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**How established companies can master disruptive
innovation like startups?**

Achieving innovation excellence and disruptive ability

PhD dissertation summary

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“There is surely nothing quite so useless as doing with great efficiency what should not be done at all.”

Peter Drucker, 1963

1 Introduction

Emerging **exponential technologies** empower entrepreneurs to create a **world of abundance**. For established companies it implicates that if they are not the ones creating this abundance, somebody else will, by disrupting their technology and market. In order to keep pace they have to learn how to pick up and apply exponential mindset and **master disruptive innovation like startups** – even within their established organizations.

The dynamisms of immersive changes can already be experienced: in 10 years 50 % of the today Fortune 500 companies will no longer exist, while the average lifespan of an S&P 500 company decreased from 67 years (measured in 1920) to 15 years today. Exceeding 1 billion market capitalization can be achieved only in some years and the cost of launching an internet startup has dropped from \$5,000,000 in 2000 to \$5,000 in 2011 – that is a **1000 fold price-performance improvement in just 11 years!**

That kind of exponential progress of technology quickly turns into **exponential business growth**. Giant corporations are not just forced to compete with, but are annihilated by a new breed of companies that harnesses the power of exponential technologies.

Entering the **age of disruption** and the **world of billion-dollar startups** (the so-called unicorns), neither age nor size nor reputation nor even current sales guarantee that established companies will be around tomorrow. It is also a place where anyone can build an

organization that is sufficiently scalable, fast moving, smart and global by default. They may enjoy exponential success never seen before, with a minimum of resources and time. This is what startups are doing best: unlocking potential from exponential technologies with a speed of light, building global businesses in a short period of time never seen before and disrupting existing markets and its incumbents.

For established companies it is time to **learn from startups** about mastering disruptive innovation and dealing with exponential changes in the fields of innovation management.

My dissertation is about **how**.

1.1 Why this topic?

As the systematic process of execution needs to be repeatable and scalable, staff functions developed Key Performance Indicators (KPIs) and business processes to plan, measure and control execution. These KPIs and processes make companies efficient in execution, but paradoxically they are the **root cause** of the corporations' inability to be agile and responsive innovators. Since technology is advancing exponentially, the organizations absorbing these changes logarithmically, need **new approaches, tools and mindset** to keep themselves in the race in the fields of profitability and growth.

According to **Moore's Law** (the exponential growth of computing power) and **Metcalf's Law** (exponential value of interconnections on expanding networks) the exponential advancement of technology has become a generally accepted phenomenon in the last decades. Futurist Ray Kurzweil has identified this exponential technological progress on many fronts as part of a **law of accelerating returns**. The driver fuelling this phenomenon is information. Once a domain, discipline, technology or industry becomes **information-enabled** and powered

by information flows, its price/performance begins doubling approximately annually. [Ismail, 2014]

The great **management dilemma** of the 21st century is that **technology is changing faster than organizations can absorb change**. Providing appropriate answer is the crux of innovation management.

Innovation management must explicitly address how these technologies will be absorbed into the operations of established companies. The **goal** of my dissertation is to give a **deep insight** into this phenomenon and to provide **appropriate answers** on the attending problems by comparing traditional and lean innovation methods, analysing the innovation performance of various companies and elaborating a **roadmap for a successful transition**.

1.2 Research objective and question

Innovation management techniques pioneered by startups were originally designed to create fast-growing tech ventures. But in the last decade it became clear that those innovation management and lean startup practices are not just for startups.

The first hundred years of management education focused on building strategies and tools that **formalized execution** and efficiency for existing businesses. In the last decade, fast-growing tech entrepreneurs elaborated **new set of tools** for searching for new business models, launching startup ventures and managing exponential technologies – just in time to help established companies to deal with the forces of continual disruption. [Blank, 2013]

Built on these early and immature results, I set the **objective** of my dissertation as follows:

To generate for established companies new in-depth, context specific insight into dealing with the challenges brought by emerging exponential technologies and to arm and equip them with appropriate tools and methods to be excellent and eventually disruptive innovators.

This had been planned to be achieved by answering the **research question**:

How established companies can master disruptive innovation like startups?

Unfolding a research question into **sub-questions** helps not only to understand the phenomenon but supports to translate theory into practice and fosters managerial implication. Therefore my research question was split into **three categories**.

Since the research objective was similarly complex and holistic as the research question, setting **research sub-objectives** seemed to be appropriate. The consequent following of these sub-objectives also supported holding the focus of the research. Table 1 gives a summary of the research sub-questions and the research sub-objectives.

