



# **Exploring Success Factors in Chatbot Implementation Projects**

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| Abstract:  |   |
| <p>Chatbots are digital agents which can be used to automatize an organization's customer interactions and internal business processes. This conversational software is powered by artificial intelligence and utilizes natural language processing to communicate with human users via text or voice. The aim of the study was to explore success factors in chatbot implementation projects and develop a best practice framework based on the findings. The research questions were selected around the chosen themes of success definition, critical success factors, risk management and overcoming challenges. The study was designed in the project management context and taking the service provider's perspective on the topic. The purpose was to understand how success can be defined in chatbot implementation projects and what are the expected benefits, which critical success factors can be identified and which best practices applied to bring forth the expected benefits, control risks and overcome challenges. A literature review was conducted to introduce the history and basic concepts around artificial intelligence and existing applications, followed by a review on project management principles and existing best practices for chatbot implementation projects. For the empirical research, semi-structured interviews as a qualitative research method was applied. Five chatbot implementation experts around Europe participated in the study. The data from the research was processed, analyzed and categorized based on the research questions. The results were then triangulated and turned into insight with the main outcome of forming a project management best practice framework for chatbot implementation. The results show that the main contributors for chatbot implementation success include: Defining clear goals for the project, involving all relevant people in the organization, forming coherent teams, obtaining sponsorship from leadership, using an agile project management methodology, involving the client from early on in the validation and testing of the product, building knowledge and capabilities on the client's side, employing conversational designers, UX practitioners and copywriters for the project and implementing analytics to be used as basis for continuous improvement of the chatbot. The limitations of the study were the lack of existing academic research on the subject and the absence of standardized terminology around the research subject.</p> |   |
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| <p>Abstract:</p> <p>Chatbotit ovat digitaalisia assistentteja, joita voidaan käyttää asiakaspalvelussa ja yritysten sisäisten prosessien automatisoinnissa. Näiden keskustelevia ohjelmistojen taustalla hyödynnetään tekoälyä ja luonnollisen kielen käsittelyä, mikä mahdollistaa tietokoneen ja ihmisen välisen kommunikaation tekstin tai puheen välityksellä. Työn tarkoitus oli tutkia onnistumistekijöitä chatbotin käyttöönottoprojekteissa ja kehittää löydösten pohjalta parhaiden käytäntöjen viitekehys. Tutkimuskysymykset määriteltiin ennalta valittujen teemojen ympärille, jotka olivat: menestyksen määritelmä, kriittiset onnistumistekijät, riskinhallinta ja haasteet. Tutkimus suunniteltiin projektinhallinnan kontekstista ja palveluntarjoajan näkökulmasta. Tarkoitus oli ymmärtää, kuinka onnistuminen voidaan määritellä chatbotin käyttöönottoprojektissa, mitä onnistumistekijöitä voidaan osoittaa ja mitä parhaita käytäntöjä hyödyntää projektien läpiviennissä sekä riskinhallinnassa. Kirjallisuuskatsaus jakautui kahteen osaan: tekoälyteknologioiden historia ja nykypäivän sovellutukset sekä projektinhallinnan perusteet. Empiirinen osuus hyödynsi laadullista tutkimusmetodia ja siinä haastateltiin viittä eurooppalaista chatbot-käyttöönottojen asiantuntijaa. Data prosessoitiin ja koodattiin, analysoitiin toistuvuuksien löytämiseksi ja kategorisoitiin tutkimuskysymyksiin perustuen. Tuloksena saadun tiedon pohjalta rakennettiin parhaiden käytäntöjen viitekehys chatbotin käyttöönottoprojekteihin. Tulokset osoittavat, että tärkeimpiin onnistumistekijöihin chatbotin käyttöönotossa kuuluvat tavoitteiden ja päämäärien tarkka määrittely, avainhenkilöiden aktiivinen osallistuminen projektiin, sisäiset sponsorit, Agile-metodiin pohjautuvan projektinhallintamenetelmän hyödyntäminen, asiakasorganisaation aktiivinen osallistuminen jo aikaisessa vaiheessa chatbotin testaamiseen, osaamisen aktiivinen kehittäminen asiakasorganisaatiossa, keskustelumuotoilijoiden, käyttäjäkokemusasiantuntijoiden ja tekstittäjien hyödyntäminen, sekä analytiikan käyttöönotto chatbotin jatkuvaa kehitystä varten. Tutkimusta rajoittivat aiheeseen liittyvän olemassa olevan akateemisen tutkimustiedon sekä vakiintuneiden käsitteiden ja sanaston puute.</p> |  |
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# TABLE OF CONTENTS

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>INTRODUCTION</b>                                 | <b>6</b>  |
| 1.1      | Background  | 6         |
| 1.2      | Research Questions and Objectives                   | 7         |
| 1.3      | Scope and Limitations of the Research               | 7         |
| 1.4      | Structure of the Thesis                             | 8         |
| <b>2</b> | <b>LITERATURE REVIEW</b>                            | <b>9</b>  |
| 2.1      | Fundamentals of Chatbots                            | 9         |
| 2.1.1    | <i>Consumer Trends</i>                              | 9         |
| 2.1.2    | <i>Technology Overview</i>                          | 11        |
| 2.1.3    | <i>Chatbot Applications for Business</i>            | 14        |
| 2.2      | Principles of Project Management                    | 16        |
| 2.2.1    | <i>Project Management Body of Knowledge</i>         | 17        |
| 2.2.2    | <i>Project Lifecycle</i>                            | 18        |
| 2.2.3    | <i>Partnering in Projects</i>                       | 19        |
| 2.2.4    | <i>IT Projects</i>                                  | 19        |
| 2.2.5    | <i>Project Success and Critical Success Factors</i> | 20        |
| 2.2.6    | <i>Success in Chatbot Implementation</i>            | 22        |
| 2.3      | Summary   | 25        |
| <b>3</b> | <b>METHOD</b>                                       | <b>26</b> |
| 3.1      | Selecting the Research Method                       | 26        |
| 3.2      | Respondents   | 28        |
| <b>4</b> | <b>RESULTS</b>                                      | <b>29</b> |
| 4.1      | Pre-Analysis  | 29        |
| 4.1.1    | <i>Coding and Categorization</i>                    | 30        |
| 4.1.2    | <i>Category Matrices</i>                            | 32        |
| 4.2      | Primary Analysis                                    | 36        |
| 4.2.1    | <i>Success Definition and Benefits (RQ1)</i>        | 37        |
| 4.2.2    | <i>Critical Success Factors (RQ2)</i>               | 38        |
| 4.2.3    | <i>Risks and Challenges (RQ3)</i>                   | 43        |

|          |  |           |
|----------|--|-----------|
| <b>5</b> | <b>PROPOSAL FOR A BEST PRACTICE FRAMEWORK FOR CHATBOT IMPLEMENTATION PROJECTS.....</b> | <b>46</b> |
| 5.1      | First Phase in the Framework - Initiating .....  | 47        |
| 5.2      | Second Phase - Planning.....   | 48        |
| 5.3      | Third Phase - Executing.....   | 48        |
| 5.4      | Phase Four - Controlling .....   | 49        |
| 5.5      | Phase Five – Closing .....   | 50        |
| <b>6</b> | <b>CONCLUSION.....</b>   | <b>51</b> |
| 6.1      | Recommendations for Future Research .....  | 55        |
|          | <b>LIST OF REFERENCES.....</b>   | <b>57</b> |
|          | <b>APPENDIX 1. LIST OF STOP WORDS.....</b> Virhe. Kirjanmerkkiä ei ole määritetty.     |           |
|          | <b>APPENDIX 2. INTERVIEW TRANSCRIPTS.....</b> Virhe. Kirjanmerkkiä ei ole määritetty.  |           |

## Figures

|   |    |
|---|----|
| Figure 1. Structure of the Thesis.....  | 8  |
| Figure 2. Messaging apps vs. Social Networks Monthly Active Users (BI Intelligence, 2016).....                                  | 10 |
| Figure 3. AI Concepts and Their Relationships (Author’s own modification based on lecture material by Sarlin, 2018).....        | 13 |
| Figure 4. Project Management Process Groups (A Guide to PMBOK, 2000).....   | 18 |
| Figure 5. Word Cloud Visualizing the Most Frequently Occurring Words in the Interview Responses (Author's own composition)..... | 31 |
| Figure 6. Proposal for a Framework for Chatbot Implementation Projects (Author's own composition).....                          | 47 |

## Tables

|  |    |
|--|----|
| Table 1. Interview Participants.....   | 29 |
| Table 2. List of Most Frequently Occurring Words in the Dataset.....                           | 30 |
| Table 3. Categorization of Concepts Found in the Data Based on Thesis Research Questions.....  | 32 |
| Table 4. Categorization of Concepts Found in Interview Data in Project Management Context..... | 35 |

# 1 INTRODUCTION

## 1.1 Background

Messaging applications as a digital communication channel have surpassed social media in popularity (BI Intelligence, 2016). The speed and usability offered by these conversational platforms have greatly affected consumers' expectations towards how they wish to communicate with brands. Businesses must respond to the new demands by being able to offer customer service across digital channels and answer queries quickly and efficiently. Following this shift in consumers' expectations, we are seeing the re-birth of a digital marketing channel and user interface, which is not a new idea in itself, but is now becoming viable with the wide availability of the internet, advances in artificial intelligence and the explosion of data. This channel is known as Chatbots.

Chatbots, or conversational agents, are computer programs that are able to communicate with human users in natural language. Chatbots may or may not be powered by artificial intelligence (AI) technologies and can be used to automate business processes across industries. Chatbots are typically offered to businesses as Software-As-a-Service solution (SaaS) and the industry is commercializing rapidly.

The recent popularity of chatbots is driven by two factors: 1. The growing popularity of messaging applications and 2. Recent advances in Artificial Intelligence (AI) technologies. Today, messaging applications' user base globally is larger than that of social networks. The developments around AI are explained by advances in machine learning and deep learning technologies, both utilizing large volumes of data and cheap processing power, which today are widely available (Accenture, 2016). As a result of these two trends, messaging applications today can be built to offer a range of services rather than simply having a conversation: They can include features such as payment interfaces, ordering and booking functionalities.

A growing number of companies are utilizing AI technologies today. 2016 Accenture research predicts that by 2035, AI will boost labor productivity by up to 40 percent.

Companies are deploying chatbots to bring forth these operational efficiencies, improve customer experience and drive down labor cost. Chatbots have potential to disrupt operation models in the near future and it is therefore important to be aware of the benefits, risks and challenges that may arise with the implementation of such technology. It will also be beneficial for businesses to understand how chatbots can be successfully implemented and plugged into the customer interface.

## **1.2 Research Questions and Objectives**

The aim of this study is to identify Critical Success Factors and best practices in chatbot implementation projects. Further, the study attempts to find out how success in chatbot implementation could be defined. The main objective is to contribute with a framework for how best practices can be used by chatbot professionals in implementation projects.

The research questions (RQ) are:

RQ 1. How can success be defined in a chatbot implementation project and what are the expected benefits?

RQ 2. What are the Critical Success Factors for chatbot implementation?

RQ 3. What best practices can be applied in chatbot implementation projects to maximize the benefits, control risks and overcome challenges?

## **1.3 Scope and Limitations of the Research**

The study is designed from an IT project management perspective and examined through the service provider's point of view. The study is not constrained to any single industry, technology platform or business segment. The results and findings are to be used as part of a holistic project management strategy and best practice framework.

The main restriction of the study is the limited amount of academic studies on the topic. Chatbots represent an emerging technology and there is little understanding of future impacts of current developments. It is difficult to estimate the future as technology

adoption is unpredictable and trends can turn fast: When new technologies become available, old ones are quickly abandoned. The author wants to point out that this thesis does not intend to make future predictions but is explorative in nature.

