

**Differentiation in telecommunication
networks analytics market through
direct monetization**

Case QROi Analytics Oy

Asko Kupiainen

Master's thesis

May 2021

Technology

Degree Programme in Business Network Management

Author(s) Kupiainen, Asko	Type of publication Master's thesis	Date May, 2021 Language of publication: English
	Number of pages 85	Permission for web publication: x
	Differentiation in telecommunication networks analytics market through direct monetization. Case QROi Analytics Oy	
Degree programme Master's Degree Programme in Business Network Management		
Supervisor(s) Aarresola, Eero; Nieminen, Sanna		
Assigned by QROi Analytics Oy		
Abstract <p>Background of the work was relating to questions how start-up company could enter one of the largest global market areas of telecommunications with new and disruptive offering, asking for changes in how customer company top leadership approaches the daily challenges of data-based decision making.</p> <p>Study was focusing on analyzing the means and methodologies for assignee company, QROi Analytics Oy, to accelerate its presence in a telecommunications marketplace, learn how to bring in the monetization more deeply into operators' decision makers interest and ways how to further differentiate through those factors. Underlying target was to find directly applicable methods for company's business development.</p> <p>Study was related to approaching thesis area from three angles, i.e., decision making process, learnings from other industries and utilization of disruptions, for addressing the study questions of how to create demand for new approach in a market and how the assignee company could add value and benefit from utilizing those learnings.</p> <p>Implementation method was built on top of the recent literature analysis from wide spectrum, complemented within study part by practical focus customer observations, stakeholder analysis and reviews as well as practical field test for awareness building.</p> <p>Results of the work were constructed through synthesizing from both study and literature findings, and they were presented from two angles, behavioral and operational, with practical conclusions from both categories.</p>		
Keywords/tags (subjects) Analytics, Monetization, Differentiation, Business Development, Global, Start-up		
Miscellaneous (Confidential information)		

ABBREVIATIONS

AI	Artificial Intelligence
APAC	Asia Pacific
ARPU	Average Revenue per User
B2B	Business to Business
B2C	Business to Consumer
CDR	Call Data Record
CxO	Chief X Office
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CMO	Chief Marketing Officer
COVID	Contagious Viral Disease
CTO	Chief Technical Officer
DNA	Deoxyribonucleic Acid
IoT	Internet of Things
ICT	Information and Communications Technology
ID	Identity Document
IMSI	International Mobile Subscriber Identity
IT	Information Technology
KPI	Key Performance Indicator

MEA	Middle East Africa
ML	Machine Learning
MVNO	Mobile Virtual Network Operator
NPV	Net Present Value
OSS	Operations Support System
R&D	Research & Development
SaaS	Software as a Service
SMS	Short Message Service
SW	Software
UK	United Kingdom

1 Table of Contents

1. Introduction and background.....	5
1.1. Different data sources as basis for analytics.....	6
2. Research frame	8
2.1. Meaning and targets	9
2.2. Research questions	9
2.3. Theoretical themes.....	10
2.4. Study process	11
2.5. Methodologies for the work	11
2.6. Collection of materials and analysis.....	13
2.7. Ethical aspects and credibility of the thesis work	13
3. Decision making processes and operational effectiveness	14
3.1. Decision making link to company's success	16
3.2. Analytics utilization in decision making	19
3.3. Cultural and organizational aspects on decision making efficiency	21
3.4. Speed of Decision making	23
3.5. Monetized Analytics in research	25
3.6. Data utilization and decision making	26
4. Paths to monetization	28
4.1. Applying monetization in industries.....	30
4.2. Monetization of Internet of Things (IoT).....	31
4.3. Monetization in banking	32
4.4. Monetization in insurance business.....	34
5. Utilization of disruptions	36
5.1. Disruptions – background	36

5.2. Disruptive approaches.....	38
5.3. Roots of disruptions	40
5.4. Characteristics of disruptive companies and individuals.....	41
5.5. Disruptive storytelling and human aspects.....	43
6. Research implementation.....	44
6.1. Source materials.....	45
6.2. Observations.....	47
6.3. Analysis model.....	48
7. Research results	49
7.1. Customer problems identified	52
7.2. Competitive situation	53
7.2.1. Competitive argumentation	54
7.3. Differentiation within target markets	55
7.4. Thought leadership.....	56
7.5. Awareness creation	57
7.5.1. Awareness creation test	59
7.5.2. Analysis of the results.....	60
7.6. Utilization of challenger position	61
7.7. Innovation and execution.....	63
8. Conclusions	64
8.1. Need for additional studies	66
9. DELIBERATION.....	67
9.1. Study journey	68
9.2. Wider industrial implications	69

References.....71

APPENDICES.....76

FIGURES

Figure 1. Data sources for cross-analytics usage	7
Figure 2. Study process	11
Figure 3. Normal model of analytics utilization	50
Figure 4. Analytics utilization expanded into monetization	51
Figure 5. Study practice	52
Figure 5. Updated introductory material example for sales use	53
Figure 6. BrightTALK webinar main page	58
Figure 7. Page from QROi Analytics marketing material for forecasting	62
Figure 8. Example of use case innovation in QROi Analytics marketing material	63

TABLES

Table 1. From the book “The road to reinvention...” by Linkner 2014, 17	61
---	----

1. Introduction and background

Data analytics is one of the fastest growing domains in the area of telecommunications and for a good reason; the amount of data generated in telecommunication networks enables information and communications industry being on top rank for data utilization (Bach, Bertoucel, Mesko, Vugec & Ivancic 2020, 11).

Due to massive amount of data (from “Big Data” to “Enormous Data”), the utilization of the data is taking place in number of forms and technical dimensions. Thanks to modern cloud based storage and data handling capabilities, the challenge is not the amount of data nor availability or collection of it, but rather finding the right use cases to capture the real value of the data for business development use.

Long lasting tendency within telecommunications sector is to break down the data into technical KPIs (Key Performance Indicators) and optimize the network mostly in element level based on those. While that is excellent method and mechanism for making the most out of the network elements, it still leaves unanswered number of important questions; what is the level of service the subscribers are receiving from the network, are they satisfied with it, what are the applications used and number of other, directly business oriented analysis.

That further leads into asking whether the networks are providing the maximum level of commercial value they could do based on the technical analysis only.

Knowing that would ask for additional, surprisingly rarely asked question: what are the customers not receiving from the network. Being a paradox itself, with the sophisticated data analysis and utilizing the demand-supply variance in networks, it is possible to capture the underserved regions, areas and base station sites, or even single subscribers, yet depending on data privacy in particular country, to answer that question.

Yet not only knowing the reasons behind, but monetizing them; against how much revenue the selected part or entirety of the network is creating based on subscriber data, there is also awareness created how much revenue is missing due to non-optimal setup, location, technology selection or other drivers in the network.

Monetizing both served and underserved customers opens up the view into opportunity and potential in a network via reconstruction, optimization, capacity addition of reallocation or other levers, and that makes the business view complete and fully monetized in real time, which is the primary source of information needed by the CxO teams, boards and other final decision makers in telecommunications industry.

This is new and experimental approach to helping decision making in challenging telecommunications investment problems and allocations, and therefore the topic behind the direct monetization and why this study is being done, is to define the mechanisms how to advance and secure that there is wider demand created for the industry decision makers for helping their daily work.

1.1. Different data sources as basis for analytics

In this thesis it is not entered deep into technological selections underneath, yet it is justified to open the basic principles to explain the basis for solution. Within mobile networks, there are multiple options how to capture data for making business analytics. They are all having their own characteristics with positive and negative sides, and at the end of the day the final use cases are dictating what is the best data source or combination of data sources.

Typical data entries for analytics purposes are consisting of measurement data from various network elements, often at 15 – 60 minutes measurement intervals, as well as performance monitoring data obtained from Operation Support System (OSS), aggregated for pre-defined level of object hierarchy instead of raw data. For technical troubleshooting purposes, as well as for mobile user level tracing needs it is also possible to obtain direct subscriber data for understanding user behavior, follow the network resources usage patterns or other detailed analytics use cases.

For making sustainable and repeatable analytics from mobile network there are also static data needed, such as base station geolocation, antenna direction or technology in use (2G, 3G, 4G or 5G). This can be complemented by many of the additional data sources, such as probe data which can provide very detailed level information per

network node. Utilization of it is however expensive and in global scale primarily selected by large network operators only. Below is the picture of all the various data sources that can be utilized and cross-analyzed through QROi Analytics solution.

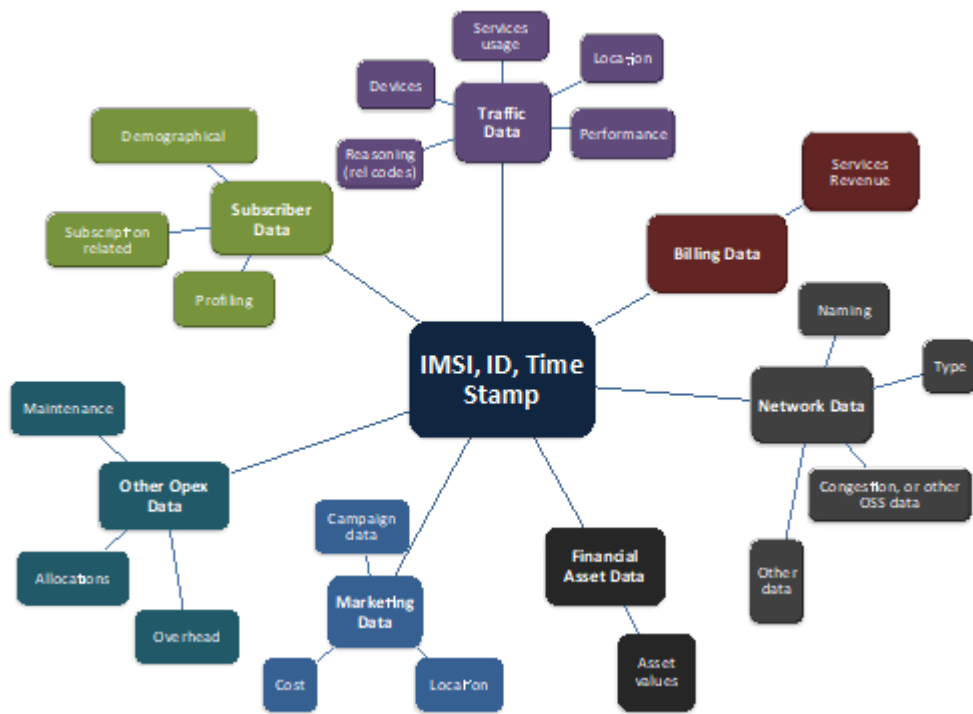


Figure 1: Data sources for cross-analysis usage

To have solid basis for monetized analytics, there are asset data with tariffing needed, as well as subscriber specific usage data, broken down to network services used (voice, data, SMS). This data is most reliably obtained from charging and billing system, as the same data forms a basis for customer charging and usage control. This data is called CDR (Call Data Records), and that provides the ground for assignee company's solution for monetized analytics.

Reasons for utilizing CDR data as primary, value adding data source are many. They form reliable basis for analytics, as the data is unique and including the success or failure data for network transactions. They are also simple and cost-effective method for precise data collection, as the amount of data per CDR is optimized.

Additionally, for monetized analytics, the same data that is being used for commercial billing use, is equally justified for the commercial analytics usage.

2. Research frame

Academic research targets to focus on real life phenomena. Furthermore there is typically some or many problems within phenomena, for which research is looking for analysis to be solved. (Kananen 2015, 14.) This research is looking for ways how to differentiate in telecommunications analytics marketplace through monetized analytics. Research is performed from analysing two prime angles; first aspect is how the monetization could be raised higher and better into agenda of the board level decision makers, as the major users of the information and solution provided.

Another aspect is the utilization of the findings for the assigning company, i.e. QROi Analytics Oy, as small start-up entering into market, and how to turn them into competitive edge and enable the new incumbent to master the market entry with differentiating message and offering. As per the basis of the solution being financially beneficial for the potential customers, the outcome of the work should help the assigning company reaching its business targets and utilize the momentum for obtaining market share in analytics market.

As the approach in telecommunications industry domain is new and considerably disruptive, and therefore readily available studies or academic research is extremely hard to find, there has been need to widen the theoretical analysis basis towards other industries that are more into monetization by nature, especially banking and insurance industries. Theory part of the study digs deeper into materials and analysis offering in those domains, and analyzes the methods and mechanisms and their capabilities to be applied in telco domain framework.

Throughout the research study the target has been, that findings and theoretical framework, either directly or indirectly, are applicable for assisting with selecting the right approach and proposals for the assigning company to take advantage of the learnings obtained in a level of concretism.

2.1. Meaning and targets

Meaning of this research is to find ways to impact to analytics market demand, especially into telecommunications board level utilization, and model those into use by the assigning company.

Targets of the research are, ultimately, to understand the decision making models and drivers on board level disciplines, how those decision makers could be helped and impacted through the means of monetized analytics, and how those finding can be turned into concrete, executable items for the assigning company. Further, the research would serve as basis for the company's existing and upcoming personnel as explanation to business environment, challenges and reasons why many of the business related selections have been made, and how to impact to and benefit from the market position.

As monetized analytics methodology under development by the assigning company is innovative and not being developed on top of existing, well known information basis, there were new causalities, hypothesis and likelihoods being searched with wide spectrum to enable out-of-the-box approach being utilized without predefined limitations.

2.2. Research questions

The research is looking for answers for addressing the recognized business challenge. Therefore, analyzed by validity and how to best address the targets of the study, the reseach problem was opened to be examined through following two research questions.

1. How to create demand for new type of approach of "Monetized Analytics" for board level decision makers?
2. How the assigning company could benefit from the respective changes?

Answering these questions does require analysis from more than one angle, in order to make the results comprehensive and not to limit the results for too limited view only. Therefore, it was selected to further address the research questions from the basis of themes, approaching the topic from different aspects yet pointing to finding answers to common research questions.

2.3. Theoretical themes

Research aims to approach the needs of the assignee company from various viewpoints, thus asking for research themes to address the same accordingly. Based on analysis for covering the best the environment for the business challenge, the following three themes were selected to address the fulfillment of answers to research questions.

1. Decision making models and speed on management boards?
2. Monetized Analytics within other industries
3. Utilization of business disruptions

First theme is looking for commonalities and models on which the top-level decision making can be constructed upon, and thus far how those learning could be utilized helping the research problems and questions.

Second theme studies the phenomena and general approach to monetization through external sources from other industries outside telecommunications, to benefit from cross-industrial view and learnings from the other research's findings.

Third theme supports the assignee company's view on creating a new market segment, which would ask for disruptions on decision making and data utilization by the target markets; it also looks for examples where and how such disruptive approach could be achieved and through which variables.

2.4. Study process

The overall process for the study is built on top of the study questions, broken down to three themes. The findings from theory analysis are then discussed against the research materials, which are consisting of multiple sources including meeting observations, memos, and other documentation.