Table 1: Sub-questions and sub-objectives of the research

Sub-question	Sub-objective
A) Theoretical foundation	To build a deep and wide foundation from already researched, documented and validated sources which serve as pillars of new findings and insights.
A1) Why is it important (for an established company) to be innovative?	To have an overview about the development of exponential technologies and disruptive innovations, their effects on the global economy and the nature of innovation management.
A2) How established companies are trying to be innovative?	To explore the innovation conundrums of established companies in order to identify focus areas of management cognition and

Sub-question	Sub-objective
	action to which the delivery of top or potentially disruptive innovations are highly dependent.
A3) How startups are making innovation happen intentionally and not exceptionally?	To show the main characteristics of startups and to bring a preliminary insight into the lean startup method used by them.
B) Practical establishment	To bring together relevant practices about innovation-related activities of startups and established companies.
B1) What established companies can learn from startups on the field of innovation management?	To provide practical distinction between startups and established companies, and a detailed description about their innovation management practices and strategies.
B2) Are lean startup methods appropriate for unlocking innovation potential?	To present lean startup principles and methods from the specific perspective of getting them used and applied at established organizations.
C) Managerial implication	To create a conceptual roadmap which shows the way towards innovation excellence and disruptive ability.
C1) How top and moderate innovators are different from innovation management point of view?	To specify the significant differences between top and moderate innovators and their innovation performance.
C2) How startups and established companies are different from innovation management point of view?	To specify the significant differences between startups and established companies and their innovation performance.
C3) What are the enabling factors of being a disruptive innovator?	To deliver a holistic understanding of the key facilitators (factors) enabling the capacity and capability to pursue potentially disruptive innovations.
C4) What are the enabling factors of being a top innovator?	To identify the most important capabilities that spur innovation performance and lead to excellence.
C5) What actions to take on strategic and operational level to be a successful and disruptive innovator?	To convert the knowledge (gained during this research) into systematic management actions on strategic and operative level to reach innovation excellence and enhance disruptive ability.

Source: own design

2 Research methodology

Posing problems correctly is often more **difficult** than answering them. Indeed, a properly phrased question often seems to answer itself. [Babbie, 2010]

2.1 Research character

Since my research is conducted and carried out in a field which existed only in its embryonal form a decade ago, the required knowledge, experience and literature for setting **hypotheses are absent**. Therefore this research has an **exploratory and qualitative character**, where the **aim** is to **deepen and widen the general understanding** by uncovering previously unknown fields and nexuses, and answering the research question.

The exploratory and qualitative nature of the research also means that **there are no hypotheses set**, and rather more research sub-questions are stated which give a clear orientation. Furthermore, the formalization of the research objective and the underlying sub-objectives also helped to hold the **focus** on the results concluded from the available resources. What really matters is the **new knowledge** gained.

My research was mainly based on **surveys**: personal interviews and online questionnaires. As a practice-oriented researcher I had the opportunity to see different companies and carry out **qualitative field research** by observing their day-to-day innovation management activities.

Furthermore, this research has an **explorative character**. Explorative studies are essential whenever a researcher is breaking new ground, and they almost always yield new insights.

Descriptive studies answer questions of what, where, when, and how; explanatory questions, of **why**. Research techniques help in moving from a general idea about what to study to effective and well-defined measures in the reality. **My dissertation describes a new phenomenon arose only in the last decade. By understanding the roots, gives an explanation about the details and tries to forecast some future trends.**

The **distinction** between qualitative and quantitative research can be in the context of research designs. There is a close parallel in the distinctions between exploratory and conclusive research and qualitative and quantitative research. There is a parallel, but the terms are not identical. There are circumstances where qualitative research can be used to present detailed descriptions that cannot be measured in a quantifiable manner. Therefore, **the questionnaire-driven (quantitative) technique should be combined with a qualitative research approach when the goal is to gain understanding of the research problem setting.** [Malhotra, 2007] **This approach was used in my dissertation.**

2.2 Sample selection, data collection and measurement

Probability sampling is the primary technique of selecting large and representative samples for research. At the same time, probability sampling can be impossible or inappropriate in many research situations, especially when no list exists of the statistical population. Since no such list exist about all the innovative companies in Hungary, in this research **purposive (judgmental) sampling** was used. This is a type of nonprobability sampling in which the units to be observed are selected on the basis of the **researcher's judgment** about which ones will be the most useful or representative. [Babbie, 2010]

When field research involves the researcher's attempt to understand some typical setting much of that understanding will come from a **collaboration** with some members of the group being studied. Talking to **informants**¹ makes it possible to construct a **composite picture** of the group those respondents represent. *“The interrelated steps of conceptualization², operationalization, and measurement allow researchers to turn a general idea for a research topic into useful and valid measurements in the real world.”* [Babbie, 2010, p. 163., p. 166.] A similar approach was used during my examinations.