## 1.4 Structure of the Thesis

First, an *Introduction* presented an overview of the study and introduced the research questions. Next, a thorough *Literature Review* is conducted to provide a state-of-the-art review of existing literature on the research subject. The third chapter, *Method* begins by explaining the selection process of the research method and design of the chosen approach. Next, the data collection and analysis techniques are explained. The *Results* chapter focuses on analyzing and presenting the findings generated from the data analysis phase. The Chapter *Framework Proposal* introduces the best practice framework as the outcome of the research. The final chapter, *Conclusion*, summarizes the results, proposes managerial recommendations and areas for further research. See figure 1 for the overall structure.

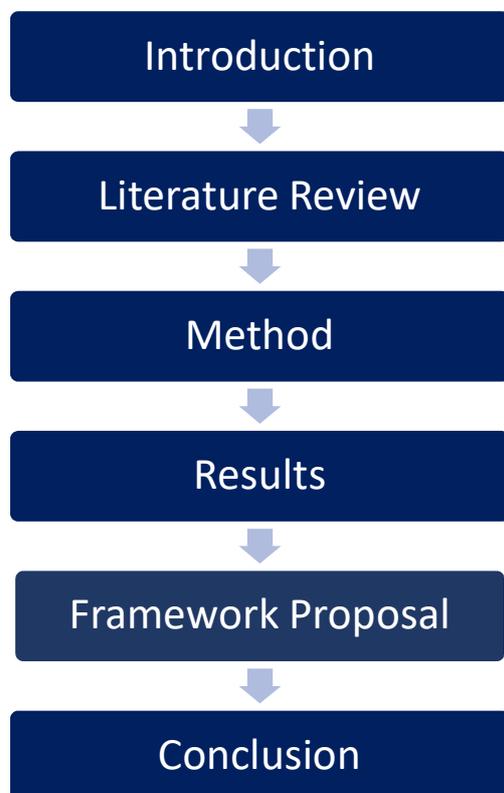


Figure 1: Structure of the Thesis

## **2 LITERATURE REVIEW**

This chapter introduces the key concepts and terminology related to the research subject as well as existing theoretical frameworks around chatbot implementation projects. The purpose of the first section is to explain the consumer trends behind the rising popularity of chatbots, to give an overview of the underlying technological aspects and to inform the reader about existing and potential business applications of chatbots. It is also discussed, how a company should approach the implementation of a chatbot and what are the key considerations for project preparation. A theoretical overview of the core elements of project management is provided with a focus on the aspects that are most relevant to information technology (IT) projects.

### **2.1 Fundamentals of Chatbots**

#### **2.1.1 Consumer Trends**

In 2019, there are various channels used by brands to communicate with their customers. These channels can be divided into two categories: Traditional media (Printed advertisement, telephone, mailing) and digital media (i.e. E-mail, social media) (Fill & Jamieson 2011). The latter has gained overwhelming popularity in the last two decades with the rapid development of online-based services. The revolution that digital media channels, such as Facebook, offer in comparison to traditional ones, is the shift from “push” marketing strategies to “pull” marketing, allowing customers to proactively reach out to brands via the channel of their choice. It is a fundamentally different way of communicating, shifting power from the brand to the customer (Pelton et al 1997.).

Digital marketing channels are developing rapidly, now including corporate websites, social networks and instant messaging. It is clear that the communication processes are becoming more interactive and with the internet, customers can easily find information about products and services (Fill & Jamieson 2011). During the past decade, social media has been the preferred platform for digital marketing by companies, but this trend is now starting to change. A new exciting digital channel has seen its rise: Messaging applications (Apps). Customers using messaging apps are accustomed to speed and live

interactions and are now demanding service when and where they want to receive it. A 2016 study by Business Insider found that messaging apps have long surpassed social networks in number of monthly active users globally (Business Insider, 2016). As result, the position of social networks as the dominant digital marketing channel is starting to fade. See Figure 2 for the visualization of the trend.

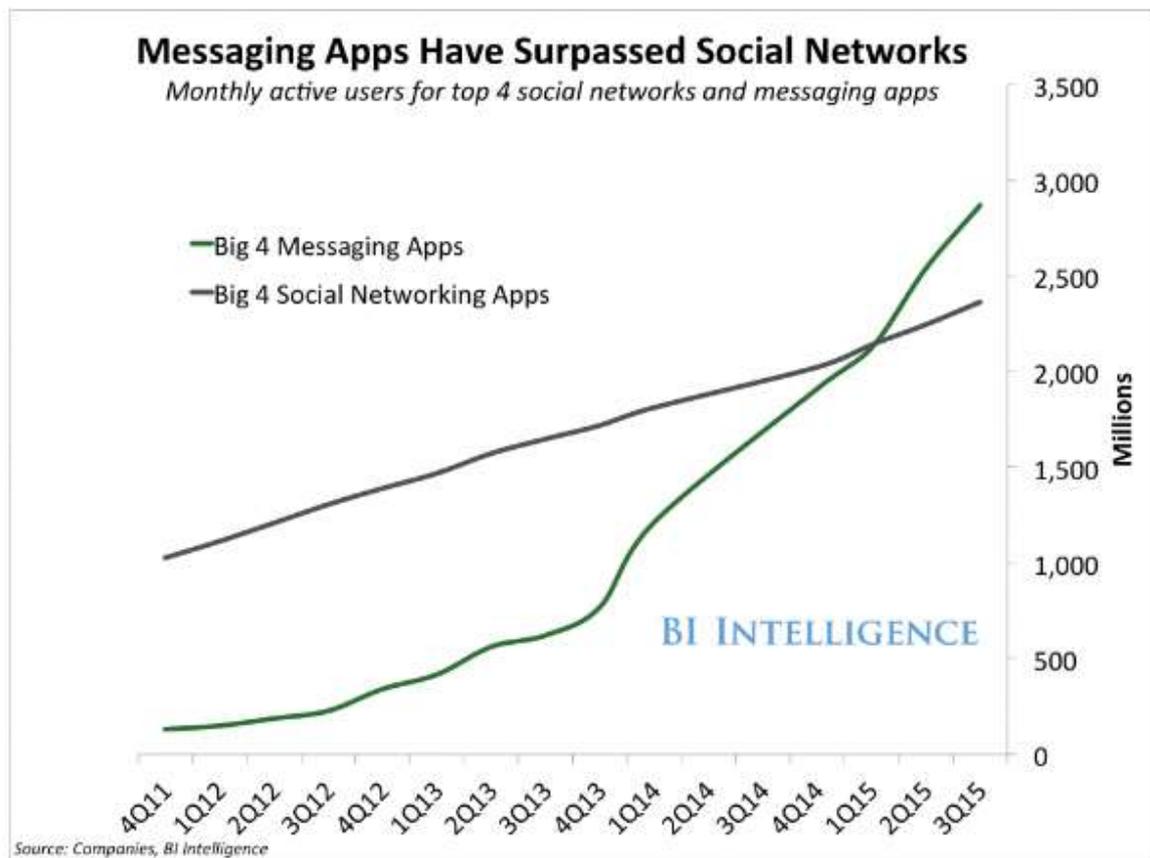


Figure 2: Messaging apps vs. Social Networks Monthly Active Users (BI Intelligence, 2016)

The use of messaging apps has profoundly impacted the consumers’ attitudes towards communication - people are now expecting to receive replies to queries instantaneously. The speed of communication is accelerating and it is forcing businesses to innovate conversational solutions that can provide information fast (Ubisend, 2017.) Companies are expected to adapt and use messaging applications as communication channels. The renaissance and sudden popularity of chatbots is clearly linked to the new customer expectations and is being propelled by recent advances in artificial intelligence and explosion of data (Abdul-Kader & Woods, 2015).

A Chatbot, also referred to as Chatterbot, virtual agent or conversational agent, by definition, is a computer program which has the ability to hold a conversation with humans in text or speech using Natural Language Processing (Abdul-Kader & Woods 2015, 72). Consumers have been mainly familiarized with them in the recent years in the form of personal assistants used in mobile phones. For example, Siri is an intelligent agent used by Apple, reacting to the user's spoken language. These automated conversational solutions are serving the new customer demands for speed and flexibility perfectly.

It is worth noting that chatbots are not a new idea. The history of chatbots dates back to 1960's, when Massachusetts Institute of Technology developed a chatbot called ELIZA, which attempted to trick users into believing that they were having a conversation with a real person. ELIZA could ask open-ended questions and respond with follow-up questions. ELIZA could recognize key words and utilize pre-programmed responses to answer back to the user. (Analytics India Magazine, 2016). In the recent years, we are starting to see a variety of chatbot applications across industries and business processes using further advanced artificial intelligence technologies, as well as a growing number of technology platforms to facilitate them.

## **2.1.2 Technology Overview**

### *2.1.2.1 Artificial Intelligence and Machine Learning*

There are multiple descriptions of artificial intelligence (AI) and not a universally accepted definition to what it covers and does not cover. AI refers to the science and engineering practice of creating intelligent computer systems (McCarthy, 2007). It originated as a subfield of computer science in the 1950's at Dartmouth College (Russell & Norvig 2010). Technology applications of AI include Robotic Process Automation (RPA), Natural Language Processing (NLP) and Image Recognition among others (Rouse, M & Laskowski, N, 2016). AI is also used as an umbrella term to cover machine learning and deep learning technologies.

As the pioneer AI researcher Arthur Samuel formulated it in 1959, machine learning refers to computer systems which are able to "learn without being explicitly

programmed”, as humans do. Machine learning can be further categorized into supervised, unsupervised and deep learning, which are all technologies leveraged by chatbots. When explained from a chatbot perspective, supervised learning means that the bot is being provided training data in natural language and it is assisted to categorize it by pre-labeling the data. The chatbot in operation will receive input and independently look for the correct label or answer to the problem, as it has been taught to do. In unsupervised learning, the machine does not require pre-assistance. Instead, the program can be provided any data and it will be able to categorize it using algorithms like clustering, where it groups similar objects together based on characteristics and then creates its own rules based on similarities and patterns. Reinforced learning relies on feedback, as the program will make independent decisions but those decisions are then reinforced by a human as correct or false to enforce the algorithm. (Samuel, 1988).

Deep learning can be explained as a sub-field of machine learning studying models known as deep neural networks. This technique has seen advancements in the past years due to breakthroughs in brain science. It can be said that neural networks mimic the human brain and how it operates. Neural networks consist of an input layer of neurons, at least one hidden layer and an output layer, which all operate in a “feed-forward” manner. All the neurons are connected in a grid-like structure to pass on information from one to another and working as a super brain (Claesson & Hansson, 2017). Deep learning can pose great potential for artificial intelligence technologies, including chatbots, as it indicates potential for self-learning, self-reasoning systems which are able to learn and make decisions independently. It remains to be seen how neural networks will be leveraged for chatbots in the future. See Figure 3 which describes the relationships between the introduced concepts around AI and their interrelation. Artificial intelligence is the umbrella term for cognitive technologies, such as NLP, which is utilized by chatbots, and computer vision. Machine learning and its variations are also subsets, but where as all machine learning is AI, not all AI is machine learning.

