How to increase intention to use CPaaS by IT professionals?

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How to increase intention to use CPaaS by IT professionals?

by

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Abstract

Communications platform as a service also known as CPaaS is a new up and coming technology which adds a communication layer to any app via API [1]. During the Corona pandemic the importance of CPaaS became evident when companies needed to communicate with their customers digitally [2]. This paper presents the findings from an explanatory positivist multi-case study which aimed to find an answer to the following research question: "How IT Professionals intention to use CPaaS is affected by cognitive, individual and organizational factors?". The study was deductive in nature and tested a theory based on existing literature. The literature found 7 potential factors influencing the intention to use CPaaS being: Perceived usefulness, perceived ease of use, voluntariness of use, experience, social influence, facilitating conditions and top management support.

10 semi-structured interviews were held with IT professionals in which they were asked to fill in a questionnaire and afterwards answer more interview questions. These 10 interviewees were from 5 different companies. The results of the data collection were analyzed via a within-case and cross-case analysis. 5 of the 7 factors were found to be supported and 2 factors were rejected being facilitating conditions and top management support. This study makes contribution to the literature by empirically validating the facilitating factors for the intention to use of CPaaS. It also provides practical implications for IT professionals to advocate the adoption of CPaaS.

Keywords: Communications platform as a service, Intention to use, Technology acceptance model, Unified Theory of Acceptance and Use of Technology

Preface

Before you lies my master thesis: "How to increase intention to use CPaaS by IT professionals?". This master thesis has been written to fulfill the graduation requirements of the master information management at Tilburg University. This master thesis was written in the period of September 2022 to February 2023.

As I finish my master thesis, I also realize that I finish my academic career at Tilburg University. I would first and foremost like to thank Dr. Sijia (Catherine) Ma for her continuous support and helpful feedback during the writing process of my thesis. I would also like to thank everyone at CM.com who made this thesis possible and along the way supported my research. Simultaneously, I want to thank all the companies which allowed me to interview their employees to create new insights into the world of CPaaS.

A special thank you goes out to the students with whom over the last years I worked together on various projects.

Finally, I would like to thank my family and friends for their continuous support during my academic career. I also want to thank you, my reader. I hope you enjoy reading my thesis.

Friso Pijpelink
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1. Introduction

Since the inception of the technology acceptance model in 1989 by F.D Davis [3] technology adoption has been one of the most important verticals in the Information system literature. Technology adoption is crucial for further development of new technologies [4]. Technology adoption has gained a lot of attention over the last few years due to quick digitization during the COVID-19 pandemic. Overnight businesses had to switch the way they worked and adopt new technologies [2].

One of these technologies which allows companies to add a communication layer to their software is Communications platform as a service (CPaaS). CPaaS is a type of Platform as a service (PaaS) technology [5].

According to Gartner the definition of CPaaS is:" CPaaS offers application leaders a cloud-based, multilayered middleware on which they can develop, run and distribute communications software. The platform offers API's and integrated development environments that simplify the integration of communications capabilities (for example, voice, messaging and video) into applications, services or business processes [1]."

According to CM.com CPaaS is: "CPaaS (Communications Platform as a Service) is a cloud-based communications platform that integrates SMS, Voice & OTT Chat Apps into your existing software with the use of API's. As businesses rely more on cloud-based services, CPaaS enables a fully customizable communications infrastructure. With CPaaS, you can build front-facing applications for your customers more easily without managing the underlying communications infrastructure [6]."

Juniper research expect the CPaaS market to be 34 billion in 2026 rising from 3.4 billion in 2021 [7]. The CPaaS landscape is constantly expanding with new competitors joining in for market share. Some notable names that over the last few years have made a commitment to further develop CPaaS capabilities are: Facebook, Apple and Google [7].

CPaaS can be paired with other technologies to make it more powerful. For instance, during the COVID-19 crisis companies used CPaaS capabilities to change the way they worked by adding chatbots and AI to their communication strategies. These chatbots which are a part of the CPaaS suite combined with AI made it that customers did not have to wait to speak to a representative of the business to get their questions answered [8].

