

Expertise  
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# Data Driven Digital Business

Transforming business models through emerging  
technology

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<p>The development of technology, digitalization and the growth of data is a driving force for businesses to transform. Businesses are facing multiple challenges in adapting their capabilities to better serve the markets. By overcoming these major challenges related to digital transformation and developing a more digitally mature business there is an opportunity to achieve significant competitive advantage.</p> <p>This thesis approaches challenges that businesses need to overcome from a technological and an organizational point of view. The objective was to highlight key components which influence the success of a holistic digital transformation. For practical conclusions this thesis observes the components through use cases from digital marketing. Digital transformation should flow through the organization and affects all aspects of the business.</p> <p>The research in this thesis is based on relevant literature, studies from independent and private stakeholders, journalistic publications, industry articles and blogs, empirical observations from a digital industry and Directives from the European Union Commission.</p> <p>Data has become increasingly accessible, complicated to manage holistically and has changed the way different stakeholders react to propositions in the markets. Technology that enables commercialization of data has developed faster than regulation. The digital ecosystem is not fully aligned with the regulation due to the velocity of emerging technology and complicates strategic decision making for businesses.</p> <p>The research found that there are tangible actions that businesses can take in order to digitally transform and to improve competitive advantage. Data as the fuel for technology is a significant factor in the transformation and the way businesses approach it defines largely their success in a global competitive market. Businesses should act through leadership in order to adapt to the needs and requirements of modern digital markets.</p>	
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## 1 Introduction

Businesses across industries are seeking efficiencies and increasingly streamlined processes through technology. Transformation is crucial to maintain and develop competitive advantage and it requires foremost a change in the way businesses manage data throughout their organisation. There is a great number of dimensions related to data that affect significantly the quality of the decision-making process, whether the decision is to change their business model or to move from a strategy to another. Majority of industries are facing a situation where the competition is moving faster in adaptation of technology into their business model. This imbalance in agility shortens the timespan in which businesses must react to the markets. This means that business units in charge of operative functions such as marketing, specifically in digital marketing must be able to utilize more predictive, efficient and accurate execution.

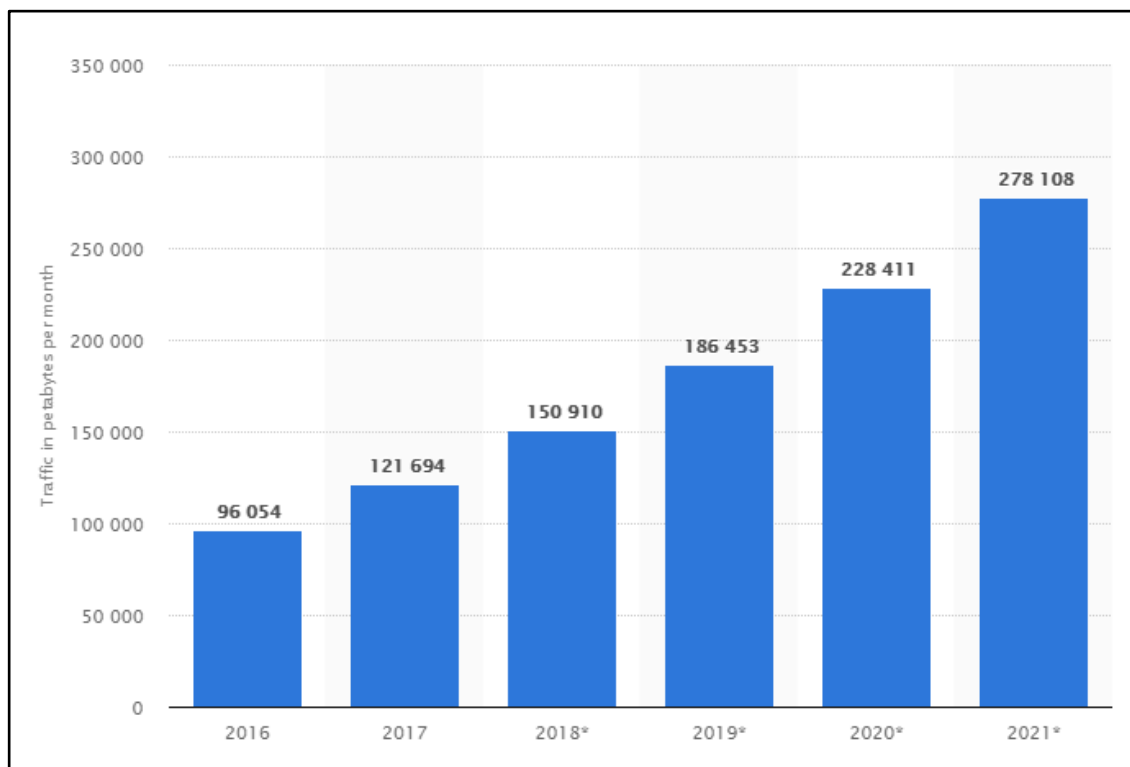


Table 1 – The forecasted growth of Global IP based data traffic from 2016 to 2021 in petabytes per month (Statista 2018).

As digitalization is progressing globally technology enables us to measure more consumer activity and behaviour on daily basis. Majority of this data sits untapped due

to several reasons. The quantity of accumulated data through internet usage, IoT (Internet of Things) and communicating is growing exponentially. The phenomena propose not only an opportunity and a challenge for businesses tapping into Big Data. Data comes in a variety of forms and can be scaled from SME's to global corporations. With the right tools, approach, process, strategy almost any business can benefit from incorporating data-based functions into their marketing mix.

Businesses need to provide their customers and stakeholders superior value to stay competitive and profitable (Kotler, Kartajaya and Setiawan 2010: 12). Marketing plays a large role in this proposition as it provides an opportunity to transmit and showcase these values. Consumers react better to value driven marketing as it serves a larger purpose rather than fulfilling isolated needs. This requires solutions which penetrate the superficial reasons of interacting with a business as a consumer. These solutions give an explanation to consumer behaviour thus could be the answer to enhancing relationships of all parties. Not only is the need for better solutions rising but also the need for efficient regulation, justification and security of data usage.

Consumers are becoming increasingly aware of their digital footprint. This global trend fuels societal discussions of data rights, responsibilities and raises security questions. As technological advances such as behavioural algorithms are improving quickly, businesses have strong sense before the consumers which products they are prone to purchase. Consumers are in a relationship with businesses long before they comprehend, in data markets moving as potential audiences in-market for any potential service / product suitable for them. Accurate recognition of the consumer behaviour based on data can be extremely difficult and false interpretations based on impartial data are more than likely. Execution of marketing strategy, objectives, KPI's and control is affected by this especially in digital marketing which naturally creates data touchpoints with the consumers.

Western businesses have up to the release of EU's GDPR in 2018 (General Data Protection Regulation) operated digitally in a rather border free world regarding data. Global businesses have had the opportunity to commercially utilize consumer data from market to market. As the regulatory stakeholders have started to take more control globally it directly and indirectly affects local businesses also to react. Businesses face

two large challenges; they need to maintain legitimate practises and improve their data-based practices in way stakeholders see as acceptable. Businesses which are facing these must-win battles can be divided into two different categories. Firstly, businesses which are native to a digital environment and secondly businesses which must transform and adapt to the digital environment. Regardless of which category the business falls into, major challenges come from the need to either transform or activate and enhance digital processes.

## **2 Research problems, purpose and objectives**

The main objective of the research is to show how data relates to current marketing tools and how it affects decision making in modern businesses. These tools consist of general tools taken from marketing theory and as well as specific tools created by a single business or an industry. The assumption made here is that the current system has many defects and is heading towards inevitable corrective change of course. The implications related to the changes we have to globally figure out and implement on a large scale are the main goals of this study. Majority of the research goals are to provide answers to questions below, remaining goals will try to bring clarity and simplify this subject for businesses better to serve consumers in an ethical way.