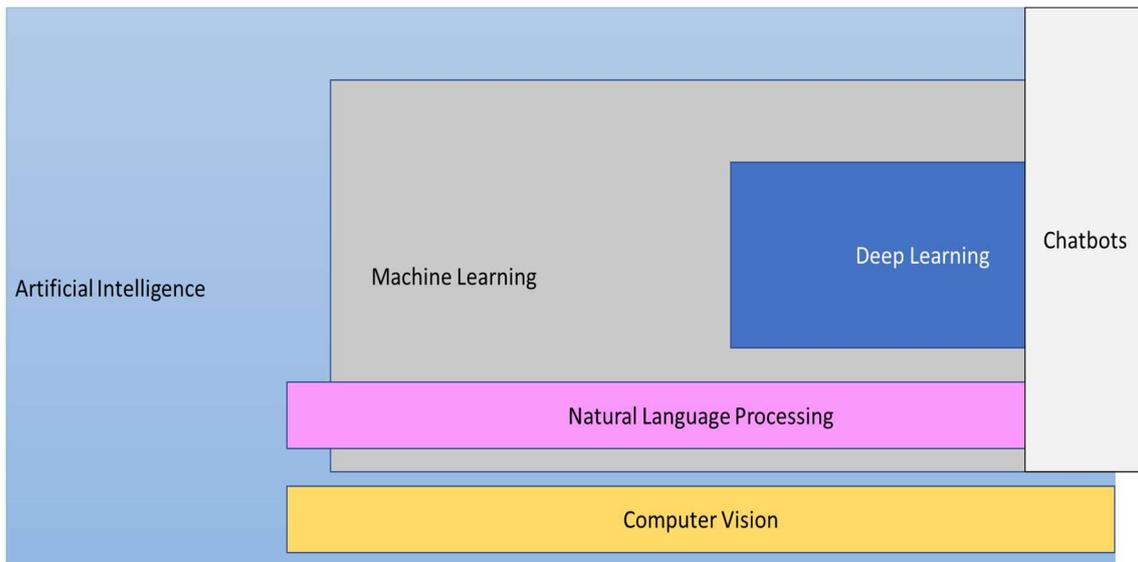


Figure 3: AI concepts and their relationships (Author's own modification based on lecture material by Sarlin, 2018).

Chatbots are said to appear intelligent. Intelligence is a complex idea to explain and a rather vague concept. We should still attempt to provide a definition for it because if we cannot explain intelligence, we cannot explain artificial intelligence. The most famous method to evaluate a machine's operational intelligence is known as the Turing test, proposed by Alan Turing in 1950's. The Turing test aims at finding out whether machines can think by facilitating a human evaluator who will judge natural language conversations between human and a machine, such as before mentioned chatbot ELIZA, which is designed to give human-like responses (Saifullah, 2005). If the evaluator is not able to tell whether the responder was machine or human, the test would be a pass. This is a good attempt to judge intelligence, but it can be argued whether the machine is really thinking or simply registering and manipulating symbols which they have no true understanding of, and in fact no reasoning process needs to take place.

Intelligence can also be defined from the perspective of cognitive science. Encyclopedia Britannica defines cognition as the states which include "All conscious and unconscious processes by which knowledge is accumulated, such as perceiving, recognizing, conceiving, and reasoning". Intelligent beings could be defined as creatures which are able to process information utilizing cognition and human-like capabilities, such as language and senses. When evaluating chatbots from this perspective, they indeed appear to use human natural language as a cognitive skill to communicate with users and

therefore could be described as intelligent. With this definition of intelligence it can be argued, though, that a chatbot is still only an algorithm and no conscious process takes place when it communicates with humans and thus there is a lack of intelligence.

### *2.1.2.2 Natural Language Processing*

As established in the first section of this chapter, conversational human-computer user interfaces are gaining popularity as a technique of computer interaction. A chatbot, by definition, is a computer program which has the ability to hold a conversation with humans using an artificial intelligence method called Natural Language Processing (NLP) (Abdul-Kader & Woods 2015, 72). NLP technologies enable a human actor to input natural language in speech or text via the user interface and the program will react to the input with the most suitable response, therefore appearing to be intelligent and to have cognitive skills. NLP is a branch of artificial intelligence that is used to understand and generate language as close as possible to a human. NLP can leverage structured and semi-structured information as well as databases of natural language to interpret inputs and create outputs (Espinosa-Anke et al, 2018). NLP systems can utilize different techniques, which generally speaking are quite similar. The techniques work by breaking language data down into components on word level (parsing) and then categorizing the data. Algorithms, which may or may not use machine learning, are used to generate system responses (Forbes, 2018). The main challenge with the applicability of NLP technologies is related to the complexity and ambiguity of natural language, which complicates the parsing and categorizing of the input (Espinosa-Anke et al, 2018).

## **2.1.3 Chatbot Applications for Business**

### *2.1.3.1 Current and Future Applications*

A variety of chatbot applications are beginning to surface to support different business processes. A new coin term “Conversational enterprise” is becoming common in recent literature. Conversational enterprises refer to the phenomenon where traditional applications and modules are being replaced by chatbots and conversational agents (Deloitte, 2016). Chatbots are now posed to be the user interface of the future. Deloitte, in their 2016 report, describe a kind of chatbot enterprise system that consists of front-

end and back-end components: The system covers multiple customer-facing and organization internal channels like Facebook and Slack. Chatbots will support customer service processes by answering queries across different channels and also serve as a tool for a company's employees. The chatbot will be able to help employees by answering questions, such as "who was the biggest customer this month?" or "How much did they purchase?". The chatbot can also integrate with different enterprise applications to, for example, update customer records, fill out applications or book travels. Everything will be conversation driven rather than clicking buttons or downloading apps. Deloitte finds potential use cases in numerous business functions, such as human resources, B2B applications, IT support and across multiple industries including financial services, travel and retail.

### *2.1.3.2 Business benefits*

Chatbots have a number of great benefits that they can bring to an organization. From user experience perspective they are superior as they remove the need to navigate between apps and websites to find information. Chatbots can "orchestrate" processes across several applications using the dialogue in natural language (Deloitte, 2016). This means that they can provide an improved end-user experience and deliver information faster. Chatbots are available 24/7 to serve customers and therefore they are able to satisfy the demand for speed.

Not only can chatbots interact with customers fast, but also with lower cost (Accenture, 2017). Companies are under pressure to cut down cost of customer service. According to the Accenture study, labor cost and high employee turnover rate are making up nearly two thirds of call-center operational costs. A chatbot, after it has been properly set up, requires very little maintenance cost and is always available, helping companies achieve efficiency gains through automation of business operations.

Chatbot technologies can bring forth many benefits to organizations, including improved customer experience, cost and efficiency gains, increased sales and technological advantages. However, chatbots represent an emerging technology and there is little understanding of changes that the adoption of such a device may bring to the organization. Companies want to be early adopters, while there is a clear lack of best practices and

knowledge of how different aspects of the implementation should be managed. In terms of project and change management, chatbot implementations can be placed under the category of Information Technology (IT) projects, which typically have massive impacts on processes, employees and customers. The next section lays the theoretical foundation for project management processes and concepts, which can be applied to chatbot implementation.

## **2.2 Principles of Project Management**

McKinsey Global Institute's 2016 paper *Artificial Intelligence: The Next Digital Frontier* states that AI transformation projects include similar elements as digital and analytics transformations. These elements include: Use cases, data ecosystems, tools and techniques, workflows and organizational culture. The paper claims that when re-designing processes around AI, both technological and human aspects should be carefully considered. Change management of human tasks can be even more demanding than the technical challenges. This can be recognized in any project where business employees need to be trained with new skills and where there is a change aspect. Leadership, therefore, is an important aspect in successful AI implementation. According to the McKinsey report, there is a correlation between strong AI-adoption and strong leadership and support.

When implementing AI solutions, companies should consider co-operating with startups and leading AI companies to be able to leverage already proven technology solutions, while identifying new opportunities (McKinsey, 2016, 32-33). Most companies do not have the resources or knowledge in-house to build AI solutions such as chatbots internally. Thus, technology projects are often executed together with partners and vendors, which adds a level of complexity to the project landscape.

This section introduces key concepts around leadership, change and project management as well as existing best practice frameworks around chatbot implementation projects. Further, project management strategies and key concepts, such as Agile, critical success factors (CSF) and tools for exploring best practices are introduced.

## 2.2.1 Project Management Body of Knowledge

The Project Management Institute in its Guide to PMBoK (PMI 2000) defines a project as a “temporary endeavor undertaken to create a unique product or service”. Managing project activities requires skills, tools and techniques to meet the project’s requirements as posed by stakeholders and to fulfill the demands for scope, time, cost, risk and quality (PMI 2000). Project management is a set of techniques that covers planning, estimating and controlling activities to reach a goal or goals in agreed time, budget and according to specifications (Wysocki, Beck & Crane 2000). Hamilton (1997) described a project as any series of activities which combined can achieve pre-determined deliverables while following quality specifications, that have start and end dates with intermediate milestones, budget limitations and use up resources like material and labor. In order to meet the project’s requirements, a project owner needs to control the demands of scope, time, quality and cost. Involved parties often have different requirements and expectations which makes project environments ambiguous. Lock (1996) characterized a project as a “step into the unknown”, a journey which is full of risk and uncertainty.

PMI in its project management body of knowledge (PMBOK) describes five process groups of project management: Initiating, Planning, Executing, Controlling and Closing of a project. Further, PMI describes nine knowledge areas in project management: Scope, time, cost, quality, integration, human resources, communication, risk, procurement and contract. These represent the aspects which should be properly managed in order to reach the projects deliverables within time, scope and budget. The five process groups in matrix together with the knowledge areas are categorized into sub-elements known as project management processes (PMI, 2000).

The *Initiating* process group includes the processes which are performed to define a new project or a new phase in a project. In this process group, authorization and sponsorship is obtained for a project. The *Planning* process group includes processes which are required to identify the scope and objectives of a project and define activities to reach the objectives. *Executing* refers to all processes carried out to complete the work described in the project management plan. The *Controlling* process group covers processes to track and review the performance of a project and identify if changes to project management plan would be required. *Closing* includes processes to finalize activities and formally

close project or project phase (PMI, 2000). See Figure 4 illustrating the Project Management Process Groups in alignment with Knowledge Areas.

| Process Groups<br>Knowledge Area      | Initiating     | Planning  | Executing  | Controlling  | Closing                     |
|---------------------------------------|----------------|---|--|--|-----------------------------|
| 4. Project Integration Management     |                | 4.1 Project Plan Development  | 4.2 Project Plan Execution   | 4.3 Integrated Change Control                      |                             |
| 5. Project Scope Management           | 5.1 Initiation | 5.2 Scope Planning<br>5.3 Scope Definition  |  | 5.4 Scope Verification<br>5.5 Scope Change Control |                             |
| 6. Project Time Management            |                | 6.1 Activity Definition<br>6.2 Activity Sequencing<br>6.3 Activity Duration Estimating<br>6.4 Schedule Development  |  | 6.5 Schedule Control                               |                             |
| 7. Project Cost Management            |                | 7.1 Resource Planning<br>7.2 Cost Estimating<br>7.3 Cost Budgeting  |  | 7.4 Cost Control                                   |                             |
| 8. Project Quality Management         |                | 8.1 Quality Planning  | 8.2 Quality Assurance  | 8.3 Quality Control                                |                             |
| 9. Project Human Resource Management  |                | 9.1 Organizational Planning<br>9.2 Staff Acquisition  | 9.3 Team Development   |  |                             |
| 10. Project Communications Management |                | 10.1 Communications Planning  | 10.2 Information Distribution  | 10.3 Performance Reporting                         | 10.4 Administrative Closure |
| 11. Risk Project Management           |                | 11.1 Risk Management Planning<br>11.2 Risk Identification<br>11.3 Qualitative Risk Analysis<br>11.4 Quantitative Risk Analysis<br>11.5 Risk Response Planning |  | 11.6 Risk Monitoring and Control                   |                             |
| 12. Project Procurement Management    |                | 12.1 Procurement Planning<br>12.2 Solicitation Planning   | 12.3 Solicitation<br>12.4 Source Selection<br>12.5 Contract Administration |  | 12.6 Contract Closeout      |

Figure 4: Project management process groups, knowledge areas and processes (A guide to PMBOK 2000)

PMI’s PMBOK gives a good characterization of the different processes and operations that should be taken into consideration in projects, thereby helping the planning and execution and demystifying project practice. Another benefit of PMBOK is that it is universal and can be applied to any type of project, including IT projects.

