expectations (Berglund, 2007). Table 3 summarizes the differences between SMEs and large companies, which turn into advantages as well as disadvantages dependently on given circumstances.

Table 3. Advantages and disadvantages for small firm innovators (Tidd, Bessant 2013: 69)

Advantages	Disadvantages
Speed of decision making	Lack of formal systems for management control, for example of projects times and costs
Informal culture	Lack of access to key resources, especially finance
High quality communications – everyone knows what is going on	Lack of key skills and experience
Shared and clear vision	Lack of long term strategy and direction
Flexibility and agility	Lack of structure and succession planning
Entrepreneurial spirit and risk taking	Poor risk management
Energy, enthusiasm, passion for innovation	Lack of application to detail, lack of systems
Good at networking internally and externally	Lack of access to resources

Besides the reasons of failure coming from poor management skills and lack of experience, a number of other reasons should be recognized. For example, introducing the product to the market before the product that is not fully developed and has not gone through reliable quality control procedures usually cause dissatisfaction regarding product among the customers. The other reason is overfunding or underfunding. Underfunding is quite common problem among SMEs (especially among start-ups), which leads to lack of resources, poor decisions and low credibility among customers and investors. One more common reason of failure of SMEs is the ignorance towards customers' needs. SME's teams come up with the great idea that is also getting attention in the market; however, the idea is being developed without potential customer participation through innovation process. It leads into creating the product that has potential but lacks certain qualities that would be important for the customers. The other reason of failure is relying on success stories and ignoring the failure stories. The companies should maintain the optimism and gain the inspiration from success stories, however stories of failure may prevent from doing mistakes that would lead to one more failure (Revzin 2015).

Harvard University professor Clayton M. Christensen in his book "The Innovator's dilemma" (2000) has noted that whilst creating innovations, companies must not always rely on their customers' expectations. Many successful companies have failed because of blindly following the wants of their customers; Christensen (2000) suggests that instead of chasing after the wants of the customer, companies should firstly focus on identifying what customers do not want: "The highest-performing companies, in fact, are those that are the best at this, that is, they have well-developed systems for killing ideas that their customers don't want." In addition, as per Start-up Genome (2014), most of the companies come up with perfect ideas and well developed business plans, as well as fully carried out marketing researches, but at the end the problem is, that customers do not buy the item. The reason is, that at the early stages of product development, potential customers show the interest, but once the product is delivered to the market, the customers do not want it anymore for certain reasons, such as price, changes in trends, qualities of a competitive item, to mention but a few.

The table 4. "Reasons behind the failure of SMEs" illustrates the reasons of failure, that were grouped and simplified into five categories: (1) **Priorities:** Lack of skill to identify and prioritise the problems and opportunities, (2) **Management:** Lack of structure and problem management, (3) **Team**: Ineffective team that drives a change and poor talent management, (4) **Testing**: Not established or poorly established environment for testing and experimenting, and (5) **Metrics**: Inaccurate metrics to measure the success and anticipate the risk of failure.

Table 4. Reasons behind the failure of SMEs

Reasons behind the failure of SMEs				
Priorities: Lack of skill to identify and prioritise the problems and opportunities	**Management:** Lack of structure and problem management	**Team:** Ineffective team that drives a change and poor talent management	**Testing:** Not established or poorly established environment for testing and experimenting	**Metrics:** Inaccurate metrics to measure the success and anticipate the risk of failure
Focus on the idea instead of tackling the customer's real problem	Lack of competence	Ineffective and unexperienced team leaders	Market does not want the product that SME introduces	Wrong timing to enter the market

Following the behaviour of a large company	Chaos accepted as a norm	Lack of training about problem solving or process	Inaccurate market research	Emotional pricing
Running out of cash (living too high for the business)	Ineffective and unstructured company culture	Lack of the team work and partnership	Inaccurate competitors' analysis	No record keeping or poor analysis
Too rapid expansion and inadequate borrowing practices.	Lack of planning	Poor knowledge of the stakeholders throughout the value chain	Carrying out inadequate inventory	Not applying the metric of what pays off best in the portfolio
Dependence on one or two customers	Inaccurately dispersed budget: e.g. marketing vs. product development	Lack of experts from different fields that would comprise one team, i.e. lack of cross functionality	Focusing on one product and not establishing the diversified portfolio	Relying on financial metrics at early stage
Inability to sustain the resources, especially the financial ones	Poor risk management		Unsystematic testing: not overseeing that the primary testing results may differ at the later stages	

2.3 Innovation in this research

Nowadays term of innovation is frequently used in different environments; innovation and innovative attitude lately have become the synonyms of successful management and profitable future performance in many companies. However, defining innovation is rather a challenge because innovations happen in all industries as well as in all aspects of a human life; therefore, definition of innovation is always to some extent subjective and thus one common definition is non-existent.

In broadest sense, term of innovation comes from the Latin word *innovare*, which means 'to make something new' (Berglund 2007: 3). In the literature concept of innovation has been defined in a variety of ways: usually definitions fall into two categories (1) innovation as a process and (2) to innovation as an outcome (Saunila 2014: 6). As a process innovation is defined by J. Tidd (2013), where innovation is "a process of turning opportunity into new ideas and of putting these ideas into widely used practice." Online Business Dictionary (2014) defines innovation as a process that

produces an outcome: innovation is “the process of translating an idea or invention into a good or service that creates value or for which customers will pay. To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need.” Furthermore, as per this definition, in order for a certain good or service to be considered as an innovation it must have the economic value and thus the consumers. In this sense, innovation should be viewed as change that creates value (Saunila, Ukko, Rantanen 2012).

J. Andrew (2015) notes that innovation is often confused with creativity and ideas. Innovation is contrary from creativity, idea or similar terms in a sense that innovation must always create a value. Value can be seen in a broad sense (e.g. improvement in the operations, more positive culture, etc.), but at the end any innovation has an impact on generating the cash (Harvard Business Review 2015). Due to the fact, that innovation is meant to create value, innovation is considered part of a business strategy in many organizations (OECD 2010).

Hargadon A. (2003) considers innovation as an outcome of “synthesizing (bridging) ideas from different domains”. This definition leads to understanding, that roots of any innovation are based on the older ideas. Often innovation is found by combining well-known insights from diverse settings and in that way creating novelties that may turn into innovation. Innovations that are based on experience and have some solid basis from the past tend to be more pragmatic and thus they carry lower risk of failing, whilst innovations that on novel knowledge in most of the cases are meant to fail (Hargadon 2003: 78).

As a process innovation acts as internal or external driver in a company and attempts to answer to the question “how” (here internal sources for driver are knowledge and resources, and external sources are market opportunity and regulations) (Saunila 2014: 6). As a process and as an outcome, innovation in every case is a social phenomenon, meaning that innovation always comes with plurals (Hargadon 2003). Innovations are created in networks by social interaction. (Saunila, Ukko, Rantanen 2012). Idea of innovation is developed by many people; even more people get involved while creating an innovation and finally innovation must be used by many people in order to be considered as a successfully executed innovation. Innovation is a team sport and thus team and organizational behaviour have a crucial role in delivering innovation (Patel 2015).

Tidd J. and Bessant J. (2013) define innovation as change with four main dimensions: (1) product innovation, (2) process innovation, (3) position innovation and (4) paradigm innovation. Innovation as expression of all these dimensions can be incremental or radical (non-incremental). The basic idea of incremental innovation is improvement (what can we do better), meanwhile radical innovations are based on creating something new (do something different).

The bottom line is that Innovation based positions are fragile and competencies are short-lived. Any innovation is time consuming and costly action. Furthermore, the nature of innovation is social. It means that usually innovations stand as a bridge between two unrelated industries or business areas and acts as the outcome of more than one idea (Hargadon 2003: 76). Most of the innovations are almost impossible to predict, therefore clear planning and innovation management are necessary to handle innovations that would lead to success. By considering the social factor of innovation as well as drawing two definitions of innovation as a process and as an outcome together, innovation in the context of this thesis work can be considered as social phenomenon. Furthermore, in the broadest sense, innovation is assumed as a process and outcome of transforming new ideas into renewed sources of value, i.e. generating cash.

2.3.1 What is a successful innovation?

Various organizations aim for innovation success and therefore innovations are being added to business strategies. However, defining what is a successful innovation mostly depends on the organization. Various companies determine differently the value of innovation that they are aiming for. What value is expected and how it is measured differs across the industries and networks, which certain companies are maintaining (Christensen 2000: 36).

Innovations must create value and this characteristic makes innovation distinguished from the pool of similar terms such as ideas, creativity, novelty, etc. In the business world, successful innovation is the one that drives commercial value. The essential part of innovation process is to estimate if the primary ideas (thoughts/hypothesis) of innovation have viable opportunities to generate useful outcomes and to bring top line growth (Mugge 2014).

In the context of this research successful innovation is comprehended as the innovation that brings improvement for the company and generates higher financial value, which was logically expected by a company and which is higher than the value invested into creating the innovation.

2.4 Excellence Management Systems to reduce of failure

Facing the broad variety of reasons causing the failure, there is a wide range of attempts to identify models, systems, process changes etc. that would lead to reducing the failure rate of various companies. For this thesis work the term Excellence Management Systems is defined as “quality and operations improvement systems all oriented towards process improvement” (Chiarini 2012: 1). Excellence Management Systems are more than academic methodologies; they were tested with many companies and are based on implementation factors and have tangible results, such as: continuous improvement, customer satisfaction, people and management involvement, etc. In this research, there are two methodologies of Excellence Management Systems introduced, which aim for smoother and successful SMEs process whilst introducing innovations. These methodologies are (1) the Six Sigma, and (2) the Lean Start-up.

The choice of these Excellence Management Systems is because, both analyse and attempt to solve the main reasons of why around 90% of SMEs are experiencing failure. The Six Sigma and the Lean Start-up contain plenty of success stories to support the fact that these methodologies are working. Both methodologies have similar roots (each of them started as an effort to improve the efficiency), and eventually developed their own approach of how to bring in innovation into various companies and how to do it successfully.

Later in this thesis work (section: Common key drivers) can be found the comprised table that displays the common success factors. Six Sigma is older and in more companies established excellence management system. It focuses more on incremental innovation and keeps the efficiency as the top priority. Lean Start-up has evolved from Lean Thinking, and got global acknowledgement only a few years ago, when in 2011 Eric Ries’ “The Lean Start-up” book was published. It focuses on disruptive and breakthrough innovations.