There are many unknown issues riddling the discussion about data, so it becomes difficult to speculate what are the key elements missing when it comes to data. Even research in this topic is blurred by the ethical borderlines, which are gray to say to least. A worrying perspective on many researches based on datasets sheds light to access to data, ownership, licensing and overall use of purchased data is a volatile subject even for educational institutions (Leetaru 2016). This level of moderation in the conversation is most definitely worrying from the perspective of societies that should be able to hold institutions on certain level of accountability. This is a good showcase of the penetration privatized businesses have over the overall situation. This topic is highly relevant to many of different stakeholders in our society. A good example of a common practice amongst the intellectual professionals such as the American Statistical Association and Digital Analytics Association are to deploy Code of Conducts or Code of Ethics, but these guidelines are not enforced in any way or form (Morgan 2015). This lack of enforcement

leaves a window open for abuse as the consequences for breaches in ethics or gray areas are minimal. In the viral world that we live many negative cases have small or no effect on the business even when they break out to the media such as the case "Facebook 2013". This radical data-based experiment used millions of people's social media data and manipulated their feelings through de-identified and allegedly aggregated data (Kramer, Guillory and Hancock 2013). In the aftermath of this study Facebook swept their research behind closed doors and gained little to no public relations damage from the outbreak (Leetaru 2017). This response from large corporations in the data game is a dominating issue with the research. The implications of negative practices are handled with strict or no closure to the public which creates an informational barrier and does not support the trend of transparency.

Lastly, there is an issue with how to synthesize current marketing theory with the rapidly developing practices and tools. There is a major challenge for management to harness data in its full potential without risking the businesses core values and brand. The majority of Chief Marketing Officers across industries believe that big data and analytics behind it are the most valuable future asset and according to latest studies 48,4 percent of Fortune 1000 executives are receiving measurable results from their big data investments (Bean 2017). The transformation is still very hard for the most businesses and these large organizational changes take time. Businesses that understand the importance of holistic approach to opportunities of data as well as to digitalization have an upper hand on the situation. The combination of technology and data development will most likely generate disruption to an extent and one of the goals are to identify what implications there might possibly be. One of the major topics is the way data is disrupting the health care industry with its technological implementations (Rands 2017). The health care industry is a slowly changing entity and is monitored vigorously through the eyes of different stakeholders. Ethics are an essential element when we discuss the healthcare industry. Inevitably, the responsibility for our health will be proportionately given to technology and in the end to businesses. In industries where ethics are at the forefront in public discussions, business functions such as marketing, should to be executed with high standards. The opportunities data provides to different industries varies but common denominators must exist for marketing and implementation of data. The concept and utility of big data is still widely open for the future and can be shaped to serve a common good if these broad issues are defined and attended.

## Research problems

- Data practices in the digital marketing industry
- Organizational change towards digital transformation and maturity
- Societies outlook on the development of data usage and data monetization
- Best practices of data implementation for digital businesses

## Purpose of research

- Highlight digital business solutions which enable improvements of competitive advantage through data
- Identify factors driving change in digital business
- Create an analysis of data practices in relation to businesses, stakeholders and society
- Highlight opportunities, risks and limitations of data-based digital marketing
- Describe a framework of data activation for businesses to enhance performance
- Study the effects of emerging technologies in relation to different stakeholders

## Research objectives

- To describe a framework for businesses to include in their strategic planning
- Enable a better understanding in technological utilities based on common types of business-related data
- Describe how data can improve business performance overall
- Discuss key components needed in digital transformation

## **3 Applicable Marketing Theory**

### 3.1 Implementation of relevant literature

The foundation for creating the framework in this thesis is based on overlaying 21<sup>st</sup> century possibilities to established and proved marketing theory. Strategy and the strategic management of marketing operations are in an essential role to provide the causal reasoning for businesses to implement changes in their operations. By understanding the strategic effect and meaning of different tools, integrations and the



importance of a data driven organization businesses can impact their competitive advantage positively. Businesses should establish a vision of the change and be decisive on how it is driven. Traditionally, changes are driven from the above by senior executives either in-house or by introducing new leadership. In general learning happens in our existing contexts which is problematic due to its limitations (Kotler, Berger and Bickhoff 2016: 17). One solution for this problem is to use consulting from a 3<sup>rd</sup> party or integrate expertise in to the organization from cross-industries.

"Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large" (American Marketing Association 2013).

As digitalization moves industries forward the fundamentals of marketing theory should follow suit in the implantation phase. The fundamental reasoning for businesses to exercise marketing functions has stayed intact for decades. The change is driven from the consumers perspective as there are growing expectations be more precise, to meet consumers as individuals, be more relevant and to provide long term value and relationships. To elaborate on how to react to these changes this thesis will focus on a digital perspective as the main driving force. Digitalized processes help businesses to bridge the gap between market research and the market reality. Primary objective of going digital is to be performance driven through better targeting and to be more agile for the business to run within their overall marketing strategy (Dodson 2016: 3). Digital marketing has also a secondary purpose for businesses. By implementing the right tools in digital marketing in relation to the business objectives and the resources businesses can input in to the processes, it can be easily scaled. The ecosystem can seem very complicated and chaotic as service providers are flooding the industry.



Figure 1 - The Marketing Technology landscape illustrates the vast amount of service providers that businesses could choose from which could create a problem when the need for finding the right solution rises (Brinker 2014).

Marketing efforts have an impact on our societies as well as on the economic performance of businesses. Latest trends such as influencer marketing shapes the way consumers interact with brands. Many businesses are successful in utilizing established marketing theory to postmodern consumer behavior and creating an innovative approach to marketing while other businesses struggle with emerging in understanding these factors (Lüdicke 2006: 9). Therefore, the issue with businesses failing to activate in digital functions is not just based on the lack of theoretical understanding but relates also to our sociological and organizational understanding.

To enclose this research, the theory will be based on marketing theory in general, organizational and industry literature, publications and professional blogs, articles and public discussion on related topics and marketing theory specialized in digital ecosystems used for marketing and business control purposes.

### 3.2 Relevant studies and regulations

The practical insight to the world of data usage within companies comes from the study of EU's General Data Protection Regulation. Entrance of this act is considered a great refresher in the industry for the fact that the previous Data Protection Directive was implemented and signed in 1995. The industry has seen major development and change within 20 years, but the legislation has in the EU for instance stayed unchanged and unresponsive (European Commission, n.d.). This new directive gave the industry across business areas momentum to start the conversation about rights, responsibilities and restrictions about data usage. EU even arranged its first Data Ethics conference in September 2017. For many years the marketing scene has favored certain quantitative empirical models such as LISREL and AMOS to create more efficiencies in their marketing strategy (Diamantopoulos, Fritz and Hildebrandt 2012). The progress of data technologies has liberated many theories from their practical restrictions. This has given the field the opportunity to validate faster and with more accuracy and in the meantime has revealed the arising problems with personally identifiable information.

Data flows across international borders is still a surprisingly silent conversation. For the most of us this outlook is natural since we it differs so much from traditional commodities and requires little resources to move globally. However, many realize the nature of future trade, which will move towards being ever more digital. This is greatly reflected in a letter directed towards the European Commission and signed by 15 trade secretaries and ministers across the European Union (Government of The Netherlands 2017). The letter raises concern on how EU should position its trade agreements to give more opportunities for businesses to grow and develop in the region in relation to the rest of the world. Localization, as it is described in the letter is protectionism in disguise. Many European leaders propose harder regulations for global corporations from the economic perspective and not for ethical reasons. It seems that discussion is very fragmented and lacking knowledge on how to deal with issues related to data on a governmental and international level. This might be the result of the big corporations which may or may not benefit from the discussion being fragmented and blurry.

Many across international professional platforms are concerned that we are already too late for implementing ethics and regulations towards big data and information

technologies. A common understanding prevails in the professional field that a new set of parameters need to be established in order to protect data (Macaulay 2017). Recent issues and scandals related to information abuse for example in political campaigns have left the public image of the webs trustworthy at a low level (Cheema 2017). A common note and a coherent tone in the voice of authors is the lack of control consumers have on their own digital fingerprint in the world wide web. This dilemma creates negative attitudes towards development and most likely will slow down economic growth if public trust does not match the need for investments in the tech industry. Businesses have taken some of this responsibility into their own hands and issued spontaneous ethical code of conducts as a part of their public relations strategy (Accenture 2017). The negative sides of data receive proportionately more public coverage in the media, and this shapes the public image largely. This is a phenomenon that many businesses know all too well, and others try to avoid to the best of their capabilities.

In order to receive full benefits from the opportunities we should display changes that are more positive, achievements and events to change the perceptions about control. Development and ethics are seen by many as the opposite side of the coin. For instance, China is moving forward with major emphasis on the development and progress of technology and business. They have made a conscious decision not to use ethics as an asset or a value they need to represent. This development direction is an international problem for many reasons, but one major issue is the vigorous and asymmetric data protectionism in place (The Economist 2017). These differences create major disruptive surfaces in industries as geographical advantages become more important to circulate and avoid legislation and regulation. Amongst many factors, this political development related to data has affected the EU leaders to react 'by protecting businesses and consumers creating data imprints inside the EU region.