## 2.2.2 Project Lifecycle

Project lifecycle is a set of project phases that connect the start and end of a project. Typically, projects are divided into phases based on governance needs. This means that there are decision points and milestones to control the progress and facilitate governance. It is common for an organization to standardize the lifecycles used for all projects to create consistency, although sometimes organizations may also let project teams self-organize and choose the appropriate lifecycle (PMI, 2000).

Project phases typically proceed in sequential order, where a previous phase's outputs are the input for the next phase, but they may also overlap each other. At the "handover" points, often it is required to review the deliverables for correctness and quality before the next phase starts. This is critical because as the project proceeds, the cost of changes normally increases. Phase ends are also known as gates, exits or kill points (PMI 2000; Kerzner 2006, 72)

### **2.2.3 Partnering in Projects**

Partnering is the process of establishing a contract or charter to meet project goals by collaborating and working together (Hibbert, 1994). At the core of partnering is cooperation to achieve the objectives of all the parties. Teams are working to reach an effective outcome while ensuring that all partners receive a reward (Stokes, 1998). Bubshait (2001) lists as benefits of partnering effective project control, cost effectiveness, improved public relations and improved issues identification and analysis (Bubshait, 2001).

Due to the complexity of IT projects, companies are often faced with the need to obtain external competences and form partnerships. To be able to capture benefits of AI technologies and utilize the best practices, companies may choose to partner with start-ups or leading AI companies.

### **2.2.4 IT Projects**

IT operations are becoming more "projectized" (Kwak & Ibbs, 2000). Due to this reason, project management has become a popular topic in the IT field. Projects are seen as vehicles that organizations use to turn business opportunities into value and assets. When a company successfully runs projects, it is able to increase its revenues, decrease cost and use less capital to achieve goals (Lavingia, 2001). However, there is a lack of consistent success in the area of IT project management and it is a field where new methods and tools are constantly developed (Urli & Urli, 2000).

A 2003 study executed by the Standish Group revealed that only 34% of over thirteen thousand IT projects which were surveyed, were successful. The study found that 51% of

the projects produced significant cost and time overruns and were not able to deliver the original requirements. Project delivery therefore is critical to the success of organizations which rely on projects to achieve goals (Pennypacker & Grant, 2003).

A major risk in IT software development that may cause project failure is spending time and money on something which, at the end, does not serve the original purpose. This can be avoided by validating a prototype early on with the end users. Early testing can inform about what should be the direction of development to take and even if the product or project should be killed (Mölsä, 2017). Agile methods are employed to manage this risk. Agile project management refers to techniques which emphasize the ability to move quickly, test early, be nimble and adapt to changes fast (Larman & Vodde, 2010). It can be described as a mindset or set of values which guide project execution.

The 2017 study by Mölsä exploring success factors in implementation of AI powered solutions found that with advanced technologies such as AI, development should follow agile principles and happen closely with customers. Other findings of the study were that a supportive company culture is important to achieve commitment from employees, business cases should always be clear and measurable and that development teams should be multidisciplinary (Mölsä, 2017).

### **2.2.5 Project Success and Critical Success Factors**

The traditional approach to studying project success typically focuses on the operational level where success and failure are determined against performance on time, cost and scope (Pinto, 1988). Another criteria known as the “Iron Triangle” of cost, time and quality has also been used as traditional success measures (Yu, Flett & Bowers, 2005). Recent research has started to argue that there should be a distinction between success which cannot be measured until the project is closed and performance which can be measured during project lifecycle (Cooke-Davies, 2002). There are examples of projects which have been executed on time and budget but have turned out to be failures in delivering benefits to the customers, or revenue to the organization (Baker et al. 1988; Dvir et al. 2003). Opposite examples also exist where projects that seemed to be failing have later provided great business benefits (Shenhar et al 2001). It is agreed among academics and professionals that project success goes further than measuring its

performance against time and budget. Defining project success is a strategic concept as projects are becoming more common in organizations. In the future, projects will not be merely operational tools but an essential way of driving the business strategy (Shenhar et al, 2001).

IT projects bring both short-term and long-term benefits to the organization as well as transform and prepare the organization for the future. As explained earlier, drivers for chatbot implementations may include cost reduction and efficiency, which are measurable concepts, but other benefits may include improved customer experience and differentiation, which are much more difficult to quantify during a project's lifecycle.

As stated by Freeman and Beale (1992) "Success means different things to different people". The project manager, team members, customers and top management may have differing, subjective views of how to rate the project success. Recent project management literature makes it clear that in partnering projects, client and provider organization have fundamentally different viewpoints on project success: Clients are focused on achieving the deliverables and the supplying organizations are focused on how those deliverables are created.

IT and more specifically AI implementation projects are high-tech projects introducing new technologies to organizations. In a study by Shenhar et al (2001), it was found that in high-tech projects, end-customers are proven to be more accepting towards taking risk and approving high prices. Another finding was that with IT projects where high uncertainty is embedded, there is less focus on meeting time and budget limits. In IT projects, creating value to the customer and being prepared for digitalization seem to be more valuable than performance on cost and schedule.

The idea of Critical Success Factors (CSF) was first popularized by Rockart (1979) as the foundation for defining the information needs of project managers. Rockart summarized that CSF's are "areas of activity which should receive constant and careful attention". CSF's should be distinguished from best practices which refer to generally accepted superior methods or techniques to bring forth results. The working definition in this thesis is that best practices are the tools and activities used to carry out projects whereas CSF's include the phenomena which contribute to project success.

Pinto & Slevin (1988) state that CSF's are the "Factors which, if addressed, can significantly improve project implementation chances". Pinto & Slevin (1988) attempted to create a universal set of CSF's for project implementation success. They studied a Project Implementation Profile model (PIP) to find out what aspects of a project determine the success. PIP is a measurement tool for project managers to measure project performance. The study concluded 10 universal CSF's, which are: Project mission, top management support, schedule/plan, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback and communication.

Cooke-Davies (2002) categorized CSF's into three categories: Project management success, CSF's to an individual project and CSF's leading to consistently successful projects. To determine these factors, he laid out a set of guiding questions to identify CSF's:

- Which factors are critical to project management success?
- Which factors are critical to and individual project?
- Which factors lead to consistently successful projects?

### **2.2.6 Success in Chatbot Implementation**

The term "Implementation" in this thesis' context refers to the carrying out or the realization of the project. The empirical study will focus on this aspect of chatbot technology – how should a company approach the implementation phase of a chatbot to reach project success, maximize benefits, overcome challenges and control risks. Limited existing research on the topic is found, with existing literature focusing mostly on the technical or design aspects of chatbots. In the next chapters, three existing best practice frameworks on chatbot implementation projects are reviewed.

Amir Shevat in the book *Designing Bots* (2017) introduces a four-step process for chatbot implementation and, aligned with Mölsä's recommendations, aims at building and validating a prototype following an extensive design process. After deployment, the chatbot is followed up through analytics and a continuous improvement cycle is adopted.

1. **Exploration** – In the first stage, the purpose of the chatbot is defined around the following aspects:
  - a. **Audience** - Who is using the bot, when and why?
  - b. **Use case** - What is the problem that the chatbot is expected to solve? How is success defined?
  - c. **Features** – What content is needed for the bot? Is it text or voice based? what should the bot be able to present to users?
  - d. **Persona** – What is the personality and tone of voice of the bot? How does it express the brand behind? What does the visual logo look like?
  - e. **Platform, devices and channels** – Is the chatbot an at-home or on-the-go service? Is it used from mobile or desktop devices? On which portal or app will the chatbot be published?
  
2. **Conversation Scripting** - Drafts of the conversation scripts and workflows are created using copywriting and conversational design. Visualization tactics can be used such as decision trees and flow charts. At this stage it is also defined where rich content is used as opposed to plain text. Error handling and feedback gathering processes are defined.
  
3. **Designing and Testing** - Designs of conversation scripts are visualized and the prototype chatbot application is set up on the platform. The elements (colors, fonts, etc.) in the chat view are defined and the bot is exposed to users for feedback. Testing cycles follow with the intention of improving and iterating the chatbot to a desired level of usability. The training of the chatbot - collecting and analyzing data to improve performance, is an ongoing process that will continue throughout the lifecycle of the chatbot.
  
4. **Analytics and Continuous Improvement** - Chatbot interactions are continuously monitored from different angles in order to improve the bot's performance:
  1. **Raw data logs** – Following up what users are saying message by message and what the bot is replying. A time-consuming process which can yet provide an unfiltered view of the conversation traffic.

2. **Logs** – Typically this means grouping together outcomes, for example, where a problem was solved or not, human agent intervened or a product was bought. Logs can help to see patterns in behavior when analyzed against context.
3. **Analytical tools** – Visualization tools to analyze trends and turn raw data into insight. Both quantitative and qualitative methods can provide important information about chatbot performance. SaaS services often provide analytics as part of the service but data can also be extracted into other intelligence tools for analysis.

Accenture proposes five key considerations for any business planning on implementing a chatbot. These five principles help control the challenges that may arise with adopting a chatbot. According to Accenture, the main risks involved in the implementation of a chatbot are related to ensuring proper user experience and security level and to the technology itself (Accenture, 2017). The following five aspects should be taken into consideration:

1. First, it should be considered what makes the user experience stand out of the crowd – what makes the chatbot unique in a “sea of chatbots”.
2. Secondly, companies should understand the customers’ behavior – interactions with the chatbot should be seamless. Customers will quickly escape if chatbots cannot understand easy questions.
3. Thirdly, simplicity should be embedded – Chatbot interactions should be short and painless for the customer.
4. Fourthly, the chatbot experience should be consistent across channels – A chatbot should be integrated into mobile and web services with carefully designed communication paths and protocols to ensure the consistency.
5. Finally, security and privacy aspects should be considered. Customers will not use a service that they do not trust with their data. Security should always be considered from the point of view of the customer.

Silo.AI, a Finland-based company focused on AI research and services, proposes a six-step framework for identifying AI opportunities in companies, which can be applied to chatbot implementation context. This 6-step approach builds from understanding the data content and structure:

1. **Defining the business objective.** First, use cases and project success criteria are defined. In the case of chatbot implementation, the objective may be to deliver effective and efficient content distribution via a conversational interface using specific metrics to measure performance.
2. **Data understanding.** Existing data should be collected from, for example, existing chat logs, via interviews or other sources and analyzed with the aim of building a proper discussion flow with the chatbot.
3. **Data preparation.** Data should be prepared for the machine learning algorithm.
4. **Modeling.** At this step, the initial dataset is fed to the NLP algorithm and the model is trained on it.
5. **Evaluation.** Before launch, performance should be tested and evaluated with respect to original business objectives, using metrics and KPI's.
6. **Deployment.** Chatbot is integrated to processes and the user interfaces are built.

## 2.3 Summary

The literature review begun by explaining the key concepts around artificial intelligence and known applications of the technology, introduced theoretical frameworks for project management and concluded by exploring existing best practices around chatbot and AI implementation projects.

The objective of the next chapters of this thesis is to explore through empirical research what Critical Success Factors can be identified across different project management process groups that can be applied to chatbot implementation. A second objective is to find out how success in chatbot implementation projects could be defined. Thirdly, the study will collect and analyze best practices around chatbot implementation in terms of benefit maximization and controlling of risks and challenges, which can be standardized into managerial recommendations and frameworks.