2.4.1 Six Sigma

The roots of Six Sigma Methodology date back 1920s, when W. Shewhart, American physicist, statistician and the 'father' of Quality Control, explained that in order to enhance quality, companies must reduce the variation. This approach of reducing variation resulted in multiple industries higher efficiency and improved quality (Six Sigma Study Guide 2014). He emphasised that any process can be brought under statistical control. Shewhart's principle paved way for modern scientific analysis of process control, and thus the Six Sigma (Chiarini 2012: 37).

The mission of Six Sigma is to enhance quality by improving the process and the way to achieve it, is to reduce the variation in manufacturing and business processes. (Chiarini 2012: 37). The focus of the methodology is on statistical improvements to a business process and is based mostly on empirical methods, statistics, financial analysis and project management to achieve better functionality. Six Sigma supports the idea of qualitative measurements of success over qualitative markers (Investopedia 2017). The failure of a project is less expected if the defined target has a settled range of variations and the number of six sigma stays inside the range. Failure means that the outcome of the process is outside the range and consequently the products or services are defective (Chiarini 2012: 39).

'Sigma' (a Greek letter) is a mathematical term which is used to denote standard deviation. Sigma is a standard statistical unit, meant to measure and outline the distribution of any process. Every process has its estimated mean value, and so Sigma measures of how wide is the range from the mean to the outliers (Six Sigma Study Guide 2014).

Six Sigma as the Excellence Management System was developed by Motorola in 1986. As per Investopedia, Six Sigma "emphasizes cycle-time improvement and the reduction of manufacturing defects to a level of no more than 3.4 per million. As of 2016, Six Sigma has evolved into a more general business-management philosophy focused on meeting customer requirements, improving customer retention, and improving and sustaining business products and services" (Investopedia 2017). Today Six Sigma from being focused around manufacturing evolved to management system that is applicable to all industries to diverse companies (Chiarini 2012: 37). There are trainings and certifications offered to learn the Six Sigma methodology.

According to Six Sigma, the innovation/improvement team is hierarchical and cross functional. In terms of hierarchy there five levels, starting with the C-level executives that a referred as (1) Senior Champion or Sponsor. Senior Champion or Sponsor is usually the CEO of the company, who introduces the Six Sigma and appoints the (2) Champion, who drives the strategic part of the innovation along with the Senior Champion. (3) Master black is appointed by Champion and coaches the management team and ensures entire organization learns of Six Sigma tools and methods. (4) Black Belts are usually managers of different business functions or departments, and they run specific Six Sigma projects, managing resources and applying the tools. The black belts are managing the operational team, (5) the Green Belts, who not necessarily have the full knowledge of the project and tools, but follow day-by-day assignations (Chiarini 2012: 38).

Before reviewing the process of the Six Sigma (DMAIC), it is critical to note that when Motorola in 1986 developed the Six Sigma as Excellence Management System, it required the cultural change, i.e. for Six Sigma to be proven as a successful methodology the company culture had to adjust first. Thus, Six Sigma helped Motorola drive powerful bottom-line results in the entire organisation, which at the end were documented as more $16 billion in savings. Motorola's example prompted hundreds of companies globally to adopt Six Sigma and, if needed, adjust company culture to it (Chiarini 2012: 37).

Six Sigma management system of excellence has 5 steps that are usually referred as DMAIC. Where D – Define, M – Measure, A – Analyse, I – Improve, C – Control. These five phases of DMAIC methodology are applicable to three different levels of the organisation: business, operations, and process (Chiarini 2012: 39).

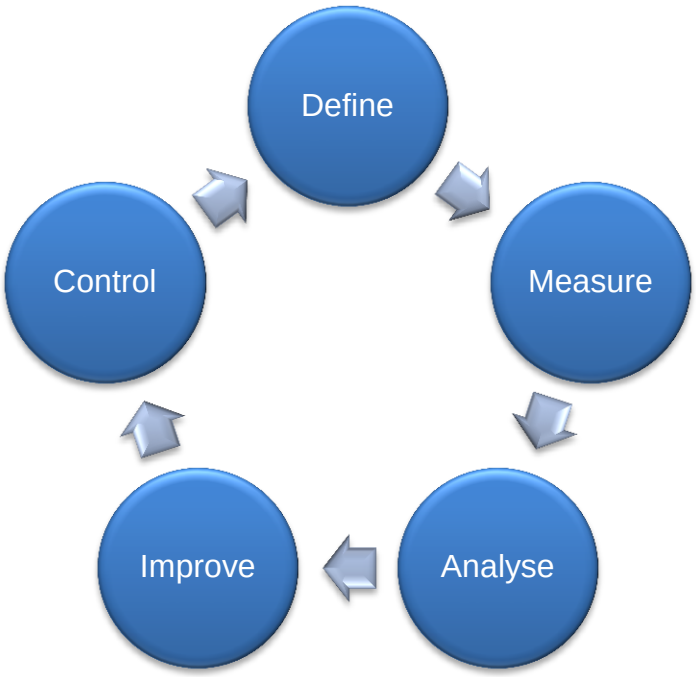


Figure 1. DMAIC pattern by Six Sigma management excellence system.

D—Define Phase: Define the project goals and customer (internal and external) needs. At "Define" stage companies prepare a solid base for the next steps of the project. The objectives of this stage are (1) "To identify and/or validate the improvement opportunity" and (2) "To develop the business processes, define critical customer requirements, and prepare them to be an effective project team" (Lean Six Sigma Training Certification, 2017). The priority at this stage is to define customers and their requirements, which will lead to developing the problem statement, goals and benefits. To ensure the quality team work, the team must identify project champions and key stakeholders. Finally, the team must draw project constraint; define the timeline, resources, project plan and milestones (Chiarini 2012: 40).

M—Measure phase: Measure the process to determine current performance; quantify the problem. At "Measure" stage companies establish metrics, so that companies would be enabled to quickly identify and react if the process is taking the wrong turn or is not delivering desirable outcome. The objectives of this stage are (1) "To identify critical measures that are necessary to evaluate the success, meeting critical customer requirements and begin developing a methodology to effectively collect data to measure process performance, and (2) "to understand the elements of the Six Sigma calculation and establish baseline sigma for the processes the team is

analysing" (Lean Six Sigma Training Certification, 2017). To establish the right measurement system, companies must define defect, opportunity, unit and metrics. Based on this, the next step is to develop process map and data collection plan. Finally, the company must validate the measurement system and collect the data (Chiarini 2012: 40).

A—Analyse phase: Analyse and determine the root cause(s) of the defects. At the phase of "Analyse" the company analyses the given situation to prevent the project from errors; if the analysis show there are any errors, company must fix them. In addition, the "Analyse" phase provides insights on how to eliminate the gap between the current level of performance and the anticipated level. The objectives of this phase are (1) To identify and validate the root causes and thus the problem the team is focused on, and (2) to determine true sources of variation and potential failure modes that lead to customer dissatisfaction" (Lean Six Sigma Training Certification, 2017). In order to meet the objectives of the "Analyse" phase, company defines the performance objectives, identifies value/non-value added process steps, identified source of variation and determines root causes. The tools used at this stage are: histrogram, pareto chart, scatter plot, etc. (Chiarini 2012: 40).

I—Improve Phase: Improve the process by eliminating defects. After the "Analyse" phase provided the causes of the problems, at "Improve" phase company can determine innovative improvement solutions. It can be done through the process testing and simulation. The objectives of this phase are (1) "to identify, evaluate, and select the right improvement solutions" and (2) "to develop a change management approach to assist the organization in adapting to the changes introduced through solution implementation" (Lean Six Sigma Training Certification, 2017). In addition to performing design of experiments and developing potential solutions, at this phase company also defines operating tolerances of potential system, assess failure modes, validates and, if needed, corrects the potential improvement. The tools used at this phase are brainstorming, mistake proofing, failure modes and effects analysis – FMEA and the others (Chiarini 2012: 40).

C—Control Phase: Control future process performance. During the "Control" phase company establishes the tools that ensure the key variables stay within the accepted variances over the long run. The success of "Control" phase is based on how well the performance was executed in four previous stages. The objectives of this phase are (1)

"to understand the importance of planning and executing against the plan and determine the approach to be taken to assure achievement of the targeted results," and (2) "to understand how to disseminate lessons learned, identify replication standardization opportunities/ processes, and develop related plans" (Lean Six Sigma Training Certification, 2017). To ensure that variables stay within the accepted variances, companies at "Control" phase must define and validate monitoring and control system, based on which they develop standards and procedures. In addition, companies must implement statistical process control, determine process capability and develop transfer plan. Finally, companies must verify the benefits, close the project and celebrate (usually undervalued the critical part of any project) (Chiarini 2012: 40).

2.4.2 The Lean Start-up

The Lean Start-up methodology was firstly proposed in 2008 by Eric Ries. The lean start-up is "a set of practices for helping entrepreneurs increase their odds of building a successful start-up" (Ries 2011: 27). Start-up is defined as "a human institution designated to create a new product or service under the conditions of extreme uncertainty" (Ries 2011: 27).

The main idea of lean start-up is to provide a scientific approach, which would help for start-ups to introduce the desired product to customers faster (Ries 2011: 48). Lean start-up involves such attitudes as spending less money, failing cheaply, failing fast so that after that start-up would succeed faster, etc. The main approach here is about putting a process or/ and a methodology around the development of a product (Ries 2011: 10).

Lean start-up idea indicates three main reasons, which cause failures in start-ups: (1) following business plans as the instructions; (2) accepting chaos in daily start-up routines; (3) lack of managerial skills as following the management practices of large companies, inability to focus on a "boring" parts of the business and inability to efficiently learn from own and the others' mistakes (Ries 2011: 11).

The lean start-up method proposes a bunch of possible solutions that would reduce the probability of failure rate among the start-ups. The idea of lean itself refers to the attempt of reducing the waste, which in the case of start-ups means the sources of waste that are obstructing the entrepreneurship. Providing the benefit to the customer

is considered as value, whilst everything else is a waste (Ries 2011: 48). The other suggested tool for reducing the failure is an implementation of cross functional teams. Different perspectives coming from team members with diverse professional skills may help to understand what the right product should be (Ries 2011: 19). Build-Measure-Learn feedback loop is the core of the Lean Start-up model and thus also a method that should be applied to reduce failure. The idea of it is based on loop process (i.e. circular, constant and non-linear), where peer groups participate in each step of the loop and provide a feedback on the product development. Build-measure-learn feedback loop is perceived as a fundamental activity of a start-up, where ideas must be turned into the products, after that it is measured how customers respond, and then finally learn whether the start-up must pivot or persevere. The Lean start-up theory assumes that all successful start-up processes should accelerate the feedback loop (Ries 2011: 76).