The results are then combined to match the research questions and presented in terms of practical considerations for the assignee company.



Figure 2: Study process

2.5. Methodologies for the work

As the principles are following the model of qualitative study, which aims to search for new approaches, trying to clarify the phenomena underneath for understanding the target customer audience behavior, as well as develop working hypotheses on top of the analysed findings, the respective guideline is being utilized. As per definition, qualitative study applies well for the cases, in where there are no ready-made answers available and underlying phenomena is new and not widely known nor studied; therefore allowing to obtain deeper understanding on the studied entity.

Due to practical implementation and target for creating operational guidance by the work, it can also be considered as development study. (Kananen 2015, 70-76.)

Targets of the work were also partially approached from the methodological basis of case study (Kananen 2015, 76). Reason for the applying method comes from the background where study attempts to understand the underlying phenomena and find the meaning for subject through holistic approach both via literature as well as through empiric study by selected customer prospects, vendor and internal observations.

The researcher has spent 20+ years within telecommunications domain on senior managerial roles, out of which latest two years within analytics, so there are certain pre-assumptions made based on the domain experience.

Firstly, it is assumed that overall target for the company is to create both customer satisfaction and profitable business results at the same time, so this is underlying guideline for research.

Secondly, it is assumed that differentiation is preferred target for competitiveness for new incumbent in the market, and hereby desirable state to reach.

Thirdly, it is assumed that directly addressing the decision makers as final customers instead of through influencers is the preferred method in new market segment to be established within domain.

Further, it is of the best understanding of the researcher that the models and methodologies selected are serving the best interest of the outcome, as the holistic understanding on the phenomena is being extended within the research, hereby complementing, and deepening the domain competence achieved during the career so far.

Examples and justification are based on the cross-industrial analysis for utilization of monetization in relation to analytics, taking new views, aspects, and insights into use for area, that may not have been taken advantage of those earlier.

Also looking the selected methodology from the angle of assigning company, it is essential to apply the findings into practical proposals to enable full deployment and value to be obtained for business environment and further strategic planning.

2.6. Collection of materials and analysis

Research study material analysis and collection has been done from diverse of set of sources. As the topic especially in relation to industry is considered new, there has been need to extent the data sources also beyond the typical scientific data bases or studies, i.e., utilize the open databases through crowdsourced sources, commercial yet publicly available analyst reports, industrial consortiums studies and data sources, as well as direct company specific findings made publicly available through industry events, summits, or other open digital platforms.

Data collection methodology was broken into two parts: first part is based on literature analysis forming the theoretical framework for the research. Second part is forming the more empiric part of the research, through observations from actual customer and other stakeholder meetings, complemented by utilizing large amount of other materials as described in following chapters.

Research implementation with description of materials, analysis and description of the analysis is opened in detail in chapters 6.1 and 6.2.

2.7. Ethical aspects and credibility of the thesis work

This thesis work, including but not limited to planning, writing, and reporting is being performed with honesty and general research accuracy, as well as storing and presenting the results and analysis of them. All the phases are followed in accordance with best scientific research practice.

References are being handled to properly give credit to work and results obtained by the other researchers. The highest ethical standards are being followed in all the

data collection, research, and analysis work, as well as sustainability and responsibility in publishing the results.

Topic of the work being generic and cross-industrial by nature, there are no identified needs for pre-defined approvals for any of the study items, nor for ethical pre-analysis.

Other than employment relation to the assigning company by the researcher, there are no other ties nor disqualifications identified throughout the practice of developing this work.

Confidentiality as agreed with the assigning company will be ensured with this work by not disclosing any trade or other secrets in work report or attachments. Separate confidentiality agreement is therefore not needed and has not been prepared nor signed by the parties.

3. Decision making processes and operational effectiveness

Making decisions is the prime activity for management teams in any organization. It is often seen as falling under conditions of conflict, risk, and uncertainty; however, targeted to contribute to operational effectiveness (Ugoani 2019, 1).

As per early theory for decision-making by Simon (1957), as referred by Li (2016, 506), there are three phases involved: intelligence, design, and choice. Intelligence means collecting all the relevant information in terms of data and artifacts that are relevant for decision making, whereas design looks upon the available options to reach the goal. Further third phase defined making the choice out of those options defined in design stage. As per Simon the order and phases are important as it would decrease the correctness of the last phase if the first two are not handled adequately.

According to analysis by Frisk and Barrister (2017, 2078), the literature around management often takes for granted that idealistic conditions for decision making, such as needed information and unified criteria, are always given. Frisk and Barrister further notes, however, that practical problems in real situations are related to needed information being unclear nor available at all, often unstructured and inaccurate, in some cases even unreliable. This combined with typical cognitive or other biases end up idealized decision-making situations being rare and primarily exceptions to the rule.

Due to very diverse and wide-ranging nature of management decision-making, there are also critical aspects raised in related literature. One example goes as far as mentioning that in number of cases it lacks scientific background with proof, stating even model called "Garbage Can", in where decisions are randomly taken and unsystematic. That can still be justified release of the model as being logical from the point of time dependence, related to combining all the three rights (right time, right solution, right problem). (Ugoani 2019.)

Building on top of that finding, it is still today valid what Simon in his early study, as referred by Shenghua, Reb and Gigerenzer (2019, 1753) have pointed out about information processing, stating it well into one sentence: *"A wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it."*

Making a simplified model on operational efficiency, Ugoani (2019, 1) states that process related asks for obtaining the best information, analyzing it with the right stakeholders, working through the options, positive and negative impacts and further driving into execution, which is the immediate next step after decision-making in typical cases.

As per the research, Aydiner, Tatoglu, Bayraktar and Zaim (2019, 179) have concluded that decision making performance is positively affected by the information system capabilities, which are further in alignment with business and

enabling problem solving. This has been equally the finding by Frisk and Barrister (2017, 2078) in their study related to design attitude, that both aspects are needed for decision making domain expertise through analytics tooling, complemented by meta level formality in decision-making process.

Through its wide and meritorious study, Shenghua et al (2019, 1753) speaks about heuristic approach to decision making and its applications. Based on their findings, managers are assumed to utilize their cognitive capabilities which further takes them using heuristics, however leading to even harmful biases and finally fewer effective decisions. Going deeper into logic underneath, this is mentioned being tradeoff between accuracy and effort.

Looking the decision-making from the side of a smaller, unequal party in case of business-to-business transactions and relationship raises an important point for paying attention to time limitation in decision-making process and turning it into advantage for smaller player through sheltering the time available through developing alternative options. (Baum & Wally 2003.)

Synthesizing the angles into one, decision making combines the paradoxes into controllable set of actions. Information can be rational or irrational, it consists of certain and uncertain factors, it needs to be planned but cannot be fully planned, leading to continuous handling of uncertainty. Effectiveness in decision making asks for time to understand the problem at hand, for developing solutions to cover the challenge. This will be handled more in details in the coming chapters. (Ugoani 2019.)

3.1. Decision making link to company's success

Prime reason for existence and enabling continuous operations for company is strive for success. According to Ugoani (2019, 1), the formalization of the matter equals to decision making being part of the management process in general, further asking accountability for success or failure from management by identifying problems and getting them solved. Following the same theme, also Shenghua et al (2019, 1753-

1754) while studying the decision-making, came into conclusion that adaptive utilization of heuristic approach enables management to perform better than through complex strategies, being more sensitive to conditions underneath.

Lending parts of the approach to heuristics, ecological rationality, in turn, looks the world of decision-making from the angle of contextualizing the capability and approach to reach the correct decisions. Instead of having fixed set of rules and guidelines in use, it focuses on decision making adapting to situation, making selections from the basis of heuristic, either fast-and-frugal, recognition or more complex models and picking up the most adequate option according to the situation. (Shenghua et al. 2019.)

Interestingly also Valkeapää and Seppälä (2014, 305) have ended up to similar outcome, though looking the matter from another dimension or decision theory, finding that decision making links tightly to behavioral process, impacting therefore to organizational performance and finally resulting to effectiveness. (Valkeapää & Seppälä 2014.)

Throughout the academic studies, companies' success can be measured in number of ways, financial success being the most common and the easiest to measure. Through different kind of commercial and networking models in modern networked and international business environment, however, it may not be the only variable, especially in case of licensing, non-profit or publicly funded companies. Despite those variables, though, the importance of decision making and investing time and other resources in getting the needed information in place is universal and independent to underlying business model, as per following findings.

In their book, Alahuhta, Häikiö and Seppänen (2015, 170) are referring also typical decision-making case as one with collecting all the relevant info prior to creating a view, whereas after that comes cold consideration; however, in a manner in where it is possible to revert to decision should there be external business reasons to it. It has been stated and presented as fundamental that the linkage between phases exists;

effective decision making is mandatory for financial management, which further is prime driver for operational effectiveness (Alahuhta, Häikiö & Seppänen 2015; Ugoani 2019).

Among large number of academic interest group and researches, Aydiner et al (2019, 168-182) have studied the mechanism of decision-making performance and how they impact into overall success and reaching their objectives. According to Aydiner et al (2019, 178), it can be concluded that

“...superior Decision Making Performance helps firms to make accurate and timely decision, and aligns their business processes better with their objectives. Therefore, the improved Decision Making Performance increases the efficiency and effectiveness of business processes in a firm...”.

Based on the literature and scientific research around the topic of decision-making and its effectiveness, it can be said that there is correlation between decision-making efficiency and increased effectiveness of the company's business and related processes. Breaking it further into smaller pieces, there are similar findings supporting each other related to operational effectiveness and its subsequent impact by effective decision-making. Additionally, it can be presented that financial success of a company is an outcome and logical continuation to these structural steps mentioned, forming a logical chain of activities that can be approached with similar type of findings from start to end, from end to start and from between.

Extremely important aspect of decision making and its link to company's success, in 2020's competitive global environment, comes from the aid of utilizing data with both depth and width. This we will approach with literature in next chapter.

3.2. Analytics utilization in decision making

Making decisions in business context is relational to having needed information and resources at hand, as we have covered in earlier chapters. That has also been presented to have an impact to business performance and company's success.

Literature has covered those aspects widely as we have learned so far. Still, as an emerging area of study, there is somewhat limited amount of academic research conducted by today over data analytics, or business analytics impacts and mechanisms on decision making. (Guangming et al. 2015.)

Due to early maturity stage of utilization of data in systematic manner in decision making and value creation, there are little structural examples on the leverage for real life use cases. This chapter investigates information available and forms a basis for contextualizing the research available for this thesis work input.

Utilizing data and data analytics in systematic, auditable, and meaningful manner in decision making is a question of many requirements. In one hand it is required by dynamically changing business environment that forces companies searching for more effective methodologies in continuous basis. On the other hand, there is need to increase the level of collaboration for decision-making processes, which further are impacting into overall decision-making culture in companies. (Frisk and Barrister 2017.)

Frisk and Barrister (2017, 2074) continue that skillful use of data analytics may radically improve company's performance. However, through the findings by Aydiner et al (2019, 178), there is illustration that even that IT infrastructure advances organizational information sharing, there is no scientific nor other research-based evidence that this would be enough to improve the performance of decision-making.

Despite of lacking scientific analysis, there is justified need to arrange information handling process capable of handling the wealth of data masses, for the decision

makers. This highlights the importance of the relation between uncertainty and needed amount of information, for having a desired impact on organizational performance and further decision-making. (Ugoani 2019.)

While extending the topic of data analytics terminologically over big data and business intelligence, Frisk and Barrister (2017, 2074) have found that these together are forming revolutionary progress both for decision-making capabilities, as well as organizational management. Aydiner et al (2019, 179) are supporting the same view, taking the matter further by stating that development of decision-making performance of a company is considered as critical management activity, and therefore such capabilities need to be utilized and prioritized in decision making process for obtaining the targeted business value.

Guangming, Yanging and Gendao (2015, 386) have extended the view by taking a position to focus on reliance of the data-driven results. Without relying on the data and insights there is only little value to be obtained for decision-making or operations, as the fact-based insights are important for making the well-grounded and backwards auditable decisions. Ugoani (2019, 2) continues that once such systematic mechanism is in place, organization can be considered as having enablement for evaluating its business practices and therefore having means to perform adequately informed decisions. (Guangming et al. 2015.)

Providing support to above finding, through example study, it was found out that managerial level respondents were reporting the increased value of including unstructured data for more evidence-based decision-making. This has led to increased and more wide understanding on the topic, which in this example was related to information system purchasing and utilizing wider data base against only hard data from one financial or feature based angle. (Frisk and Barrister 2017.)

Though having limited amount of scientific research available so far, the examples and data sources referred are forming somewhat unified view about the expected positive and business-critical nature of data and analytics utilization in corporate

decision-making efficiency and related business value dependencies. This finding is supported by statement of Guanming et al (2015, 384) that formalizes it together as: *“The key findings demonstrate that business analytics, through the mediation of a data-driven environment, positively influences information processing capability, which in turn has a positive effect on decision making efficiency”* (Guanming et al. 2015).

As stated in earlier chapter by Frisk and Barrister (2017, 2075), there is need to extend the impact of data analytics capabilities to the overall decision-making culture of a company. In next chapter, we will take a closer look into those findings.

3.3. Cultural and organizational aspects on decision making efficiency

“Culture eats strategy for breakfast”, referred as being said by Peter Drucker yet not academically confirmed, is one of the key aspects in decision-making. Shaping the basis for decisions and securing drive for executing them relies on the joint and unified way of operating, and cultural environment is underneath for making it as continuous practice. In this chapter we will cover the cultural and organizational aspects on decision making efficiency.

In typical organizations, especially in large corporations, there are two cultural straits visible: executive culture focusing on financial side of the matters and engineering culture that focuses on hard facts, such as technology, systems, and solutions. While these may prove to be effective from decision making point of view, there is strong impact to limiting factors such as social or human, impacting overall culture. (Frisk & Barrister 2017.)

Analyzing the cultural impacts and aspects requires starting from the top management and how the behavioral model of theirs is supporting the organizational learning, trust, and enablement for culture to grow and flourish. There is needed to systematically guide the organization towards the direction where the good decision-making capabilities are developing over time, and therefore being less and less dependent on the leader in person. (Alahuhta et al. 2015; Ugoani 2019)

Enablement for cultural development of decision-making can also be related to the tactical model of making decisions. Effective method for such development to take place is to keep the targeted, final outcome in mind when the order and sequence of decisions is being made or driven. Hereby the steps are supporting the targeted results one by one and forming a basis for a culture that is target oriented, results driven and systematic. In terms of negotiating methodology, it is supporting the organizational learning and sequencing the actions into controllable pieces. (Johnston 2008.)

Decision-making culture may have long-lasting implications to company's financial performance through reflection to budgets and how rigorously commercial aspects are being followed. Executive culture can be seen both in top and middle management in a manner, that when financial environment is considered loose, it leads to ease of decision making and limited controls, impacting to overall culture being short term and driven by emergencies. (Frisk & Barrister 2017.)