### **3 METHOD**

The thesis began by providing a comprehensive literature review to build up a theoretical framework around chatbot technologies, project management and existing frameworks for chatbot implementation. As the research subject is new and there is little existing research available, it became clear to the author that a literature review alone would not provide enough insight to answer the research questions. The author decided to turn to industry experts and pioneers to gain further information. Companies with a track record in delivering chatbot solutions successfully were contacted over the internet and proposed collaboration. Experts from the companies were assigned to participate in the thesis research. The purpose of the research was to understand, through real project experiences, what elements contribute to successful chatbot implementations, how success can be defined and what best practices could be identified from real projects.

This chapter introduces the chosen research method used in the empirical study and then progresses to explain how data collection, processing and analysis were executed.

#### **3.1 Selecting the Research Method**

Primary data, by definition, is the data created by the author in the research project, whereas secondary data is retrieved from existing written and electronic sources on the topic (Saunders et al. 2009). In this thesis, the secondary data in the literature review was collected from latest academic electronic and published resources, while the primary data was gathered using qualitative research methods. The research results and discussion conclude findings from both data sources.

In order to answer the research questions, a qualitative study was conducted by interviewing five chatbot implementation experts. In this thesis, the studied phenomena is not measured by numbers, but the main aim is to develop a deep understanding of the experiences of selected experts by exploring their statements, which is why a qualitative method was chosen to be used. Semi-structured interviews as the qualitative research method was selected for the thesis as it can offer rich feedback and a more personal approach to understanding the unique points of view of the subjects. Open-ended interview questions were formulated around the thesis research questions. The

participants of the interviews resided in different countries, which is why most the interviews were conducted over the internet, via online conferencing or e-mail.

An interview is the conversational process between two or more people which has a defined purpose and is used for gathering information on specific topics. Interviews are classified into unstructured, semi-structured and structured: Unstructured interviews have no pre-defined questions and appear as discussion between participants. Semi-structured interviews have a list of topics and the main questions are defined but they can be changed throughout the interview. Structured interviews have a standard list of questions which is followed (Saunders et al. 2009). The questions in this semi-structured interviews were open-ended and formulated around the research questions. The interview questions asked from the participants were:

- 1. Please describe the type of chatbot implementation projects you have taken part in. What was your role, what kind of client organizations and use cases were involved?*
- 2. How do you or your client organizations define success in a chatbot implementation project? Are there specific metrics/KPI's or expected outcomes used?*
- 3. What are the key benefits that a chatbot is expected to bring to the organization (i.e. cost savings, improved customer experience) and what are the key considerations to maximize these benefits?*
- 4. Do you use specific project management strategies or tools in implementation projects?*
- 5. What are the main risks involved for an organization in a chatbot implementation project? How can these risks be managed?*
- 6. What do you consider the main challenges in a chatbot implementation project? Are they technological or organizational/behavioral?*

7. *What would you say are the critical success factors in a chatbot implementation project, from your perspective? Would you have some real examples of successes where these can be recognized?*

As the topic of chatbots is new and there is little existing research material available, it was not clear what the author should look for in the responses. The chosen research approach was therefore inductive, meaning that data was collected and analyzed, after which it was generalized into a framework. Deductive method, for contrast, is typically used to test pre-formulated theories or hypotheses, which were not present in this research (Saunders et al. 2009).

When conducting the interviews, the role of the researcher was to act as an instrument to generate data from one-to-one interviews and analyze it. The researcher's task was to take notes to summarize the spoken responses, transcribe them and to consolidate the responses into a database. The researcher took an objective position to allow the voice of the interviewees.

### **3.2 Respondents**

The five key informants in the interviews represented experts from pioneering companies in the industry that have delivered chatbot solutions to business customers. Three of the participants were founding members in the company, one managed design operations and one worked as a Service Manager for continuous services. The key informants had worked directly in client projects in different roles including project manager and conversational designer and had insights from different aspects of implementation. Four of the interviews were held in English and one in Finnish. Finnish answers were translated into English before data consolidation and analysis. See Table 1 for interview participants.

*Table 1: Interview Participants*

| <b>Nr.</b> | <b>Name</b>        | <b>Position</b>             | <b>Organization</b> | <b>Company homepage</b> | <b>Channel</b>   |
|------------|--------------------|-----------------------------|---------------------|-------------------------|------------------|
| R1         | Antti Törrönen     | CEO                         | Kwork/Chatbot Pack  | www.kwork.fi            | Video Conference |
| R2         | Alex Debecker      | Founder                     | Ubisend             | www.ubisend.com         | e-mail           |
| R3         | Laura Leskinen     | Head of Customer Engagement | Giosg               | www.giosg.com           | e-mail           |
| R4         | Juhan Kaarma       | Co-Founder                  | ChatCreate          | www.chatcreate.com      | Video Conference |
| R5         | Henrik S. Andresen | Conversational Designer     | BotSupply           | www.botsupply.ai        | Video Conference |

## **4 RESULTS**

### **4.1 Pre-Analysis**

In this chapter, the results of the qualitative research are analyzed, triangulated and interpreted. Following the principles of thematic analysis, the data collected from the interviews was organized and transcribed to manage it properly for further analysis. After familiarizing with the data and reflecting on first impressions, the author analyzed the data with the purpose of coding and categorizing it in order to find patterns. The coded or “tagged” data was first analyzed based on occurrence of words, then categorized into themes in order to conceptualize. A text analytics approach known as “word cloud” was utilized to visualize the word count and find patterns without direct linkage to the research topics. This visualization technique finds the most frequently appearing words in the qualitative data and arranges them based on size and color for interpretation. To further conceptualize the data, the author looked for reoccurring themes and patterns in the form of expressions and full sentences. To link these concepts to the research questions, a category matrix was formulated to understand patterns in the information which could be

further generalized. Finally, the concepts were categorized and reflected against the PMBOK project stages to understand their relevance in the project management context.

#### **4.1.1 Coding and Categorization**

As the very first step, the transcripts of text data were coded and analyzed utilizing Power BI tool to get an initial understanding of the volume and content. As precaution, a list of stop words were removed from the data. The full list of the stop words is found as an appendix to the thesis. The word count analysis showed that the dataset included 11271 characters out of which two most frequently occurring codes were “Customer” and “Chatbot”. The ten most frequently occurring words in the dataset are listed in Table 2 and a word cloud in Figure 5.

*Table 2: List of most frequently occurring words in the dataset*

| <b>Count</b> | <b>Code</b> |
|--------------|-------------|
| 95           | Customer    |
| 82           | Chatbot     |
| 60           | People      |
| 57           | Bot         |
| 43           | Use         |
| 38           | Chatbots    |
| 37           | Work        |
| 35           | Service     |
| 31           | Need        |
| 30           | Answer      |



### 4.1.2 Category Matrices

Table 3: Categorization of concepts found in the data based on thesis research questions

| Category                 | (Sub-category)    | Coded excerpts   |
|--------------------------|-------------------|--|
| Success Definition       | KPI's and Metrics | <p>First contact response rate</p> <p>Recognition rate</p> <p>Chatbot answer rate - how many questions did chatbot answer correctly</p> <p>False positives</p> <p>How many cases get handed over to human</p> <p>How many conversations held</p> <p>How many questions asked</p> <p>Average messages per session</p> <p>How many self-service procedures done</p> <p>Saved working hours in human labor</p> <p>One True Goal</p> <p>Basket size before and after interaction with chatbot</p> <p>Average revenue per user</p> <p>Increase in revenue</p> <p>Return on investment (ROI)</p> <p>Customer survey metrics within the chatbot</p> |
|                          | Expected benefits | <p>Chatbot to answer queries at times people cannot</p> <p>Instantaneous answers from chatbot</p> <p>Being an innovative company and getting the publicity</p> <p>Improving customer experience with chatbots</p> <p>Easier scaling of customer service without hiring new people</p> <p>Chatbots can handle big amounts of chats cost efficiently</p> <p>Human agents can focus on cases where a lot of experience is needed</p>  |
| Critical Success Factors | Strategic         | <p>Introducing chatbots internally first</p> <p><i>(To be continued on the next page)</i></p>  |

|  |                    |  |
|--|--------------------|--|
|  |                    | <p>Starting with proof of concept/prototype and iterating from there</p> <p>Proper resourcing from customer side</p> <p>Product managers involved for content creation</p> <p>Involving the whole organization, not just IT</p> <p>Managing expectations of the customer</p> <p>Educating and creating awareness how the chatbot works and why does it answer the way it does.</p> <p>Training someone at the client's organization to understand what goes on inside the bot</p> <p>Emphasizing to clients how much effort training the chatbot requires</p> <p>Sponsorship from leadership</p>   |
|  | Project Management | <p>Using a project management model based on agile</p> <p>If customer has a specific PM model, good to adopt</p> <p>Use of Trello</p> <p>Use of Gant charts</p> <p>Use of development sprints and sprint meetings</p> <p>Project team of project manager, designers and developers</p> <p>Clear scoping</p> <p>Having buffer in timeline for scope changes</p> <p>Phases including exploration, development and pilot</p> <p>Proper planning and research from client side</p> <p>Proper defining of goals</p> <p>Evaluating final performance against original goals</p> <p>Coherent team with key roles on each side</p> <p>Using an iterative approach</p> <p>Customer internally testing with an assigned group first</p> <p>Allocating enough time for dataset creation</p> |
|  | Design             | <p>Employing copywriters and UX practitioners</p> <p>When customer staff are involved in testing early on, they are more positive about the outcome.</p> <p><i>(To be continued on the next page)</i></p>  |

|            |  |  |
|------------|--|--|
|            |  | <p>Design thinking and understanding context</p> <p>Using conversational design</p> <p>Creation of customer/user journeys</p> <p>Creating good datasets</p> <p>Creating personality for the chatbot</p> <p>Not using email or document content in chatbot</p> <p>Use of fallback messages and process</p>  |
| Risks      |  | <p>Customer picking the wrong technology partner</p> <p>Customer going on self-service platforms and failing, then deciding chatbots are useless</p> <p>Over-excitement and goal stretching – customers over-imagining the potential</p> <p>Companies are afraid bot will cause negative publicity</p> <p>Companies not doing the initial research and not involving important people and parts of organization in the project</p> <p>Chatbot giving wrong answers, wrong prices, etc.</p> <p>Chatbot not configured properly and creates a poor customer experience</p>                                   |
| Challenges |  | <p>Being able to implement a chatbot to a whole organization and gaining usage for it</p> <p>Organizational and behavioral challenges</p> <p>Data for chatbot content being siloed and unstructured</p> <p>No standardized pricing models for chatbot implementation, prices vary a lot</p> <p>Client not OK with cloud-based solutions for SaaS products</p> <p>Clients don't want to engage before they see what a chatbot is about</p> <p>Depends a lot on high-level decision makers whether to implement a chatbot</p> <p>Difficult to prove if something is improving customer experience or not</p> |

In addition to the categories based on the research questions, the author wanted to study the themes and ideas specifically in the context of the Project Management Process Groups to understand their relevance in the project lifecycle. A separate matrix was created for this analysis using the PMBOK Project Management Process Groups as the categories. Each identified theme was analyzed against the process groups to understand at which point of the project it is most relevant and assigned with a category label. This matrix was used to categorize the information for developing a best practice framework. See table 4 for categorization of themes around the Project Management Process Groups.