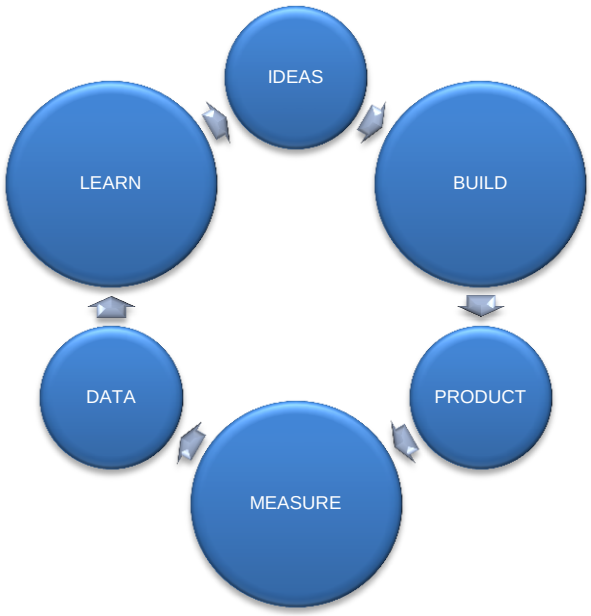


Figure 2. Build-measure-learn feedback loop. Source Ries E., 2011 *The Lean Start-up.* 1st ed. New York: Crown Business. p. 75.

The Lean Start-up idea can be summarized by main five principles. (1) Entrepreneurs are everywhere. It refers to an idea that entrepreneurs vary in financial capabilities, amount of ideas, working experience, to mention but a few. Entrepreneur does not have exact definitions or frames that he or she would fit. (2) Entrepreneurship is management. This refers to one of the main reasons, why start-ups fail, meaning the

acceptance of constant chaos by start-up owners. Every business must be managed and carried out, lack of management cause low credibility of the company. (3) Validated learning. It means learning of how to be a sustainable business; raising revenues and gaining higher profits should not be the main aim of the company, but the attempt of developing the product and adjusting the idea, that would help in solving the problem of the customer. (4) Innovation accounting. It is a system used to measure the progress of the start-up and in this way to keep entrepreneurs accountable. Instead of traditional metrics, such as revenue and profit changes, that do not provide any trustworthy information at the beginning of the company, innovation accounting is based on the different metrics, so called actionable metrics (Ries 2011). For example, it is highly recommended for a start-up to create minimum-viable-product (MVP) – "a version of a new product which allows a team to collect the maximum amount of validated learning about customers with the least effort" (Ries 2011: 77). Actionable metrics are created around MVP and they directly measure customers' interaction with MVP as well as collect the feedback to meet customers' expectations better. (5) Build-measure-learn is feedback loop, which helps a start-up to decide whether to continue with the idea or look for the different angles of how to solve a problem. The Build-measure-learn feedback loop is represented in figure 2 (Ries 2011).

Lean start-up idea, especially the principle of build-measure-learn feedback loop, has inspired more authors for deeper analysis and thus, for broader scale of solutions. Blank, Dorf (2012) have introduced Business Model Canvas. Business plans always fail (Blank, Dorf 2012: 35); Ries (2011) claims that business plans do not work, because vision of the established SME is too concrete and thus it is not able to adjust to the market changes. Therefore instead of business plan, SMEs should exploit their flexibility and accept the Business Model Canvas, which contains nine interrelated key components of the company: (1) value proposition, i.e. products, benefits of the company; (2) customer segments, i.e. identification of key customers and putting them to the segments; (3) distribution channels, i.e. channels to reach customers and offer them the value proposition; (4) customers relationships, i.e. identification of demand; (5) revenue streams, as reflect of value propositions; (6) resources to make business model possible; (7) activities that are necessary to implement business model; (8) partners, i.e. motivated participants in the business; (9) cost structure as a result from the business model. Business Model Canvas is illustrated in figure 3, Business Model Canvas (Blank, Dorf 2012: 36).

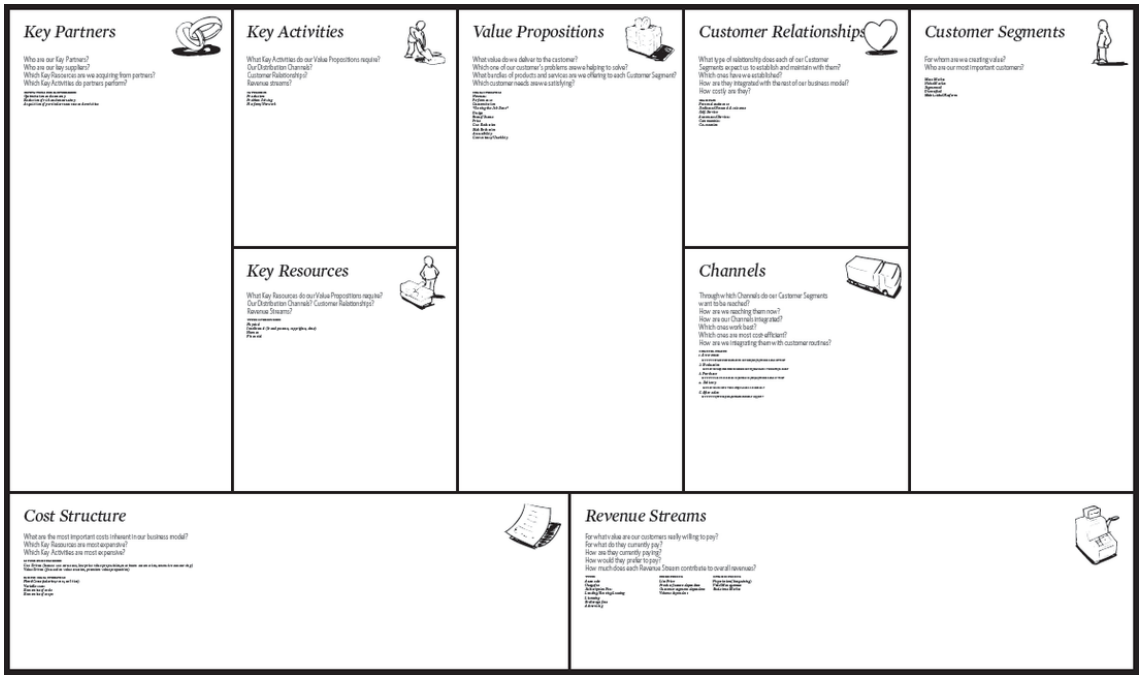


Figure 3. Business Model Canvas. Source (Blank, Dorf 2012: 36).

The basic idea of business model canvas is business-hypothesis-driven experimentation, iterative product releases and so called validated learning. The aim is to collect the hypotheses on each component and in the process to test them whilst working face-to-face with the customers. In this way business model canvas works as a guide, that makes it easier to understand where and how to pivot. Every hypothesis should be tested until the most suitable is detected (Blank, Dorf 2012: 37). In the best-case scenario, business model canvas should be applied through the whole innovation process in SMEs. It would allow SMEs to use their advantages, such as flat hierarchy, flexibility, possibility to act quickly, all team involvement and understanding where company is standing, etc. Moreover, it would allow SMEs to go out of the office and create actual business by testing the ideas through innovation process, and thus it would prevent from wasting the resources, especially the ones that are limited financially and time wise.

Lean start-up theory opposes the traditional and accepted ways of starting the company. It is yet being tested by many SMEs and various results of it are coming to the light. The example of that is analysed in the discussion part.

2.5 Common key success drivers

After laying down the main principles and processes of two Excellence Management Systems: (1) Six Sigma, and (2) The Lean Start-up, the multiple insights can be generated based on what these methodologies have in common. Both emphasise (1) importance of clear identification and prioritization of the problem, (2) the importance of the structure and structural approach in managing the problem, (3) the need to identify the right people to drive the change and growth, (4) creation of safe space for experimentation and learning, and (5) the necessity to define the things to measure and identify to most suitable metrics.

(1) Importance of clear identification and prioritization of the problem. Both methodologies emphasise the importance of clearly identifying the problem, and each of the methodologies suggest variety of tools how it can be achieved. The Six Sigma suggests identifying the problem based on statistical data and indications (Chiarini 2012). The Lean Start-up methodology suggests to lay down the ideas for improvement based on customer responses and test them (Ries 2011).

(2) Importance of the structure and structural approach in managing the problem. It is safe to assume, that structure is the core value of the Six Sigma since the project can reach its success if the target has a settled range of variations and the number of six sigma stays inside the range (Chiarini 2012). The Lean Start-up defines chaos as one of the main reasons of failure and thus suggests the 6 steps process to handle the projects in a structured way (Ries 2011).

(3) The need to identify the right people to drive the change and growth. Rather the objective truth is that in order to succeed, companies must empower the champions, so that they could push back against the bouncers. Both methodologies define the structure of the change-driving team by different categories, however each of the methodologies suggest that cross-functional teams are the fit to lead the company to the success.

(4) **Creation of safe space for experimentation and learning**. Experiments and learning are essential for the success. The Six Sigma claims, that learning essential because only when fixing the mistakes throughout the process helps avoiding delusional decisions (Chiarini 2012). The Lean Start-up is based on learning and experimentation. Throughout the process of the Lean Start-up the company should proceed from one step to another only when it is validated by learning and testing (Ries 2011).

(5) Define the things to measure and identify to most suitable metrics. As per both methodologies, revenue and profit are not suitable to measure the success of SME at early stage of any project, because these metrics reflect on the performance only when the companies achieve the stable position. Before achieving this, the companies should define metrics that could clearly define company's situation at each project milestone, e.g. number of customers accessed, number of subscribers, decrease in the customer complains in a given time period, time spent to produce the item, etc. It is important to understand that even though the early stage metrics are not directly profit and revenue based, they still must accurately measure the activities, which in later stages will accelerate the cash-flow and then will be measured by using profit and revenue metrics.

The table below illustrates the most important factors of the Six Sigma and the Lean Start-up and represents in more detail five common key indicators.