This research was **mainly** based on **ordinal measures and ratio measures** when categorizing the different companies being observed. Their innovation management activities in various dimensions were put on a **Likert-scale**, where responses were scored along a range of (usually) 1-5.

2.3 Data analysis

The most important characteristics of qualitative analysis that it transforms data into **findings** – but for this transformation no formula exists. Qualitative data analysis is about focusing on **text** rather than on numbers. That text can be transcripts and abstracts of interviews, expert surveys or notes from different observations or personal experience. The goal of such analysis is to gain new insight leading to **new understanding** – even for the researcher or for a larger scale, e.g. the scientific and practitioner community. From this point of view the

¹ Informant: a member of the group who can talk directly about the group per se.

² The mental process whereby fuzzy and imprecise notions (concepts) are made more specific and precise.

background of the researcher plays a significant role. [Babbie, 2010].

Qualitative data analysis seeks to describe data in ways that capture the setting or people who produced the data on their **own terms** rather than in terms of predefined measures or hypotheses. Thus, qualitative data analysis follows an **inductive** approach: relationships and patterns are identified through a process of discovery, usually without any predefined measures or hypotheses. Furthermore, the **big picture** is always more important than the details – or with other words the whole is always understood to be greater than the sum of its parts, and so the **context** of the observed phenomenon becomes essential for interpretation. [Schutt, 2012]

Consequently, a research questions-based, explorative approach was applied, with the aim of finding **significant correlations** between being a successful innovator and using lean startup methods.

3 Findings and contributions

The startup movement is like a reboot of the human spirit. It is moving from an economic model that treats individuals as replaceable cogs in an anonymous yet efficient system, to one that recognizes that individuals are the only ones who can make the system better through their innovations, inventions and creations and thus, it **brings a new paradigm into the practice of innovation management**. This new paradigm can be the answer to the challenges brought by disruptive innovation and exponential technologies.

3.1 Theoretical foundation

My research has delivered essential insights into the underlying theories of innovation, management, exponential technologies, disruption and lean startup – with **answering the questions** of the sub-question group **A) Theoretical foundation**. My **findings** (answers on the sub-questions) and **contributions** (attainment of the research sub-objectives) are summarized in Table 2.

Table 2: Findings of and contributions to Theoretical foundation

Research sub-questions and findings	Research sub-objectives and contributions
A1) Why is it important (for an established company) to be innovative?	To have an overview about the development of exponential technologies and disruptive innovations, their effects on the global economy and the nature of innovation management.
For established companies it is important to be innovative since because of exponential advancement of technology they become gradually threatened by the increasing pressure of new entrants mastering disruptive technologies. Such trends make not only whole sectors, industries, but the	The age of disruption eroded management theory and practice used in the last 100 years and dramatically shaped the landscape of entrepreneurship. Hundreds of millions starting new businesses and using zero-cost solutions to develop blockbuster innovations in just some months,

Findings and contributions

Research sub-questions and findings	Research sub-objectives and contributions
<p>applied innovation management tools and methods to move, adopt and change. Small teams with global effects, headway of the “winners take it all” paradigm, declining transaction and annulling marginal costs, and emerging new methods are all signs of a singularity in stealth mode, and soon to appear.</p>	<p>significantly affecting the global economy. In such situations renowned companies having a hard time in keeping their talents, improving the necessary skills, growing further on and staying profitable, therefore emerging new methods are required. This is why and how the lean startup approach has made its triumph in the last decade, while deeply altering the nature of applied innovation management.</p> <p>My dissertation has shown the most important characteristics of exponential technologies and disruptive innovations. It was achieved by providing novel extensions to the widely accepted approach of Christensen [1997] and Rogers [2003], mainly by bringing into the discussion the topics of zero marginal costs [Rifkin, 2014] and emerging new methods [Ries, 2011].</p>
<p>A2) How established companies are trying to be innovative?</p>	<p>To explore the innovation conundrums of established companies in order to identify focus areas of management cognition and action to which the delivery of top or potentially disruptive innovations are highly dependent.</p>
<p>A typical established company does not count with being disrupted. For them, being conscious only means applying and mastering management methods elaborated in the last 100 years: focusing on the best customers or delivering a higher quality or a lower price will not save them. The more rigorous they are, the more blind they get towards the next wave of disruption. Their resources and capabilities optimized for execution</p>	<p>At most established companies innovation is a frustrating point. The reasons are partly immanent to their nature: growing and getting large means executing a proven business model, which require radically different skills then searching for a new one. The causes are rooted in their conventional mindset: focusing only on one strategic discipline, instead of competing on all strategic dimensions; first targeting only a small group of</p>