*Table 4: Categorization of concepts found in interview data in project management context*

| <b>PMBOK Project Management Process Group</b> | <b>Coded Excerpts</b>  |
|---|--|
| Initiating                                    | Proper defining of goals<br>Managing expectations<br>Educating and creating awareness how the chatbot works and why does it answer the way it does<br>Picking the right technology partner<br>Doing the proper research and involving all the parties in the customer organization<br>Emphasizing to customer how much effort running the chatbot requires<br>Committing enough resources from customer side<br>Clear scoping<br>Sponsorship from leadership |
| Planning                                      | Proper planning and research from client side<br>Coherent team with key roles on each side<br>using a project management model based on agile<br>doing proof of concept/prototype and iterating from it<br>piloting first and going from there<br>proper resourcing from customer side<br><br><i>(To be continued on the next page)</i>  |

|             |   |
|-------------|---|
|             | <p>Involving whole organization, not just IT</p> <p>Phases including exploration, development and pilot</p>   |
| Executing   | <p>Product managers involved for content creation</p> <p>Involving everyone in the process</p> <p>Being flexible</p> <p>Having an iterative approach</p> <p>Creating good datasets</p> <p>Employing conversational designers, copywriters and UX practitioners</p> <p>Creation of customer/user journeys</p> <p>Involving client's users in the testing early on</p> <p>Allocating enough time for dataset creation</p>           |
| Controlling | <p>Use of Trello</p> <p>Use of Gant charts</p> <p>Use of development sprints and sprint meetings</p> <p>Organization to test a clien-facing bot internally first</p> <p>Having buffer in timeline for scope changes</p>   |
| Closing     | <p>Training at least one user at the client's organization to understand what goes on inside the bot</p> <p>Putting analytics into place</p> <p>Continuous improvement</p> <p>Continuous improvement of the solution based on analytics</p> <p>Proper resourcing from customer side to train the chatbot</p> <p>Implementing customer satisfaction survey in the chatbot</p> <p>Evaluating performance against original goals</p> |

## 4.2 Primary Analysis

In this chapter, the data is analyzed in the context of the three research questions and turned into insights. First, the author will reflect upon the first impressions and high-level themes around success definition, critical success factors and best practices which were identified in the interviews and continue to discuss specific issues. As outcomes, a list of

Critical Success Factors and a project management best practice framework for chatbot implementation are proposed.

#### **4.2.1 Success Definition and Benefits (RQ1)**

When presented with the questions on how customers tend to define success, the answers leaned towards tangible, measurable goals. All interviewees were able to list several measures that they had seen used by the customer to evaluate chatbot behavior and consistently explained that it is important to select one concrete expected outcome to guide the chatbot project. Alex Debecker (Ubisend) described an old marketing term “One True Goal” which they apply in projects, something that is defined together with the customer in the beginning of the project.

*“For each build we work on, whatever the industry, department, or language, we define the chatbot’s One True Goal. What is the single most important thing the software must achieve? What is the one reason this business needs it? What does it need to do better than anything else? Success happens when we build a solution satisfies the One True Goal” (R2)*

Key measures that customers were said to apply included the number of conversations held or questions asked, which are used to monitor the activity of the chatbot and are very easy to quantify. Secondly, “First contact response rate” was discussed, also described as “recognition rate” or “answer rate”, which means whether or not the chatbot could resolve a problem on the first contact. This was described more challenging because of the presence of “False positives” where the chatbot comes to a conclusion and provides an answer, but it is actually not the correct answer.

Other key measures regarding chatbot performance mentioned included how many cases get handed over by the chatbot to human - meaning how independently can the chatbot operate, how many end-to-end self-service procedures were done by a customer, average messages per session and shopping basket size before and after interaction with chatbot or revenue per user. The improvement in customer experience was said to be an expected benefit, but no specific measure for it was mentioned. However, customer satisfaction

questions were said to be used inside the chatbot itself to get feedback about the chatbot performance from users directly.

The hard KPI's that were mentioned included saved working hours in human labor and return on investment (ROI). Chatbots can indeed handle big amounts of chats cost efficiently and this had been seen by customers in two ways: Chatbots enable to scale up customer service without hiring new people but also they free up time from the customer servants to focus on the more challenging cases where human experience is needed. Cost savings were described as a consideration, but this aspect did not dominate the results.

*“It’s something we thought starting out, that cost saving is the best selling point when selling chatbots, but it turned out that it actually isn’t. What’s most important for the customers that we’re seeing is having the ability to answer stuff instantly to customers. So instead of customer coming in, they have to send an email and have to wait several days for a response or a call, now they have an opportunity to give some sort of an answer instantly. It’s very important for the client.” (R4)*

Another important expected benefit that was mentioned frequently was the increased speed in service and the possibility of chatbots to answer queries when humans are not in office. Chatbots could provide instantaneous answers and thereby improve the customer experience in many channels simultaneously. It was also discussed that customers sometimes seek for publicity with the chatbot project, and want to give the impression of being an innovative company.

*“Chatbots are a hot topic and many companies have heard about them and they are, like, we should get a chatbot. So companies often times want to have it for the sake of being innovative, or having the possibility to have a press release or announcement. Now we have a chatbot, it’s important.” (R4)*

#### **4.2.2 Critical Success Factors (RQ2)**

Although chatbot implementation can be labelled as an IT project, the described critical success factors were mostly non-technical in nature. Tools and tactics for IT project management were mentioned and largely the drivers for success were described to come

from within the organization: Communication, involvement, training and providing sufficient resources. Roughly, the critical success factors could be divided into three sub-categories: Strategic, project management related and chatbot design related.

#### 4.2.2.1 Strategic Success Factors

A major what-works strategy mentioned by several of the interviewees was to start the chatbot implementation from an internal process in the company and only afterwards extend to customer-facing processes.

*“My general approach is to advise large businesses to start introducing NLP and ML technology internally first. To most key stakeholders within the business it’s new, risky and untested technology. They don’t know what to expect. They don’t know what artificial intelligence is, how much it will cost, the impact it may have or even what it can do. We start by focusing on solving internal issues. Tell us a business’ top three internal challenges and we will be there to fix them with conversational software and bleeding edge artificial intelligence technology. Then, once everyone is amazed, they work on understanding the return on investment, building business cases and diffusing the technology through other business units and processes.” (R2)*

In the stage where use cases and goals are defined, expectation management was seen important from the provider’s side. Key is to start with a simple proof-of-concept and iterate from it while emphasizing to the customer that the chatbot cannot solve all problems at once and training it takes a lot of effort from the implementing organization.

*“People have so many different interpretations of what the chatbot do. Managing expectations and getting people to create good datasets is the challenge because we don’t create the datasets for them. We don’t have the knowledge of what the customer’s customer asks, we need them to do the variations as well. Basically, there are the questions of “why don’t it answer this, it should be able to answer that...” Well, we didn’t teach the bot to do that because it’s not part of the scope. “Yeah but why doesn’t it chit chat?” How could it chit chat if we haven’t taught it to do that? So there’s this expectation of what a chatbot can do, it’s not a magical device that can do whatever.” (R5)*

*“I think one of the crucial points is to understand the work teaching the chatbot requires. People often think that they buy a chatbot and it can take care of the rest. but it requires constant teaching to become better. It's the never ending work. The truth is that they require quite a lot of work to learn since many of the chatbots actually don't have AI behind them.”(R3)*

*“AI software is not an exact science. It's important to understand that whatever timeline is put together, we will most likely deviate from it. Typically, it's because the client wants to change scope, add features or realizes there's something else it can do.” (R2)*

The training of the chatbot among other project activities was highlighted as something that needs proper resourcing from the customer. In projects where the content of the chatbot is related to products or other factual information, product managers and relevant departments of the company should be involved in the project. It was pointed out that chatbot implementation is not only an IT project but the whole organization should be involved. To create awareness from the beginning, the customer should be educated in how the chatbot works and even if the chatbot is bought as a service, it is a good idea to train someone at the client site to understand what goes on inside the bot and how the NLP works.

*“We have the product managers working with us and guiding us, so they have good resources and they have emphasized internally that it is important to them. Of course, in a big organization it might be challenging sometimes, and there are a lot of rules and instructions about how to do things, starting from how you spell the chatbots name - not with a dash but with an underscore. Nobody would have known this if they hadn't circulated material through the marketing department as well. So I'd say the key thing is involving the whole organization. Sometimes it starts from IT organization (the project) and then they try to get information from other places of the company and they don't have time (for the project).” (R1)*

#### **4.2.2.2 Project Management Success Factors**

Most interviewed experts recommended using an iterative approach based on agile methodology. However, it was pointed out that if the customer has a well-established

project management model, it makes sense to adopt it by the provider. The agile approach was characterized as an iterative approach where development sprints and sprint meetings are used. In terms of project management tools, Kanban boards such as Trello were mentioned as well as Gant charts for visualization. Proper planning and research from client side before project start was seen as key factor, as well as establishing clear goals for the project.

*“Conversational software is complex. It’s important to define the goal, then start small and improve the solution little by little. Whatever the size of the project, we always start small. Build a minimum viable product, then pile features on top of it. Then aim for the final product. Build, test, deploy and get feedback from users to steer the next stage of development.” (R2)*

Putting together a coherent team with key roles from both the customer as well as provider’s side was seen as important. The provider’s team should include at least a project manager, designers and developers.

*“We form a project team of at least one project manager and two developers for every project, a typical project team works on 3 to 4 projects at once, depending on complexity. We then have specialized individuals who work cross-projects, such as ML or NLP, copywriters and UX practitioners.” (R2)*

From operational perspective, it was recommended the project is split into phases including exploration, development, testing and live pilot. For the testing phase, customer’s own users should be involved from early on. Even if the chatbot would be a customer facing one, it should still be first tested by internal users before deployment. It was also noted that when customer staff are involved in testing early on, they are more positive about the final outcome.

*“The first thing you need to do is to actually identify what are the issues that the chatbot should solve. Customer needs to have the data or they need to collect it, what are the questions people are asking, how many of those are repetitive, how many of those potentially a chatbot could answer. And then you need to clean that data on maybe a spreadsheet and upload it to DialogueFlow, for example. And it’s a very painful process.*

*But that's the way it's done right now. We've experienced it can take several weeks to get it done right. So, it's the first step to collect the data and make sure the data is of good quality before plugging it into NLP. So the next step then is training the NLP model, so we do that and then you get the first version of it and then you give it over to the client, you have them test it, you have the client's clients play with it and then you do testing loop a few times and you train the bot to become smarter and smarter. Once that's done you integrate the bot with the client's channels where they want it.”(R4)*

#### **4.2.2.3 Design Success Factors**

Establishing specific roles in the project team was seen as important. From design perspective, the use of copywriters and UX practitioners was recommended. Design thinking and understanding of context was described as cornerstone of the project. Design thinking should be embedded in the content and conversation design, creation of the datasets and in designing the personality of the chatbot. The final experience and how the company's brand is represented with the service depends greatly on how the chatbot is designed. In order to improve the experience, the structure of the chatbot should be carefully considered.

*“Defining who this organization is, is a big part of organizational design. The customer is talking directly to the brand. It's your brand you are designing. So how would you like your brand to sound? There are studies showing that when you have a conversation with a bot, you always understand some kind of a personality of the thing you are talking to, because it's language. So there is always some kind of relationship with this thing you are chatting with. So it's when and where do you want to create a relationship with your customer? How do you want to communicate as a company?” (R5)*

In the experts' opinion, chatbot as a media should be distinguished and treated understanding the unique context. For example, it was mentioned that it is not a good idea to try to include e-mail content in a chatbot.