## **4 Data practices**

### 4.1 The nature and relevance of data in digital marketing

Decision making process usually is based on a series of factors which suggest an action to a direction or another. Majority of businesses recognize the value of data in this process, whether its offline or online, quantitative or qualitative data. From the technological perspective, we have increasingly better capabilities to utilize in ranking

data according to its accuracy, reliability, source and other factors. This leads to better decisions for businesses which are onboarding data into their marketing operations. The problem derives from the vast amount of data in the markets as well as businesses not knowing what to do with their own data, for example how to use CRM (Customer Relationship Management) data effectively and in line with the prevailing strategy in their marketing. For many companies' data is their primary source of income as they natively operate in an ecosystem which gathers information about the consumer. Companies, such as Google, Salesforce, Microsoft and many other global players offer solutions which are scalable from SME operations to global corporates (Columbus 2018). The field of data driven marketing is growing as businesses are starting to understand the benefits of real time data analytics which describe the markets activities more accurately than slower traditional methods. On the contrary to market research, data analytics from multiple touchpoints exclude the human nature to give false information to others, resulting in a more trustworthy conclusion (Dodson 2016: 2). This means businesses don't have to rely only to their gut feeling, polls and surveys as there are better sources for information.

Data can be divided in digital marketing to several categories based on its characteristics. A common use case for e.g. consumer-based data in digital marketing is to define a target audience based on qualitative factors such as demographics, interests, online activities, affinity audiences, geographical or any combination of data the business may have to legitimately use in their digital marketing strategy. This creates the frames for digital segments which can be then created from first party data or bought from a third-party data provider.

#### 4.2 Definition and scope of digital marketing in this research

Marketing in the modern world is a very complicated multichannel function, specifically in businesses that are already utilizing both traditional and digital marketing channels. In this research, the dominant purpose is to provide insight in to the marketing functions operating in a digital landscape. To further the scope the objective is to focus on functions in digital marketing which utilize data. These functions can be fully digitalized and should be in line to each other for purposes of control, optimization and attribution modelling. As these functions are aligned in the organization the objectives and goals

are more accessible, accurate and realistic. This creates better momentum for the business, cuts out excessive marketing efforts and serves as support for decision making for the CMO's.

It is important to note that businesses can be in transition period from traditional CRM to a digital platform or have one or more function completely offline. In these scenarios, it is crucial to have the ability to cross examine performance and evaluate the main drivers of the marketing objectives. Depending on the size of the business, growth options and objectives and the nature of products and services they provide there aren't any one right solution models. Technology is accessible and relatively easy to onboard and integrate but it should be a discussion of relevancy, benefits, time and resources. Due to the complicated nature of a digital ecosystem as a holistic being this research will provide generalized uses of data in digital marketing. The context of data will mainly be data created in CRM and on site (1<sup>st</sup> party), buying data from external sources (3<sup>rd</sup> party) and how to implement this in marketing efforts (mainly advertisement). Sales are linked to the data discussion within the CRM or through other platforms which enable businesses to analyse performance of a certain audience.

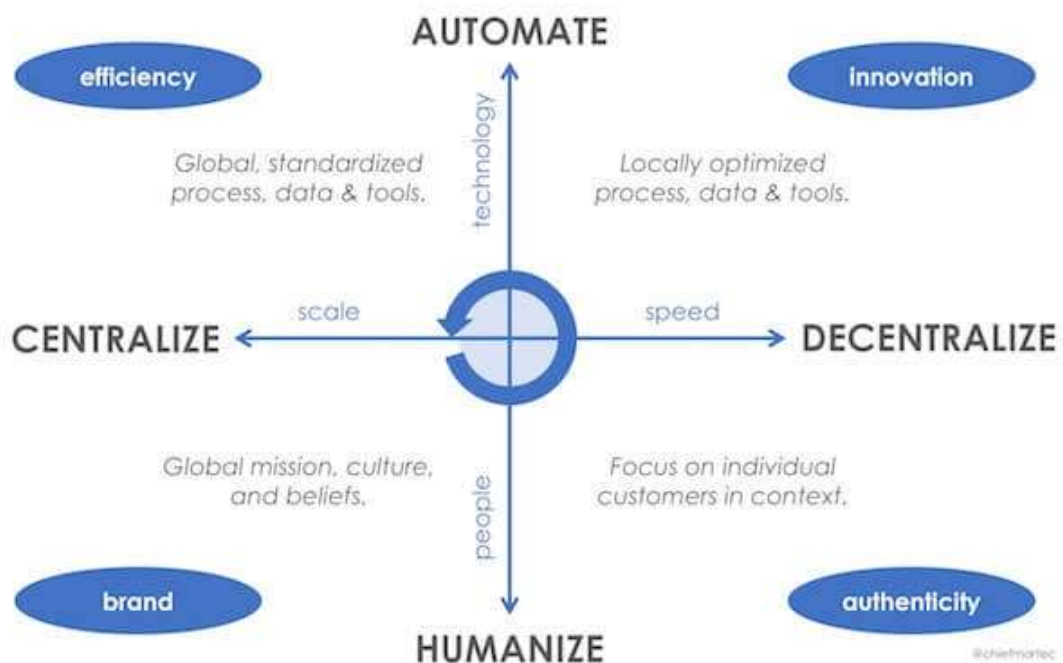


Figure 2 - Modern perspective on the marketing push & pull ideology which describes the opposite forces in play when considering the e.g. technology to implement in the business (ChiefMarTech 2018).

Globalization, digitalization and technology development is accelerating the growth of opportunities regarding data use. Many brands are investing in growing numbers to centralization and automation of marketing technology. It is estimated that global marketing automation spends will reach 25 billion dollars by the end of 2023 (Sweeney 2018). The industry growth is creating challenges for businesses, consumers, legislators and other stakeholders. This research is aimed to provide a vision of the current challenges and to provide solutions which companies could experience useful in developing their competitive advantage. Foremost, the direction of global development in technology is driving organizational challenges as the way we work is transforming. This transformation of business affects many levels of an organization as different skillsets and assets are needed to businesses to stay profitable, transparent, acknowledged as a great place to work.

#### 4.3 Data quality and warehousing

Any business decision created on partially or completely on data is only as good as the data is. A bad decision based on quality data tells about the inefficiency to use it in decision making, but a good decision based on inferior data is unavoidably lucky. This has the implication that the quality of the data is essential to making actionable and informed decision in the business. The foundation of the data quality is based on its completeness, accuracy, consistency, duplication, conformity, integrity, timeliness, availability and history (Wells and Chiang 2017: 164-165).

To meet these different requirements characteristics of data businesses should pay attention to the way data is stored. Often called by different terms, data warehousing is one of the most common terms used to describe a system which is used to collect and store all necessary electronically stored data. Data warehousing differs from other record keeping practices by nature. The main separation is that it should include business intelligence tools for retrieving, analysing, extracting and transforming data into supporting business decision making (Zhang, Lu and Gao 2016: 11-12). The actual quantity of data, even if the role of data is still small for the business, should not be a red flag for businesses to research the possibilities of data warehousing. If the business requires handling and utilizing cross-dimensional data, the organization can more

efficiently access relevant data. For smaller businesses, start-ups for example, it is more natural to go with an agile and accessible system with lower costs than for a large business creating terabytes of data daily. Often service providers such as Salesforce offer modularity for their data warehousing and business intelligence systems. This approach offers scalability for growing businesses as they can add functional layers of business intelligence as needed.

The business intelligence layer on top of any data the business utilizes is fundamental. It defines the approach of decision making by identifying important functions which are to be used for the data to have any real-life value. Major steps include defining business model requirements, analysis output and expectations, how modelling is executed, the movement of data and quality assurance (Krishnan 2013: 128-129). If the business is starting to collect and store data or is developing more in-depth functions it is essential to check compliance with relevant legislation. Digitalized systems are not generally by design preventing the collection of for example PII (Personally Identifiable Information) or disallowing misuse of data for unlawful purposes. Fast developing technology enables aggressive capitalization of data and businesses need to be critical in risk evaluations of any data related project. The scope of any data function must be justified (from the business and consumers perspective) and dynamically evaluated.