Findings and contributions

Research sub-questions and findings	Research sub-objectives and contributions
<p>interfere with the processes needed to search for a new business model – which would be essential in creating disruptive solutions or at least defending themselves against being disrupted. It is also a problem that their managers want to use the same organization that provided support for execution to provide support for innovation. This structural inertia negatively influences their ability to introduce disruptive innovations because these innovations are instantaneous, not standardized, characterized by attributes that are harder to identify and control and can be produced much more easily when the firm is a startup or the innovation happens in a well-separated unit. Furthermore, a shift from the conventional mindset to the exponential mindset is also required.</p>	<p>early adopters and later enter the mainstream market, instead of marketing to all customer segments immediately; first seeking innovation in lower-cost, feature-poor technologies that meet the needs of underserved customer segments, instead of launching low-cost experiments directly into the market with combining reusable components rather than designing from scratch. My findings (summarized in the left column) brought further confirmation to the conclusions of Pisano [2015], Blank [2015a], Owens – Fernandez [2014] and Christensen [1997].</p>
<p>A3) How startups are making innovation happen intentionally and not exceptionally?</p>	<p>To show the main characteristics of startups and to bring a preliminary insight into the lean startup method used by them.</p>
<p>Not only established companies, but also startups are facing a high level of uncertainty. This situation is handled by quickly creating and validating series of hypotheses. The process of searching is cyclical and the aim is to build a product or service, to measure the users' reaction and to provide feedback which leads to validated learning. Repeating this loop results in quick failure or in awesome success, and so, the time and money squandered can be minimized. As a set of techniques for accomplishing problem/solution and product/market validation, the lean startup promises</p>	<p>This part has detailed how startups follow the path towards innovation excellence, while compressing the findings of various scholars and academics [Blank, 2007; Ries, 2011; Lemminger, 2014]. My confirmatory findings brought clarity and a preliminary insight into the topic about applying lean startup. These results were used while elaborating the questionnaire used in my research as a basic tool to bring understanding about the relationship between the applied innovation management techniques and the innovation performance.</p>

Findings and contributions

Research sub-questions and findings	Research sub-objectives and contributions
customer-targeted product development at low cost with a fail-fast, fail-cheap setting to quickly and continuously learn and avoid burning resources unnecessarily. This is how startups make innovation happen by design.	

Source: own design

3.2 Practical establishment

In this part I provided an overview and a detailed introduction about the **practical establishment** of the lean startup approach at mature companies. The focal sub-questions of the research got the answers summarized in Table 3 below, which also contains the evaluation of the attainment of the research sub-objectives.

Table 3: Findings of and contributions to Practical establishment

Research sub-questions and findings	Research sub-objectives and contributions
B1) What established companies can learn from startups in the field of innovation management?	To provide practical distinction between startups and established companies, and a detailed description about their innovation management practices and strategies.
The most important lesson is that while businesses are turning from startups to established companies, they (usually unintentionally) begin to ignore the principles behind their initial success: not making a difference between early adopters and mainstream customers and relying on vanity metrics. Similarly painful is the fear of failure culture, which makes them unable to learn how to search for new business models and opportunities. Their linear organizations are built to continuously	The main difference between a startup and an established company is whether the organization has found a repeatable, scalable and profitable business model or not. From activities point of view search versus execution is what makes the difference. Established businesses already know the answers about their core activities. In areas of high certainty, existing business processes have been optimized to be efficient at answering such questions. But innovation is about asking new questions, trying new ways and