Another important asset of CPaaS is the ability to keep the context of a conversation between a business and its customer over multiple channels this is called conversational customer engagement [9]. An example of this can be starting a conversation in WhatsApp and moving it over to Facebook messenger or SMS.

Where in the past the main way of communication was voice, this has been shifting to a messaging first approach by many companies. A study by research firm IDC [10] looked into customer experience and digital transformation and came to the conclusion that CPaaS is an important new way for enterprises to connect to their customers. The IDC report described CPaaS as follows: "CPaaS is cloud-native and aptly suited to drive the digital engagement strategies of enterprises. It is the central nervous system that orchestrates sophisticated workflows from CRM platforms to call centers, which support intelligent case routing and personalized interactions [10].

The users of CPaaS API are at the moment software engineering teams and less-technical businesses technologist. New developments by CPaaS vendors are focused on low-code solutions to make CPaaS accessible to more people in the future [11].

1.1 CM.com

CM.com is a CPaaS company based in Breda the Netherlands with offices all around the world. CM.com has around 1000 employees and is mostly known for delivering SMS messages to enterprise companies. Besides SMS messages CM.com also has multiple OTT messaging apps to offer to clients in the business version. An example of this is WhatsApp for business which allows companies to have a verified account and connect chatbots. Besides messaging CM.com is also active in Voice, Payments and verification.

According to CM.com OTT messaging apps are: "OTT or Over The Top refers to third party content that is sent directly to the end user, where the ISP facilitates the transport of the IP packets. Examples are Skype, WhatsApp and FaceTime. [12]"

CM.com opened up their resources and time to help with the making of this master thesis by giving access to their systems and customers.

1.2 Problem statement

The current problem that CM.com is facing is a lack of use of the CM CPaaS platform by their current users. As stated before CPaaS is a mix of different technologies and different channels each having a different user group and intention. CM.com sees that users do not use the full CPaaS suite available to them. Often they only use one messaging channel or only use voice apps. CM.com believes that their current users would benefit by using the full suite by adding for instance Chatbot capabilities to their communication layer. As well a recent report of Gartner gave insight in how CPaaS is adopted in organizations. Often CPaaS is adopted by one business unit in an organization for a specific use case. If the business unit has a positive experience with CPaaS it spreads through the organization to other business units [13] which means that CPaaS is used more and more in the organization. This is why it is important for CM.com to know if business units that have worked with CPaaS in the past would intent to use it in the future.

To clarify users in this situation are the product owners (less-technical) and developers who are integrating the CPaaS capabilities into their own software [13].

1.3 Importance of this research

There is a lot of existing literature on technology adoption with most notable models like the technology acceptance model [3] which was the basis for the unified theory of acceptance and use of technology [14] another more expanded model. Currently there is no existing research into the technology adoption of CPaaS but there has been research done in an adjacent field of CPaaS. The closest field of research to CPaaS being PaaS. Platform as a service adoption is not researched by top IS journals directly but is in the scope of research when looking at cloud computing adoption. Existing research in cloud computing (CC) adoption uses the Technology acceptance model [3] , Unified Theory of acceptance and use of technology [15], Diffusions of innovations theory [16] and technology-organization-environment framework [17]. For instance Qasem et al [18] who used the technology-organization-environment framework and the diffusions of innovations theory to predict CC adoption using the factors: Top management support, relative advantage and security concerns. Another paper by Nikolopoulos & Likothanassis [19] used the technology acceptance model to predict cloud computing adoption. Nikoloupoulos & Likothanassis [19] used among others perceived usefulness and perceived ease of use to predict the intention to use cloud computing.

It is important to research the technology adoption of CPaaS because of the lack of current research done in the IS research field. CPaaS became an important technology during Covid-19 [2] and the market will be growing in the upcoming years. Specifically, the adoption of CPaaS by its users which are software engineering teams and non-technical business technologist creates valuable insight in how CM.com can improve their services and on focus areas.

1.4 Research question

To tackle the problem that CM.com has the following research question was composed:

How IT Professionals intention to use CPaaS is affected by cognitive, individual and organizational factors?