#### 4.4 Data types and their usability

Data in its raw form is not equal with actionable information. It comes in various forms and appearances and there are fundamental elements which need to be understood and interpreted before it can be used as base for any decision. Data is essentially a set of values or facts given by parameters defined by the channel it flows through. It can be partial or encrypted, hashed, PII (personally identifiable information), quantitative, qualitative, categorical or numerical. The key to refining data to a valuable resource is to understand its source, rules and form. Most of the data created daily is unstructured which means it is not formatted and stored directly to serve an identified purpose. This form of data is commonly referred as big data. This a business domain of large tech companies such as Oracle, IBM, Microsoft and Google mainly operate due to the vast resourcing the amount of data needs to be utilized for smaller businesses. This is known as the big data industry which leads the way of development in data technology. The



big data companies provide various services and products for business analytics, market development and intelligence which are scalable but tend to have high operating costs. This means they are not that accessible for smaller businesses to implement. Nevertheless, smaller businesses can benefit from onboarding to services for example Google Analytics, which if interpreted correctly adds value to the decision-making process. Analytics as a marketing function could be advised not to be done in isolation from all marketing. To understand better on how start thinking about data and its usability in marketing, a shortlist of data types and their use cases is a good starting point.

Qualitative data in digital marketing and its interpretation drives largely the context of advertising and essentially the consumer base in descriptive manor. Subjectivity is important to understand when looking at qualitative data as it is harder to measure than quantitative. Consumer characteristics are becoming more important as personalization and dynamic messaging is more important to the consumers. Consumers are not responding positively on mass messages, out of context advertising and business values that are miss-aligned to their own perspective. Because of this it's important to get the individual consumer preferences right specially in digital marketing efforts where clutter and attention span are an obstacle. Consumers should be reached in the right context, time and place with a tailored message that suits their needs if a business is seeking better performance. This phenomenon is seen in the data industry through high growth rate of 3<sup>rd</sup> party data companies which offer consumer segments to digital marketing functions at a price. This operation model is based on implementing tracking pixels to sites which transmit data to the product owner. The behaviour is identified and categorized in DMP's (data management platforms) based on site visits, actions and attribution and built to logical digital audiences for marketing purposes. There is no limit on which the qualitative audience is built meaning it can be based on simple rules or a set of very strict and complex data points. For businesses, this means transparency of the segment is important when buying from a 3<sup>rd</sup> party. If businesses are struggling with the control of data whether first or third party, ad agencies in general have extensive tools and resources to support this process.

Third party data might have issues in performance if too many assumptions are made based on its qualitative nature. For example, an audience created to find people in

market for buying dog food might not perform when marketing cat food if the rules of the segment describe only people buying pet food. Qualitative segments are always highly subjective from the way they are created and require discretion in implementation. The most accurate qualitative data comes from systems such as CRM due to its proximity to the actual business. If qualitative data is pulled from CRM and built as a first party segment the control is within the business itself. A proportion of SME's are not using this opportunity to its full extent even when they are investing relatively big to digital marketing. This can be time consuming and difficult to achieve, usually this approach is assimilated with businesses e.g. running an online store. On the contrary, if businesses have a digital CRM large value can be driven from cross examining the customer base with existing third-party segments. The result might not have to be a set of first party segments but could be a tool for finding the most optimal data to buy from the markets. The results of the first party segmenting could be very low in quantity if the business does not have high amount of transactions. The data is still very usable if the business wants to start prospecting for new consumers and this can be done by scaling the segment up by lookalike modelling or affinities. These algorithms find similar qualitative values that are present in the first party segment and build segments based on the findings. This creates an opportunity for smaller businesses to grow visibility and maintain control of the consumer base to an extent.

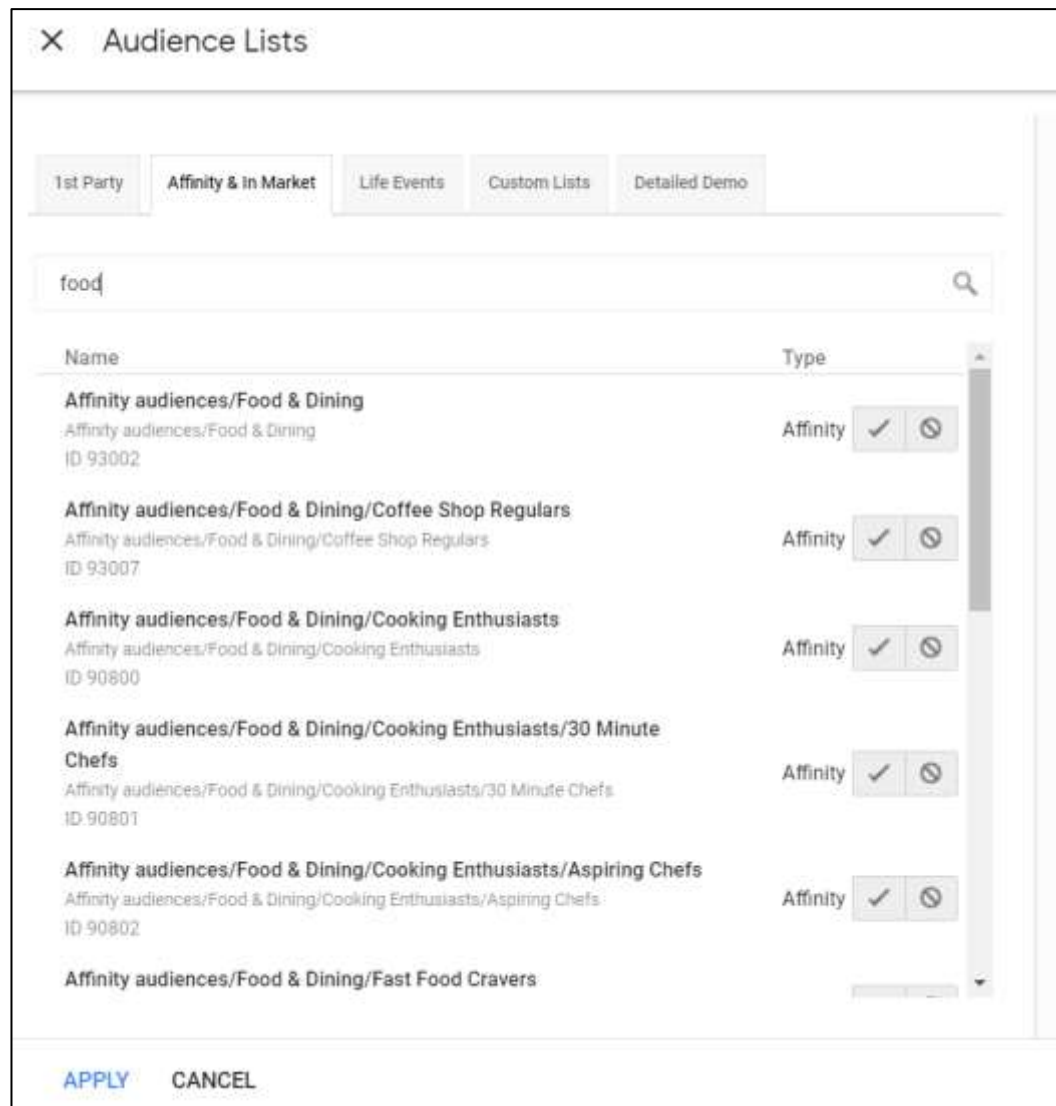


Figure 3 - Example of segment targeting options in Google's DoubleClick Bid Manager which is based on qualitative data, these segments could be used in e.g. digital display advertising for a restaurant chain business (Google 2018).