Table 5. Common key success factors between the Six Sigma and the Lean Start-up

	Six Sigma	Lean Start-up
Problem identification and prioritization	The basis of problem identification is quantitative research and statistics. After a prompt and in-depth analysis, the SME must create and action plan with measurable milestones.	Business Model canvas to analyse the market, value chain, etc., based on which the hypotheses are identified and prioritized. Statistics are important only on actionable metrics.
Structure and problem management	Essential. The clearly define structure evolves around the defined main problem. Any structural outlier must be eliminated.	Essential. Chaos and lack of structure among entrepreneurs cause the failure.
Scale of variation	Minimal. SME must reduce variation to the very minimum to achieve quality and tackle the problem.	Variation itself is not a bad thing. The SME must focus on waste reduction that often comes a part of variation (what doesn't deliver value for the customer is the waste).
Team driving the change	Hierarchical (5 levels) and cross functional team.	Cross functional team and various levels of experience.

Innovation	Essential and Incremental. The right innovation is identified at the 3rd phase and has to fix the gaps in the quality.	Essential and radical. The team of scalable SME must identify the next breakthrough
Cultural Change	Essential. Six Sigma to be proven as a successful methodology the company culture had to adjust first.	Essential. Starts with the organization or new project (entrepreneurship and intrapreneurship).
Learning from testing and experimenting	Essential. Testing and experiential learning are applied in fixing the mistakes throughout the process to avoid delusional decisions.	Essential. Validated learning is the learning based on testing and experimenting. It paves the path to sustainable business, where raising revenues and gaining higher profits should not be the main aim of the company, but the attempt of developing the product that solves the problem of the customer.
Quality Improvement	Essential. DMAIC process pattern is in the core of quality improvement and waste reduction in three levels of the SME: business, operations, and process.	Essential. Build-measure-learn feedback loop perceived as a fundamental activity of a start-up, where ideas must be turned into the products, after that it is measured how customers respond.
Metrics	Essential and measuring not only profit and revenue. Established after defining the problem (2nd phase).	Essential and measuring not only profit and revenue. Metrics are action based and a part of validated learning.
Stakeholders	Customer is the focus. The other stakeholders from the value chain are involved in DMAIC pattern as well.	Customer is the focus. All the other stakeholders, such as suppliers must be mapped on Business Model Canvas and tested.
Business plan	Not needed, because the Six Sigma is not applicable	Not needed and not recommended. Business Model Canvas instead.
Continuity	Yes. Constant, circular (i.e. non-linear) process. To succeed through innovation company must always look for improvement and change.	Yes. Constant, circular (i.e. non-linear) process. Peer groups participate in each step of the loop and provide a feedback on the product development.

3 Research Methods

The objective of the thesis is to through the analysis of excellence management systems to identify common key indicators that help to reduce failure in SMEs, which aim to grow through innovation. To support it, the case study of Lean Start-up is applied. To achieve this, the stages of the thesis work are identified. These stages are split into more detailed action plan.

1. A literature review is conducted on the failure of SME's at early stage,
2. Analysed innovation within the excellence management systems (the Six Sigma and the Lean Start-up) as the solution for growth and success for SMEs
3. No primary research is needed. Instead case study will be investigated through the framework of excellence management system – the Lean Start-up.

3.1 Issues Analysis and thesis action plan

Issues Analysis is a tool that is applied to create and manage an action plan of this thesis work.

3.1.1 Issues Analysis and action plan definition

Issues Analysis, according to Consulting Management Institute, is a tool to approach business problems. Issues Analysis is based on the questions that must be addressed in order to answer the key question. It breaks down the categories of issues that should be answered. It has 5 steps: (1) Identifying the sub questions of the key question, (2) Sort and group the questions, (3) Build the issues tree, (4) Test if the questions are mutually exclusive and collectively exhaustive (MECE), (5) List activities or tasks for getting and evidence.

3.1.2 Issues Analysis and thesis action plan: Can common key indicators that help to reduce chance of failure be identified?

Key question:

- Through the analysis of management excellence frameworks can the common key indicators be identified, which help to reduce failure in SMEs?

Sub questions:

- Can the main reasons for SMEs failure be identified?

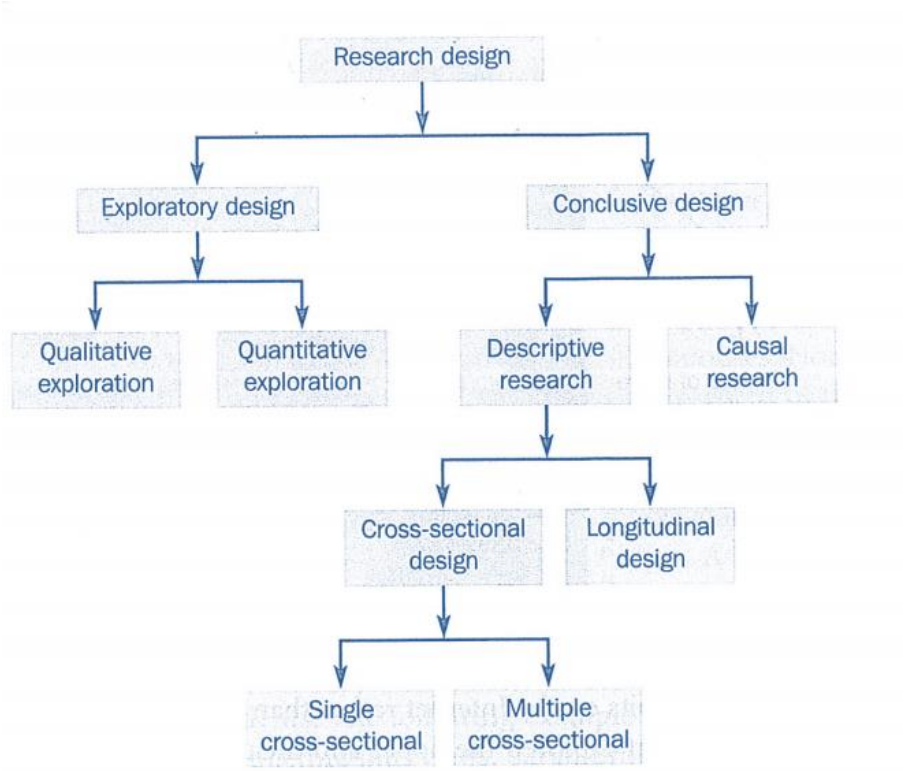
- Can the main management excellence frameworks that drive SMEs into success be identified?
- Can the findings be tested with real-life case?

List of activities

1. Define SMEs
2. Define SMEs' failure and the main reasons of it happening
3. Define innovation
4. Introduce two excellence management systems: The Six Sigma and the Lean Start-up
5. Run the comparative analysis
6. Apply case study
7. Analyse findings
8. Draw the conclusions and recommendations

3.2 Research Design

There are three types of research design: exploratory, descriptive and causal. For this thesis, exploratory qualitative research design is applied. The sequence of the techniques is as following: (1) Literature review, including some quantitative research related to the topic (e.g. 9 out of 10 Silicon Valley start-ups fail); (2) Qualitative research; (3) Discussion, (4) Case study analysis (qualitative sampling) (5) Results.



The primary objective of exploratory research is to provide insights into an understanding of phenomena. Subject of the study can be measured in qualitative and/or quantitative manner.

The objective of conclusive research is to describe specific phenomena to test specific hypothesis and to examine specific relationships. This requires that the information needed is clearly specified. Conclusive research might be either descriptive or causal. Major objective of descriptive research is to describe something, usually market characteristics and functions. Main difference between exploratory and descriptive research is, that descriptive research has the prior formulation of hypothesis on a certain matter. Causal research is used to obtain evidence of cause-and-effect relationship, i.e. it attempts to answer if a hypothesis of causal relationship can be justified (Malhotra & Birks, 2003).

3.3 Limitations

Time limitation: new case studies step in with new updated suggestions on how to reduce failure rate of SMEs.

Variety of companies: companies vary in their size, industry and corporate cultures. All these factors have an impact on how different approaches can help them to succeed through innovation.

Case study limitation: both the Six Sigma and the Lean Start-up have myriad of case studies that could support the value and efficiency of these Excellence Management Systems, however the majority of these case studies are lacking the in-depth description or are limited with the non-disclosure-agreements, meaning, they cannot reveal the data that is critical to know in order to conduct insightful and useful case analysis for the thesis.

4 Results. The Case Study

To prove that The Six Sigma and The Lean Start-up methodologies as the Excellence Management Systems are working, many success stories can be found in the academic books, white paper and articles, also in the private domains of the consulting companies, but these are often limited by non-disclosure-agreements. Companies like Motorola in 1987 (Ansari, Lockwood, Thies, Modarres, Nino, 2009) and General Electric in 1995 (General Electrics) are most-known cases of successful the Six Sigma implementations. In fact, Motorola and General Electric managed to sustain their global success because of the Six Sigma; Six Sigma up to this day is inevitable part of these companies' culture and strategy. The success of the Lean Start-up is best illustrated with the success of stories of companies like Dropbox, IMVU, Votizen, Aardvark (The Lean Start-up, 2010), Slack and Snapchat (Business Insider, 2014).

To support the fact that Lean Start-up methodology works, the case study of Gamevy has been selected. Important note: today Gamevy is a successful company. At its early stage Gamevy followed the Lean Start-up methodology, however, according to Gamevy, it almost led the company to a costly failure. Firstly, this case study can showcase the methodology step by step and identify the mistakes, secondly, it provides for the Lean Start-up some insightful critique based on real-life experience, and thirdly, this case gives an opportunity to explain what and why went wrong and what could have done differently in order to succeed following Lean Start-up methodology.

4.1 Company Profile: Gamevy

Gamevy is a licensed supplier and operator producing a high- quality, select range of real-money games. It was founded in 2013 and is headquartered in London, the UK. Its specialties are gambling, product development, and entertainment. It directly employs 12 people and invites the other people to join them for various projects and activities. The competitive advantage of the Gamevy is the innovation in gaming; the Gamevy bridge online gaming industry with gambling. They “believe that players deserve more innovative and unique content – games that are every bit as entertaining as a TV gameshow, as well as offering life-changing prizes” (Gamevy, 2015).