1.5 Unit of analysis

According to Gartner the users of CPaaS API's within a business unit are software engineering teams and less-technical business technologist [13]. This research is aimed at technology adoption on a user level that's why it's important to use the correct terminology for the unit of analysis. An all-encompassing term which is regularly used in top journals is IT Professional. According to Miller & Voas [20] an IT Professional is a broader term that encapsulates not only software engineers and computer scientists but also other IT related roles like support roles, telecommunication software & hardware and less technical business technologist. An IT professional is not a protected job title like doctor or lawyer which makes it a good fit as a term to describe CPaaS Users [21].

1.6 Research structure

This paper starts with and introduction about CPaaS and describes the problem statement and importance of the research. In the introduction the unit of analysis is also introduced after the research question. In chapter 2 the literature review is done which provides more insight into the neighboring literature to CPaaS being cloud computing and insights into existing technology adoption theories. Chapter 3 is the theoretical development in this chapter the factors which influence the intention to use CPaaS are defined, further explained and the relationships between the factors is presented. As well the nomological research model is made in this chapter. In chapter 4 the research methodology for this research is explained as being an explanatory multi-case study. Also, in this chapter the measurement of the factors is introduced and there is a section on how the cases were selected, data collection and data analysis. Chapter 5 is the data analysis in which the results of the hypothesis defined in the theoretical development are given and looked at through a within-case analysis and cross-case analysis. Chapter 6 discusses what is learned from the results and looks at the differences between cases an which one's were supported or rejected. Finally in chapter 7 the conclusion to this research is given and a section on further research finishes the paper.

2. Literature review

In this chapter we look at the existing literature on communications platform as a service and intention to use technology so that we can define a literature gap. This chapter as well introduces the factors that will be used in this research. There is no academic research done on the intention to use CPaaS. Existing research on CPaaS in general is done by research firms like Gartner, Juniper and IDC. These research firms mainly focus on the future of the CPaaS space and which companies in the space are excelling. But we are able to look at neighboring literature to CPaaS. To fully understand CPaaS we have to look at its origin being telco API's. In 1998 a group of telecom operators came together to form an initiative called Parlay. The group had the intention to create standard API's for accessing PSTN (Public switched telephone network) [22]. This was supposed to make: calling, messaging, location, profile and payments available via API's for companies which back in the year 2000 were dependent on their own infrastructure. While this project eventually failed and shut down the start was made with the first CPaaS companies appearing in early 2008. It would take until 2016 before communications API's for enterprise were released which did not need specific telco developers [22] [23]. Communications platform as a service is a service model of cloud computing and part of the platform as a service branch. Cloud computing has three service models being: Software as a service (SaaS), Infrastructure as a service (IaaS) and Platform as a service (PaaS) [24]. Existing research in the adoption of cloud computing, Software as a service, Infrastructure as a service and Platform as a service are used between the disciplines.

2.1 Cloud computing

The relevance of cloud computing literature to the intention to adopt CPaaS is the fact that CPaaS is a part of cloud computing through the PaaS branch.

First of all, the literature on cloud computing shows that there has always been a focus and interest on how to adopt cloud computing. An example of this is an article by Armbrust et al [25] which is a seminal article on cloud computing and was written to clarify terms and quantify comparison between conventional computing and cloud computing. In the article Armbrust [25] gives definitions on cloud computing and goes in to depth on Software as a service. Also, Armbrust [25] goes in depth on what are obstacles for the adoption of cloud computing. Armbrust [25] finishes the article with a focus on scalability of the system. A continued focus on adoption of technology happened because of the pandemic which forced companies to digitalize quickly. Kubacz-Szumska & Szumski [26] researched the usage of cloud communications during the pandemic. One finding in the paper [26] is that almost all respondents of the survey had previous experience with cloud communications platforms like zoom and Microsoft teams. Kubacz-Szumska & Szumski [26] also found that there is no unified approach for communications which means the necessity to support multiple applications. As stated in the introduction of the literature review cloud computing consist of 3 delivery models Sunilkumar et al [27] examined resource management for infrastructure as a service. Sunilkumar [27] presents the importance of the connection between IaaS, PaaS and SaaS and how they are intertwined. Sunilkumar et al [27] also found that the success of companies offer IaaS depends on the amount of flexibility, scalability, adaptability and reusability they have. Cloud computing interest in adoption intention is not only a hot topic because of the pandemic as can be seen in an article by Choudhary & Vithayathil [28] who employed a stylized model to look at cloud computing impact on IT departments. The authors found that the adoption of cloud computing has consequences for the internal IT department of a firm. The tasks of the IT department changes to a more administer and monitor level. This way the authors find that the IT department can turn from a cost center into a profit center. More support for this notion comes from Vithayathil [29] who researched how the rapid growth of cloud computing impact IT departments. The article found that IT departments have to change themselves to add value. Vithayathil [29] also found that when an organization starts using cloud computing new roles in the IT department appear. The article by Choudhary & Vithayathil [28] shows that the adoption of cloud