Quantitative data is "data that can be quantified and verified and is amenable to statistical manipulation" (Business Dictionary, 2018). Traditionally it is used for statistical purposes but has many other key functions in terms of digital marketing. Quantitative data is the foundation for businesses to overlay different key performance indicators and serves as the main tool to benchmark performance in digital marketing. Digital marketing as an entity is usually performance driven and quantitative factors play a large role in this operation. Not only does it fulfil the role of guiding decision making on a financial level, but it also provides a potential opportunity to actionable insights. The main use areas of quantitative data in digital marketing are cost and revenue which are traditional to any business. Due to the sophisticated nature of modern digital marketing there is a

vast number of subcategories a business can dive into in order to refine and fine tune marketing operations. At this point platform choices become important as the business should understand what is important to measure, on what level and how agile the analysis should be. Large service providers such as Google offer a 360-platform solution for this cross-platform dilemma. Accountability and attribution of marketing capital spent is not free of problems regardless of the platform choice. For example, Google Analytics uses Bayesian inference modelling in its projections. In a very simplified manor, the Bayesian model seeks to explain any given qualitative data by utilizing prior knowledge from related systems (Kramer 2016). This is very important to understand when acting upon the analytics within the organization to eliminate misunderstanding of the results. Most modern digital analytics platforms use the same theory as a tool to build algorithms and the variations are minor in general. People who are involved in analytical operations must know the conditions in which the quantitative data is gathered and projected to show e.g. trends. Data modelling is prone to human error and subjectivity which means process knowledge is important in quantifying any data. In layman terms it is easy to find the answers businesses want to find but more complicated to find the answers they need.

#### 4.5 Data Strategy

The key to building a winning data strategy is to drive actionable insights and uphold causal relationships between processes and objectives (Baker and Gourley 2014: 31). These insights should link to short -and long-term business objectives and support decision making to reach these objectives. Identifying individual needs, objectives and requirements of the objectives will produce the framework for the strategy. This should include reasoning and critically evaluating processes. The most logical starting point is to look how processes are built and executed status quo. By using the current situation as the starting point for analysing strategy it is easier to find development areas and avoid inefficient overlap in the new strategy. Data processes should be evaluated on why they exist, what is the function, what resourcing they need, could it be done more efficiently, are there cross functions and what is the actual underlying value of it all. Not all legacy processes should be restructured or even removed from the data strategy if there is clear value to the process. Often with small modifications older processes can be included to the new data strategy as they could be established and well performing

parts of the overall business operations. Transformation and change shouldn't be done solely for the sake of change. The resourcing that transformation needs is highly dependent on the digital maturity of the business itself. For businesses only starting to onboard digital marketing operations less could mean more in terms of success. Incremental development and staying agile through smaller phases should minimize risks liabilities related to data process investments. On the contrary these incremental changes offer better control over the business performance and build confidence through knowledge. For larger and more digitally mature businesses data strategy relates more into creating strategic partnerships with technology service and product providers as these offer scale and volume.

The starting point for any data strategy is to think about the overall business strategy and vision of the business. Three important aspects needed to support a holistic approach are choosing the right data, building models that predict and optimize business outcomes and transforming the company's capabilities to stay actionable (Barton and Court 2013). For example, Chief Data Officers (CDO) are increasing in numbers and importance across businesses as data and its meaning to the business is being realized in executive boards. CDO's and CMO's should be in close quarters when it comes to formulating the data strategy. There is not a time in history where businesses have had this level of opportunity to build long term consumer relationships utilizing data and the insights it offers to the business leadership. Marketing functions are transforming from necessary expenditures to critical business development units. CMO's with the help of the CDO's can create top level justification to marketing decisions by analysing performance and consumer behaviour (Williams 2014: 7). It is estimated that in 90 percent of large global companies there will be a CDO in place by the end of 2019 (Desjardins 2018). Main objectives for CDO's will be in data integration, business optimizing and in innovation. The dramatic development of the C-suite can be seen in the growth curve of the CDO's through the years. In 2010, there were only 15 appointed CDO's in large global organizations (Desjardins 2018). The amount of CDO's is measured by thousands by the end of 2019.

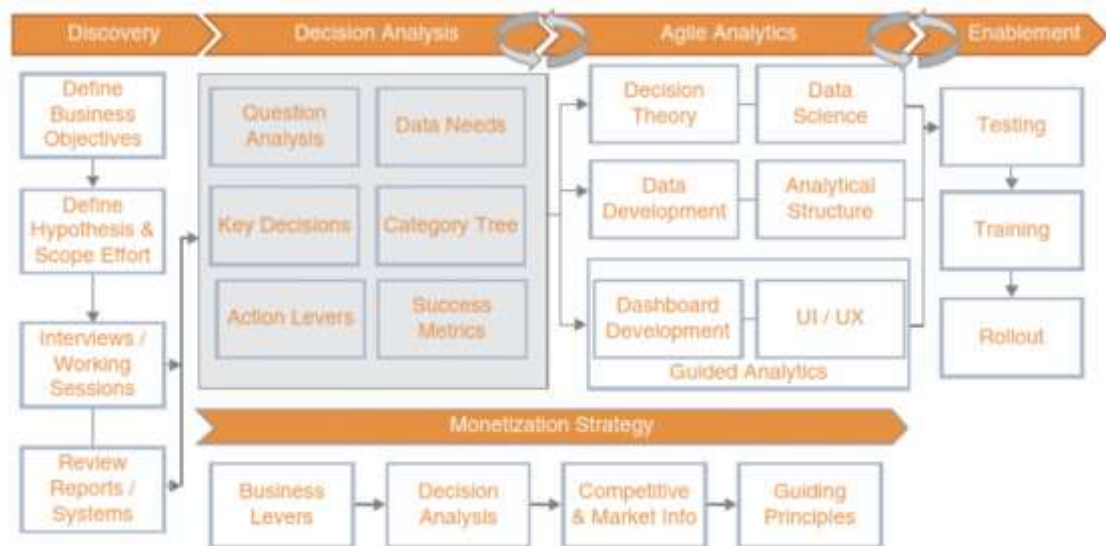


Figure 4 - Decision analysis tool for CDO's to map out different areas of action needed to implement actionable data (Wells and Chiang 2017: 55).

The advancement of technology has facilitated a completely new level of knowledge about the business factors. Specifically, the timeline between collecting data and acting upon it in terms of analytics has diminished. The performance growth of digital analytical tools has allowed the creation of real time analytics and using predictive modelling more efficiently. Business intelligence solutions are becoming smarter and are no longer standalone systems apart from other business areas. Digital analytics solutions such as Google's 360 Suite, Salesforce Customer 360 and Adobe's Customer Intelligence offer a wide set of tools for businesses to go towards using actionable insights. For marketing purposes these platform solutions offer turnkey answers to businesses. The major benefits in a 360-platform type solution is the availability, flexibility and singularity of data. This enables accurate decision-making in marketing operations but also feeds the business leaders important signals and trends from the market. Depending on the variety of functions needed by the business the costs related to the acquisition may be high for SME's. Businesses should create a strong vision about the short- and long-term needs in terms of analytics and technology partnerships.

According to a recent SAS survey consisting of 132 government and business organizations, over 80 percent reported the growth of analytics discussions in board meetings (van Loon 2018). Moreover, a clear majority felt that onboarding platform analytics had added value to the core business. Another significant observation from the

survey is that it can benefit tactical decision making as well as strategic decision making. Good example of a solution which serves members of the board would be a dashboard solution which in real time highlights important signals by design. This eliminates significant amount of reaction time when a need for information rises to the actual delivery of a report.