Findings and contributions

Research findings	Research contributions
<p>get bigger and take advantage of economies of scale – but this will rarely disrupt their own products or services, so somebody else will come up with such offers.</p> <p>Furthermore, the reason for their failure to innovate is that they usually do not dispense over good-enough tools for understanding how disruption really happens and how exponential technologies should be harnessed. The same is true for measuring innovation. The related difficulties are that financial management techniques of the last decades were planned to be used in a predictable market environment, to fine-tune margins and squeeze the highest return on investment. Applying them to uncertain and unpredictable situations (which is immanent to disruptive innovation) is counterproductive.</p> <p>Another important lesson is that they should be aware of the differences between traditional and entrepreneurial management and to know what methods to apply and what time. Experimentation, discovery, generalist staff, horizontal teams, flexible routines, embraced errors, and avoidance of fixed costs are the most important slogans.</p>	<p>searching for new opportunities – activities all associated with high-risk, and thus unusual for established organizations.</p> <p>Innovation strategies are very similar to innovation itself. They mean innovation in business models which equals a new way of playing the innovation game. Disruptive strategic innovation is a specific type of strategic innovation – namely, a way of playing the game that is both different from and in conflict with the traditional way. In characteristic, disruptive strategic innovations emphasize different product or service attributes, and usually start out as small and low-margin businesses, but aim to capture a large share of established markets (when not creating new ones).</p> <p>My summary about the differences between startups and established companies brought additional approval and understanding to the conclusions of Kawasaki [2004, 2015], Blank [2012, 2013] and Furr – Dyer [2014a].</p>
<p>B2) Are lean startup methods appropriate for unlocking innovation potential?</p>	<p>To present lean startup principles and methods from the specific perspective of getting them used and applied at established organizations.</p>
<p>While companies turning to established ones, need to balance between size and flexibility, otherwise they will feel disruptive change extremely difficult. In practice it</p>	<p>The digital transformation has dramatically accelerated the development timescale. Customers all over the world are thirsty for novelties. To serve them effectively, new</p>

Findings and contributions

Research findings	sub-questions and	Research contributions	sub-objectives and
<p>means balancing between exploration (i.e. creation of new business, search) and exploitation (i.e. development of existing business, execution). The corresponding integration of incremental and disruptive innovation can basically be achieved by building lean startup capabilities.</p> <p>Results from Harvard researchers has shown that lean startup means an appropriate method for unlocking innovation potential in the phases of building solutions and business models – it means in creating the minimum viable product and validating the go-to-market strategy.</p> <p>It is important to note that lean startup does not necessarily fit all projects. It has its greatest added value in case of extreme uncertainty, where experimentation is emphasized over planning, customer feedback over intuition, and iterative design over business plan building.</p> <p>The mentioned cases of GE, Telefonica and Intuit have also shown that the lean startup methods have found their ways to established companies, and provided examples about how the selected tools could and should be applied.</p>	<p>approaches are required, which enable to lead and build sophisticated capacity for continuous and validated learning. Businesses have to evolve to talent-driven organizations, where people take the risk of failure, and are empowered to propose, defend and execute innovation projects with autonomy.</p> <p>Lean startup principles show what testing hypotheses means and how this approach should be used when making rapid experiments. Focusing on validated learning evolves the culture of accepting and even rewarding failure as the inexhaustible source of new knowledge.</p> <p>Furthermore, lean propagates an original approach for measuring innovation itself and especially the result of innovation-related activities, because using traditional measures for innovation might be easy but misleading and harmful. Innovation accounting is the right tool for selecting, building and applying the right metrics. Moreover, it also helps to establish and validate the business model and convert it to a quantifiable financial plan. That plan provides assumptions about what the business will look like at a successful point in the future.</p> <p>The lean startup is not a blueprint of steps to follow, but serves as a framework for measuring progress towards a repeatable, scalable and profitable business model. But companies have to be aware: their business model will determine the types of value propositions they can and cannot offer for their customers. In other words, once the pieces of a business model have coalesced to deliver a</p>		

Research findings	sub-questions and Research sub-objectives and contributions
	<p>particular value proposition, the causality of events begins to work in reverse – only value propositions that fit the existing resources, processes, and profit formula of the organization can be successfully taken to market. Besides focusing on creating new products, they have to concentrate also on continuously renewing their business models.</p> <p>With giving an overview about lean startup in practice, I could also provide new extensions to the general knowledge about the topic. This knowledge was utilised when I was collecting the methods for being surveyed at startups and established companies, while finalizing the questionnaire and translating the various methods to clear questions.</p>

Source: own design

3.3 Managerial implication

The research presented in my dissertation was aimed at **increasing the understanding of applying lean startup methods at established companies to intensify innovation performance, and to show the effects of managerial intervention to improve disruptive potential.**

I have studied the consequences of applying various methods, both at operative level as well as at strategic level and additionally, in a disruptive dimension.

The underlying **online questionnaire** was available between May and November 2015. The total number of contacted companies in this period was almost 1000, out of which 120 filled the form, from which 7 were excluded (due to invalid or fake data). The final sample contained **113 valuable responses.**

Exploration of the applied innovation management tools and methods took place by asking specific questions about day-to-day activities and processes, while measuring innovation performance was mainly based on financial and business data, and partially on self-evaluation. Ascertaining lifecycle stage occurred based on the self-assessment of the company.