4.2 Lean Start-up approach at Gamevy

In 2015 Helen Walton, the co-founder and Marketing Director of Gamevy, published an article “Lean Start-Up, and How It Almost Killed Our Company”, telling a story of lean start-up almost brought the Gamevy to the failure. Only when company stopped following the Lean Start-up and took the different approach (i.e. managing the regulations first and then choosing the other product to enter the market), it managed to get back on track and succeed (Walton 2015). In this thesis work, is delivered the quick overview of the Gamevy and the criticism towards the Lean Start-up (the full article can be found in the Annexes part). Finally, there will be delivered analysis of what went wrong and what could have been done differently to succeed following the Lean Statup methodology.

The biggest problem, according to Gamevy team, is that companies view the principles of Lean Start-Up as the universal recipe to innovation success: “Simple solutions are tempting – but they are rarely effective” (Walton 2015).

At the very early stage of the start-up, three co-founders of the Gamevy (marketers and business developers from gambling industry), had a vision to add more fun into real money games, by build a game that would feel like “a TV gameshow, where combining a particular skill (answering trivia questions) with a luck/ chance mechanic gave you a shot at winning a big, jackpot prize” (Walton 2015). The Gamevy team chose to follow the Lean Start-up methodology, by building Lean Canvas, following Build-Measure-Learn loop so that, if needed, they could experience ‘failing fast-failing cheap’. The first challenge they faced were strict British regulations on gambling business, therefore

Gamevy could not run a test with a game that involve real money. It was a costly and long process to get the license (none of this was anticipated).

As for the trial version, Gamevy team created series of playable paper game prototypes that were tested with hundreds of fantasy convention participants; the winning game was called Blackjack Attack. The team draw two possible versions of how to go to the real market with Blackjack Attack: Freemium and with the real money. The description of both versions is below.

Launch a fremium version	Go for the real money version
Faster to market – estimate 3 months	Slower to market – estimate 9-12 months
Cheaper, can be handled internally	Expensive license fees plus external costs
Small revenue stream via in-app purchases	Much bigger revenue stream
Easy / cheap to acquire customers via Facebook advertising on platform – industry average £1	Hard / Expensive to acquire customers willing to deposit – industry average £200 minimum
High Competition from small, innovative companies	Low innovation from large competitors focused on different sector
Payments/ accounts etc handled by platform	Need to build own platform or integrate with third party
Multi-player will be easier since free play means can use bots if necessary	Multi-player will be very hard since it will require high liquidity of simultaneous players
Not our end goal	End goal

Table 6. Gamevy Blackjack go to market options. 2013.

In order to get answers to their key-questions – will people play the game and will people pay for it – Gamevay used Facebook, which turned out to be more costly way that they anticipated. The Facebook gave answers to both: 1) People play the game, 2) Only a few people pay for the game and thus improvement was needed. To measure the improvements the Gamevy team established the metrics, that after team effort were met, but all of them were going too slow compared to what was anticipated. After an effort of 5 months, the Gamevy team decided to quit the Lean Sartup Approach and go after the other option. Gamevy firstly focused on fully understanding British regulations on gambling business and that lead them to entering the market with a different product: “the much bigger bet of regulation – and we needed to do it with a different product, one which accepted a different series of trade-offs” (Walton 2015).

4.3 Analysis and discussion on Case Study of Gamevy

The Case study of the Gamevy showcased of how the methodology that is working in theory, is not always as efficient in practice. This thesis section overviews the critique towards the Lean Start-up, analyses the Lean Start-up approach taken by Gamevy, responds to the criticism and suggests what could have been done differently, that according to the Lean Start-up methodology, Gamevy could have gone through a successful path.

4.3.1 Critique on Lean Start-up Methodology

The Lean Start-up, despite today being one of the most recognized and appreciable methodologies that reduce the failure rate among early stage of SMEs, receives some solid criticism. In this section is overviewed the general critique towards Lean Statup and displayed the main points of criticism from a particular case of Gamevy.

Ladd (2016), based on the research of American 250 teams in clean-tech industry, claims that having a strong strategy is more important than running many market tests to check whether the hypotheses from Business Model Canvas are true or not. The research showed that there is no linear relationship between the number of validated hypotheses and a team's subsequent success. Furthermore, the teams that conducted both open-ended conversation and formalized experiments, at the end performed worse than their counterparts, who chose only one way to test their hypotheses. Thus, based on this research, more testing and validation does not deliver more valid results. In some cases, getting a lot of various customer feedback, may cause confusion in deciding on the next steps, since the entrepreneur might be unsure which feedback to rely on and which one is better to ignore. So, in this case having a solid strategy could help entrepreneur to keep the focus (Ladd 2016).

Testing, according to the Lean Start-up, is inevitable from producing a minimum-viable-product (MVP) – "a version of the product that enables a full turn of the Build-Measure-Learn loop with a minimum amount of effort and the least amount of development time. The minimum viable product lacks many features that may prove essential later" (Ries 2011). Burgstone (2012) argues that entering the market with MVP might be a fatal mistake for many companies. He suggests that instead of entering the market with low quality imperfect product and testing the potential customers with it, the companies should firstly learn other, lacklustre products; improving upon the initial work of others,

companies would be able to produce a better solution and grow to dominate their markets.

The other weakness of the Lean Start-up is that there a potential that good ideas that might be killed quickly only because Lean Start-up does not have a clear rule for when companies should declare the victory; the metrics are left to be decided by the companies without overseeing that these metrics might be rejecting worthwhile ideas (Ladd 2016). In addition, Burgstone (2012) claims that innovation accounting, "measurement/accounting system that uses actionable metrics to evaluate how fast we are learning as a critical measure of progress toward converging on a business-valuable result" (Ries 2011), is a needed way to measure the outcomes at the early stage of SME, however the standard accounting practices cannot be ignored and left unexamined. "Standard accounting simply needs to be interpreted differently for early-stage ventures, not ignored or deemed irrelevant" (Burgstone 2012).

Gamevy, the company of the case study at this thesis work, has recognized the following flaws of the methodology:

1. The companies follow the Lean Start-up as the set of rules, instead of trying to find their own path of success. The Lean Start-up is not the universal recipe of success, but more as a reference that could help companies to be smart and innovative when attempting to survive and succeed.
2. With the lean start-up approach the Gamevy focused on the product instead of the market they wanted to be in.
3. Business Model Canvas led Gamevy choosing Freemium as go-to-market strategy. According to Gamevy, the business plan, which is not recommended when following the Lean Start-up, would have been more comprehensive tool to understand their market segment and thus it would have shown that Gamevy should choose the go-to-market strategy with real money. This go-to-market strategy, according to Gamevy, would have been more successful choice than Freemium.
4. Minimum Viable Product (MVP), according to Gamevy, is an inadequate way to anticipate customers' willingness to buy the final product. According to Gamevy, the minimum viable product, at the end of the day, is a different product from the final product, and therefore the outcome of the MVP does not necessarily match the outcome of the final product, i.e. if the customers pay for the MVP, it

does not necessarily mean that they will pay for the final product that will be introduced to the market.

5. Lean Start-up methodology doesn't help where barriers to entry exist. Instead of facing and working on the end-goal difficulties (such as legal bindings), the Lean Start-up suggests to try the easier options and validate the product through testing. In the case Gamevy, the learning based on their MVP (paper versions and free version) was not useful, since people gave positive feedback on these products, while there were serious barriers to entry for their final product which required costly and time consuming licensing (Walton 2015).

4.3.2 Response to the Lean Start-up critique

In the previous section, there was provided a solid criticism towards the Lean Start-up. This section responds to the criticism and suggests the solutions for Gamevy, on what could have been done differently for Gamewy to succeed following the Lean Start-up methodology. To ensure steady way to suggest the solutions for Gamevy, it was chosen to comment under each step in the timeline of what Gamevy did, what was done wrong and what could have been done differently.

Ladd (2016), criticized the Lean Start-up, in terms of lacking strong strategy (i.e. a strong strategy is more important than running many market tests) and that more testing and validation does not deliver more valid results, but a risk of distracting the entrepreneur on what she or he should focus on. Similar criticism towards the Lean Start-up was attributed from Gamevy, claiming that business plan would have helped the company to anticipate the legal challenges. The fact is that Business Model Canvas is a stage of serious planning, and prioritizing, not anti-plan, as some may claim (Kaplan 2015). Entrepreneurs, who follow the Lean Start-up, should ask themselves which aspects of the business model they should consider first. Lean Start-up, in fact, does not deem the strategy to be irrelevant, but suggests that Lean Start-up based strategy cannot be formed the same way as is it done when creating business plans to persuade the Venture Capitalists or asking for a loan from a bank. Entrepreneurs must test their strategy to avoid the delusional next steps; companies test strategies to find out "which elements of our strategy are working to realize our vision and which are just crazy. We must learn what customers really want, not what they say they want or what we think they should want" (Ries 2011: 9). Furthermore, David Collis, a professor at Harvard Business School, proposes a solution to this challenge: "the Lean Strategy"

(Ladd 2016). It “involves setting clear constraints for which markets and methods are to be considered while testing and refining the business model” (Ladd 2016). Finally, the Lean Start-up process consists of 6 phases (3 of which are major) and each of them has an impact on Start-up Success. It responds to no linear relationship between the number of validated hypotheses and team’s subsequent success, because the success at the first step does not necessarily mean that the start-up will go through the remaining phases without making critical mistakes causing the failure.

The other important and one of the most common pieces of critique towards the Lean Start-up is about minimum-viable-product (MVP). Burgstone (2012) suggests that companies should learn from the other products and improve upon, instead of risking the image of the company by offering own MVP. Gamevy claims that MVP is an inadequate way to anticipate customers’ willingness to buy the final product. In response to Burgstone, it is important to note that MVP is introduced when the product or some characteristic of it is new to the market and, therefore, companies cannot learn of its success based on the similar products. In regards of Gamevy criticism, it is essential to understand that it is not meant to be a separate product, which has somewhat similarities to the final product, but it must be a low value product that exactly replicates the company’s hypothesis of how final product will be. As Kaplan (2015) notes, “MVP is simply a way to rapidly test your hypotheses, deepen your understanding and clarify your vision.”

The final piece of critique was that Lean Start-up does not have a clear rule for when companies should declare the victory. Potentially good ideas could be ignored, when they do not match the established metrics of the start-up. Furthermore, according to Burgstone, companies rely solely on innovation accounting and ignore the standard accounting. Good ideas are important; however companies must prioritize and set their focus, therefore every good idea can be acknowledged at a given time. Lean Start-up as any other methodology does not avoid the need of opportunity cost, and thus some ideas must be sacrificed for the sake of the others. Lean Start-up advantage is that it pushes for hypotheses testing and thus it allows start-ups to recognize valuable ideas. Innovation accounting was introduced, because start-ups face completely different issues than the other companies; it does not mean that standard accounting must be ignored, but it means that start-ups must be aware that standard accounting is not accurate enough to define company’s success at early stages (Blank, 2013).