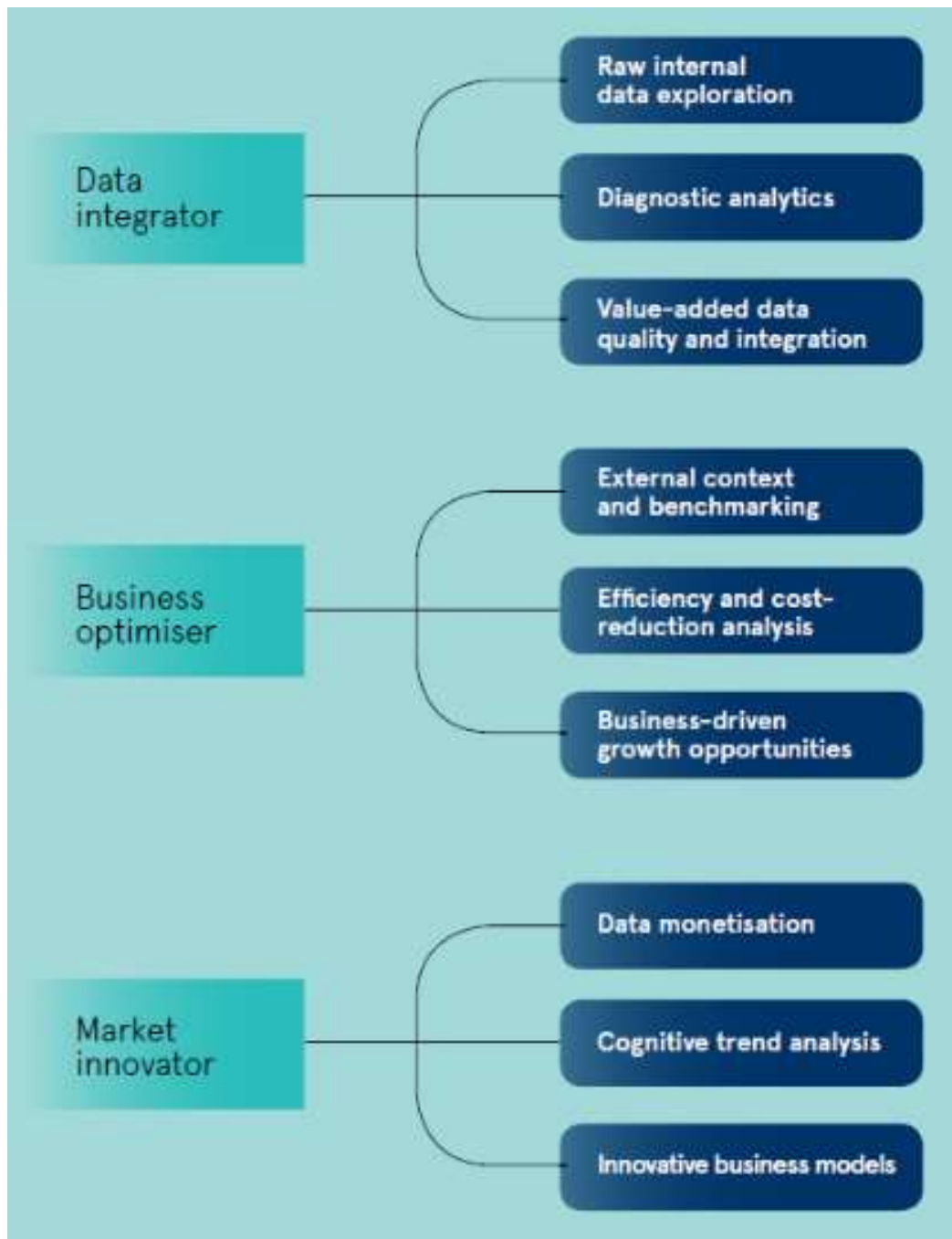


Figure 5 - The key challenges that CDO's are in place to resolve (Raconteur 2018).

One of the major difficulties in formulating a good data strategy is to overcome the organizations internal fear of automation and stepping into unknown business territory. Established mindsets might be in the way of development and need to be addressed accordingly (Baker and Gourley 2014: 36). This problem is inevitable for all businesses which are in the transition from intuitive strategy to more data-driven thinking. It is significantly important to justify the strategy also from the people's perspective and not only from the business side. Staff needs reassurance that automation will not eliminate the importance of their work and in the end, make the worker dispensable. The development should rather reallocate internal resources and create more time for meaningful work for the staff. This means eliminating repetitive tasks, streamlining informational flow and creating easier and faster access to functions that guide decision making for the business. By moving towards this scenario, the business has more resources and time to allocate to more complicated processes which require creativity and human intuition. Data is in place for people to make well informed decision based on facts. Human intuition still plays a large role in the interpretation of these facts as algorithms and code only does what it is told to do. Technology is optimal for reading facts and displaying them in an understandable format, but it doesn't tell the full story. People are the key in this chain to link the facts into the right context in terms of the business and drive the right actions forward. This combination is the solution for optimal overall business performance.

#### 4.6 Data Management

Human resources management contributes to the sustainable competitive advantage when it succeeds in finding and managing appropriate talent pool. Strategic HRM is important during digital transformation as businesses are competing to recruiting highly skilled, adaptive and forward-thinking employees. For example, in the United States the demand for Data Scientists has grown by 344 percent since 2013 (Holak 2019). European markets are facing similar demand of data experts. The implications are that businesses should also focus on creating a positive employer image in order to gain traction in recruitment of skilled workers. To have a successful data management framework it is vital that there are right resources at hand internally. Data management is a scalable concept and can be approached from different perspectives depending on the function of the data. This model will highlight the main components of a generic data



management structure which can be divided into four main activities including data generation, ingestion, storage and analytics (Fausto and Lev 2017).

Data generation includes all different sources of data used by the business for any purpose. The data can be internal data from different systems such as production or inventory data, sales data, platform-based data from e-commerce or digital marketing activities. It can also be any type of 3<sup>rd</sup> party data source which is used to support decision making or as a performance enhancing tool e.g. targeting data used in programmatic advertising to optimize ROAS. A major challenge related to any data generation is the quality of the data. Due to the growth of data volume it is increasingly difficult for businesses to identify what data is truly actionable and worth being generated. The generation process should be streamlined to serve accurately the needs of the business and unnecessary data should be kept to a minimum. To distinguish data generation from research purposes the objective is to use technology to feed business information to the decision-making process. The data generation source in this context are all business activities which are needed to monitor, track and collect as raw data.

Data ingestion is an important part of data management as it defines largely the operational requirements of systems in order to support decision making and control. The ingestion process is the base platform for any business to utilize data in analysis. Common steps in the ingestion process are extracting, transforming and allocating the data into storage for future use (Kranc 2018). Depending on the business model the ingestion process can be in-house or outsourced, or a combination. Ingestion can be time consuming if the three components are not integrated in a way that enables agile operations. There are several platform products on the markets which are scalable in use from small businesses to large enterprises. Latency regarding the data analysis is a key component of the ingestion process. The implication is that the business needs to critically evaluate what data is needed for real time analysis and where other types of data should be stored to. There should be a layer of applicable tools which help in structuring the ingestion of the data.

Management has a significant role in creating a culture of data-driven thinking and activating the business in necessary areas. Data is considered to fall into the domain of engineers and scientific purposes but the underlying value for all businesses is there. Data management should be considered as a part of the businesses digital

transformation and treated accordingly with enough focus. Most businesses are collecting data but struggling with leveraging its power due to insufficient data management strategy (Wertz 2018).

#### 4.7 Development of data driven digital business solutions

One of the main tasks' businesses have on their shortlist of objectives is to show consistent improvements in overall performance. Parallel to the development of technology is the growing need to present stakeholders' reasonable actions of implementation of this technology in the business. Businesses specifically operating in the B2C markets should be monitoring these developments critically. As marketing technology is penetrating more efficiently individual consumers, tracking online movement and behaviour better, mutually the responsibilities of brands and businesses are growing towards the consumer.

“As businesses look at securing more personal data from consumers, consumers value transparency and want to know if their information is being well-protected. Moving forward, trust will and should play a critical role in an organisation's business strategy.” (Sangster 2017)

Consistency of the business improvements echoes positively in the customer experience which in terms uplifts consumer loyalty and long-term yield. Technology is in the centrefold as it drives consumer insight and supports marketing decision making better than traditional instinct based methods. The global development is driving technology to fulfil even more tasks at once and with better cost efficiency. There are few major trends that should be mentioned, closing the gap between obtaining and using data to its full potential, integrating data to B2B marketing e.g. ABM (Account Based Marketing), the growth of programmatic and automated marketing and the challenges related to them (Dun & Bradstreet 2019). This development will push businesses to change their internal approach to marketing tactics e.g. with ABM which will shift focus from older methods of B2B marketing. The approach consists from elements of marketing and sales and combines these two to a coherent overall strategy. What can be helpful in overcoming difficulties with the growth of digital and increasing rate of technology is building an

organization which can operate transparently and have limited number of informational silos (Walker 2019).



Figure 6 - Five key business challenge areas which can be significantly improved and automated with current marketing technology platforms, these areas are important focus points for marketing executives and operational managers (Frost and Sullivan, 2018).