Impacts on such behavior may be severe and harmful for the company to success. This is especially so when the topic is looked from the viewpoint of growth companies in emerging markets, that are targeting to expand towards global markets. Being tied to traditional, executive, and engineering focused decision-making is risky via limiting innovation factors and therefore making it more challenging to enter new competitive markets due to company's internal limitations. (Aydiner et al. 2019.)

Cultural impact for decision making can be analyzed also from the points of design approach and ecological rationality. Both are targeting the same outcome, that is better and more involving decision-making culture, though from different angles. Where design approach is focusing and proposing increased levels of collaboration between stakeholders within organizations, the heuristics, in turn, are utilizing the ecological rationality aspects for enabling decision-makers with capability to challenge the assumptions under trustful organizational environment. That would lead into decision-making model where, even under state of uncertainty, the less information may actually prove to be more effective than rational strategy due to avoidance of silos and limited focus. (Frisk & Barrister 2017; Shenghua et al. 2019.)

Decision making effectiveness is always targeted to be beneficial for the company and the organization, there is no proof nor evidence that any party would intentionally harm the company, except under hostile circumstances that are outside of this study. In real competitive environment, the success is not relational only to decision-making but to executing the decisions for implementing the decided actions.

Therefore decision, independently through which model it has been reached, needs to be meeting the objectives of a company, having behind the commitment from the needed stakeholders' parties, and represent the highest of ethical standards. This needs to happen in parallel while being acceptable and timely. (Ugoani 2019.)

Combining the views into comprehensive picture accordingly, our last chapter will investigate timeliness and speed of decision making.

3.4. Speed of Decision making

As stated by Alahuhta et al (2015, 169): *"In decision making, maximum speed is not the optimal speed."*

One of the most successful Finnish business leaders states the above. While having good arguments behind, there are also differing and even arguing views and studies presented in scientific research. Angles are many and results altering, so topic is perfect for taking a closer look.

Going as far as 1980's, Leventhal (1980) as referred by Valkeapää and Seppälä (2014, 305), defined the six procedural justice rules related to decision making, and them have been referred in number of academic research ever since. Building on top of those rules, Valkeapää and Seppälä (2014, 305) have gone step further in a research, making proposal to *"bring the speed of the decision-making process into discussion as one justice principle"*. This approach is at the same time bold and justified and makes many new points and angles into discussion justifying the proposal. (Valkeapää & Seppälä 2014.)

Based on their research, Valkeapää and Seppälä (2014, 307) are stating that both very fast and very slow decision making are perceived worse than moderate time in between. This approach is taken primarily from the view of social acceptance, and therefore is limited to looking the topic from that aspect only, against the success of the company related interest.

Being contradictory to above, Baum and Wally (2003, 1124) are concluding, that speed of decision making needs to be considered as an asset, therefore providing company with fast capabilities to learn and further create itself a competitive edge.

Fast decision making has been presented as relational factor for the company's growth. Going further, the reason underneath is related to the view that fast decision making may lead to faster growth as companies are adopting the processes that are improving the demand in a market. Therefore, it can be said that speed in strategic decision making is a mediator for business success. (Baum & Wally 2003.)

That is a view that can be challenged, though. As speed alone does not make the decision good or bad, there are multiple other aspects to consider. Decision makers need to keep up the levels of decision-making standards and rationale in order to obtain ecological rationality on their managerial behavior. Violating these standards through heuristics only make decision makers viewed as biased. (Shenghua et al. 2019.)

Valkeapää & Seppälä (2014, 306) are supporting this view, by further stating that time has importance in relation to judging fairness of the decision-making processes, and further continuing that longevity in decision-making leads to uncertainty and even anxiety, both highly unwanted qualities of good decision-making.

It is, however, still lacking relation to impact of fast decision making in firm success, notwithstanding the importance of social science related study results here. It is said that there is causal interpretation between fast decision-making and sub-sequent firm growth, however as a predictor, not full causality. As well the results of the

academic research can be drawn into saying that decision making speed equally predicts subsequent firm growth directly and indirectly. (Baum & Wally 2003.)

This can be still challenged up to its most extreme extent. Very fast decision-making may indicate that other decision-making factors are not considered adequately, and therefore also that may cause anxiety and be related as unfair by the impacted stakeholders. Perception of fairness is seen equally important to that of speed, and relation between two were found being non-linear. (Valkeapää & Seppälä, 2014.)

Baum and Wally (2003, 1122) are still coming from the angle of company's success and do not compare the fairness into outcome, but states that fast decision-making is having positive effect and dynamism is antecedent of decision speed. Through the studies it has been shown that CEOs that are reporting slower decision-making speed, are having also slower growth to that of comparable companies; admitted still is that there is no relation to profitability. Study concludes that despite many supporting factors found, there is no assurance on the causal link between decision making speed and company performance.

Decision making is highly evolving and widely studied area reaching continuous interest by research practitioners. There are multiple viewpoints and partially supporting, if at the same time opposing results depending on how the original approach was selected. All that makes the topic highly interesting and rich source for further studies.

3.5. Monetized Analytics in research

Monetized analytics as a term has not been industrialized, not yet at least, and therefore it is having more than one translation and definition depending on the source and interest group. All the approaches are still agreeing on the focus on turning some base or group of data into form of commercial deliverable, through the aid of analytics. In here the focus is set to cover that what kind of approach towards

topic has been taken by the literature, what kind of utilization examples can be found and what are the deliverables through monetization. References are intentionally selected from wide spectrum of backgrounds to express the immaturity of the field, as well as provide the reader with cross-analysis for the topic. Despite wide cross-industrial analysis, covering the branches that are focused on monetizing the customers, i.e., banking and insurance, there are still surprisingly few academic studies made about the big data monetization, as stated below.

“During the setting up of this state-of-the-art, we have noticed that, to the best of our knowledge, there is not enough academic research in Big Data Monetization. Furthermore, the existing ones do not consider all big data aspects such as pre-processing, cleaning, and other big data specificities.” (Faroukhi et al. 2020, 19)

In following chapters, the literature findings are presented, and different approaches compared.

3.6. Data utilization and decision making

Through digitalization of the businesses and increasingly also public services, it is mandatory for the companies to stay up to date of progress on the field and prepare for the future capabilities for keeping up the competitive edge. Change in business environment is continuously accelerating and requires transformational actions from the companies to enable innovation, or even definition of completely new business models. Both in business-to-business (B2B), as well as business-to-consumer (B2C), the role of digitalization is putting value propositions of the companies under constant reanalysis. In typical scenario to respond to those market requirements, the digital transformation is seen as building up data handling capabilities only. While that holds true from the angle of starting the process for long-lasting development, it asks much more to proceed with transformation than data alone. Sustainable development will consist of entire organizational planning, as data-based processes

need to be defined as ground for the decision-making throughout the organizational layers. (Schneider & Imai 2019; Dremel & al 2017.)

The level of complexity of the industry or the single company within such industry is often proportionally defined by the additional value obtainable through leveraging systematic analytics in operations and transformational actions. That is especially so with the domains in where the final deliverable consists of many subcontractors, partners and vendors, and therefore managed network asks for thorough and accurate planning and project management. Examples of such industries are likes such as transport and telecommunication networks, large utility-level construction businesses or specific field of defense industry, to mention but a few. (Schmarzo 2015.)

Through phenomenal success of the web-scale companies, often referred as FAANG (Facebook, Amazon, Apple, Netflix, Google/Alphabet) since 2010's, it is stated like mantra in economics writings that any business is going to be technology business, also through research (Schneider 2019, 1-3). While that may be exaggerated statement as such, it does have a seed of truth with it. Being capable to reach scale in global business asks sales efforts to be minimized and enable as-easy-as-possible buying. Via transforming the business models into fully digitized direction, keeping, and enforcing the competitive advantage is more likely to be as a result, instead of fine tuning the existing, more manual, and traditional business models.

Looking the market development holistically, the digitalization with extended data utilization can be seen from two primary angles: internal and external (Gandhi et al. 2018, 1). According to Gandhi et al, the internal view is built around utilization of data within operations and enabling productivity increase. External view then is related to new business development and building the value of the bidirectional data with company's network, including suppliers, partners and finally customers as well.

In their research, Gandhi et al (2018, 1) goes further into extremes by stating that even 11 out of 12 companies are not able nor prepared to utilize the data up to its limits, i.e., "leaving money on the table". Through such limited view there are many opportunities untapped, as the insights from the market and customer behavior are

not being taken the full advantage of, and therefore margin impacting improvements, let alone the new revenue streams are easily left undone.

Then how should the companies make more value out of data and analytics, create additional revenue while keeping the customers more satisfied? In our next chapter, we will look at some established models for monetization through different starting points.

4. Paths to monetization

Last decade has shown that business growth can be obtained through monetizing data in multiple ways, providing companies with opportunities that have not been possible to consider earlier. Combined with innovative utilization of artificial intelligence for bringing prediction capability as additional driver for business decision-making through advanced analytics, such opportunities have been opening whole new options for extended revenue sources. Through organizational learning, however, companies are understanding more on what kind of data, in which format and combined with what other information sources, can provide the customers with insights that can be monetized as value adding components for commercial operations. In addition to data itself, it requires tangible strategy and understanding on the underlying business domain, and flexibility to leave space for customer to define the data connections in addition to ready-made reports and insights. This leads to partial data platform business thinking and opens more options to monetize the data in various dimensions, such as behavioral information for predictive purposes, or improving the customer experience. (Mehta, Dawande, Janakiraman & Mookerjee 2019; Seufert 2014.)

Schneider et al (2019, 4) are continuing that with platform approach, there comes a new way of thinking business more of connecting the parties who are willing to sell or buy and creating the value through the enablement of the other to connect through the platform, instead of company having a product or service of its own. The latter model is called linear, traditional, or normal product or service business with

deliverable within company itself, and that can be applied to data product business as well.

Following with Schneider et al (2019, 3), on their research the platform and linear approaches can still be further broken down to three categories, them being subscription-based, freemium and transaction-based business models, and hereby separating the approach to monetization. These models may form hybrid approaches over the categories, too. Despite of the chosen model, it is of particular importance to define the quality and quantity of the data, so that the combination of selected dataset is either predefined to provide productized insights for the customers, or then more flexible to be customized per data type and therefore allowing freedom to analyze the data entries against multiple data types. Example of such is financial data that considers users buying behavior and capability to control the personal longer-term financial stability.

Freemium – based model is based on extensive utilization of the data product or solution. Freemium model rewards from more and more usage, in where new features and functionalities are being released based on increased user activity and is therefore primarily applicable for very active frequent users. While those applications are many in business-to-consumers market space, such as mobile gaming, they are hard to find from business-to-business domains, and therefore we are not focusing them more in this research. (Seufert 2014.)

Subscription and transaction - based models for software licensing are the most used models in business-to-business contexts. Whereas the monetization itself does not separate the licensing model used, it is important to understand the difference between alternatives to understand the different use cases for monetization options. With subscription-based licensing the customer purchases right-to-use license for infinite time or certain specific period, typically yearly. Right to use can further be broken down to smaller pieces based on number of users, number of functionalities, capacity, support level, or other relevant qualities.

With transaction-based model, in turn, the payments are relational to direct use of the system, independently on the time used. This model can be attractive for the user in cases, in where the utilization is not frequent and value can be easily counted

per transaction yet can be proved not beneficial when number of users, mandatory use cases and daily operations is high, with big number of users and no alternative way of obtaining the needed information. Therefore, the transaction-based licensing or pricing is typically limited to applications where the usage rate is limited, infrequent and predictable.

For monetization that brings guideline per model transparently. With subscription-based licensing model, there is easy to make the attractive entry pricing for the business-to-business customers, create the extensive user base and grow the business organically through few features and functionalities with separate prices. The same mechanism can be used with capacity increases, additional number of users or other related variables, to monetize the installed base as effectively as possible.

Monetizing the data per chosen model still requires considering the value potential of the data. Not only is it necessary from the company's financial planning perspective, but it is also mandatory to define the competitive edge through which the differentiation in the market can take place. In data driven business in particular, automation is the prime source for generation of new data sets, data products and related data services with minimized human interaction. Companies striving to automate their data generating system for feeding the data analytics mechanisms are likely to add more value to their customers. (Gandhi et al. 2018.)

4.1. Applying monetization in industries

The first chapter in this theme was starting with reference to having very limited amount of research material and literature available. Despite being repetitive message, the same is raising up from multiple sources even when expanding the literature basis, as per reference by Suliman et al (2018, 32) below: *"The current literature is lacking work on automating the monetization of IoT data."*

It is fair to state that monetization as topic would deserve wider level of research interest, as it is, at the end of the day, the core capability of any company and

especially so within data-driven industries. In following, we will look at the practical findings through existing literature.

4.2. Monetization of Internet of Things (IoT)

Internet of Things, usually referred as abbreviation IoT, is one of the recent trends towards future market expansions for utilization of new kind of data. Whether it related to the infrastructure provides, hardware component supplier, sensor or device owner, the exponential growth of the IoT applications is making it lucrative market for data monetization. That does not come without challenges, though. Combining multiple data sources and making the insights such that can be considered sellable and easy to utilize and reuse, is in practice asking for platform approach, as covered in earlier chapter. However, platform alone does not help without trust between players, and uncompromised security of the data exchange. That can be solved in many ways, yet either looking from centralized platform side, or decentralized, transaction-based option. The latter is currently raising interest as one of the blockchain most promising use cases. (Suliman et al. 2018.)

As discussed by Suliman et al (2018, 33-34) and following the common trend, the next step for IoT goes beyond infrastructure and deployment, thus making data as the product and deliverable providing added value itself, changing the dynamics of the market. Monetization continues as a challenge, as the scale of the managed units providing data may easily grow into millions, if not billions, and therefore any centralized system, even if it would reach such deterministic market position, may become a subject of capacity limitation or commercial feasibility for data providers and business partners, as well as focus for misuse or hacking. Therefore, distributed system with built-in security and automation for trusted system is logical development direction, and programmable blockchain is matching those needs, removing the platform provider in between and providing transparent system between ecosystem partners, suppliers, and customers. Use cases for programmable blockchain are many widely distributed systems, such as energy trading and smart grids, voting mechanisms and crypto currencies. (Suliman 2018.)

4.3. Monetization in banking

As per definition, banking industry is all about monetization, whether with buying the raw material i.e., investments into banks' balance sheet, for further distribution as lending it out against interest rate and making the value with delta in between.

Though overly simplified view, the same applies also to monetization in banking industry. Philosophically it can be said that monetization in banking goes all the way back to sources of sovereign states, that are able to enable the monetary transactions for the sake of country level well-being and development (Funke 2020, 4). This research study does not go deeper in its analysis, but it is important to note that monetization in banking goes all the way down to fundamentals of modern societies.