4.3.3 Step-by-step Gamevy analysis and suggestions

In this section is provided the timeline of the Gamevy Lean Start-up story. Each step contains insights what was done incorrectly and what are the proposed solutions that would have allowed Gamevy to win following the Lean Start-up. Figure 4 'Timeline of Gamevy Lean Start-up Approach' displays the actions taken by the Gamevy in a timeline. Based on these actions, there will be suggestions conveyed.

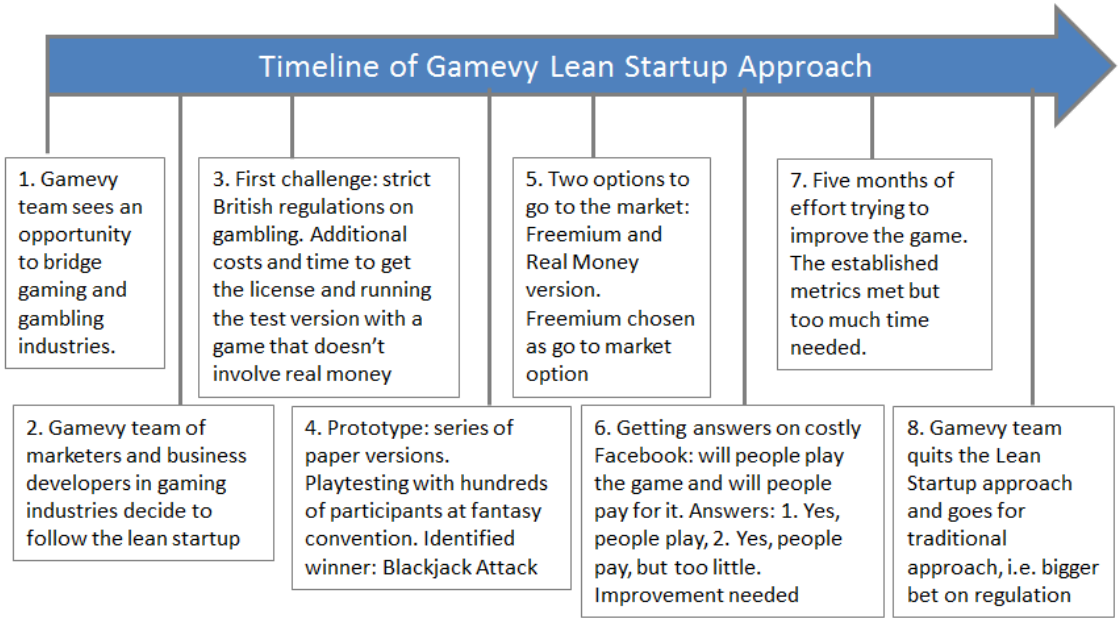


Figure 4. Timeline of Gamevy Lean Start-up Approach

1. Gamevy team sees an opportunity to bridge gaming and gambling industries. Market research is integrative part business model canvas and is needed to manage the start-up. As Eric Ries (2011: 8) notes: "A start-up is an institution, not just a product, and so it requires a new kind of management specifically geared to its context of extreme uncertainty". It responds to Gamevy criticism where it was said, that Lean start-up does not give a right insight of the market, meanwhile traditional approach such as business plan would serve as a great tool. Lean Start-up suggests using business model canvas as it is more insightful and closer to the real-life substitute for business model (Blank, 2013: 66). If done correctly and with a serious research involved the business canvas should prevent from the challenges that Gamevy team experienced.

2. Gamevy team of marketers and business developers in gaming industries decide to follow the lean start-up. The focus here should be on the Gamevy team

which consisted of marketers and business developers, and then product developers, who joined the team at the later stage. Gamevy did not follow the critical point of Lean Start-up: to form cross-functional and hold them accountable learning milestones (Ries 2011). If the Gamevy laid-out in-depth Business Model Canvas and accordingly tried to form the cross-functional team, they would have overseen and managed the barriers to entry, which, eventually turned out to be the main criticism towards the Lean Start-up.

3. First challenge: strict British regulations on gambling. Additional costs and time are needed to get the gambling license and run the test version of a game that doesn't involve real money. This point goes back to the need of cross-functional team and the Gamevy criticism towards Lean Start-up in regards of not overseeing and ignoring the barriers to entry. The Lean Start-up suggests focusing on testing in order to meet customer needs (Ries 2011); it does not imply that Lean Start-up suggests ignoring and skipping the more complicated options to enter the market, as Gamevy case attempted to illustrate. The well identified and managed cross-functional team of knowledgeable people in several areas of the business and its functions, including the expert in legal matters for the gaming and gambling industry, would have diminished chances of this first challenge happening. Not having the right team with the right knowledge and expertise was the root of Gamevy's failure.

4. Prototype: series of paper versions. Playtesting with hundreds of participants at fantasy convention. Identified winner: Blackjack Attack

Series of game paper versions was the Gamevy Minimum-Viable-Product (MVP) to test if the customers are interested in Gamevy games and which game is the best for the market. Gamevy team expressed the criticism saying that testing with MVP does not provide adequate results, based on which they could anticipate how successful the final product will be. As a reminder, MVP is "a version of the product that enables a full turn of the Build-Measure-Learn loop with a minimum amount of effort and the least amount of development time" (Ries 2011: 76). Firstly, the question is if the paper version of a game is the right MVP for online game with money. Ries (2011) notes that developing the right MVP might require investing time and money to accurately test the assumptions about the final product. The unsuccessful case of Gamevy and then later criticism towards MVP, prove that paper version of a game was not a suitable MVP. Finally, testing must be done with the segment of the market, that already at the stage of laying down the Business Model Canvas are hypothetical customers; Fantasy

Convention participants was not the right segment of Gamevy customers (only one small part of it), therefore testing results raise the doubt of their validity.

5. Two options to go to the market: Freemium and Real Money version. Freemium chosen as go to market option. Gamevy explained their choice of Freemium as it is more suitable when following Lean Start-up methodology. The fact is, that Lean Start-up does not necessarily mean cheaper; it means faster and easier to test, therefore based on a given situation the Real Money version would have been better choice if following the Lean Start-up. Ries (2011) notes, that when start-ups send out their imperfect products (MVP), they should consider charging money for them, because developing the product is costly and even this primary imperfect version of a product should create value to the customer.

6. Getting answers via costly Facebook: will people play the game and will people pay for it. Answers: 1. Yes, people play; 2. Yes, people pay, but too little. Improvement needed. Gamevy team did not put emphasis on the Lean Start-up statement that "the business and marketing functions of a start-up should be considered as important and engineering and product development" (Ries 2011: 7). It means that marketing efforts must go hand in hand with product development and not in phases one after another; product improvement and marketing efforts (including social media) should happen simultaneously, and if needed, multiple times. In this case the Gamevy ran only one marketing campaign and then closed for months to improve the product without further testing with a real customer.

7. Five months of effort trying to improve the game. The established metrics were met but it required too much time. If time is critical for a company, it should become part of the active metrics. This would help company to anticipate failure early enough, if the time metrics among the other metrics, are not met. Time related metrics, if needed, are the part of the Innovation Accounting, which measures progress based on the set up milestones and the way work was prioritized.

8. Gamevy team quits the Lean Start-up approach and goes after the other option: firstly focusing on British regulations in gambling business and then entering market with a different product

It is a smart decision to quit the project, which turns out to be time consuming, costly and not adding enough value in an anticipated period. This analysis showed that

Gamevy made a bunch of critical mistakes when following the Lean Start-up. Recommendation for Gamevy is to complete the in-depth analysis of Lean Start-up or any other methodology before attempting to apply it. Gamevy had expressed the correct criticism aiming to emphasize that companies should not view the Lean Start-up as a set of rules, which should be blindly followed. However, any interpretation of the methodology should not digress from the core, because it causes confusion and series of critical mistakes as it happened in the case of Gamevy.

5 Conclusions and Recommendations

SMEs at early stage experience failure for myriad of reasons. In this thesis the reasons behind the SME failure were distinguished into five categories: (1) Priorities: Lack of skill to identify and prioritise the problems and opportunities, (2) Management**:** Lack of structure and problem management, (3) Team: Ineffective team that drives a change and poor talent management, (4) Testing: Not established or poorly established environment for testing and experimenting, and (5) Metrics: Inaccurate metrics to measure the success and anticipate the risk of failure.

A big number of reasons behind the SMEs failure correlates with the wide variety of SMEs: they differ size, industry, management styles, business model, the choice of objectives, etc. And therefore, there isn't one universal recipe that would prevent all these diverse SMEs from all these diverse causes of failure. SMEs of this thesis (the ones that aim to grow and scale through innovation) should keep in mind that every success story is special, and therefore what worked well for one SME might be worthless for the other. Instead, it is recommended to actively follow the changes in the market, as well as actions taken by different stakeholders throughout value chain, which led them to the success, and pick a few actions/things that would be suitable for your SME. Then test them and only if these possible innovations are generating cash, accept them into the strategy. The primary innovation strategy of a successful company never remains the same; it must be constantly adjusted as per changing environment.

Excellence Management Systems, such as the Six Sigma and the Lean Start-up should not be viewed as the *new-way-of-doing-things,* but rather as a comprehensive tool that guides the SME towards its objectives based on its current situation and future goals. SMEs shouldn't blindly follow the rules of methodology; instead it should interpret and adapt the methodologies in its own way. Essential to understand, that interpretations cannot oppose or digress from the core of the methodology.

Upon the comparison of the Six Sigma and the Lean Start-up, there have been distinguished five common key-success factors: (1) importance of clear identification and prioritization of the problem, (2) the importance of the structure and structural approach in managing the problem, (3) the need to identify the right people to drive the change and growth, (4) creation of safe space for experimentation and learning, and (5) the necessity to define the things to measure and identify to most suitable metrics.

Managing these five areas and having a well-tested strategic approach to them should prevent SMEs from the failure. In addition to this, both Excellence Management Systems that were analysed in this thesis work are customer-oriented. However, it does not mean that the SMEs should focus solely on the customer, but instead through its cross-functional teams SMEs should establish a trustworthy network of the stakeholders throughout the value-chain. Strong relationship with all stakeholders, including the customer, will allow the SMEs to leapfrog their competitors that do not have well established network and navigate alone at their ecosystem of multiple stakeholders.