Technology is significantly impacting the churn time of digital marketing decision making through its dynamic nature and differentiates in strategy from traditional marketing. For business management, this means that e.g. platform choices can be critical in terms of overall business strategy success. The implication is that the digital marketing strategy should be aligned and support the corporate strategy objectives (Chaffey 2015: 185). This approach enables better competitive development, breaking down silos, resourcing and operational capabilities. For businesses already using platforms such as Salesforce as the main CRM body, it could be logical to introduce integrated digital marketing functions from the same service provider. Investing in less platforms and essentially centralizing digital marketing provides scale and efficiency but limits agility of digital operations to an extent. Depending on the size of the business it is advisable to analyse the requirements and impact of the decision carefully. Most data-based marketing tools and platform solutions are based on licensed contracts which have positive and negative

implications. Success factors of the digital marketing strategy are different depending on the business model and correlate with the digital maturity of the business. An ideal situation would be that a business would have a single platform solution which interacts the consumer (Chaffey 2015: 456). This scenario has positive internal and external benefits which impact the performance of the business and the consumer journey. Technology companies are pushing the data-based marketing solutions to this direction. The issue with this development is that activation fees could be high for the business and the service does not cover all areas of the business appropriately. Or simply businesses have legacy systems in place which are still performing on a required level. It is difficult to justify a leap from a performing process to a new way of operating solely based on a tech company's sales pitch. Back office systems are still largely in place SME businesses, but they are inevitably expiring in efficiency and losing in functionality compared to next generation automated platforms.

Development of data driven marketing solutions is driving internal change in organizations as well as in strategy and operations. Business are facing challenges in breaking down silos, recruiting knowledgeable personnel and convincing staff to commit to new platforms and processes (Mareddy 2017). These factors add on layers to the digital strategy and require focus from management. If the internal challenges are overlooked the business could be inefficient and not reach the objectives. Most modern data-based marketing solutions have cross functional qualities and perform best when they are operated on a cross functional level. This will impact the business performance positively if management understands the importance of change management. The implementation of platform solutions requires clear objectives and goals internally. Uncertainty and silos within the same ecosystem could cause controversial insights or lack of performance. In the worst-case scenario, these issues are visible to the consumer and stakeholders and might damage the business in addition to the negative impact to marketing performance.

#### 4.8 Introducing Artificial Intelligence and Machine Learning

AI and ML are commonly used in the industry as interchangeable concepts as their operating method might be confusing to understand. The core idea with either concepts is to generate something out of data. The outcome depends on the sophistication of the

system, data being used to feed the process, the objectives and the technology. AI can be defined as a larger system which utilizes technology to drive intelligent decision making as machine learning is the subset, based on interpreting data in a defined and teaching itself during the process (Marr 2016). The idea of AI was first brought to public knowledge was in the 1950's by Alan Mathison Turing who was a mathematician, studied logic and was a pioneer in the field of computer science (Turing, cited in Corea 2019: 4). Through developments in technology we are seeing more investments in the field of AI and ML applications. There is a large demand for business intelligence driven applications through the growth and efficiency needs of the markets. On the contrary, there is also a wide supply of different digital platforms based on AI and ML concepts. For businesses that don't have in depth knowledge about these systems the task of choosing to one system over another for a task could be difficult.

As many emerging technologies claim to be AI the applications are often less complicated by design. ML applications are far more widely spread out through the markets and heavily used in different industries. Any industry which needs to synthesize large amounts of data to drive either better decision making, or performance can benefit approaching the business challenges with ML. The basic idea of ML is to predict future unknown events through exposure to different signals. This process was brought up by Arthur Samuel who described ML as computer learning without explicit programming (Samuel, cited in Awad and Khanna 2015: 1).

The importance for businesses flows through from exploration of data and increases knowledge. Trends, attribution, necessity, relationships and scaling up are some of the main benefits of implementing AI & ML applications into the business. Traditional businesses which are implementing legacy systems could see major benefits in implementing ML based technology in stages. The most suitable place for onboarding ML systems into the business tends to sit in either sales or marketing. In digitally mature businesses these two are interconnected and can be dynamically operated through platforms such as Salesforce or Google Marketing Platform. These systems leverage cross functional data streams with ML for real time analytics, control and decision making. Businesses have also the opportunity to build tailor made solutions when there is no applicable solution on the markets. A business could see benefits from implementing simple, cost effective and easy to use ML approaches. The quality and the

value of the application is not dependant on the hours put into building a sophisticated algorithm, it is more related to the actual impact the solution does for the business (Marvin 2017).

Businesses should start to feel comfortable in growing their technological resources in the light of the development. The focus is on building a better core business and AI and specially ML have much to offer. ML is the backbone of automation which drives efficiency through eliminating reoccurring tasks and can be linked to many other supporting tools. If the ML system is connected to the organizations infrastructure there are numerous options for creating a faster flow of information and enabling insights. Data visualization is a good example of an engaging output of an automated, ML based, interface which drives faster and more precise decision making. The insights are not limited into external but can also drive internal observations in process efficiency and increase time employees have for more meaningful and immersive tasks (Ellingrud, 2018). In general, there are some fears of current work being lost to AI and ML driven automation. The unavoidable truth is that there will be traditional jobs lost for automation as seen already in production, manufacturing and different industries where manual labour is needed for reoccurring tasks. The upside is that there will be new roles and jobs needed in vast numbers around the technology. On a small scale the best approach for businesses is to identify the need for change early. This will allow the organization to communicate ahead and provide employees the chance to develop their own skills to meet the needs that the business has in the future.

## **5 Compatibility of regulation and business**

### **5.1 The impact of GDPR**

The of EU's General Data Protection Regulation law was implemented on the 25th of May 2018. The main role for the regulation is to provide framework which protects individual privacy and defines how businesses must handle personal data. The regulation was implemented inside the European Union and the European Economic area. The regulation in addition addresses the export of consumer data outside of the EU. GDPR was highly anticipated from many different perspectives. Specifically, in the digital marketing industry the potential impact of the regulation was perceived as ambiguous as many parts of the legislation could be interpreted in many ways. Non-compliance with

the law could cost up to 4 percent of the annual global turnover or 20ME, whichever is the greater (Eugdpr.org 2019). The maximum penalties are issued in cases of infringements which violate the core of the legislation which could be described as the "privacy by design" approach. This approach defines consumer to business interaction in a way that by default consumers are provided with the maximum privacy, guaranteed personal data protection and are given the opportunity to choose in what way personal data is collected and utilized commercially.

The main consumer rights associated with GDPR are breach notifications, the right to access collected data, the right to be forgotten, data portability (the right to ask and receive personal data in a commonly accepted format) and the requirement of the service provider only to collect and use data which is justified and necessary for the service. These rights are not unequivocal across different touchpoints between the consumer and businesses. The justification and the definition of necessity in terms of consumer data collection varies depending on the service, layers of consumer consent, digital maturity of the business and the organizational framework which the business is built on. From the consumers point of view GDPR most visual impact has been the explosively increased cookie consent management screens or popup windows across domains. The fact is that for businesses operating widely with digital tools, whether it's using customer relationship management, data management platforms or other support and performance enhancing systems the change has been significant.

## 5.2 Arrival of ePrivacy Regulation

European Commission's ePrivacy Regulation is aimed on updating and modernizing the previous regulation from 2002 (Directive 2002/58/EC/amended in 2009). The tone of the directive is to improve communications security and consumer to business confidentiality (Donn 2019). The regulation is anticipated to have a significant impact on the foundation of businesses reliant in digital means to market their services or products. The regulation will bring another layer to GDPR by increasing regulation specifically in areas where a consumer can be digitally identified. Cookies which are data sent from a service provider to a terminal device e.g. smartphone might become obsolete in terms of digital marketing after ePrivacy is implemented. Any terminal device requesting a publicly available service is considered as an end-user by the regulation (European Commission

2016: 18). This will force the marketing ecosystem to reconfigure certain aspects of their framework to be enabled to stay alive in the European Economic area.

Though the regulation widely addresses technical aspects of the digital business climate in Europe it also is aimed on improving societal issues that the development of marketing technology has brought. As data is becoming a valuable and more easily accessible tool for mapping out human behavior and commonly used to influence consumer behavior, there are underlying problems from a citizen's perspective. If we compare western world in terms of privacy and regulation, we are worlds apart with e.g. China. The approach in China is to utilize technology and data to assert censorship and government control. Without regulation and public discussion from the regulatory perspective there are sinister results already in place. Chinese government has used increasingly technology and data in purposes of surveillance, political control and suffocation of misaligned opinions with the Communist Party of China since Xi Jinping took power in 2012 (Larson 2018). Algorithms, which can be used in digital marketing to identify intent or interest to purchase something are enabled also to be used for detecting other personal factors such as political activity. The ePrivacy regulation is a part of a bigger approach in the EU to prevent the use of personal information to malicious intents. Capitalizing from data which the user has not consented to is one of the subdomains of this attempt to preserve individual rights such as freedom of speech, shield individuals from oppressive actions through technology and to provide the right of choice for people.