*“There is a set of best practices you follow from conversational design aspect, you shouldn't put the same answers you put into an email into a chatbot. You don't put long text or paragraph into a chatbot. This is user experience stuff. Having a personality for*

*the chatbot, don't make it a dry automated answering machine... Define what is the language the chatbot is using. If it's a bank, maybe it should be more formal or if it's a fun market place, it can be a lot different, using GIF's and stuff. The fallbacks are super important, if the bot doesn't understand what's happening, how the bot is responding in those cases. Probably a good idea to ask the customer to repeat, or say I'm sorry I don't understand.” (R4)*

### **4.2.3 Risks and Challenges (RQ3)**

As with the identified success factors, many of the described risks and challenges were also related to human behavior and mainly linked with the customer organization rather than the provider. It was seen as important that the customer do proper planning for the project, allocates enough resources and people from around the company to the exercise and that these people are involved in the research and exploration activities. Many challenges with communication were described, keeping all parties informed and also creating enough awareness of the project – to be able to implement a chatbot to a whole organization and gain usage for it. The customer should also make sure to pick the right technology partner for the project. The issue was discussed that there is currently no pricing framework for chatbot implementation, which means that offered prices can vary and customers may be more prone to running competition rounds with potential partners.

*“I'd say (the challenges) are mostly to do with general communication and project management, and content management, when you have many people involved and different instructions, brand instructions, and different systems. There might be many teams involved and some teams are busy, you don't have the resources.”(R1)*

*“One thing is that there aren't any standardized pricing models with chatbots and the prices can vary a lot, regardless of the quality of the bot actually. I can only speak for ourselves, I don't know what other companies charge, but it can vary from 5-10k for a setup to 100k or even a million depending on the setup. There are a lot of things that come to play, what is the client, what are their security needs, do they want the bot set up on-premise or in cloud, are they OK with the cloud and stuff” (R4)*

*“I think (the challenges) are mostly organizational and behavioral challenges. The chatbots are under constant development so it’s faster to change the chatbots’ behavior than the organizational behavior.”(R3)*

Although many chatbots are offered as SaaS solutions, some clients do not approve of cloud-based solutions, which can create an infrastructure challenge for providers. Other challenges for providers that were discussed included the fact that clients don't want to engage before they see what a chatbot is about, meaning that a proof-of-concept is often asked for before committing to a project and those may not always be paid work. Overall it was said that generally it depends on high-level decision makers whether to implement a bot in the first place and this can slow down sales processes. However, when the customer does get onboard, an over-excitement and goal stretching tendency was described where customers overimagine the potential of chatbots as them being magical devices that can do anything.

*“This comes down to expectation management. Sometimes companies start thinking that chatbots can solve anything, or AI can do anything, which is not true. And there is the perception that robots are taking over all the jobs, which is also not true, but it’s expectation management and explaining to the customer what the bot can and cannot do.”(R4)*

*“Managing expectations of what the chatbot can actually do, so educating. And then it’s aligning and scoping exactly what we are going to do. It’s about finding use cases and making everyone aware of what the use case is. This is what we can do and this is what we’re gonna do”(R5)*

A major risk that was mentioned is the fact that customers often tend to go on the self-service platforms to build a chatbot, fail at it and then determine that chatbots are useless. This is where the technical challenges usually get out of hand. The chatbot may not get configured properly which creates a poor customer experience, giving out wrong answers and information, such as wrong prices. At this stage, customers become afraid of negative attention in the media. If their chatbot would say something outrageous, it could end up in publicity and this is what customers absolutely want to avoid. On the other hand, it is

very difficult to prove when the chatbot has actually improved customer experience. Failures are obvious but successes less so.

*“Nowadays, anyone can build a ‘chatbot’ using one of those drag-and-drop platforms, but, it is important to realize that these are no more than tools for experimenting. They’re great to play with, but any real solution will require expert knowledge, custom integrations and probably custom machine learning and natural language processing development” (R2)*

*“A general skeptic that we meet thinks it’s not complex to create a chatbot and doesn’t know anything about it... And this is where we meet a lot of our problems. People get on these do-it-yourself platforms and start creating chatbots there - and conclude that chatbots don’t work.” (R5)*

From the providers’ perspective, another challenge is that the data which is required to build the chatbot content, such as existing conversation logs and customer query databases, are siloed and unstructured. The existing data needs to be researched to understand what problems the chatbot needs to solve and what may be the user input that the bot should be able to understand. Apart from the lack of data, there are often many people from the organization involved with different ideas and instructions to be aligned, which means that the scope of the chatbot can easily get out of hand.

*“For a start, most of the time, a company's data is a complete multi-siloed, unstructured mess. So we have to spend time organizing their data, preparing it for machine learning algorithms in order to train their conversational software” (R2)*

*“They (Customer) need to be co-operative. Often times you need to work with the data initially to properly train the bot so yeah, that’s one thing, and it’s what you need from the client’s side, the motivation to make it as good as possible. You need someone from the client’s organization to spend some time on their side.” (R4)*

## 5 PROPOSAL FOR A BEST PRACTICE FRAMEWORK FOR CHATBOT IMPLEMENTATION PROJECTS

As explained in the literature review, the five process groups of project management described by PMI in its project management body of knowledge (PMBOK) include: Initiating, Planning, Executing, Controlling and Closing of a project. These represent in a time-based order the aspects of a project which should be managed properly. A chatbot implementation has unique characteristics which should be considered when taking on such a project. This chapter proposes a best practice framework for project management based on the identified success factors, risks and challenges.

The purpose of the framework is that it can be used as a tool for chatbot implementation experts who are looking for support, guidance and lessons learned from real project experiences. The framework consolidates the insights derived from the research and allocates them to the relevant project management phase. See Figure 6 for a complete illustration of the framework. Next, the five phases in the framework are described.

### Project Management Best Practice Framework for Chatbot Implementation

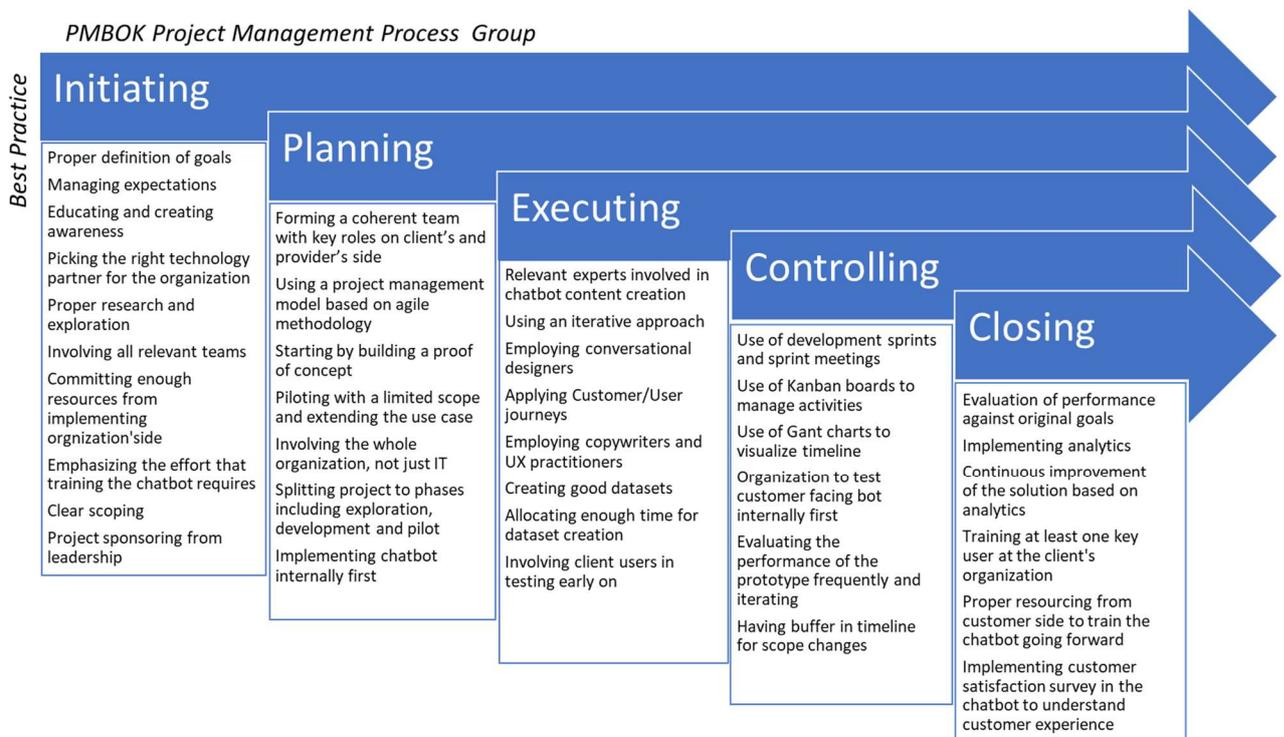


Figure 6: Proposal for a Best Practice Framework for Chatbot Implementation Projects (Author's own composition)

## 5.1 First Phase in the Framework - Initiating

This project management process group contains the activities required to define a new project or project phase and gain authorization for the project. This is where a project charter is created, stakeholders defined and established and the overall vision established. The best practice framework proposes that initiation should begin with definition of the expected outcomes: how is success to be evaluated or measured. As argued by Shenhar et al, project success goes beyond the “iron triangle” of cost, time and quality as in every project there are context specific considerations. Definition of success is a key strategic consideration. When setting goals, stakeholders’ expectations should be managed so that the potential is not over-evaluated and goals which are set are realistic. To involve the whole organization and create interest and commitment to the project, customer should be well educated both internally and by the provider on the technology, its implications and potentials to create awareness around the project. Any organization should put enough time and consideration into selecting the right technology partner and together with the partner spend enough time on researching the use cases. From early on, it is vital to involve all relevant people and teams in the organization and make sure that the required resources are adequately allocated to the project, whether this is human resources or monetary resources. It is especially important to emphasize already in the beginning, that when the implementation is over, the work with the chatbot does not end there – the training of the bot will be an ongoing effort and require work after the implementation as well. This means that there will be a permanent need for people to work on the chatbot and its improvement. The agreed scope of work around the desired use cases should be clear from the beginning, so that deviations can be tracked and treated accordingly. The scope is to be agreed with respect to the project goals and allocated resources. Last but not least, confirming the findings from the 2016 McKinsey study, which showed a correlation between success in AI projects and strong support from leadership, obtaining sponsorship from leaders of the organization was found to be important. It is crucial that the project is supported by the leadership of the organization. This is essential to get the proper mandate and attention for the project and make it a truly company-wide initiative.

## **5.2 Second Phase - Planning**

The planning process group covers the planning of activities to identify the scope and defining the work to reach those objectives. Supporting Mölsä's 2017 findings in his study exploring success factors in AI projects, the best practice framework recommends forming coherent teams on both client's and provider's side where key roles, such as project manager, are filled. Teams should be multidisciplinary to provide a good representation of stakeholder requirements. Use of an agile project management methodology is recommended as it allows projects to have shorter time-to-market and for teams to be nimble and flexible in execution. As known to agile methodologies, the project should plan to start with a pilot where a proof of concept, a prototype, is built and iterate from there onward. Recommended use of Agile project management methods contributes to the finding from Mölsä's 2017 study, which showed that early testing and prototyping of the product is a key success element.

It is recommended that the scope of such a pilot is limited and not aiming to solve too many problems at once. The pilot is a good time for the organization to learn about the technology and how to manage it. Later, in further stages, the scope can be extended with more confidence, knowledge and lessons learned. It is recommended to start from internal processes before extending to customer-facing processes, which allows experimentation and taking more risk with the chatbot before putting into use with end customers. When planning the project, it should be split into phases, where the project starts out by exploring and researching the context to come up with proper use cases. Next, the development work should be done and as with agile, testing should be done in parallel to improve the product. Finally, a live pilot is to be run where the chatbot's performance is closely monitored and improved. As in other stages, it is key to involve and keep informed all the relevant people around the entire organization when the planning the upcoming work.