Banking industry is no different to others what comes to utilization and deployment of big data analytics capabilities. That is even more so, as the business model is highly transaction-based, fast-paced and requiring absolute trust between the parties, as an example being automated stock exchange trading systems that are fully automated and relying on ongoing automated analytics functionality.

That means that in order to succeed in creation of such mechanisms, there is continuous co-operation needed between the banking business functions and IT departments. While being internal organizational topic as such, there are common denominators in place how to capture the most value from internal setup. First of all, there is both organization and data related governance structure needed, starting with focused organizational unit with responsibility over analytics. It may have the accountability over business results, or it can be equally well a support organization with internal service provider identity. In either way, it typically acts also as an internal ambassador to data driven decision-making and capability development, and therefore having major impact for cultural development of a company. (Dremel et al. 2017.)

With monetization in banking industry there are two prime drivers, level of risk and time length. Monetization in banking, even data driven, is still more speculative by nature, as the entire ecosystem around is built on estimated future earnings, with highly modelled risks probabilities. That is under the basic assumption in banking,

that period from investment to realization of the profit is proportionally aligned with related risk levels, therefore meaning that the longer term until the expected profit, the higher the risk level and uncertainty. (Funke 2020.)

In his research, Funke (2020, 2) has further studied the other financial institutes and stakeholders utilizing the modern IT and analytics capabilities. It was discussed, with regards to monetization, that the agencies doing credit rating are at the forefront of utilization of advanced analytics for predicting risks related to credit ratings. They are forming a scoring mechanism based on variables such as past income, demographics and geographics, for making applicant a specific scorecard, which is continuously updated through the identified, applicant specific new financial data based on usage and behavior. That scorecard can also include average revenue per user (ARPU) related data, which further classifies the applicants based on the usage category and defines the risk premiums accordingly. (Schneider & Imai 2019.)

Through these findings and insights, looking the monetization in banking industry, at the end of the day, it follows the same logic as other Business-to-Consumers businesses with regards to data utilization. Investment banking is considered as more project-based analysis here and therefore not further analyzed in this thesis, even being fully Business-to-Business based example.

The prime difference is that there are not many examples through literature where data itself would be as externally sellable product, but it is mostly utilized for creation of the internal insights. This is mostly due to data being very sensitive and highly classified information that speaks against tight confidentiality rules related to customer relationship, even when aggregated. Hereby it is also partially contradicting with Gandhi et al's (2018, 2) general view, that the best opportunities for data monetization would be through external path, as optimal utilization is industry specific.

Looking from another angle it still testifies the statement by Schneider and Imai (2020, 6-7) that finally the greatest value provider and asset for digital company are the users. In its terms it confirms that as the scale is needed, obviously, for big data analysis, it is mostly applicable for the companies with large customer base and high growth ambitions. That matches quite accurately to banking industry as well.

4.4. Monetization in insurance business

There are many similarities with banking and insurance business with regards to approach to data utilization and monetization. However, most of the literature speaks monetization as a synonym to customer life-cycle value, i.e., putting the expected single customer value at the center of monetization, instead of looking the situation more holistically.

Potter and McDonnell (2008, 75-76) are discussing the legal structures and monetization especially in the context of life insurances. While limited to one, yet important product in insurance companies' portfolio, there are many aspects and findings that can be utilized more widely. This thesis does not take deep analysis on the reinsurance and further private or institutional investor risk as those are primarily investment and risk-based decisions, though linked into monetization indirectly. Focus is on finding the models that insurance industry is using for monetization purposes. (Potter & McDonnell 2008.)

Monetization in insurance is calculating the probabilities. Potter and McDonnell (2008, 75-76) are stating that as the level of risk for one insurance company may be considered too high, there are options to lower the risk through reselling and indemnity reinsurance, therefore releasing capital expenditure for re-investing and obtaining the targeted profits through other, lower risk insurance transactions.

Through this logic of capital management and divesting the originating insurance provider from the highest risk options to more controlled, lower-level risk, makes the business logic of insurance matching quite close to that of banking as covered in earlier chapter. It also opens the path to consider the use cases for monetization in insurance business more from the individual customer point of view and utilizing the data insights for the internal activities, equal to banking as such. Also, the level of confidentiality and commitment to customer for data privacy are par to that of banking or even health care, so only highly aggregated data with any identifiers masked away can be considered for external data utilization within insurance domain.

Insurance industry often speaks about “embedded value” in relation to monetization, that refers to time value of the money. By Potter and McDonnell (2008, 79) it is somewhat advanced model in where the right for the future calculated earnings is being purchased by the investors or credit companies, against the discounted present values of those earnings. What makes the model tempting for the insurance provider is the fact, that also associated risks are being outsourced to investors, thus future earnings are monetized today, with NPV (Net Present Value) though, and risks are also withdrawn from the balance sheet. This requires rigorous value optimization through demographic, health care, and other data, in order to find the mutually agreeable price level for such business transaction. (Potter & McDonnell 2008.)

It has become known by now, that data monetization is still relatively new area of business and equally also literature and academic research are on their early phases of maturity. However, if synthesizing the different viewpoints and industries covered in this chapter, it would be possible to create some tempting usage areas for insurance data monetization, worth for additional studies. Such could be, for example, combining IoT solutions for health care sensors utilization with insurance demographics data, in order to provide more accurate insurance schemes for different users and user groups.

Another example could be, post-pandemic that is, for location specific travel risk insurances through combining big data records from target country health care, disease probabilities and weather forecast data, combined with mobile networks mass mobility data, to predict the spread and likelihood of insurance covering healthcare issues. It is certainly one interesting area to investigate towards future, and leaves space for upcoming research to focus deeper into. As was well stated by Schmarzo (2015, xxiii), “...*the business potential of big data is only limited by the creative thinking of the business users*”.

5. Utilization of disruptions

Any branch of business is subject to be disrupted, only time varies. Starting from horses to cars, from land line to mobile communications or from video rental to Netflix, there are always opportunities arising for those who challenge and question the status quo. Disruption can take place in all levels, and despite those given world-famous examples the smaller scale disruptions are more common and more frequent. Characteristic to disruptions is typically the time needed; first there is idea, then there is rejection by the competition, then early adopters start embracing the idea and big wave starts to happen.

“No matter how successful you are, no matter how many awards you’ve won, no matter how great last quarter’s earnings may have been, you are risking it all if you expect your winning streak to automatically continue. Someday another company will come and put you out of business. It might as well be you.” (Linkner 2014, 9)

It is far from easy, though. Convincing the market and making the case for changing what is seen working is laborious work to do and asks time, effort, and in most of the cases also a little bit of luck. However hard it finally is, entrepreneurs can be motivated by the words of wisdom by Nicholas Klein (1918, often misattributed as quote by Gandhi): *“First they ignore you, then they ridicule you, and then they attack you and want to burn you. And then they build monuments to you”*.

In next chapter, the literature and research related to disruptions and their nature, implementation and commonalities are being studied.

5.1. Disruptions – background

“When something is important enough, you do it even if the odds are not in your favor.”

- Elon Musk

Disruptions are linked with innovations, and business disruptions are fueled by business innovations (Biber, Light, Ruhl and Salzman 2017, 1571). Primarily there are following different categories for business innovations, any of which can be considered as disruptive, yet only one being really such that requires major changes in business power relations, as well as by policy and rule makers.

Typically, most of the innovations in number are falling under category where either products or services are made available in new and innovative manner, through existing businesses. That could be, for example, digitizing normally manual order and delivery channel, or upscaling the niche product to availability for wider masses. In these examples, the innovation can be considered as disruptive from company's own perspective, but not necessarily from the industry point of view. Therefore, the big change due to innovation is visible to internal stakeholders, suppliers, partners, or customers, yet to reach level of forcing the competition to transform or being pushed out from the market. (Biber et al. 2017.)

Biber et al (2017, 1571) continue that another category are the companies that can organize themselves in new and innovative manner, for re-inventing the way how products or services can be provided. Example of such often referred is Uber that outsourced the entire vehicle fleet and therefore turned the business model with capital expenditure needs, as well as business risks against traditional taxi companies.

Last category, according to Biber et al (2017, 1571) and by definition also the rarest but at the same time most disruptive, are the companies that are creating technology not seen before, enabling completely new kind of business through products or services. Examples of such could be likes such as private space travelling, or much older example of telegraph.

The last category is also the one, that is problematic for policy makers and regulatory bodies due to non-existent guidelines for the business, and therefore they are not only disruptive as businesses, but also towards regulatory frameworks. In

terminological development, such examples are called companies with policy disruption. (Biber et al. 2017.)

5.2. Disruptive approaches

When searching the disruptions through research and literature of 2000's, Google is one company that cannot be left uncovered. Through the early days of innovation with indexing the massive amounts of data and therefore making the search engine superior to competition, there are also business model innovations that are worth raising up.

As stated by Wacksman and Stutzman (2014, 152), one such example is the introduction of 100 times more free mail storage with registered users, for creating tangible value for the users while creating very sizable user base for future innovations. This has certainly helped extensively when introducing the Chrome browser or deployment of Android ecosystem to mobility users, related app store (Google Play), as well as many other services through the common platform. This has enabled Google to integrate the users through the platform to new services without major need for user to intervene, and thus creating an ecosystem that is self-driven through the scale in dimensions of function and integration (Wacksman & Stutzman 2014).

Through globalization and continuous technology development, it is ever more important to be fast and unique. As stated by Linkner (2014, 9), there are no more possibilities for similar (me-too) companies in the market, or even individuals. Creativity and renewal capability are the prime sources for success, as those cannot be left handled by any external party, unlike nearly everything else in modern corporate environment. This has been also found out by Krippendorf and Kaihan (2011, 104-105), who have come to similar conclusion by stating that *"Truly effective strategies must be disruptive meaning that they are creative and difficult for competitors to copy"* (Linkner 2014; Krippendorf & Kaihan, 2011).

Linkner (2014, 9) goes further by discussing that traditional (hard) skills that have been thought to be the focal point of any successful company, such as production, customer relation or financial skills, are quickly becoming obsolete or business-as-usual. Therefore, it means that those old competitive edges cannot be utilized anymore for lasting success, but disruptive skills are needed to overcome the challenge. It emphasizes the human capital, innovation, and strategic thinking skills to raise up high in the agenda of future working life needs, and thus rewarding disruptive minds. (Linkner, 2014.)

Wacksman et al (2014, 56) are supporting the findings of both Linkner as well as Krippendorf and Kaihan by adding that even that speed has never been unimportant for running as business, through latest technological development it has become mandatory to master, not only to be embraced as new capability. They are also highlighting the importance of agile methodologies with continuous development in relation to products and services creation, as standing still is never an option. (Wacksman et al. 2014.)

As an example, outside technology space alone, there has been major progress in terms of disruptive approach within health care due to widened data utilization. As per Rose and Burgin (2014, 11), the health care industry has been able to take predictive analytics into use, not only on trend level but for specific patients. This has triggered further plans to extend the view into what is called intervention roadmap, thus far driving towards financial value aligned with improving the quality of the care activities. (Rose & Burgin 2014.)

Coincidentally, Linkner (2014, 130) referred indirectly to health care industry by stating that companies should ask themselves *“Am I selling aspirin or vitamins”*, when they are thinking about the criticality of the product or service they are selling. In referred example, vitamin is related to optional product, whereas aspirin is something that customer simply cannot go on without. Separating those views is crucial to understand the needed marketing strategy and related efforts, which may

give a guidance how to make the positioning disruptive in a market based on customer needs and through utilization of data. (Linkner 2014.)

As per the literature findings and examples as shown in earlier chapters, it has become evident that disruptions are unavoidable, mandatory and something to cherish instead of being pushed back. Manu (2010, 171) has come into conclusion, admittedly philosophic one, that possibility is something to be desired by man, and if possibility is being let go, it suffers. Therefore, strive to keep and meet the highest possibility is worth targeting and focusing on. That takes us further towards the root of the disruptive innovations, as to be covered next. (Manu 2010.)

5.3. Roots of disruptions

Many of the disruptions are being enabled by the cultural frameworks, allowing innovation to take place and be a norm within company environment. Linkner (2014, 16) explains that start-ups are primarily the source of most impactful innovations. That is explained by the economies of scale, with established, large corporations having focus on protecting the existing business, whereas start-ups tend to have nothing to lose. Thus far they are focusing on telling the existing structures apart, as well as focusing on inventions, as often considered as being built into entrepreneurs' way of thinking. (Linkner 2014.)

Cultural aspects of innovation and disruptions are found being of importance by other researchers, too. Manu (2010, 29) raises up the link between managing and monetizing the creation of culture being the ultimate capability of a business, matching well towards the overall theme of this Master's work. He continues with explaining that due to change being continuous and unavoidable, the reinvention of the companies and organizations is also needed in continuous basis and doing so especially against the culture of a company. (Manu 2010.)

Krippendorff and Kaihan (2011, 94-95), in turn, are addressing the domain of disruptions from the system dynamic direction. Through studying the history in context of how small players, such as start-ups in today's framework, can counterattack the bigger ones, i.e., corporations, they end up finding that current systems thinking methodology as a disruptive mechanism has been in use already by the Taoists in ancient China. While seeing the interconnections of the multiple factors, they were finding that instead of mastering the more powerful contender, the easiest and most impactful way would be weakening the enemy. (Krippendorff & Kaihan 2011.)

Putting it into today's context and one could see similarity, for example, in cyberattacks against governmental services or large corporations, or creating platform for impacting the old monopoly such as landline telephone by mobile, or physical mail delivery by electronic mail.

Learning from the multiple disruptions with many of the viewpoints, they are quite often following the same logic; only by executing the same thing than competitor is not considered as innovation, let alone disruption. As per Krippendorff and Kaihan (2011, 96), when the whole entity forming a system is being investigated as a whole, it is easier to find the interconnections and see where the weak point of the system is.

With this thought in mind, we will go next studying the characteristics of disruptors, both in company and individual levels.

5.4. Characteristics of disruptive companies and individuals

Starting something new and unknown is risky, yet at the same time the most important (Linkner 2014, 10). Standing the unclarity, working against the odds and trying to convince the others is not only laborious, but also hard and often unrewarding. This easily leads into situation in where the easier path is found, to make everyday life more predictive, controlled and seemingly more effective. Still

the speed is of essence with any innovation, as if all the details are being worked out prior to coming out to public and customers, it is highly likely that competition has already bypassed during that process. It is seen by the research that creativity and innovation are part of the reinvention process, so that many of the highlights for innovation have been part of the continuous process, instead of separate, single findings. (Linkner 2014.)

That may not be the case with all the companies, though. Wacksman et al (2014, 164) are speaking about the common phenomena in established companies, which is relying and following the progress based on key performance indicators (KPIs). While being a visual and easy-to-capture information as such, KPIs can mislead the company if not correctly defined. Wacksman et al continue explaining that most common mistake is trying to put digital offering to be measured with the same variables than hard products or physical services. The cycle of development and obtaining data for adapting the offering for digital products and services is cheaper and faster than for physical products, and therefore measuring them with similar KPIs is highly inefficient and questionable. (Wacksman et al. 2014.)