### 5.3 Acting and thinking digitally

One of the most important challenges for businesses to tackle in terms of data, whether first or third party, is to understand what function it serves in their business objectives. A good way to start this process is to map out different sources of data and visualize how and why it is created, who is the proprietary owner in the business and what is the potential use for the data. This process requires a level of objectivity towards the resources and opportunities and might be best to be executed by an outside consultant or an agency. This approach could provide more accurate judgement on the value of data and give true causal reasoning about the characteristics of a certain dataset. Depending on the business structure the amount of data created and stored varies highly. The means of creation and storage should also be in the focus when mapping



out the structure. Many businesses depend on legacy systems to operate daily processes which could create issues when on-boarding new digital processes. Foremost, a business should think about the level of digitalization it represents as one of the main drivers of its development. Digital maturity is an essential part of the base which a digital growth strategy is built on (Grossman 2018). When the business has a realistic perspective on its digital maturity in different functions across it is easier to evaluate and execute development actions.

As regulations and emerging technology is shaping the competitive field swiftly the need for businesses and organizations to adapt makes a difference. Different approaches exist on evaluating the businesses capabilities in terms of digital. Common methods are to analyse digital transformation from the leaderships perspective and in addition to map out the digital maturity of the organization. Digital transformation is the organizations response to external trends which affect the business domain (Kane 2017). Without having necessary resources for the management to respond to external changes there is a high risk of investing in e.g. technology which is based on instable ground. A good example of this has been the booming 3<sup>rd</sup> party data sector which is facing high volatility due to uncertainty related to regulation.

#### 5.4 Development areas and opportunities

Looking at different industries on a global level many businesses are already started their digital transformation process. The dimensions where development could be made can be divided into digital and leadership capabilities (Capgemini 2018). Digital capabilities can be evaluated on the degree of technology implemented in the business in support of business model, interaction with consumers and the way internal processes are managed. Businesses are at different levels of technology implementation as described in the context of digital maturity. Leadership capabilities have not been able to follow the pace of technological development on a global scale. In the report established by Capgemini only a minority of organizations feel that they are up to date both dimensions of the digital transformation. The reasons behind the slow progression might derive from difficulties in adapting to the pace of technology innovation, not understanding the full scale of digital transformation, not changing the business model even when disrupted by emerging competitor businesses and not knowing how to meet expectations of

stakeholders. The definition of the digital transformation should come from leadership in the form of vision and governance. If the leadership doesn't provide the organization with a vision and a framework which supports that vision it is significantly difficult for employees to develop the business to a coherent direction. The lack of vision from the top impacts overall business strategy negatively as the organization cannot recognize the purpose of the business. It makes a major difference for the organization if there is purpose, direction, framework for support and tools, incentive and a culture which enables people to explore opportunities and push development thinking.

There are major opportunities in developing a holistic vision and strategy in digital transformation. Depending on the industry the success of a completed transformation could provide market growth, lower costs long-term, better customer experience, better resourcing, employee happiness and engagement, increased efficiency in collaboration and agility (Bookbinder 2018).



Figure 8 - Common digital capabilities in which organizations can benefit from development (Capgemini 2018).

The development of all the necessary digital and leadership capabilities are not naturally achieved overnight. Natural starting point for the development should be the leadership's role in defining the necessary elements for the organization. After the birth of a clear

vision statement there should be intense focus on the digital capabilities. This could be approached through a hierarchical order which defines the importance of one development area over another. This way the organization can focus on development projects according to the importance for the business, urgency of the change and based on the benefits of the change. The change might require investing into new skills, technology, training or re-organizing the structure of the business. These investments should support development needs and be a direct result of a critical risk and benefit analysis. Businesses should also understand their development needs in relation to short-, mid- and long-term goals (Grossman 2018). This will enable better decisions in terms of investing into relevant development projects and minimize the risks associated to emerging technology.

## 6 Recommendations

- Start from the top down by clarifying the vision of the business. Define why the business exists in the first place, what are the key functions of the business and where are the biggest pain points in the organizations. Without solving the core issues the business will not be able to perform in the long term successfully.
- Evaluate the digital maturity of the business vigorously and leave no stone unturned. Critically analyze the need, justification and use rate of current technology and its implementation in the organization. Align technology with the overall business strategy and organization.
- Communicate changes within the organization and improve transparency. Break down silos with the help of technology and enable an atmosphere of collaboration. Communication is an important tool for reassuring and building trust with stakeholders. Without communicating success and failure amidst transforming the organization will struggle to understand the overall goals.
- Follow data. There is plenty that can be improved with existing data flows by including right tools in support of business intelligence. It is beneficial to understand what data the business creates, the type of the data, where is it

stored, how is it used, the costs related to managing data, what is it used for and what it could be used for in the optimal scenario.

- Due diligence of technology partnerships. There are thousands of emerging technology solutions for businesses from different suppliers. There are no set guidelines on which technology suits best your business. The choices in terms of strategic partnerships with technology providers are dictated by the business goals. Investments into a partnership with technology suppliers should follow the vision.
- Be prepared to pivot during the transformation. Change towards being fully digital in the full meaning is complicated and emerging technologies are incrementally disrupting more industries. The organization should have readiness and incentives to change relatively fast.
- Follow industry trends closely. Emerging technology moves fast across businesses if there is real value to it. It depends on the business model and the purpose of the system whether it is beneficial to onboard beta technology. For some businesses it has proven to be a lifeline and a catalyst towards high growth rates. Not to state that tried and proven methods don't work. Innovation does not require the latest generation of technology.
- Familiarize yourself to an extent with the theory behind artificial intelligence and machine learning. The information technology is globally moving towards higher implementation rate of applications in this field.
- Enable and acquire the right expertise and skills in the organization. Training of employees, recruitment of high potential people and adapting to external changes are crucial to the business during a digital transformation. This means there will be new roles, responsibilities and skills needed internally to drive the businesses digital maturity forward.
- Search solutions across industries as the borders for innovation have become lower. Many data-based applications are transferrable between different functions.

## 7 Conclusion

A large proportion of factors that defined and structured 20<sup>th</sup> century business has changed rapidly in the first quarter of the 21<sup>st</sup> century and the pace of global change does not seem to be slowing down. Different industries are facing disruption and unexpected competitive scenarios as businesses are reinventing revenue streams and pivoting their core business. Digitalization, changes in infrastructure and consumer behavior and expectations force businesses to focus more into their own digital approach. Digital maturity of a business is as crucial from my personal point of view as the credit rating or the profitability of the business in the scope of a decade. Some businesses have done better than other in digital transformation and in accelerating their digital maturity to perform now and to be competitive in the long term. Succeeding in these areas requires in depth vision of the business which should be based on understanding necessary elements contributing to development.

Many of the business cases, development work and projects I've had the privilege to work on professionally have varied in terms of function in the digital landscape. Working in the forefront of implementation layer of technology in an agency which enables businesses to transform and optimize their business has proven to be insightful. The need for driving businesses to be more enabled digitally has been growing steadily. Empirically observed, businesses are no longer focusing on isolated functions e.g. traditional marketing silos but are more interested in building an omnichannel approach that is high performing and meets the modern consumers expectations. As business functions are merging into one another in the attempt to build a more coherent strategy and to optimize performance it is inevitable that there will be obstacles. They are often caused by not possessing the right organizational structure and mindset, technological gaps between available systems and legacy systems, fear of change and failure or due to an incomplete vision of the business. With the right knowledge, strategy and preparation these are not critical obstacles and can be overcome during the transformation.

The core of the transformation is to look forward and attempt to visualize how the business should look in the short and long term. This should be visible in multiple ways, in the way consumers experience it, how enabled employees are and how they are able

to support the business performance through technology, in using data to construct informed decisions and in exceeding stakeholder expectations through innovation. Due to the abstract nature of transformation businesses should focus on starting the transformation in areas which are critical for the business in the short term. If there are no short-term threats that need immediate attention the business should focus on improving more widely the organization towards long term goals.

Regardless of the digital maturity of the business or the current business model there is fundamental value in utilizing data. Data has become commoditized widely in the markets and its volume can be baffling. As the driving force of insights and actionable information it is important to understand as a business what key dimensions should be considered in terms of data. The purpose of this thesis is to highlight the main components needed to build a data driven business. This objective is achievable if it is approached from a wide perspective. In order to be successful in leveraging data as a driving force of a digital transformation, businesses must understand the implications internally and externally.

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