Interpreting the results of the analysis has happened with the expectation of a more clear **understanding of the correlations between the lifecycle stage, the applied innovation management tools and methods, and the innovation performance**. Categorizing the companies into two groups of startups and established companies, and classifying innovation management tools and methods as traditional and lean/startup, opened the opportunity of comparing the dependencies within and the relationships between the two groups. Statistical and data analysis tools were applied in order to explore the dominant differences within the database, and so within the companies being present – and to achieve my objectives. Various multivariate statistics methods were applied.

Table 4 summarizes the findings of and the contributions to Managerial implication (regarding sub questions and sub-objectives C1-C4).

Table 4: Findings of and contributions to Managerial implication (C1-C4)

Research sub-questions and findings	Research sub-objectives and contributions
C1) How top and moderate innovators are different from innovation management point of view?	To specify the significant differences between top and moderate innovators and their innovation performance.
Using cluster analysis, two clusters were created based on the innovation performance: innovation leaders (top innovators) and innovation laggards	Regarding this sub-objective, my findings – as a novel extension – have shown that

Findings and contributions

Research sub-questions and findings	Research sub-objectives and contributions
<p>(moderate innovators). The analysis has highlighted that innovation leaders significantly outperform innovation laggards in innovation performance, namely in the ratio of revenue coming from new services/products (introduced in the last 3 years) to the total revenue; the number of new services/products introduced in the last 3 years; the readiness for a substitute/competitor offer on the most important market, with 2x performance and ½ price; and the self-evaluation-based innovation performance. Regarding the analysed innovation management practices, innovation leaders outreach innovation laggards in 8 out of 15 lean startup methods and in 8 out of 11 traditional innovation methods, and thus it can be declared that the two groups significantly differ in their applied innovation management methods.</p>	<p>being a top innovator requires the application of an innovation management mix, containing both lean startup and traditional methods.</p>
<p>C2) How startups and established companies are different from innovation management point of view?</p>	<p>To specify the significant differences between startups and established companies and their innovation performance.</p>
<p>My results provided only a partial answer to this research sub-question by confirming the opinion that being a startup is not dependent on lifecycle stage, and that startups are not smaller versions of large companies. Furthermore, these results also say that not every startup is successful and not every established company is unsuccessful. Since the detachment of startups and established companies is not satisfactory, the other part of the answer could be given when having more detailed data and more companies in the sample.</p>	<p>Similarly to the related sub-questions, this sub-objective was also partly achieved. Despite the presence of startups is significantly higher among innovation leaders, their ratio is not sufficient high to make the generalization of being equal to them.</p>
<p>C3) What are the enabling factors of being a disruptive innovator?</p>	<p>To deliver a holistic understanding of the key facilitators (factors) enabling the capacity and capability to pursue potentially disruptive innovations.</p>

Findings and contributions

Research sub-questions and findings	Research sub-objectives and contributions
<p>This question was answered using factor analysis, which made it possible to identify the factors enabling disruption and innovation leadership.</p> <p>Since in the first factor the methods related to long-run thinking, setting targets, handling human resources and decision making appeared, all in a context of getting them measured, it got the name planning and execution measurability. Iterating fast on the build-measure-learn-feedback loop, failing frequently and cheap and getting out of the building are the cornerstones of lean startup and disruptive innovation. [Ries, 2011; Blank, 2013] Most of the methods related to these principles show up in the second factor, which mean that they are correlated, and thus, as enablers, fundamentally designate the learning and disruptive ability of companies. This result suggests that if the founders/managers of an established company want to develop their organizations' disruptive possibilities, they need to share the experience among their initiative colleagues, gained from their separated innovation projects, while relentlessly testing various hypotheses about customer needs, and utilizing the experience gained. Furthermore, fast and agile iterations are required and failure should be an option. These are the enabling factors of being a disruptive innovator – the answer to research sub-question C3).</p> <p>The third factor contained such methods which were about involving different players into the innovation process, arranging the organizational setup likewise and aiming at marketable results. Thus, this factor was called strategic and organizational consciousness. In practice it implies that being a strategically and organizationally conscious company significantly contributes to innovation success.</p>	<p>Similar elements of disruptive ability have been identified by various researchers: continuous customer analysis [Reihardt – Gurtner, 2011], handling innovations in a separated project portfolio [Thomond, 2004], accept failure [Choudary, 2016]. The shortage of these researches is their fragmentation which means that they are concentrating only on the effect of only one particular element. To the contrary I have shown that the identified elements are correlated, and jointly affect the learning and disruptive ability of a company. Therefore, the attainment of this research sub-objective has brought a novel extension to the general knowledge.</p>