Human reliance on hard facts, such as KPIs, may be built into DNA of a man. When going deeper into logic of decision-making and behavioral studies, there are contradicting views found. In his study, Manu (2014, 32) has pointed that technology itself is not a business model and, following the same logic, technology cannot be monetized alone. It always requires changes into underlying motivation and understanding the people's behavioral trends, and those, in turn, can be monetized. This is something that author of this thesis can second to, as it has been witnessed on number of occasions when bringing in new, ground-breaking proposals into new audience. Stating that something is done better than before due to technology is hard to get through as a convincing message but stating that individual's or team's life will get easier and simpler, leaving time and effort for other topics, gets much faster acceptance from even the highest decision-making level people.

5.5. Disruptive storytelling and human aspects

Learning how to disrupt starts with unlearning. As discussed by Manu (2010, 38), considering oneself as seeing the topic for the first time lets the people to use their imagination and make open or not even rational questions, while not having any predefined thoughts or limitations in mind. This is supported by Krippendorff and Kaihan (2011, 126) who are experimenting the qualities of outthinkers as disruptors. According to their view, outthinkers are extremely adaptive, and capable to dive into the minds of the people by utilizing narrative for impacting to perceptions of the others. While from author's point of view such behavior sounds like a US presidential election in its worst, especially given the additional qualities of outthinkers as being able to treat the reality as something being relative only. On the other hand, when used with innocent mind, such capability will lead into major changes in world such as establishing commercial space travel by Elon Musk or Richard Branson. (Manu 2010; Krippendorff & Kaihan 2011)

Linkner (2014, 130) provides his advice and finding on the same, through stating it is important to leave audience wanting for more, not less. This can be done through making the point simple and easy to attach, not only via storytelling, but also branding. As per Krippendorff and Kaihan (2011, 125) the same phenomena apply also to using narrative and making people feel connection to stories. That is characteristic for most successful companies, especially during digital times. When analyzing further into level of individuals, many of the executives are excelling in storytelling and therefore getting the audience attach themselves on emotional level to company. Through the early history of mankind, the storytelling has been the basis for communication, so sharing stories is grounded into deep level human-to-human connection. (Linkner 2014; Krippendorf & Kaihan 2011.)

One famous example of major disruption through literature on large corporate level is what Samsung went through back in 1993. Triggered by generation shift on company top management, as well as learning on ground level the negative approach towards company products by sales agents, there was major point of turnover disclosed. That took place by speech for company executives, referred as Lee's Frankfurt Declaration, guiding them to "Change everything but your wife and

children". That highly emotional speech was written down and given to all company employees as well. Amongst major turnover activities throughout the company, there was separate organization set up, with mandate to secure that there is no turning back to status quo, as having a look as an external to avoid stagnation. (Linkner 2014.)

Above example is not unheard of for the author of this thesis either through earlier experiences on large corporations; however typically the activity takes place in phases and, more often than not, it is run and implemented through the external consultancy companies, to avoid the internal confrontation. However, being true to the theme here, the disruption may be too much of a term, when transformation is more describing the typical project-like progress of many corporations.

Disruption and being disruptive calls for courage and is risky. Linkner (2014, 25) still states that even bigger risks are mediocrity and regret, so creativity and innovation are to be focused to avoid those risks to materialize.

Because at the end, being disruptive may be the least risky option to take.

6. Research implementation

First it was needed to define what kind of background materials would support achieving the answers to the research questions, especially when the studied entity was partially abstract and asking for combination of hard and soft messages. After considering the options, it turned out that when target is to find mechanisms how to impact the decision makers, it would be logical to base the research input around those decision makers' views and opinions as well, as highly respected sources for the information.

The other study materials were then gathered exclusively based on the relevance and identified need for the subject of the thesis work, as due to the nature of the work there were no single primary material as such. The reason for having variance

of the different sources, was targeted to support versatile approach for the topic, aligned with multi-faceted study questions approached from different angles. At the end of the day, this was targeted to benefit from the findings and dialogue with theory, as well as supporting the targets set for the thesis by the researcher and the assignee company. Any references and specific findings from additional materials are referred in respective points and chapters in following.

6.1. Source materials

As per above considerations and securing the wide enough background materials, the input categories as listed below were selected as sources for the research materials.

- Meetings (n=10) with customer organizations top management and board members. Research method personal observation. Located in geographical focus areas as below.

- South East Asia

- Africa

- Middle East

- Company's customer prospect specific file structure, overviews, and memos in common Office365 space (n=79). Rationale for selecting these as data sources spans from the need to compare and address the progress in customer approaches and validate the changes needed as per prime observations. This was done through one-by-one analysis and finding the common denominators either for or against. Material handling order followed the alphabetic file structure without separate littering.

- Presentation materials, customer materials and value analysis, documented offers, quotations, and commercial proposals (n=15). Rationale for selecting these as data sources was to validate the

commercial approach, levels of innovation related to pricing approach, as well as external message creation alignment.

- Email exchange with external parties, and company internal stakeholders (n~100). Rationale for selecting these as sources was to go through the sample of ~1500 mails and find the references to direct customer / prospect entries, analyze the related discussions and proposals against the study framework and identify any discrepancy especially in relation to four pre-assumptions.

- Company internal meetings, discussions, workshops, and their observations (n=25). Primary parties were the following:

- Chief Executive Officer of the company
- Chairman of the board
- Chief Technical Officer
- R&D representative
- Sales agents

Rationale for selecting these as source materials was based on the possibility to obtain strategic views and decisions made by the company, utilizing the unbiased view of the top management as well as take learnings from any long-term plans and roadmaps over strategic period.

As basis for the research there were events for observation within presentation and development focused meetings with target customer organizations, other vendor connections, as well as industrial knowledge hub body. Those findings are being referred in following sections as learnings relevant to outcome of the study, either directly or indirectly related to guidance obtained through theoretical part of the study.

6.2. Observations

Observations within meeting dialogue were performed with three customer prospects and one global vendor:

A: Very large operator located in South East Asia

B: Large operator in Middle East

C: Large operator in Africa

D: Telecommunications global vendor

These examples were selected based on the strategic importance for the assignee company, established relationship for open dialogue, as well as geographical diversity for representing global view. For additional scope of diversity, these operator companies were either listed companies, or public, state owned ones. Reason behind was that this typically impacts to operator's level of innovation and business sense of urgency, as the state owned, often having monopoly position in respective country, are less prone to competitor actions and therefore more traditional in decision making, being opposite to listed companies.

Roles for those customer prospect organizations representatives were primarily from board level, including

- Chief Executive Officer
- Chief Technical Officer
- Chief Marketing Officer
- Chief Finance Officer
- Head / Director level contributors reporting directly to CxO level.

Additionally, agent network contact in European market (E) was utilized as an input for market understanding for mobile virtual network operator space (MVNO). Continuous dialogue with references and within studied entity has taken place within a company, primarily with CEO (F) and Chairman of the Board (G).

Due to confidentiality reasons and this work being open to public, the direct notes from the meetings were not included into materials sections in the end of the study. However, discussion materials and public frame setup has been included for illustrating the actual setup with dialogue and analysis topics.

6.3. Analysis model

Materials for this study were categorized according to structure as described in chapter 6.1. Even there were no single prime materials as such, the most important practical value can be considered obtained from the direct observations, especially from customer and vendor contacts, whereas internal meetings, documentation, mails, and other materials were complementing and bringing supporting angle to the outcome.

Part of the method for implementing the research was littering the meeting notes with observations, based on which there was observation matrix created for mapping, comparing, and calculating out the similarities and patterns from the findings. There were 40 different data points in matrix.

Observations were done open ended, yet matrix level was focusing on ten different levers as seen valuable input from observed parties;

1. *perceived innovation*
2. *productized competition existence*
3. *access to board level*
4. *solution uniqueness*
5. *data basis for decision making easily available*
6. *disruptiveness*
7. *earlier awareness of company*
8. *demand for solution*
9. *willingness to continue*
10. *request for commercial offer*

The results obtained were then further analyzed by researcher against the other data sources. This analysis was made in four stages: first the company's existing prospect database and related notes were gone through one by one, for searching out the

similarities to data points in matrix, and hereby linked into findings from the observations.

Secondly, earlier customer materials, offers and proposals were analyzed for finding out whether the observed needs from the customers and related approach had been utilized in previous attempts or whether the argumentation has differed from main findings.

Thirdly, mail correspondence with external sources, as well as with internal stakeholders related to those specific cases, was analyzed from the sample of ~1500 messages, out of which ~100 was identified as related to specific observed cases.

Finally, company internal workshops, meetings and related minutes were studied to find out the development patterns, feedback, and targeted execution items, and whether there were discrepancies against the observed qualities of the system. The overall target and motivation underneath was to bring the full value from the diverse set of materials for the comprehensive outcome of the research, as well as avoid reinventing the wheel or relying on too narrow view only.

In following, the customer and vendor sources, as well as prime internal stakeholders are marked with capital letters (A-F) for keeping the model easy to read and understand. There would have been an option to prepare the statistical, numerical approach by creating the weighting factors for the customer observations based on the customer size and business potential, yet due to lack of clarity and neglectable additional value for the research that model was decided not to be implemented.

Research analysis for the results presentation, combined from all the source data, was taking benefit from the theme basis, while keeping strictly in mind the study questions and keeping true to source information with ethical guidelines followed.

7. Research results

As learned through the literature review section, terminologically “monetized analytics” is yet to be established to be understood in unified manner (Faroukhi et al. 2020, 19). Therefore, most of the approaches with potential customers and other

stakeholders are started with opening monetized analytics in practical terms. Below is the picture which places the monetized analytics into framework of traditional analytics cycle, and therefore expanding the established way of making the analytics within telecommunications domain.

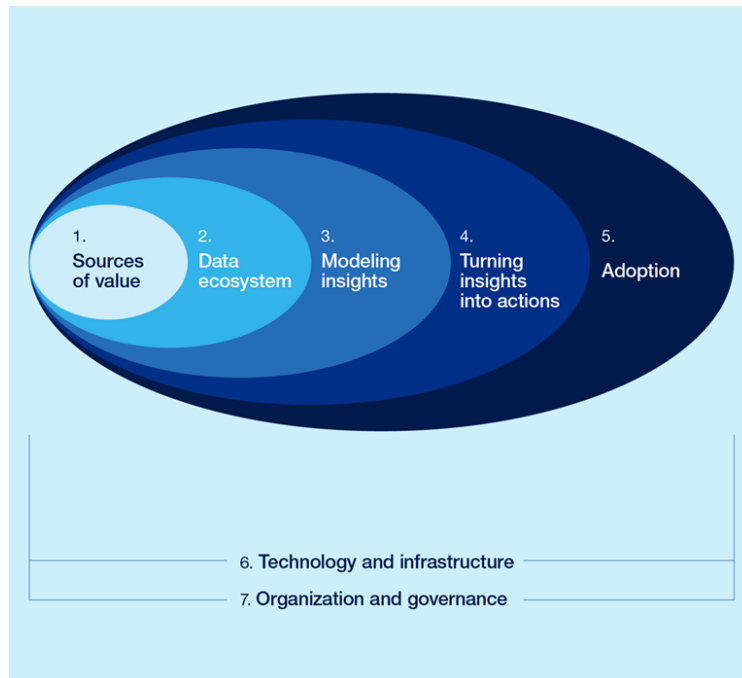


Figure 3: Normal model of analytics utilization (example McKinsey 2020)

This view, however valid and widely applied it is, still lacks the fundamental part of data analytics utilization in any industry, which is monetization through insights and actions, as presented in Figure 4. As current industry approach has educated people, including decision makers, to stop the analytics part into getting the actions implemented, it misses monetization as the most important point of why analytics in general is being done.

We cannot blame the industry and decision makers, though. So far, being laborious and very hard to achieve, it has not been possible to have a single system in place, which monetizes all the transactions and provides the outcome as directly prioritized, monetary value of technologies geographical areas in comparison to other, the value of certain customer segment or single device type user's data usage profile, to mention but a few capabilities of monetized analytics in fully flexible cross-analysis setup as per researchers' experience.

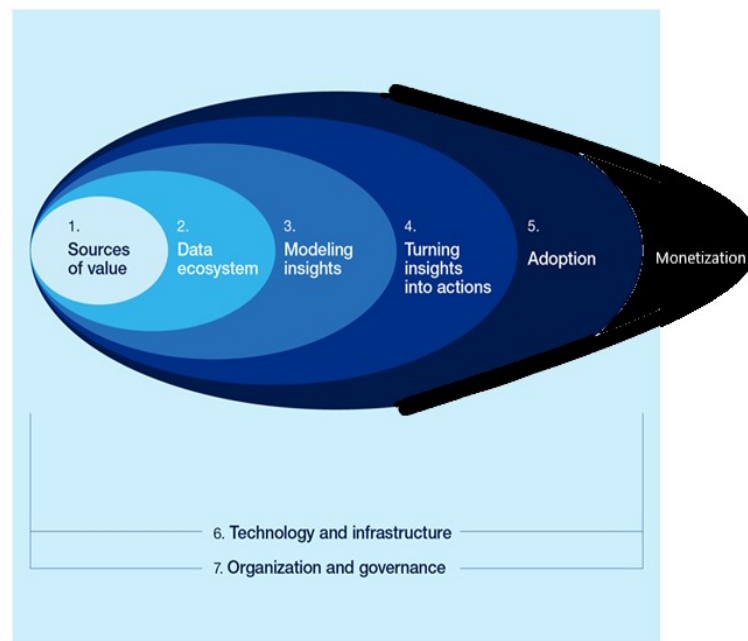


Figure 4: Analytics utilization expanded into monetization (Example McKinsey 2020 modified)

As per observations (A, B, C, D), most of the discussion and presentation towards prospects are starting from the basis how the decisions for topics such as investment location or prioritization over regions are being done in respective organizations. This typically sets the tone for further dialogue. As learned through analyzing the literature (Manu 2014, 32), technology itself is not an innovation, but changing people's behavior by the aid of technology is instead. Therefore, focus needs to be put on human behavior, this case in decision making, and how the offering will help that.

As an illustration of steps and linkages between different angles and phases, the overall study practice leading to presented results is shown in figure below.