Furthermore, SMEs should understand that when it comes to innovation, the real problem is not the lack of innovation, it is a sustainable innovation. Innovation is not only a one-time project, improvement or a breakthrough. Today innovation is an essential part in the strategies of the most successful companies; as the processes of the Six Sigma and the Lean start-up are circular and continuous, the same should be with innovation. Innovation must be continuous and play a strategic role in any SME that aims to grow. Successful development of the innovation enhances company's overall capability in many areas of performance.

Finally, the last recommendation in terms of SMEs, which successfully grow through innovation, .i.e. generate higher cash flows, gain bigger market share, increase the power of their competitive intelligence among their competitors and eventually turn into large companies. Even though SMEs should not act as the smaller versions of large corporations, but in the timeline of moving from SME to large companies, not only the innovation strategy should be revised and adjusted, but also the metrics measuring the innovation success. The right shift of metrics at each phase of company's growth will help them avoid delusional situation overviews and decisions.

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6 Appendix

6.1 Gamevy Case Study of Lean Start-up “Lean Start-Up, and How It Almost Killed Our Company”.

Since Eric Ries published his 2011 book – The Lean Start-Up – applying his experience with IMVU to business innovation, the idea has grown in popularity as a methodology. In fact, it has ceased to focus on the world of start-ups and has become the development methodology of choice for larger companies looking to improve their innovation success rate.

The MVP is almost universally accepted within software development as an aim, while ‘customer validation’ appears in every plan, presentation and project review.

As with many methodologies, as Lean Start-up has grown in acceptance and adoption, many of its subtleties have been lost. Rather than analysing the specific context in which it works best, ideas have hardened into orthodoxy as part of a solution intended to support a consultancy.

That consultancy exists because despite espousing the lean start-up method, very few companies practise it effectively. This article is not, however, a critique of companies doing lean innovation badly. Rather than calling for greater adherence to some original purity of method, I would say that the adoption of Lean Start-Up as a method (as distinct from the adoption of common-sense principles from within it), fails to take account of the limited conditions in which it is most appropriate. This holds true for the related approach of ‘Little Bets’, as described by Peter Sims in his 2013 book or Michael Schrage’s The Innovator’s Hypothesis.

The fault does not lie in the principles of Lean Start-Up, but in their application as a universal recipe to innovation success. Simple solutions are tempting – but they are rarely effective. I say this with more humility since it is a trap into which I, and my fellow founders, fell with our start-up, Gamevy. Let me tell you our story.

From Blackjack Attack to BornLucky Gameshows

The three founders of Gamevy had met researching and writing a series of books on Agile and Lean practices. Naturally, when it came to our own start-up, our mantra was to get the product out in front of customers. Find real data. Then adapt. Fail fast, fail cheap. From planning using the Lean Canvas to setting up a series of tests before we wrote a line of code, we tried to keep to a tight Build, Measure, Learn loop.

Gamevy had a clear vision. We wanted to add more fun into real money games, (real money, being the somewhat disingenuous way the gambling market likes to portray itself). In particular we wanted to build a game that felt like a TV gameshow, where combining a particular skill (answering trivia questions) with a luck/ chance mechanic gave you a shot at winning a big, jackpot prize.

The main business models were pleasingly simple – either a multiplayer version in which contestants wagered their stake against each other and we raked the winner, or a single-player version in which we acted as the house. Unfortunately, both were a form of gambling, a highly regulated industry in the UK. In either case we would need a gambling license. Within the strict rules of that regulation, we would not be able even to test a game with real money until we had a license in place.

We had created a series of playable paper prototypes. We looked at their possible value and profitability, how fun and playable they were, and how easy to build or market they might be. We took several of these to ‘play-testing’, including a memorable weekend at a fantasy convention, playtesting for 24 hours with hundreds of convention-goers all wearing corsets…

One game was the clear winner – a game we called Blackjack Attack.

At the time, our main options seemed rather like this:

Launch a fremium version	Go for the real money version
Faster to market – estimate 3 months	Slower to market – estimate 9-12 months
Cheaper, can be handled internally	Expensive license fees plus external costs
Small revenue stream via in-app purchases	Much bigger revenue stream
Easy / cheap to acquire customers via Facebook advertising on platform – industry average £1	Hard / Expensive to acquire customers willing to deposit – industry average £200 minimum
High Competition from small, innovative companies	Low innovation from large competitors focused on different sector
Payments/ accounts etc handled by platform	Need to build own platform or integrate with third party
Multi-player will be easier since free play means can use bots if necessary	Multi-player will be very hard since it will require high liquidity of simultaneous players
Not our end goal	End goal

Be honest now, which sounds like the route the Lean Start-Up method would encourage you choose? We decided to go fremium first.

The Increment Trap

We had two key questions – will people play the game and will people pay for it? Of course, we had some ideas about what we wanted the repeat play and retention metrics to look like and what we would deem a ‘success’ and what a ‘failure’.

Getting into the Facebook store took longer and was more costly than we had anticipated. In order to test the game with a statistically significant volume of customers and to charge real money, we were driving a bunch of requirements that we knew were not where we really wanted to be in the long term.

Once we were fully launched and we started getting feedback, it wasn’t perfectly clear.

Were people playing the game? Yes! Our repeat play figure was a relatively healthy 10%, although we suffered huge drop off during the first game.

Were people paying? Well, some people were. We were above the limit we’d set ourselves as ‘FAIL’, but it wasn’t enough people and not as much as we’d like.

That was all OK! We were getting feedback and we knew what we needed to do – improve!

So we began to see if we could up those numbers, refine the product, improve the drop-off rates, convert more people, see what referral and sharing metrics might look like, if the business model of gaming could be made to work…

Our changes worked. We managed to make improvements to all of our key metrics – but none of them were going fast enough. Looking forward we could see that it would be perfectly possible to spend the next year and all our resources improving the game. Would it ever do well enough?

Four months after we'd begun work on it and 1 month after launch, we bit the bullet. We needed to go back and take the other choice – the much bigger bet of regulation – and we needed to do it with a different product, one which accepted a different series of trade-offs.

20/20 Vision

With hindsight – that wonderful vision – we realised that the learning we had bought with such hard work was not that valuable to us after all. Rather than focusing on the product, we should have focused on the particular market we wanted to be in. The differing business models of the fremium and real money gaming markets turned out to be crucial. Interestingly, a traditional business plan might have helped us focus on that far better than Lean Start-Up.

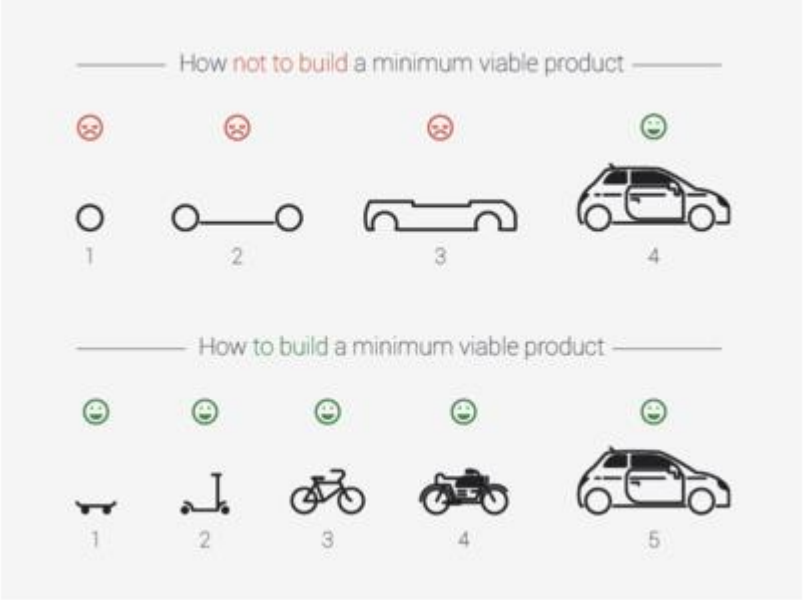
We were extremely lucky that our costly experiment did not cost us too dear, that we stopped it before it was our only experiment.

In the last year, Gamevy has gone on to gain our gambling license and build two games (both very imperfect, still). In the last month, we have shifted our focus away from our eventual goal (be an operator direct to consumers) and towards being a supplier to a couple of specific partners. Doing this has meant delaying our launch, making the prospect of consumer feedback more distant as we redo work to integrate with a partner platform. We have, painfully, decided on a trade-off that lets us stay alive

longer in the hope that it makes our eventual success more likely. This is not failing cheap and failing fast. Only time will tell if it's the right move.

It has made us think hard about Lean Start-Up and some of the considerations that might have got us here faster if we'd thought about it differently.

When the MVP is not what you want



This is a popular diagram used by Spotify to explain the concept of an MVP. The problem is that like many simplifications, it offers as much of a block to real understanding as it does clarity. The bottom 'correct' How-to progression shows 5 'solutions' to the problem of transport. Yet, of course, they are not really 5 different versions of the same thing – they are 5 separate products, each with specific benefits and requirements, each needing different learning validation.

If you want to build a car, then the learning you gain from dedicated skate-boarders is not going to help you very much. In fact, as you listen to your customers and implement features about carbon composite materials and epoxy fibre reinforcement to increase pop, you are going to get further away from your goal of creating a car, not closer.

It's just an illustration! No-one's meant to take it literally!

Yes, we know, but actually, we think the diagram rather neatly illustrates why Lean Start-Up doesn't help you much where barriers to entry really exist. Where there is something that makes building your end-goal difficult (like the complexity of a car), then 'steps' along the way can often turn out to be not the right steps at all but rather choices that lead you in a different direction.

Let's take Gamevy's example. We knew that real-money gaming had formidable barriers to entry. Rather than facing those, we decided to try to validate the idea in an area with lower barriers to entry – fremium gaming. But in doing so we discovered several things:

1. the learning was not that useful – these were not our eventual customers. They were essentially telling us about skateboard features when we wanted car enthusiasts. Even if some social gamers are also real money gamers, we were talking to them within the context of a social gaming market. It turned out that this really mattered when it came to learning.
2. we discovered new barriers to entry existed that we had not foreseen. The costs of running the game live – technical, marketing and operations – were much higher than anticipated. Since this wasn't the 'real' market we wanted, these were wasteful costs.
3. The MVP was expanding. In order to try and get the validated learning – that is, would people PAY, for the game – we needed to build an entire fremium economy around it – referral and sharing mechanisms, sales, alerts and notifications…

The Barriers to Entry

Context matters – the higher the barrier to entry, in general, the less minimal an MVP will be. Trying to take smaller steps can often lead to errors like those Gamevy made.