Research sub-questions and findings	Research sub-objectives and contributions
<p>C4) What are the enabling factors of being a top innovator?</p>	<p>To identify the most important capabilities that spur innovation performance and lead to excellence.</p>
<p>The results of the factor analysis within the clusters showed that innovation leaders and laggards significantly differ in how they measure their planning and execution related activities and how conscious they are in strategic and organizational aspects.</p>	<p>In practice it means that these (Planning and execution measurability; Strategic and organizational consciousness) are the most important capabilities a company should concentrate on when the aim is to spur performance and achieve innovation excellence. Besides this result provided the answer to research sub-question C4), as a new extension, it supported the attainment of research sub-objective C4).</p>

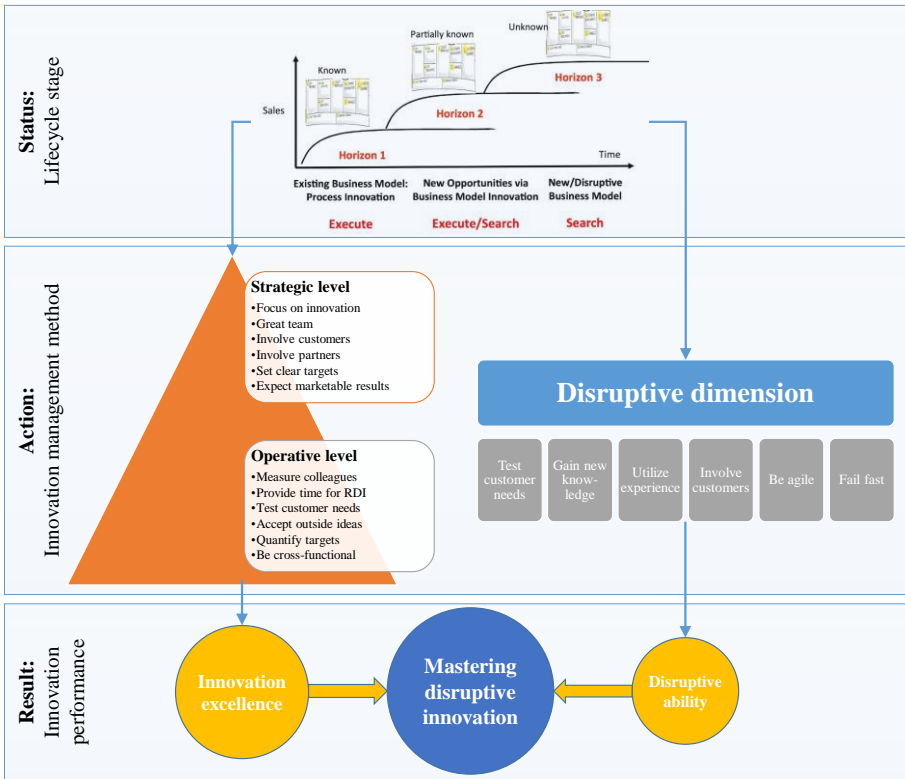
Source: own design

3.4 Roadmap for excellent and disruptive innovators

Since all new findings are valued according its utilization, it is important to provide also the details about their adaption in practice. To fulfil this requirement, based on the findings and results, a **conceptual roadmap** was elaborated which shows the way towards innovation excellence and disruptive ability, and means a possible scenario for **mastering disruptive innovation**. The roadmap is detailed in Figure 1.

Findings and contributions

Figure 1: Innovation excellence and disruptive ability roadmap



Source: own design

The suggestions of the **three innovation horizons** method [Baghai et al., 2000] shows that companies should allocate their innovations across three categories, which require different focus, management, tools and goals, and produce different outputs. The focus differs mainly based on the lifecycle stage of a company. Distinguishing two such stages means whether being a startup or an established company – and a transitive stage in between. **Horizon 1** companies are executing a known business model, while they are mainly focusing on process innovations. **Horizon 2** companies are the ones in transition.

Their business model is partially known and they are switching between searching for their repeatable, scalable and profitable business model and its execution. For them, the main source of opportunities lay in business model innovation. **Horizon 3** organizations' business model is unknown – they might be the ones coming up with new and disruptive business models.

The **innovation management methods** can be similarly twofold: lean startup methods and traditional innovation management methods. The next swim lane of the roadmap shows what management actions to take on operative and on strategic level on one hand, and also provides a suggestion for actions to be taken in the disruptive dimension, on the other.