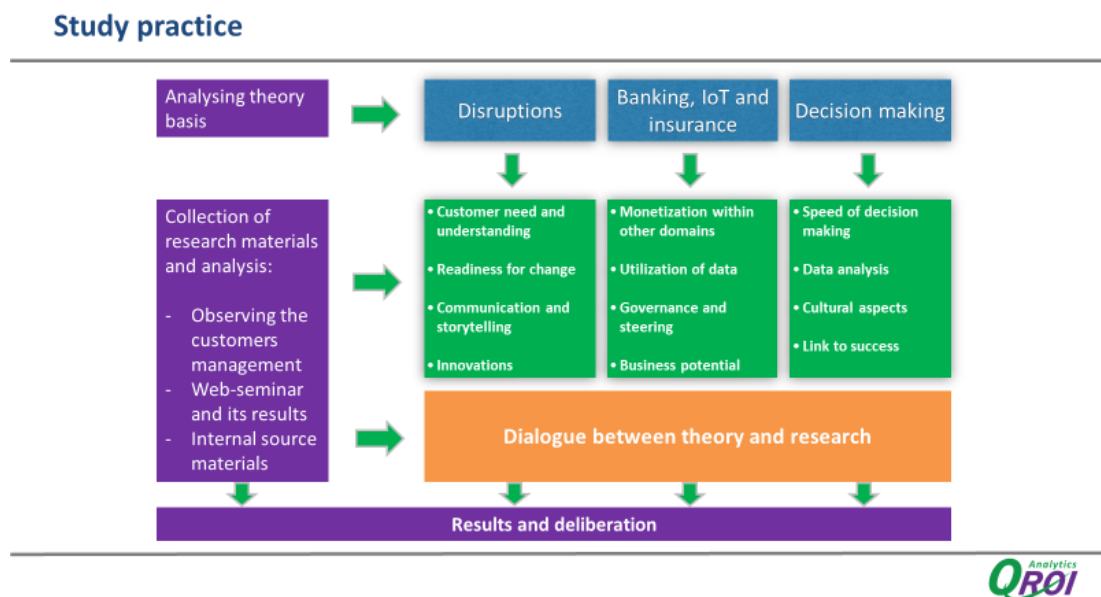


Figure 5: Study practice

7.1. Customer problems identified

Within observed organizations (A, B, C, D), with no exceptions and irrespective to geographical appearance either in east or west, one of the biggest challenges for timely and accurate decision making is the availability of reliable data basis.

Investment proposals are often biased, seen from presenter's angle only, or lacking the consequent end results or financial impact, to allow professional and backwards auditable decisions.


That observation was turning out to be a game changer for the assignee company (F, G). With strong engineering background and pride for very sophisticated and unique technical solution, the overall messaging by the company had traditionally been driven by technological superiority, and therefore target audience had been for the technical departments, including CTOs. These findings were derived from analyzing the contents and messages within earlier customer materials and correspondence, as well as confirmed through internal stakeholder reviews.

The downside of CTO-based approach is that those technical departments were not the party making the most value out of solution. Instead, it was seen partially as a threat for themselves, as the system would show exactly where the value in mobile network is lost and therefore make the technical department look bad in the eyes of rest of the board.

This finding revealed the need to redefining the overall market messaging and answers to study question “How to create demand for monetized analytics for board level decision makers”. Instead of providing a solution for making on-the-spot and effective network analysis, the need that raised from the customer front was to have a solution for enabling the understanding on each other, act as an eye opener and provide predictability for the business. All such qualities, as per figure below, that are continuously sought after by organizations (Stubbs 2014, 6).

The next Big thing in analytics – Direct monetization!

- Global CxO level request for future analytics
- Address instantly the most business-critical levers – prioritized directly by business value
- Look the business forward with predictive view
- Understand the reasons behind lost revenue – address untapped potential from network
- Enable instant decision making and action -> ensure quick time-to-money



Disruptive approach for business decision making!

Slide 5 - confidential



Figure 6: Updated introductory material example for sales use

7.2. Competitive situation

As per the literature analyzed in earlier chapters, especially chapter 5.1, innovation is the key to survive in a marketplace (Biber et al. 2017, 1571) and that is even more so

for any incumbent entering the market. This is where the differentiation comes strongly into picture, helping to position in the eyes of the customer and avoiding falling into secondary supplier role with immediate price pressure.

With the solution by the assignee company, QROi Analytics Oy, there is no direct competition with productized offering found from the global market. That makes the solution not only unique, but theoretically speaking, a de facto leader in its own niche market. That niche market, however, is subject to being created as the inbound demand is still somewhat limited.

As per observations and dialogue with the prospect customers / vendor (A, B, C and D), this view was confirmed being valid and realistic, especially given the target market of developing countries with limited development resources. However so, the competition to the productized solution is considered being project based, i.e., either external integration or consultancy houses making consultancy project with definition, implementation, and joint development phases. In some cases, as per company's internal meeting reviews as well as researcher's practical experience, with established larger operators, the same could be also possible to be performed inhouse, with allocation of internal consultancy resourcing.

7.2.1. Competitive argumentation

There are many downsides to project based or inhouse approach, though. In comparison to off-the-shelf product or solution, there would be need to large number of allocated experts from different domains of expertise, from SW architecture and specification to testing and applying commercially viable rule base for solution. Not only would it be more expensive and time consuming, but it would also ask for major maintenance resources for maintaining and further developing the system after deployment. As per results of the observations with two prospect customers (A, C), as well as researcher's industry experience, those resources are non-existent in practice and needed in other areas running the daily business or strategic initiatives, despite often used as counter-argumentation against productized solution.

Therefore, it can be anticipated that productized solution with innovative, directly monetized approach will turn the operating expenditure from negative to positive; those manual actions needed from business development personnel or departments can be released for other, more strategically oriented tasks, when all the operational decisions can be performed with ready-made solution and routine tasks, such as site- or region-specific profitability or traffic patterns, can be limited to minimum.

7.3. Differentiation within target markets

Differentiation itself can take place in multiple levels. Solution functionality and its capability to match with solving the customer problem is the primary driver, yet not the only one. Delivery model, service and maintenance model, or pricing are dominant places for additional innovation in marketplace (Gandhi et al. 2018, 4). SaaS (Software as a Service) is getting more and more tailwind within industrial software market and originally innovative approach is getting business-as-usual nowadays. What is innovative in delivery model, though, is the utilization of AI (artificial intelligence) for analyzing the customer infrastructure, making the correct platform and 3rd party component selections independently and preparing the installation for application software automatically. In more advanced model, also the user rights and system credentials are provided automatically by the system, in order to make the deployment and launch of the solution as smooth as possible. These are not in place by the assignee company's product at the time of preparing the thesis, yet options for further innovation towards upcoming releases of the software.

Pricing innovation comes through transaction-based models (Schneider et al. 2019, 3). Traditional way of pricing products in software industry has been to through perpetual license, i.e., right-to-use over predefined period of time, typically yearly. This may have been complemented with variables based on number of users, number of separately priced functionality (features), or number of connected elements or interfaces, to mention but a few. Transaction-based model, in turn, allows for pre-defined or full usage of the entire functionality provided by the

system, but the pricing is based on transactions per user and counted together in monthly basis to form enablement for frequent billing. As per researcher's experience, that model is extremely appealing in cases where the utilization is expected to grow gradually over time, therefore providing pay-as-you-grow model for the customer. Downside for the system provider is in cases where the take up starts slower than anticipated, and therefore the value of the customer remains at lower level, thus reducing the expected business value.

In assignee company's solution, the pricing model is currently the mixture of the above, i.e., relying on traditional model, with variable on size of the managed network, as well as users and interfaces. However, through the business partner providing mediation capability for the big data handling, there are also possibilities to smoothly expand towards transaction-based pricing, depending on the market need and willingness to capture the model also for B2B cases, instead of B2C only deployed in market so far.

Based on current understanding, 5G as technology may be the driver towards transaction-based models, primarily due to network slicing as methodology to utilize the same network for multiple use cases, such as ones requiring low latency or others requiring maximum throughput. As per observations (A, B, D) as well as the research around innovation (Wacksman & Stutzman 2014, 152), the flexibility to address needs towards future is the key for keeping the innovation options open. That is one of the most prominent learnings for assignee company.

7.4. Thought leadership

Making oneself visible in today's business world filled with companies searching for attention is not only hard but may also be expensive. As new entrant coming into market with limited budget for marketing, there needs to be also new and innovative means of gaining visibility, interest and finally business opportunities, to capture the mindshare for what to pay attention to (Krippendorf & Kaihan 2011, 101).

This is also practical requirement from the customers. Without awareness, visibility, and recommendations from other peers it is laborious and unrewarding task to

convince the prospects operating in balance sheet value of billions of dollars, to open the doors for dialogue and presenting the case and value for the customer.

Therefore, there needs to be additional mechanisms in use. Especially in case as with assignee company where the status is still on start-up level, and connections to prospect customers are primarily through outbound activity, i.e., utilizing the management team's personal connections.

As per the observations within dialogue with the prospects (A, B, C), vendors (D) and management team (F, G) of assignee company, it became obvious that there is need to extend the message for new approach, for creating demand and interest and especially impact the perception about the subject of monetized analytics (Krippendorf & Kaihan 2011, 120).

In case where there is new solution available with limited organic demand, the methods selected were creation of thought leadership, focusing on communication through professional social media (LinkedIn), as well as reproducing the company web pages such, that not only are they catching attention when entered, but would serve as trigger for contacting inbound due to uniqueness of the setup (Krippendorf & Kaihan 2011, 98). That would equally serve the extended awareness of the company.

That would not be enough for reaching wider audience, though. Additionally, there would be needed also visibility through independent information sharing platforms, in order to reach that public that is not searching for information from company pages but is willing to learn and look continuously for new solutions. It was thus recognized through weak signals from observations (A, C, D), that having more personalized approach against company presentation only would serve differentiation and have higher take up than traditional, corporate-based approach.

7.5. Awareness creation

As per feedback from observations, and supported by review within company's management team, it was decided to search out means to extend the

communications to professional webcasting channels and formulate the message more into helping and informing the audience, instead of making it pure sales effort. During initial search for options through which the messages could be delivered, expert webcasting platform called *BrightTalk* was found. After initial two-way discussion there was request by BrightTalk asking researcher to give a presentation during upcoming global summit labeled as “The future of business intelligence in cloud”. BrightTalk operates in UK but audience expands to global scale, also to developing countries which are the prime target for assignee company.

That theme of the summit was perfectly supporting both the company’s as well as this thesis work targets, and it was agreed to utilize the channel and prepare for the presentation slot. As the challenge for any small companies and new incumbents is to reach the time and get into minds of the decision makers (Krippendorf & Kaihan 2011, 126), the webinar topic was selected to address that topic in universal manner, not touching telecommunications as domain alone, and named as “Bringing true analytics value to Boardroom – but how?” as per figure below.

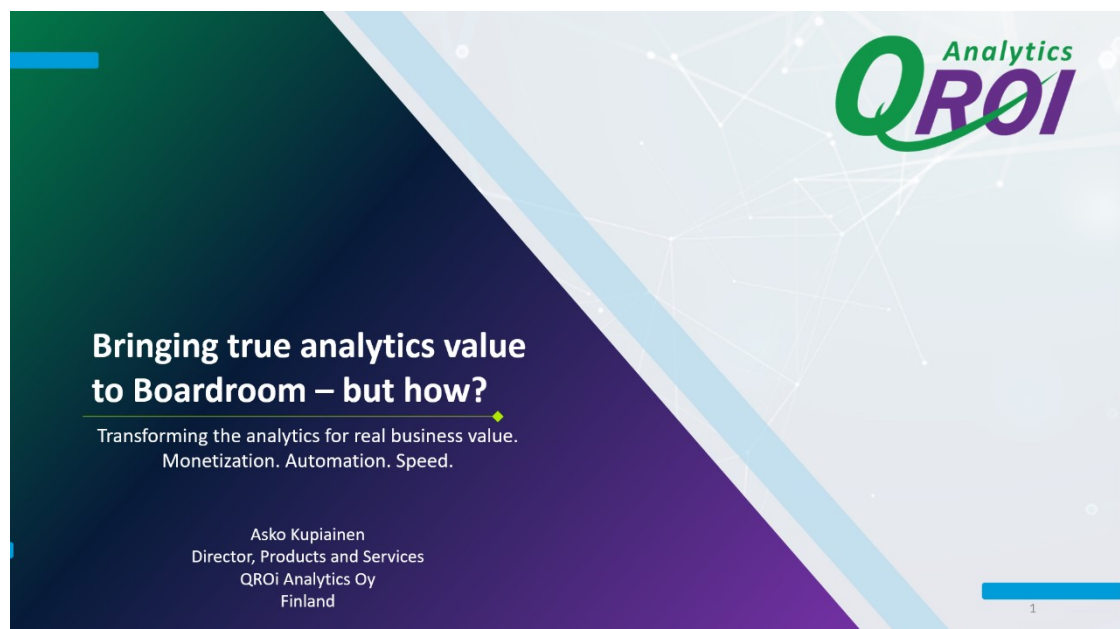


Figure 7: BrightTALK webinar main page

This approach allowed real life testing the model of utilizing the professional platforms for obtaining thought leadership opportunity, with measurable means, while at the same time raising the public profile of the company.

7.5.1. Awareness creation test

BrightTalk, the organizing platform, was automatically collecting the statistics from the registered and participating audience and provided the recorded data back to the researcher. Due to security and privacy reasons, the data was anonymized for avoiding identification yet consisting of country, professional role and represented industry by the participants. The following results were achieved in terms of number of participants, noting that registering was required for the site, so all the entries came with participant information:

- Registered viewers = 75
- Present in webcast = 24
- Watching the recording within next 24 hours = 24
- Watching the recording within next month = 98
- Viewers total = 122

Considering the pre-registration needed for the platform both for watching live or afterwards, and webinar lasting 46 minutes, the results were found promising, again putting against the company coming without earlier appearance in any public forums.

Let us analyze next the countries from which the participants for the webinar were located, especially keeping in mind the target customers for the assignee company being in the Asian Pacific, African continent, and Middle East, complemented with other developing countries.

Out of 122 viewers total, the participants were representing 37 different countries. Top countries, sorted by number of viewers per country, were as listed below. Finland is being excused from the list, as researcher himself as well as other company representatives were counted into those figures:

- Mexico	22
- USA	12
- India	8
- Brazil	6
- United Kingdom	6
- Malaysia	5
- United Arab Emirates	4
- Germany	4
- Indonesia	4
- Argentina, Netherlands, Philippines	3
- Hong Kong, Colombia, Nigeria, Peru, Taiwan, Vietnam, Zimbabwe	2
- Bahrain, Belgium, Canada, Costa Rica, Dominican Republic, Ecuador	1
- El Salvador, Israel, Italy, Mauritius, Pakistan, Portugal, Saudi Arabia	1
- South Africa, Spain, Switzerland	1

Analyzing the above against the target market, i.e., primarily in APAC, MEA and developing countries in other continents, we can count that 35 out of 122 are falling into those categories, therefore representing 28.6% of the audience. While in absolute terms this is still relatively indifferent as total amount, yet when put into context of having roughly 100 potential customer organizations globally it starts to stack up more important, considering being still only one event.