computing has effects on the organization. Another article that looks at how cloud computing decisions are made is an article by Schneider & Sunyaev [30] who reviewed the literature on IT outsourcing and Cloud computing to find the determinants that drive sourcing decisions. This article found that most of the factors that influence IT outsourcing also affect the adoption of cloud computing these factors being: Client, individual, vendor, asset, technology and environment factors. Scheinder & Sunyaev [30] also contribute by giving a basis of guidelines and best practices for the adoption, acquisition and integration of cloud services. Finally, this article also describes the lack of attention for Platform as a service in the literature when compared with Software as a service.

When talking about technology adoption and specifically the intention to use cloud computing we have to look at existing research into what factors are important to the adoption of cloud computing. Qasem et al [18] created a model by mapping a matrix of factors based on 4 theories being: Technology-Organization-Environment, Diffusion of innovation, Fit-Viability Model and Institutional theory to research the adoption of cloud computing by organizations. The article found that certain factors overlap between the theories and recommends that studies conducted in the future should look critically to other relationships. One of the papers which looks critically at other relationships using factors that came from these theories is an article by Alkhatar et al [31] who conducted survey research into the adoption of cloud computing and which factors influence the decision. The article finds that the most important factors influencing adoption are: Quality of service and trust. Alkather et al [31] also found that security and privacy concerns limit the adoption of cloud in Saudi Arabia. As well the researchers found that cloud was easier adopted in organizations that already worked with other cloud services than in organizations which are non-adopters. The article by Alkather [31] shows that the interest in cloud computing adoption is worldwide that's why Guner & Sneiders [32] researched cloud computing adoption in less IT mature countries by having an exploratory approach. The study found that adoption is mainly influenced by security, cost, reliability, loss of control over data and availability. Guner & Sneiders [32] also found that certain factors like security cost and loss of control over data overlap with IT mature countries and that more research is necessary to look at which factors differ between developed and less developed countries.

Other research using the existing literature found important relationships between cloud computing and intention to use. For instance, Ooi et al [33] who explored how performance expectancy, firm size, top management support and absorptive capacity leads to innovation in cloud computing technology. These factors were derived from the unified theory of acceptance and use of technology and technology organization environment theory. Ooi et al [33] found that management support is the most important predictor for effort expectancy. As well the article found that it is vital for organizations to have enough knowledge and competencies to implement new cloud systems. While Ooi [33] used the unified theory of acceptance and use of technology Wu [34] examined the adoption of software as a service using the technology acceptance model by Davis. Wu [34] combined TAM with additional imperative factors so that the finding would not only benefit enterprise users but also SaaS providers. Wu [34] found that TAM on its own is to parsimonious and incomplete and proposed a new system called TAM-DTM which combines the technology acceptance model with the diffusions theory model. This model consists of 8 factors being: Media influence, social influence, perceived flexibility benefits, perceives status benefits, attitude towards mobiles innovations, perceived usefulness, perceived ease of use and Behavioral intention. Wu [34] does mention that TAM-DTM also fails to include security and trust. The research done by Wu [34] shows the interoperability of theories and how factors from different theories can be used in a new model. Another article that does this is the article by Karunagaran et al [35] who did a multi case study to identify factors specific to cloud technology adoption by firms. Karunagaran et al [35] found 11 factors being: Lack of interoperability, switching cost, lack of customization, taxations issues, existing installations, data protection issues, security issues, self-service, organization structure and cost reduction that influenced the adoption of cloud computing. The article also found that there are differences between companies depending on the size of the company. Finally, Karunagaran [35] mapped the factors to the theoretical