As my co-founder Paul Dolman-Darrall once commented, 'little bets' or MVP steps work best in places that have lower barriers to entry:

- Disruptive markets where the barrier to entry will be attacked. We see this in examples such as Uber – attacking the traditional barrier to entry held by cab-drivers, or Air BnB, attacking the traditional hotelier market. They took a

calculated risk that regulation either could or would not be applied to them. In many industries – gambling, healthcare etc – this risk would simply be too high.

- Industries with naturally low barriers to market. These are typically commodity or service billing industries, which offer a respectable living but are unlikely to lead to the asymmetric payoff associated with successful start-ups.
- Incremental improvements where the barrier to entry has already been paid. For large companies trying to innovate on an existing product or service – this is the most likely scenario and explains why small bets and the concept of the internal lean start-up works so well for larger companies.
- New industries where no barrier to market exists at all – arguably this is exactly where Eric Ries's company IMVU was placed – 3D avatars were entirely new within an online social market that was itself in its infancy.

Markets with high regulation or incumbent competitors often require the opposite strategy – big bets. As Steve Jobs called it, moments in the life of a business when you 'bet the farm'.

As for Gamevy and our decision to bite the bullet and gain our Gambling License, there is often no way around these big bets. If we had failed to get the license the company would have closed down. There remain dozens of failure points in our near future – but in our case the big bet was the only one that mattered.

Step-by-step versus 'little bets'

Pixar is a frequently quoted example of little bets (including within Peter Sims' book). There is an important differentiation between enforced step-by-step development and a deliberate 'little bet' or 'MVP' strategy. It is a difference that is frequently elided, but I would go so far as to claim that prior to their first success, Pixar's actual strategy was to take the biggest bets that they could feasibly manage.

Pre Toy Story, for example, the team made several computer-animated sequences for adverts. Although such projects may well have provided valuable technical learning, they were a product of necessity – providing a small revenue stream to keep Pixar afloat. At no point did the team decide to pivot and chase such work; they were eager to be able to reject it. Similarly, the shorts that the team created (including Tin Toy, the genesis for Toy Story), were made to show off the company's hardware capabilities

and to gain a business customer. Pixar was not trying to build a consumer base, it was offering a shop window to gain a partner. As it successfully did when commissioned to make Toy Story for Disney.

Today, the available technology of YouTube, Vimeo and crowd-funding might encourage a young animation company to go direct to consumers. Who knows if Pixar would have made the same choices today? Who knows if they would have been more or less successful in doing so? Pixar accepted some painful trade-offs in order to survive.

I suggest that if in the 80s and 90s someone even richer than Steve Jobs had offered Pixar the opportunity to work ONLY on their own full-length animated feature film with no need to worry about revenue or a distributor, they would have jumped at the opportunity to turn down the adverts, the shorts and Disney's heavy-handed oversight. It is only with hindsight that we perceive decisions that at the time appeared to be compromises as small steps along the way to animation dominance.

Characterising decisions made as 'little bets' or a series of MVPs, when in fact they were enforced by necessity (need for revenue, inability to acquire distribution or customers without a partner etc) offers a misleading picture both for start-ups and larger companies.

MVP vs MDP, The Great Start-Up Experiment

Start-ups work rather differently to how large companies run innovation projects. A big company with a portfolio of innovation products is the perfect place to implement the 'little bets' strategy – investing more in this seemingly-successful idea, killing off this poor one. For start-ups a poor innovation product is its only product. When it fails or delivers only a small revenue stream, there are a limited number of times that the start-up can pivot, or kill an idea and start again.

Each independent start-up is its own 'little bet' – the market gains the benefit of the few that succeed, but that's not much consolation for the 80% of start-ups that close within the first 3 years. Those that succeed will have a mixture of good ideas, good management, good funding and luck. The Lean Start-Up method fails to say much about the equally important, latter two.

Since working in a start-up often means significant sacrifices, individuals would certainly rather fail fast and then move on to something more successful. But what happens when an MVP actually makes failure more likely?

In the IMVU story, there is little real cost to launching a buggy, poor product. Eric Ries humorously mentions the personal cost to his reputation as a technologist, but not to the product itself. This pre-supposes that there is a large pool of potential customers, that the costs of acquiring them will not outweigh the value of their feedback or revenue if acquired later, and that negative feedback will not have an impact on the product or company's future.

In fact such circumstances are rare. In many industries, an MVP either delivers little learning or offers significant risk – launching a buggy drug or financial instrument might shut down your company. Instead, the company needs to focus on delivering the Minimum Desirable Product or MDP.

Teasing out the difference between viable and desirable can prove extremely difficult. Generally customers are not able to tell you what innovation they find desirable until they see it. And seeing it means that you have to do the work up front before validation – testing concepts and ideas will not always provide reliable feedback. As any marketer will tell you 'would you pay for this?' is a meaningless question compared to seeing what customers actually put their hands in their pockets for.

Take a non-technical example… Publishers will often say longingly that they are looking for 'the next J. K. Rowling'. And if you ask children 'what kind of book do you want to read next?' they may tell you that they want something 'just like Harry Potter'. Does that mean that publishers should be commissioning dozens of series about a boy wizard set in a boarding school? No. Although there are plenty of copy-cat books which seem to suggest publishers have not really figured this out. The disappointing sales of such series mean publishers are paradoxically LESS likely to take a chance on a new author with a kooky idea.

Novels are not MVPs. Attempts to make them so – outlines, single chapters and serialisation – are rarely successful. Few readers want to try a chapter knowing it might be months before they get the rest of the novel and any fiction author will tell you the

first chapter will have many rewrites by the time the last chapter appears. For authors, it is hard work to get agents or publishers to read a manuscript and not much easier to get readers to your blog. There is also a cost to offering up first drafts: your limited group of readers will be unlikely to read your next draft and worse, they may leave a review telling everyone else how rubbish you are.

These risks hold equally true for most start-ups: a limited pool of customers who are potentially expensive or difficult to acquire and whose negative feedback is likely to be overheard and have a major impact. Eric Ries frequently stresses that early launches, ones expected to fail, should not have any press or marketing – but it's a strangely out-dated idea to believe that only advertising or PR impacts on a brand's reputation.

The Minimum Desirable Product – one which at least a sub-set of customers will love – is often not very minimal at all. Apple is the classic example – a company that focuses on ensuring the product is loved – even if that means completely redesigning something in order to achieve an aesthetic improvement (as occurred with the i-phone). Most start-ups have only one shot at such an idea.

At Gamevy today, we build game prototypes for internal testing – they help us refine the mechanics of the game, including how easy or hard it feels and what the win rate / sense of agency might be. But we do not put them live – partly because without official and expensive testing via an external party we would be violating our gambling license to do so and partly because we can't risk lowering our repeat play and retention metrics by offering our (or our partner's) expensively acquired customers an inferior game. Perhaps one day – in our successful future – we might implement a labs or beta environment where a few customers can play these prototypes for real and where we undertake the external testing early as part of our initial development cost.

At the moment, the cost of getting to the MDP is less than the risk of the MVP.

In such cases if all the Lean Start-Up method contributes is to say 'make sure you don't add in anything those customers won't care about', then it is not especially useful. You will still have to make a series of judgement calls on what is necessary, what is desirable, and what is a 'nice-to-have'. The only validation you are likely to get are from informal focus groups or existing 'friendly' customers – neither of which offers a guaranteed guide to market performance.

Conclusion

In 2004, when Eric Ries co-founded IMVU, it was still relatively cheap to acquire customers online. Those costs have since increased significantly as the online environment matches other media in marketing budget requirements. This makes parts of the model around customer acquisition rather like turning for advice to the goldrush pioneers when nowadays the mining companies have moved in.

The insights of Lean Start-up are still valuable – but their best application is in larger companies looking for a more effective way to manage their innovation portfolio. Where customer acquisition is the 'problem' of a different department or asks for transition and conversion of existing customers, a single-minded focus on product development and validating learning may be exactly what is required. Similarly when the company already works in the space and has dealt with the barriers to entry, a single-minded pursuit of keeping the product as small as possible, is also excellent discipline. After all drugs companies and car manufacturers are both as determined to avoid 'waste' as any software company.

For start-ups, high barriers to entry can make the size of the MVP so large that there is little point in calling it a 'little bet'. Instead, we should apply the common sense principles of avoiding waste and attempting to set up experiments to validate underlying business assumptions as soon as possible – although we should accept that the results are rarely binary and therefore there is little clarity on how to proceed. This is certainly incremental development with a focus on customer learning, but calling it a guaranteed process is overclaim by any standards.

In the end, I would sum up our caveats as these:

- Smaller is not necessarily better and viable is not always the right measure.
- Validated learning sounds great – but barriers to entry may force you to develop a product blind and without experiments. Blind progress may be better than open-eyed stasis.
- Pivot points do not only come from customer feedback – there are many other types of serendipity that may intervene and offer a choice. That choice is never easy because almost every trade-off hurts.

- All the metrics and hypotheses in the world will probably not help you when reality bites. Since luck plays such a major role in what occurs, try to keep this as light-weight as all your other planning.
- No process or discipline can guarantee success. There are always new, exciting and unforeseeable ways to fail. We'll let you know what original ones Gamevy comes up with in the next year.

About the Author

Helen Walton is co-founder and Marketing Director of Gamevy, a tech start-up which recently won the PitchICE award and will launch its games soon via a partner. Her writing has appeared in diverse places, from the Daily Mail to the Tate Britain, and on topics from lipstick to organisational change. The three Gamevy founders met while writing the VFQ books which now form the BCS Agile Practitioner qualification. Three years of researching and debating methodologies, and interviewing hundreds of organisations led to the founders also setting up a community and conference - Spark the Change - for people who want to improve the whole organisation, not only IT or product development. Running in London 1-2 July 2015, Spark attracts people from around the business and from all industry sectors. Leading thinkers on the future of work and management will be speaking, along with case studies from innovative companies including WL Gore and Spotify, and practical workshops on skills and tools to implement real, lasting change.