The remaining 71.4% of the other countries' representatives are of significance as well, given the target for making the ways of getting into the board agenda and raising visibility at global level. It is not possible to state whether there has been one or more people behind any of those numbers, so final number of viewers may have been even higher.

7.5.2. Analysis of the results

In overall terms it can be said that results achieved were aligned with expectations, and numbers are potentially growing all the time as recorded version is openly

available in web for further watching. Also link and material for the recording as well as live show was advertised both by the platform itself, as well as company through their own LinkedIn channels, and that enabled wide reach with zero cost in practice.

Against one of the original study questions related to demand creation, it can be stated that webcasting through reputable and publicly open platform as a channel is modern way of building the visibility, raising the topic for wider discussions as well as providing highly cost-efficient mechanism especially in comparison to traditional or externally organized digital marketing. This also supports the findings from literature in chapter 5.5 “Disruptive storytelling and human aspects” (Linkner 2014, 130; Krippendorff & Kaihan 2011, 125).

7.6. Utilization of challenger position

Innovation can take place in many forms (Biber et al. 2017, 1571). However, turning that into competitive edge, especially being an underdog in a market, requires innovations on many fronts. This is typically characteristic to small or start-up companies due to limited resources, as per table below.

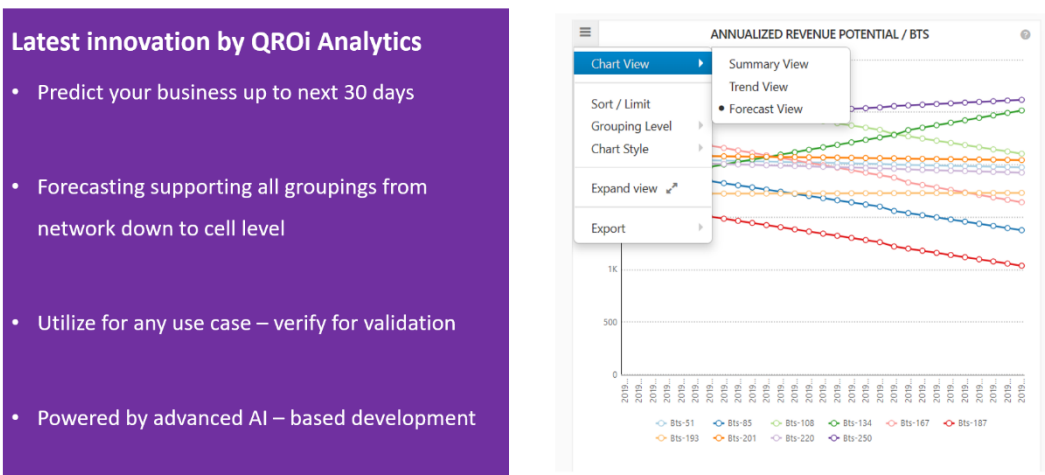
Small-Company Thinking	Big-Company Thinking
Embrace risk	Avoid risk
Urgent	Slow moving
Create new ideas	Protect old ideas
Bottom-up (everyone contributes)	Top-down (executives' ideas only)
Idea-centric	Rules-centric
Nimble	Bureaucratic
Fire-in-the-belly	Complacent

Table 1: From the book “The road to reinvention...” by Linkner 2014, 17

One of the requirements from observations (A, B) was the capability to predict the traffic in network, area, and site level in advance, therefore leaving time to react prior the big movement happens in network, especially if geographically. Such solution request, for defining the needed network changes in prioritized, monetized manner, was thus set towards assignee company as new market requirement.

Company R&D started to look after the possible options for understanding the network behavior in advance and took a study into area of artificial intelligence (AI) for analyzing how this could be possible. Assisting on the topic, there was also dedicated thesis worker allocated through Aalto University, Helsinki adult training program, to study and bring in the very latest research from the area of AI and algorithms. After intensive research and study, the forecasting functionality for predicting network utilization was implemented on product platform level, through leveraging AI principles up to 30 days in advance, as per figure below.

Breaking news! Prediction for future – built-in forecasting functionality



Slide 9 - Customer Confidential



Figure 8: Page from QROi Analytics marketing material for forecasting

As we know by now, at time of writing this thesis early 2021, this functionality would have proven to be invaluable also in the case of sudden global pandemic (such as COVID-19, exemplified in Figure 9), when lock-down impacts especially the office areas mobile traffic to be transferred to suburbs, i.e., white-collar workers homes. Yet as a sign of platform flexibility, and in the light of innovation such use case was

documented by the assignee company and taken visibly into marketing materials as a signal of agile and innovative way of developing the solution based on the market needs (Krippendorf & Kaihan 2011, 115).

7.7. Innovation and execution

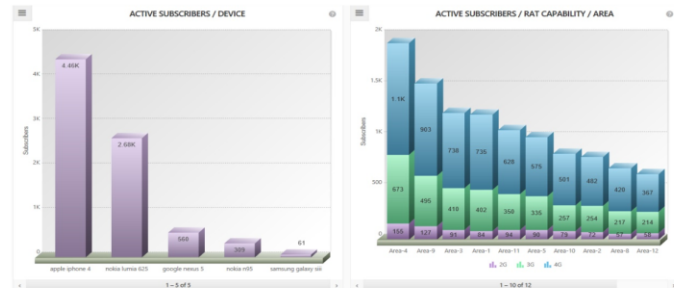
As presented through academic research findings on main chapter 5, especially by Wacksman and Stutzman (2014, 152) and Linkner (2014, 10), the progress explained in earlier chapter can be considered as supporting example on how the crisis can be turned into benefit and source of improved competitiveness, when complemented with innovative and open-minded thinking, with fast capability to implement and utilize the market momentum as a challenger. As per table 1, the assignee company was able to take the challenge and fast track the development without slowness in decision making, against one of the characteristics of large companies in front of the equivalent situation.

In case of emergency: Seeing where traffic goes and avoiding bottlenecks

Use case example: Sudden change in traffic distribution (such as due to COVID-19)

Where:

- High bandwidth traffic changes location (office districts -> suburbs and more remote)
- Fast traffic increase due to technology shift (Office WiFi -> Mobile data at home)
- Peak in new heavy data users due to remote work / study



Solution: Analyze and predict daily with AxS

- where the actual mobile users move and how the increase will be in near future
- how long new heavy use areas can stand the peak
- how much new capacity is needed quickly and where
- From where capacity can be released temporarily
- -> Enables responding and predicting the fast moves and ensuring business continuation, while serving the community and good corporate citizenship

Slide 10 - Confidential



Figure 9: Example of use case innovation in QROi Analytics marketing material

Still with critical thinking and aftermath, there are many other aspects that need to be performed well, in order to make new innovations succeed in commercial terms.

Delivery and scaling capability, finding the correct price point, making the case for various prospects purchasing departments and meeting the global companies' decision criteria still asks for continuous improvement and high level of performance. As important as being innovative is, there are still number of practical barriers to be overcome prior to final success. Therefore, it is good to consider the strategy, whether it is better to be the first mover creating the market, or second to capture the value done by the first one. There is no right or wrong answer to that, but it is question that any company with R&D needs to define in its own strategic approach. To succeed, innovation needs strong execution (Ugoani 2019, 1).

8. Conclusions

As monetized analytics is new methodology in global market and assignee company is targeting to enter that niche area, which requires also market making activities, this study was looking for answers to original research study questions for

1. How to create demand for new type of approach of "Monetized Analytics" for board level decision makers? and
2. How the assigning company could benefit from the respective changes?

Research was taking a holistic view into questions both through theory background and practical study, targeting to benefit via learnings and findings from both aspects.

The results combined as per researcher's overall opinion and understanding, taking into account all viewpoints studied, can be qualified into two categories: behavioral and operational. This distribution is partially artificial as both categories are linked to each other, yet separation is justified for easier deployment and follow-up. It also separates the items that can be impacted directly from those, where indirect impact planning is needed.

Those results under the category of behavioral ones are related to way and how to address the potential customer prospects, that are jointly addressing to both research questions 1 and 2. As based on observations (A-G), below covered are the combined results presented as step-by-step guideline for the assigned company, for behavioral category.

- 1) Focus the efforts on commercial decision makers, not technical departments as they may be threatened by the increased visibility and automation.
- 2) Competition is mostly against inhouse development and changing the purchasing party's attitude, therefore argumentation is needed for that. Direct technical competition has not been recognized in productized setup.
- 3) Utilize the variety of different channels for creating awareness, as coordinated marketing mix. Through awareness comes the interest and through interest comes demand.
- 4) Based on tested approach through professional platform, creating thought leadership can be done in small scale. Making it global requires continuous attempts and investments into focused marketing, in additional.
- 5) Even new and disrupting approach, it needs to be known widely. Risk of being copied is an honor and testimony of having done things right. It is not a topic to be afraid of.

Secondly, operational category results are more practical ones, pointing to implementation of selected actions. As the thesis is related to analyzing and finding solutions for the assignee company, the actions proposed may not be considered generic as such, yet they may serve as check list or guidance for other companies under the similar global opportunities. Topics presented are on subject level and detailed level of execution per item is to be defined by the company as part of its operational or strategic planning process.

- 1) It is advisable to focus on drawing the ease of customer's situation after solution is placed, not only the pain before. This applies to all messaging.

- 2) Efforts dedicated to demand creation are mandatory, as the results are proven doable. Differentiate and innovate at all levels.
- 3) Ensure continuous creation of awareness. Even the best ideas get unnoticed if they are not spread.
- 4) Pay attention to finding a strategic partner that is having established access to targeted prime customers. That will speed up the process.
- 5) Flexibility and speed to meet the market demands is critical. It is the survival of the fittest, not the biggest.

Even non-academic statement and only indirectly based on study work, yet worth adding into end of the list, there are two other topics: First, there is also some luck needed. For raising the probability for deserving luck, executing those earlier steps are needed. And second, being an entrepreneur is not easy or straight-forward. Either you win or learn.

8.1. Need for additional studies

This study has taken holistic approach into research and literature in the fields of decision-making processes and operational efficiency, paths to monetization as well as utilization of disruptions. It has touched upon the findings and learnings from various sources, complementing them with observations from customer prospects, industrial sources as well as company internal studies. This all has been brought into and analyzed under framework of differentiation.

There is still plenty of room for additional studies, though. Software functionality, wider utilization of artificial intelligence, as well as machine learning in massive data context is subject, that will need both theoretical and practical use case study going forward. Development in those fields is very fast, and therefore allocating time and resources for continuous improvement will remain important also in next phase of potential analysis, which are likely to be triggered by this study.

Also, the analytics market itself is dynamic, to say the least. Large market leaders are able to focus extensively on usability and customer experience of the systems, as

well as scalability for corporate level use, and therefore smaller niche challengers need to overcome those hurdles with more focused approach. Analyzing those focus areas with biggest value for the customers remains as core area for study in future, to capture the opportunities identified.

In addition, psychological aspects within external messaging and capturing the decision makers attention will ask for cultural-related finetuning, as there may be differences on most suitable approach between various markets. This is also subject to additional studies.

9. DELIBERATION

When approach selected was wide and from multiple angles, it turned out to limit the capability to go much deeper into many of the themes and findings. That may have left the work being, at least partially, on higher and generic level, thus serving only with limitations the parties searching for more detailed information or statistical analysis results on single questions selected.

Also combining the non-numerical information from diverse areas of study has required the researcher to utilize his own justification and domain experience for reaching the final results. Despite best efforts to keep the clarity and opening the background of study process and thinking behind, it may still leave room for interpretation.

Looking from another angle, the study was able to find the connections between different approaches, and synthesize them into workable and operational outcomes, bringing the level of concretism within reach for the assignee company. Additionally, it was possible to test out some of the ideas and findings from literature and observations, such as through leadership creation through professional virtual event organizer, or innovations around AI utilization for the product platform and customer use cases. As one of the criteria for the research is, by definition, the capability to utilize it in practice, that could be considered as applicable outcome for the work.

Still, it would have been valuable to have additional external parties for observations, possibly also through other methods. Though favorable as an approach, there were practical limitations for ending up to that path due to two reasons; first is the availability for the board level customer prospect representatives for dedicated interviews with relatively unknown party, such as assignee company. Another reason was more business based, i.e., when the small challenger company in a niche market would approach the potential prospects with questionnaire ref. decision making and approaching the board members, it would have been both paradoxical as well as not credible way of starting customer relationship. Therefore, through straight-forward risk assessment, that model for approaching was not selected.

9.1. Study journey

Approaching the underlying topic of differentiation from multiple points of view, separated extensively from each other, was considered somewhat risky challenge at the beginning of the thesis. Trying to find and connect the dots for the common denominators for items that were first looking irrelevant in connection, was finally eye-opening and educational, yet nerve-wracking experience for the researcher. As it was not feasible to just dig deep on one topic and leave the others aside waiting for their turn, one needed to keep the big picture in mind and try to make the clarity out of diverse sources, materials, and observations. That was forcing to keep up continuous pace with building up the thesis without interruptions.

On the other hand, taking a holistic view into matter impacting to wider entity than only one company, through similarities within start-up domain, brought more responsibility with it. Considering the findings more generic and possibly representing wider entity and having, in best case, also industrial implications with it, was bringing that extra boost for trying and making the best out of time available for study. Still, being an adult student making research simultaneously by the work life did have its implications to the researchers' capability to dedicate time and effort in needed amounts. With those limitations taken into account, there has been major level-up in researcher's understanding on the studied entities.

In overall, the study serves as a basis for assignee company's development plans, as well as documenting many of the underlying business assumptions, external dependencies, and business relations, and thus far can be utilized also as training material for new people joining the company. It is of researcher's wish that potential external readers would find the work of value and providing learnings for any party searching for information related to business differentiation, monetization and building the awareness by new incumbents in global software business.

9.2. Wider industrial implications

It would be complacent to state the exact implications on industrial scale, due to limited approach of the thesis, and on the other hand restricted availability of the work, even publicly available through thesis database, yet mostly for Finnish speaking audience.

Still the approach taken to this research has been, intentionally, through keeping the wider scale and implications in mind, as the findings and results may serve also other parties under similar phase of business, struggling to make the investments for growth and wondering from where to start, and especially any party looking for additional information how to monetize the products or services, or bring monetization higher into internal or external agenda of the company.

This study may also add value for reader considering building a start-up company and what kind of challenges to expect when expanding and preparing for scaling up globally. Typical problem at the beginning is having too much to do and limited information where to focus, these obstacles may be partly relieved through the proposals of the thesis. At the end of the day, there is always room to improve.

When the assignee company of the study has been satisfied with the outcome, as well as there have been many learnings to be applied in everyday work, including improved approach to customers, the results of the work can be called satisfactory for the researcher.