factors of the diffusions of innovation and technology-organization-environment theories. More support for using these theories for cloud computing comes from an article by Mohammed et al [16] who used the literature to create a theoretical model on cloud computing adoption with a focus on developing countries. The factors that were found in the literature were tested and validated using a survey approach. The factors being: Relative advantage, Compatibility, Trialability, Security, Fit, Adoption, Top management support, knowledge, asset, uncertainty, IT skills, viability, complexity, IT infrastructure, and return on investment. Mohammed et al [16] also found that cloud computing was uniquely positioned to be adopted in developing countries due to the elasticity, resource polling and cost structure. More research has been done on cloud computing adoption for niches like for instance education. An article by Raikar et al [36] who examined issues regarding the adoption of cloud computing in education found that the use of cloud services depended mostly on academic performances of the individual. The authors also found that training and education are associated with perceived ease of use. The findings of this article show that there is a connection between the theories and that this is found across multiple sectors. More research on cloud computing has been done by Nikoloupoulos & Likothanassis [19] who analyzed empirical data from 138 cloud developers, IT professionals and managers using factor analysis to examine the third iteration to the technology acceptance model referred to as TAM3. Nikoloupoulos & Likothanassis [19] found that intention to use can be explained by: Perceived usefulness, perceived ease of use, subjective norm, job relevance, image, output quality, result demonstrability, experience, computer self-efficacy, perception of external control, cloud anxiety, perceived enjoyment and voluntariness. The authors also found that the technology acceptance model is fit to be used to predict cloud computing adoption. More research is being done using existing theories but also new factors are being found. Holloway et al [37] did a literature survey on existing adoption frameworks and identified major criteria that impact the adoption of cloud computing from an IT expert's perspective. Holloway et al [37] found that suitability of the application, relative advantage, complexity, security concerns, availability, lock in aspects, control over it resources, compliance and trialability had a significant effect on the adoption of cloud computing. Besides these factors that were found in the literature Holloway et al also found a new factor being: service immaturity.

Besides there being a lot of focus on individual users' adoption of cloud computing there is also research being done with a more organizational focus. Aziati et al [38] examined the state of validated scale of organizational support towards implementation of cloud computing using the Delphi technique. The authors argue that top management support is one of the main drivers of implementation success. The article also found that cost, size, technology awareness and technology readiness had significant influence on cloud computing implementation in Malaysia. More findings looking at the organization came by Haile & Altmann [39] who collected data from 300 cloud service providers, consultants and its experts by way of survey questionnaire. The survey was on maximizing IT resource utilization and intention to adopt cloud federation. Haile & Altman [39] found that there is a difference needed for big and small cloud providers and that intention to adopt is driven by perceived benefit and negated by perceived risk. More research being done by Gangwar et al [40] who used a combination of Tam and TOE to develop a conceptual framework to find out how to adopt cloud computing on an organizational level by way of survey. Gangwar et al [40] found that relative advantage, compatibility, complexity, organization readiness, top management commitment and training and education were significantly important factors. The authors as well found that the research should be validated in other context because of the fact that this was only done in India.

A more complete view of what factors can affect cloud adoption came in an article by Al-shafari et al [41] who did a literature review on the adoption of cloud computing services. The article found that 53 factors have impact on cloud computing services adoption of which 16 significant. These factors being: Relative advantage, complexity, perceived security and privacy, compatibility, top management support, cost reduction, competitive pressure, IT readiness, firm size, vendor support, regulations and government policy, trialability, perceived reliability, perceived availability, uncertainty and perceived

trust. Al-shafari et al [41] also found that more research is needed continuous adoption of cloud services.

The literature on cloud computing shows that there is a need for technology acceptance literature and that the adoption of cloud is based on individual and organizational factors. The literature shows that existing technology acceptance literature is being validated for cloud computing adoption and that using factors from different theories is important to build good theories. Also the importance of the research due to the pandemic shows an important angle of the need for cloud adoption literature. The factors that have been used in research into cloud computing adoption and that have been validated originate mostly from the existing literature but it is also possible to find new factors.