Finally, the **output** can be dual as well: innovation excellence and an enhanced disruptive ability. Innovation excellence is achieved when the various methods are mastered on operative and strategic level. This makes the sufficient condition of becoming a disruptive master. The necessary condition is fulfilled when excellence is achieved also in the disruptive dimension.

The roadmap is a synthesis of these approaches and the findings of the survey-based research. It suggests that first the **status** should be ascertained. It is important to know in which **lifecycle stage** the company is. Since no accurate answer can be given, providing an approximate judgement is acceptable. Afterwards the **suggested actions** can have an effect both on strategic and operative level, and in the disruptive dimension. The **expected results** are **innovation excellence** on one hand, and an **enhanced disruptive ability** on the other. All these lead to the possibility of **mastering disruptive innovation**.

The findings and contributions regarding sub-question and sub-objective C5) are summarized in Table 5.

Table 5: Findings of and contributions to Managerial implication (C5)

Research sub-questions and findings	Research sub-objectives and contributions
<p>C5) What actions to take on strategic and operational level to be a successful and disruptive innovator?</p> <p>The relative similarity of leaders and laggards in the dimension of learning and disruptive ability seemed to be surprising. The latest article by Clayton Christensen (the facilitator of the term disruptive innovation) highlighted that excellence in innovation is not equal to being disruptive, and vice versa. They mean two very different things. [Christensen et al., 2015]</p> <p>My findings have confirmed, that being an excellent innovator is rather a status, while disruption is a rather process and refers to the evolution of a product or service over time. Such disruptions usually begin their lives as small-scale experiments. Most of them fail, but the few ones' movement from the fringe (meaning the low end of an existing market or a new market) to the mainstream erodes first the incumbents' market share and then their profitability. This outcome additionally contributed to research sub-questions and sub-objectives C3) and C4). Furthermore, my results have shown what actions are recommended on operational and strategic level to enhance the innovation performance of a company – which was asked in research sub-question C5). These actions aim at the introduction or the improvement of various innovation management methods which can be applied on the given management level. Since the methods were not only ranked but</p>	<p>To convert the knowledge (gained during this research) into systematic management actions on strategic and operative level to reach innovation excellence and enhance disruptive ability.</p> <p>Nevertheless, my results have provided important insights about advancing the disruptive ability of an organization by categorizing the innovation management tools and ranking them (using bivariate correlation) based on their potential impact on innovation performance. This has happened by invoking other researchers' findings and utilizing their results in the dimensions of my research. The outcome can be applied as a best principle when the goal is to gain disruptive ability. The suggested methods are shown on Figure 1, under disruptive dimension.</p> <p>The roadmap created on the basis of my results, converts the knowledge gained during this research into systematic management actions on strategic and operative level to reach innovation</p>

Research sub-questions and findings	Research sub-objectives and contributions
scored, the decision makers can create a preference order and focus the available resources accordingly. While this helps them in making their choices, it enhances the efficiency of using scarce assets.	excellence and enhance disruptive ability. Therefore, it means a novel extension to the knowledge.

Source: own design

3.5 Summary and conclusions

My survey revealed a clear correlation between the performance of a company and how successful it is in applying various lean and traditional innovation management methods. It also showed that despite the analysed companies consider innovation to be a top strategic priority, and measure their progress in this endeavour, many have a lot of room for improvement.

If companies really want to embrace innovation and achieve the same growth enjoyed by the most innovative companies, they need to stop focusing solely on how to change the way they serve existing customers and markets, which might make existing product portfolios increasingly complex. Instead, they need to start expanding the reach of their existing products and services, and investigating completely new business ideas. [Nilsson et al., 2010]

The most innovative companies are ably demonstrating what most companies already know – that reinventing their products and services is critical to top- and bottom-line growth. My results will help all the other companies to follow their footsteps.

In this research I was searching the answer to one research question which was broken down into 3 research sub-questions groups containing **10 research sub-questions**. Analogically, I had one research objective, with 3 research sub-objective groups containing

also **10 research sub-objectives**. These resulted in total **10 key findings**, out of which **4 counted as confirmatory**, and **6 counted as new results** and novel extensions to the knowledge.

In total the findings and the results show that the difference between being an excellent and disruptive innovator is caused not by the difference between being a startup or an established company but rather more applying an appropriate combination of lean startup and traditional innovation management methods. Concluding with such an answer the relevant question might be the following: **How to achieve innovation excellence and disruptive ability?**

Strictly speaking, **my dissertation gave general and particular answer to this question**. This is how it achieved the research **objective** while generating for established companies new in-depth, context specific insight into dealing with the challenges brought by emerging exponential technologies, and arming and equipping them with appropriate tools and methods to be excellent and eventually disruptive innovators.

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