In case any of the lines in this research study would resonate by reader of the thesis, it would become as great delight to researcher to hear any feedback or comments; in such case please do not hesitate to share your thoughts through

<https://www.linkedin.com/in/askokupiainen/>

References

Alahuhta, M., Häikiö, M. & Seppänen, P. 2015. Johtajuus: kirkas suunta ja ihmisten voima. Jyväskylä: Docendo

Aydiner, A., Tatoglu, E., Bayraktar, E. & Zaim, S. 2019. Information system capabilities and firm performance: Opening the black box through decision-making performance and business-process performance. Published in International journal of Information management 2019, 47, 168-182. Accessed on 1 October 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_gale_infotraccademiconefile_A589507086

Bach, M., Bertonecel T., Mesko, M., Vugec, D. & Ivancic, L. 2020. Big Data Usage in European Countries: Cluster Analysis Approach. Published in mdpi.com 12 March 2020. Accessed on 22 February 2021. Retrieved from <https://doi.org/10.3390/data5010025>

Baum, R. & Wally, S. 2003. Strategic decision speed and firm performance. Published in Strategic management journal 2003, 24, 1107-1129. Accessed on 1 October 2020. Retrieved from <https://doi.org/10.1002/smj.343>

Biber, E., Light, S., Ruhl, J. & Salzman, J. 2017. Regulating Business Innovation as Policy Disruption: From the Model T to Airbnb. Published in Vanderbilt law review 1 October 2017, 70, 1561-1626. Accessed on 1 October 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_proquest_journals_1952350509

BrightTALK.com. Accessed on 26 November 2020. Retrieved from https://www.brighttalk.com/webinar/bringing-true-analytics-value-to-boardroom-but-how/?utm_source=brighttalk-growth&utm_medium=social&utm_term=The-Future-of-Business-Intelligence-in-the-Cloud&utm_content=LI-page&utm_campaign=linkedin

Dremel, C., Herterich, M., Wulf, J., Waizmann, J.-C. & Brenner, W. 2017. How AUDI AG Established Big Data Analytics in Its Digital Transformation. Published in MIS Quarterly Executive, 16,2. Accessed on 1 October 2020. Retrieved from <https://www.researchgate.net/publication/317232875>

- Faroukhi, A., El Alaoui, I., Gahi, Y. & Amine, A. 2020. Big data monetization throughout Big Data Value Chain: a comprehensive review. Published in Journal of big data 8 January 2020, 7, 1-22. Accessed on 1 October 2020. Retrieved from <https://doi.org/10.1186/s40537-019-0281-5>
- Frisk, J. & Bannister, F. 2017. Improving the use of analytics and big data by changing the decision-making culture: A design approach. Published in Management Decision, London, 55, 2074-2088. Accessed on 25 September 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_swepub_primary_oai_gup_ub_gu_se_257357
- Funke, J.J. 2020. "Finance and Information Technologies: Opposite Sides of the Same Coin. Published in Geographies of the Internet, London: Routledge. Accessed on 25 September 2020. Retrieved from https://www.researchgate.net/profile/Jayson_Funke2/publication/341878455_Finance_and_Information_Technology_Opposite_Sides_of_the_Same_Coin/links/5f31ab8b299bf13404b71077/Finance-and-Information-Technology-Opposite-Sides-of-the-Same-Coin.pdf
- Gandhi, S., Thota, B., Kuchembuck, R. & Swartz, J. 2018. Demystifying Data Monetization. Published in Weblog post Nov 27, 2018. MIT Sloan Blogs, Cambridge: Massachusetts Institute of Technology, Cambridge, MA. Accessed on 25 September 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_proquest_miscellaneous_2138176559
- Guangming, C., Yanging, D. & Gendao, L. 2015. Linking Business Analytics to Decision Making Effectiveness: A Path Model Analysis. Published in IEEE transactions on engineering management 2015, 62, 384-395. Accessed on 30 September 2020. Retrieved from DOI: [10.1109/TEM.2015.2441875](https://doi.org/10.1109/TEM.2015.2441875)
- Jaffe, J. & Albarda, M. 2013. Z. E. R. O.: Zero Paid Media As the New Marketing Model. Published by John Wiley & Sons, Incorporated. Accessed on 1 October 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_skillsoft_books24x7_bkb00058231

Johnston, P.D. 2008. Negotiating with giants. Cambridge, Massachusetts: Negotiation Press

Kananen, J. 2015. Opinnäytetyön kirjoittajan opas (Guide for thesis writer). Jyväskylä: Jyväskylä University of Applied Sciences.

Krippendorff, K. 2011. Outthink the Competition : How a New Generation of Strategists Sees Options Others Ignore. Published by John Wiley & Sons, Incorporated. Accessed on 1 October 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_skillsoft_books24x7_bkb00045099

Lautjärvi, K. 2017. Yhtiön etu: yhtiön johdon päätöksissä ja toimissa. Helsinki: Alma Talent

Li, P-Y. 2017. The impact of the top management teams' knowledge and experience on strategic decisions and performance. Published in Journal of Management and Organization 2017, Lyndfield. 23, 4, 504-523. Accessed on 9 September 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_proquest_journals_1914141880

Linkner, J. 2014. The Road to Reinvention : How to Drive Disruption and Accelerate Transformation. Published by John Wiley & Sons, Incorporated. Accessed on 1 October 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_skillsoft_books24x7_bkx00072376

Manu, A. 2010. Disruptive Business : Desire, Innovation and the Re-Design of Business. Published by Taylor & Francis Group. Accessed on 1 October 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_skillsoft_books24x7_bkb00037459

McKinsey.com. 2020. Analytics Consulting. Accessed on 23 November 2020. Retrieved from <https://www.mckinsey.com/business-functions/mckinsey-analytics/how-we-help-clients>

Mehta, S., Dawande, M., Janajiraman, G. & Mookerjee, V. 2019. How to Sell a Dataset? Pricing Policies for Data Monetization. Published by The University of Texas at Dallas, Richardson, Texas. Accessed on 1 October 2020. Retrieved from https://papers.ssrn.com/sol3/Papers.cfm?abstract_id=3333296

Musk, Elon. Page on Elon Musk Quotes. Accessed 8 November 2020. Retrieved from https://www.brainyquote.com/quotes/elon_musk_567219

Potter, N. & McDonnel, M. 2008. Life Insurance Securitizations: Legal Structures for Statutory Reserve Financings and Embedded Value Monetizations. Published in Journal of Structured Finance 2008, 14, 3. Accessed on 1 October 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_proquest_journals_221018877

Rose, J. & Burgin, M. 2014. Disrupting Health Care through Big Data and Predictive Analytics. Published in Managed Care Outlook, 2014,11. Accessed on 25 September 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_proquest_reports_1474342611

Schmarzo, B. 2015 Big Data MBA: Driving Business Strategies with Data Science. Published by John Wiley & Sons, Incorporated. Accessed on 25 September 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_askewsholts_vlebooks_9781119238843

Schneidera, R. & Imaia, J. 2019. User-Based Valuation of Digital Business Models. Published in Graduate School of Science and Technology, Keio University. Accessed on 1 October 2020. Retrieved from http://www.realopn.jp/data/jaros2019-schneider_user-based.pdf

Seufert, E. 2014 Freemium Economics: Leveraging Analytics and User Segmentation to Drive Revenue. Published in ProtoView Jul 7, 2014, Beaverton 1, 26. Accessed on 25 September 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_skillsoft_books24x7_bks00062214

Shenghua, L., Reb, J. & Gigerenzer, G. 2019. Ecological Rationality: Fast-and-Frugals Heuristics for Managerial Decision Making under Uncertainty. Published in Academy of Management journal 2019-12-01, 62, 1735-1759. Accessed on 30 September 2020. Retrieved from https://janet.finna.fi/PrimoRecord/pci.cdi_gale_infotraccademiconefile_A630720578

Stubbs, E. 2014. Big Data, Big Innovation : Enabling Competitive Differentiation Through Business Analytics. Published by John Wiley & Sons, Incorporated. Accessed

on 25 September, 2020. Retrieved from

https://books.google.fi/books?hl=en&lr=&id=SijkAwAAQBAJ&oi=fnd&pg=PP11&dq=Big+Data,+Big+Innovation+:+Enabling+Competitive+Differentiation+Through+Business+Analytics&ots=b57JnmJeqR&sig=jBiT3dfT36A67xagZJINMcNMonc&redir_esc=y#v=onepage&q=Big%20Data%2C%20Big%20Innovation%20%3A%20Enabling%20Competitive%20Differentiation%20Through%20Business%20Analytics&f=false

Suliman, A., Husain, Z., Abououf, M., Alblooshi, M. & Salah, K. 2019. Monetization of IoT data using smart contracts. Published in IET Networks 2019, 8, 32-37. Accessed on 30 September 2020. Retrieved from

https://janet.finna.fi/PrimoRecord/pci.cdi_crossref_primary_10_1049_iet_net_2018_5026

Ugoani, J. 2018. Effective Management Decision Making and Operational Effectiveness in Nigeria. Referred 01.10.2020. Published in Amity Business Journal 2018, 7. Accessed on 30 September 2020. Retrieved from

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3409057

Wacksman, B. & Stutzman, C. 2014. Connected by Design: Seven Principles for Business Transformation Through Functional Integration. Published by John Wiley & Sons, Incorporated. Accessed on 1 October 2020. Retrieved from

https://janet.finna.fi/PrimoRecord/pci.cdi_safari_books_9781118907214

Valkeapää, A. & Seppälä, T. 2014. Speed of Decision-Making as a Procedural Justice Principle. Published in Social Justice Research 2014-09, 27, 305-321. Accessed on 28 September 2020. Retrieved from <https://doi.org/10.1007/s11211-014-0214-6>

APPENDICES

Appendix 1. Data inventory

Data inventory						
	Data type		Quantity		Original data source	Original intended data audience
	Sales meeting observations		10		Researcher participation	Meeting participants
	Customer and vendor presentations		15		Company case owners	Executive participants
	Webinar recorded presentation		1		Researcher	Registered participants globally
	Company prospect specific file storage		79		Product owner, sales, management	Prospect customers, internal users
	Company internal presentations		13		Chief Technical Officer, Product Owner, Chief Executive Officer, Chairman of the Board, R&D representative	Internal stakeholders
	Commercial proposals		9		Sales case owner	Sales Agents, Customers
	Email exchange external / internal		100+		Chief Technical Officer, Product Owner, Chief Executive Officer, Chairman of the Board, R&D representative, Sales Agents, Customers	Internal and external receivers / senders
	Company internal meetings, discussions and workshops		25		Chief Technical Officer, Product Owner, Chief Executive Officer, Chairman of the Board, R&D representative	Chief Technical Officer, Product Owner, Chief Executive Officer, Chairman of the Board, R&D representative

Appendix 2. Materials for awareness testing (Chapter 8.1)

Analytics as critical component in data-driven businesses

“IDC’s research shows that advanced analytics and the cloud are critical components in driving success in this new age.”

“With exploding data volumes and rapidly increasing complexity, enterprises need a clear strategy to provide all knowledge workers with access to data and analytics within their workstreams”



Any data analysis should lead into measurable financial results – either directly or indirectly

by IDC Critical Factors and Trends in Analytics for Independent Software Vendors, 2019

Slide 2



Bringing Analytics value to Boardroom – why such topic?

- Widely reported challenge by analytics industry players – both inhouse and externally
- Some findings are universal, some industry specific, yet ending up the same – the value
- Value for the user vs. value for the decision maker. Making that an asset, not burden
- Method or problem solving is important, but commercial results are the key



Slide 3



What are Board members often missing from Data Analytics?

- Addressing instantly the most business-critical levers – prioritized directly by business value and payback time
- Looking the business forward, not analyzing the past only
- Understanding reasons behind results – addressing untapped revenue on table
- Enablement of instant decision making and action -> quick time-to-money



- Monetization is the key in any business

Slide 5



How to address the challenge then? Tried and true experiences

- Bring business back at center of decision making – with directly monetized analytics
- Provide common language for whole CxO team – no need to be data scientist to make business value out of it
- Avoid creating more analysis based on analytics. Go straight into decision with business impact.
- Data is valuable only when business is able to utilize it – make it easy, simple and instant



- Hitting business targets based on technical KPIs alone?

Slide 6



Sure, sure, all clear. But how to do it in practise? Business mindset?



- ✓ **Act as an eye opener:** enable “business impact first” mindset via easy visualization, through all the layers
- ✓ **Reliably reveal,** prioritize and monetize revenue gaps
- ✓ **Monetize** each data transaction. Big work but worth it
- ✓ **Offer predictable view** with clear visualization
- ✓ **Enable understanding:** communicate and create positive perception within organization *through value* via analyzing and cross-analyzing
- ✓ **No finger-pointing** on the unexpected results, create culture of trust

Slide 7

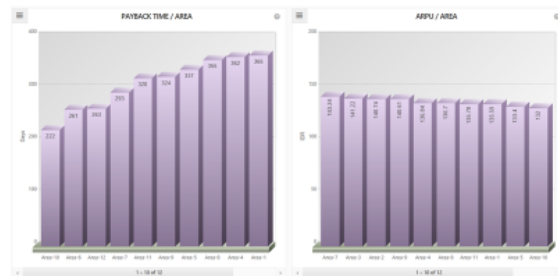


Practical example: Step by step user analysis ending up to prioritized value

Use case example: 5G network implemented across the country

However:

- In one year, still utilized by less than 5% of paying subscribers
- Impact only minor on top of previous ARPU*



Solution: Cross-analyze and monetize

- In which geographical area the current heavy data users are located
- How many of them are actually carrying 5G capable handset, and for which services
- Which customer profiles are potentially ready to pay for excellent data speed (i.e. usage/ARPU clearly exceeding average)

-> **Enables gradual build plan, starting with attractive “revenue spots”**

*ARPU – Average Revenue Per User

Slide 8



The platform to enable your data monetization work

You need to have a system that is:

- Built-for-purpose, not generic one size fits all
- Automated and up-to-date, easy to use
- Vendor independent – no lock-in to infrastructure suppliers
- Focusing on business view – not on technical KPIs directly from vendors data
- User friendly for both data analysts and decision makers
- Driving your transformation towards true business management

QROI Analytics

Create a filter

You're good to go! No pending queries or other active users.

Filter the traffic by...

- Location: All selected cells
- Device: 1 selected device
- Radio Access Technology: All
- Release Cause: All
- Service Type: 1 selected service
- Application: 1 selected application
- Destination Country: All
- Originating Country: All
- Call and SMS Direction: All

QROI Analytics

Revenue Analysis

REVENUE / AREA

Designed for full flexibility – monetized analytics against any data point!

Slide 9



Simple model to monetize – boosting decision making



1. Collect
2. Utilize
3. Trust
4. Monetize

Your Data

Create competitive edge by differentiating from sameness to greatness!

Slide 10





Key takeaways:

- Getting analytics up to Board level is *selling for business value*
- Monetization is *the way of making the value out of analytics*
- Past is for learning. Always look ahead and predict.*
- It is hard to go wrong with *monetary value first – approach*
- Use business data for monetization – and decide accordingly*