## **5.3 Third Phase - Executing**

In the execution, the project work is carried out according to project plan. In chatbot implementation, this is where the chatbot is designed and built and its content and datasets are formed and uploaded. The people required to define the use cases and the knowledge-

based content of the chatbot should be involved heavily in these processes. This may mean subject matter experts and process owners as well as customer service or HR agents who work with the end customers. Conversational design should be applied by employing someone with this competence, as well as copywriters to write the textual content and help realize the tone of voice of the chatbot. User experience experts can support the project by giving insight into user behavior and how to optimize the solution for a specific audience, as well as in designing the visual look of the chatbot. This was also mentioned by Shevat in *Designing Bots* and Accenture in their 2017: *Understanding the user and designing quality content* are important success factors.

A best practice to achieve a truly iterative approach is to involve client users in the testing from early on. When a first prototype is viable, it is best to hand it over directly to testers who can provide feedback about the chatbot. This means that testers will talk to the bot and critically evaluate the content and user experience and discover defects. The provider can then act upon the feedback from early on and improve the bot's performance.

A key factor in ensuring the performance of the bot is the data which it is provided. Data exploration and understanding was also emphasized in the approach proposed by Silo.AI (2018). In the first stages of the project existing databases, for example, customer chat logs, should be researched to understand what may be the user input that the bot should be able to understand. This is the knowledge base of the chatbot in terms of understanding user intents and their variations. Enough time and resources should be allocated for the creation of the dataset as it consumes data collection and analytical work as well as consolidation of data files.

## **5.4 Phase Four - Controlling**

Controlling processes in a project hover over the whole project and include methods to track and review performance and understand if there should be changes against the original plan. For project governance, the best practice framework proposes a sprint-based approach where small work packages are allocated into specific time frames to be carried out. At the beginning, during and end of a sprint there is a sprint meeting where a specified audience is present to evaluate the work. Based on the evaluation, new work packages may be formed and there may be impact on the project plan. It is recommended

to include some buffer in the timeline and sprints to allow for the flexibility that any scope change would require. Using a sprint-based approach is a key element of Agile methodology, as described by Larman & Vodde (2010) and Mölsä (2017).

Testing is an important part of controlling the quality of the end product and the prototype should be handed over to users as soon as possible. However, in the case of an external customer facing chatbot, it is recommended that users within the organization test the chatbot first before involving end customers.

Tools and techniques are important to facilitate proper controlling and support agile way of working. The best practice framework proposes the use of digital Kanban boards, such as Trello, to keep track of activities and have a visual understanding of how the project is progressing. In terms of timeline, Gant charts are the recommended visual tool. Making project activities seen and understood in a simple dashboard can help engage the team and foresee dependencies between teams and work packages.

## **5.5 Phase Five – Closing**

Processes in closing process group include activities to finalize and formally close a project or phase. The best practice framework proposes that at this stage, the performance of the end product and project is evaluated against the original goals set in the initiation and planning stages. One outcome of the project should be tools to apply analytics and a tracking process, which will also help to evaluate the performance of the chatbot. Analytics can mean a variety of tools and tactics, but as explained in the theoretical part of the thesis, according to Amir Shevat (2017) chatbot analytics usually consists of three main elements: Raw data, logs and visual analytical tools. In raw data it is possible to follow up each single conversation between a chatbot and user. Logs group together similar events, such as conversations where the chatbot was not able to provide an answer. It is also possible to implement customer satisfaction survey questions into the chatbot to understand customer experience. Visual analytical tools include collections of graphs and reports to track trends and gain insights from data.

Continuous improvement mindset is a legacy that the project should leave behind. This means that based on learnings and analytics, action will be taken consistently to improve

the existing solution. In practical terms, this refers to training of the chatbot by reviewing what users are requesting and where the chatbot is not able to support them. Based on this information the dataset behind the bot is grown and enriched and the chatbot is “trained” to handle situations better. This training is something that requires proper resourcing also after the project. To achieve the continuous improvement, it is important that the provider trains at least one person at the client site to understand how the chatbot works and how its behavior is evaluated and improved. If the provider is only present during the implementation project, the client should be able to manage the chatbot independently going forward.

Existing frameworks around chatbot implementation best practices are mostly focused on the planning and executing process groups, but limited research has been done around the closing and transition of the project into production use. This framework proposes setting up continuous improvement processes based on analytics to monitor performance and customer experience, training key users in the client organization and ensuring resources after project closure as the best practices.

## **6 CONCLUSION**

The purpose of this study was to explore factors that contribute to success in chatbot implementation projects, to gain knowledge about how success can be defined in such projects and what best practices can be applied to maximize the benefits, control risks and overcome challenges. A best practice framework for project management was built based on findings from the qualitative research and a number of other insights were uncovered from the expert interviews.

In the empirical study, leading experts in chatbot implementation service business globally were interviewed over the internet to gain insights from their real-life experiences in chatbot projects. The qualitative research utilized semi-structured interviews as the method and was inductive in nature.

The interview results were analyzed to identify codes and patterns in data and triangulated into category matrices in order to generalize the findings. The results yielded a number of success definitions that can be used in projects and identified critical success factors

and best practices to be considered in a project. The critical success factors were divided into categories of strategic, project management and design related considerations. Best practices were consolidated to form a project management best practice framework around the PMBOK project management process groups.

The results showed that the main critical success factors include: Defining project goals in the beginning and evaluating them throughout and at the end of the implementation, involving all key people from the organization, forming coherent teams on both client's and provider's side and keeping relevant people properly informed of the project. Obtaining sponsorship from leaders of the organization was also found to be important. The initiation of the project was shown to be a critical time in terms of exploration of use cases and forming a proper scope for the project. From management perspective, using an agile methodology was overwhelmingly recommended including use of a sprint-based action plan and visualization techniques like Kanban boards and Gant charts to display progress. The client should be involved in the project work and testing from early on and knowledge of the chatbot technology should be built on the implementing organization's side by training at least one key user who can manage the chatbot going forward. The design aspects of the chatbot were strongly emphasized by experts and the use of conversational designers, copywriters and user experience professionals was recommended. Understanding the customer journey and creating good datasets were found to be key components of a well-functioning chatbot. After the implementation, a continuous improvement approach should be adopted where the training of the chatbot remains an ongoing process and its performance is monitored by applying visual analytics and analyzing raw data and logs of the conversations that take place with the chatbot. To monitor customer experience, satisfaction surveys can be implemented in the chatbot itself as part of the conversation flow.

The chosen aspect to the research was the service provider's point of view and more specifically the phenomena were discussed in the project management context. The contribution of this study to existing literature are the identified success factors in chatbot implementation. The main product of the study, the project management best practice framework, is intended to be used as a tool to apply generalized best practices into the initiation, planning, execution, monitoring and closing of a chatbot implementation project.

Many other insights were extracted from the study. Even though chatbot projects were viewed as “high-tech” AI projects, the nature of chatbot technology was also seen in another contexts. Chatbots were not seen merely a tool in the IT portfolio, but were looked at as the first application rising from a new era of user interfaces – the conversational interface. Another powerful message that stood out from the interview results and made the author even re-consider the title of the thesis, was the fact that industry experts did not prefer to use the word “chatbot” at all. It was seen a “coined” term in the industry. The experts chose to use words like “conversational AI”, “conversational software” or “conversational bots” instead. Conversational bots were viewed ad as an application of technology that is making way for a whole new era of user interfaces – the conversational user interfaces. The author had to widen their perspective on the topic and not look at chatbots as a single application or product to be implemented, but as a step towards of a holistic change in a company, entering the conversational era. Chatbots are changing the paradigm in how people interact with computers and therefore have a much broader meaning for user experience. As established in the literature review, the use of natural language is becoming the preferred way of communicating with computers.

For a client organization, selecting the right tech-partner was seen as crucial to reach success. It was discussed that not all customers recognize that a partner is needed at all. Customers may look into self-build platforms to create simple question and answer chatbots but fail to manage the project properly. Most of the do-it-yourself chatbots don’t have much intelligence in them so understanding and performance of the bot may not be sufficient. Free platforms usually do not offer much on the analytics side, either. Yet the interviewed experts explained that there is a real challenge to argue the value of their services to the customers.

Implementation of a conversational interface was seen as high-tech project involving the entire organization, not merely an IT or customer service project. This was repeated over and over again in the responses – diverse teams should be put together in the implementing organizations to understand the use cases, define valid content for the chatbot and create awareness. A chatbot represents the whole company and is important in communicating the brand to customers, whether internal or external. They are also

often the first venture by a company into the AI world and a useful learning point for a company's employees.

The question of the definition of success was the most ambiguous concept and yielded a lot of input. Several key informants pointed out that it is highly industry specific what KPI's a company might choose to follow, yet it was highlighted that it is important that the goals and measures are put into place early on by the customer. Many different qualitative and quantitative measures were discussed and there doesn't seem to be any standardized success criteria in the market at the time this thesis was written. The described success factors were mainly related to the aspects of project and resource management, chatbot design and strategic considerations. The fact that content design, including copywriting and conversational design was so closely linked to project success came as a surprise to the author. Setting the stage right, managing expectation of what the chatbot can do, having a clear scope and starting with a proof-of-concept were frequently mentioned.

Based on their practical experiences, the interviewees were very well aware of the challenges and risks in an implementation project. Although the author was expecting to discuss rather technical challenges, most of the described challenges were related to organization and management, communications and human behavior on the client's side. From providers' perspective, the main challenges had to do with expectation management, convincing the customer of the value they can provide, pricing and finding the right solution for the specific customer.

To conclude, many things come to play when implementing chatbots: Technological complexities are only one aspect – there are still challenges to be solved around natural language processing to allow for self-learning, self-directed conversational bots. However, chatbots have already matured to the level where they can provide significant value and efficiency gains in organizations. It can also be concluded from the study that rather than technology-related, the challenges today are indeed mostly related to human behavior, controlling and interpreting it and turning behavior-based requirements into functional designs and working chatbot solutions. The key non-technical problems to solve are: 1) How to map the changing user requirements to a relevant end product and 2) How to plan and manage the adoption of a chatbot.

Most chatbot initiatives today are still small on scale. Companies are experimenting with prototypes and only beginning to think how to apply them around the organization. In terms of use cases, customer service as an overall function may prove to be challenging for a long time to get processes automated on the large scale. Even though the recognition rate of a chatbot can be very high already, chatbots taking care of customer service cases from beginning to end independently is still a very low percentage. Chatbots are very efficient at giving instructions, contact details and directing users to the right place, but the more challenging cases where reasoning, decision making and empathy are needed will still employ humans for some time. The author wants to point out, however, that artificial intelligence has the potential to be a major disrupting force in the near future, changing how companies interact with customers and employees execute daily tasks, cutting old jobs and creating new ones. Chatbots are serving a real purpose in this transformation and once the potential of this technology is understood, the applications are limitless.

## **6.1 Recommendations for Future Research**

Many intriguing topics around chatbot implementation were uncovered in the research which deserve further attention in terms of research and exploration. A current issue which was discussed regarding partner selection was that of pricing and the lack of standardized pricing models in the chatbot market. The market is still young for chatbot service providers and it is difficult for the providers to design a pricing model that is relevant to the customer. Customers, on the other hand, have a difficult time comparing the providers' services and understanding the range of prices. The demand and supply will balance out over time, but in this early stage it would be interesting for both parties to have a reliable standard around which to settle prices.

Second proposal for future research around chatbot implementation is the problem of self-service platforms and the added value of tech and service partners. Should organizations try to explore conversational AI without external help or is there a real need for professional practitioners in this space. The nature of these service providers is also an interesting topic. To stay relevant, should the market be split between service providers that act as agencies without in-house built software and separate infrastructure providers.

Or on the contrary, should chatbot-as-a-service providers aim to offer everything for conversational AI under one roof: The database or cloud, the tools and the services. It would be beneficial for professional practitioners to understand the direction that the market is headed towards.

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