The literature gap that can be derived from the existing research on cloud computing while keeping CPaaS in mind is that there are a lot of factors that influence the adoption of cloud computing and that the current existing adoption theories work for cloud computing but that they are often modified. This means that this will also be possible for CPaaS. Also, a literature gap that is found is the lack of articles with a link to CPaaS or telco API's. Also there seems to be a lack of literature into the PaaS service model of cloud computing.

2.2 Platform as a service

The relevance of platform as a service literature to the intention to adopt CPaaS is the fact that CPaaS is a part of cloud computing through the PaaS branch. Which means that platform as a service is the closest thing to CPaaS.

An article that implies the need for specific literature on PaaS is an article by Griesmann & Legner [42] who researched how software vendors can create viable business models for platform as a service. Griesmann & Legner [42] created a theory which allows for informed design decisions on PaaS and extends existing design principles. Griesmann & Legner [42] also contribute by finding new customer segments. Earlier research had let to believe that the focus should be solely on individual developers. Griesmann & Legner [42] found that System integrators and platform customers are verticals that have not been explored. The identification of the customer segments is important for research into adoption for instance into which segments adopt an which not. Al-jabri [24] researched the difference between cloud computing adopters and non-adopters using the technology-organization-environment framework. Al-Jabri [24] found that IT professionals that have worked with cloud computing seem to have a bigger perception of needing cloud than non-adopters. Al-jabri [24] also found that the factors: Relative advantage, compatibility, top management support, organizational readiness, competitive pressure and partner pressure influenced the difference between adopters and non-adopters. More research into PaaS was done by Wulf [43] who created a research model for the adoption of platform as a service. Wulf mentions that there is little literature available about platform as a service specifically and that most research is focused on cloud computing. Wulf [43] uses the technology frame of reference to hypothesize about how decision makers adopt PaaS. Wulf [43] found support for the influence of Experience and top management support on PaaS adoption.

The literature on PaaS shows that there is a need for more research into the PaaS vertical. The research that has been done shows that the existing technology acceptance theories hold up just like with cloud computing adoption. The literature also finds that there is a need for more information on customer segments

The literature gap that can be derived from the existing research on platform as a service while keeping CPaaS in mind is that the technology adoption models also work for platform as a service but that little research has been done. Also, once again the literature found that there is a need for more research into adoption. The gap that can be found here is the lack of article's on CPaaS adoption.

2.3 Origin of Communications platform as a service

To fully understand CPaaS we have to understand its precursor being telco API's. The relevance of the origin of CPaaS to this research is that to learn about the future we have to look into the past.

Research into the history of telco API's can be found in an article by Quayle [44] who examines the history of telco API's using his expertise in business and service development. He found that after the founding of parlay in 1998 it would take up until 2008 for operators to start launching API's. But that the adoption and use of these API's was difficult due to the need of specific telco developers. Quayle [44] also found that the introduction of the iPhone and android had a big effect on telco API's because this allowed for the commoditization of location messaging and profile. Finally, the term telco API disappeared slowly and was overtaken by CPaaS around the year 2016 when companies like Twilio and Nexmo started shipping their CPaaS API's for enterprise clients.

Moerdijk & Klostermann [23] outlined different types of applications that can be build using telco API's. The article describes how the use of API's changed development time and reduced cost. Moerdijk & Klostermann [23] also go in depth on the architectural aspects of OSA (Open service access) and how this enables secure communication. Applications that can be developed using the telco OSA API's are call setups and notification services. An article that used OSA to find out what this would mean for mobile networks is by Raivio & Luukkainen [45] who investigated how open API's can be applied to mobile networks using a case study. In the article Raivio & Luukkainen [45] found that Mobile operators have difficulty with releasing open API's and that this has created an ecosystem in which internet companies have nested themselves in the gap. Also, the article shows that the mobile operators have a lot of power when it comes to pricing and that this together makes it that developers are not keen to experiment with the services. More research into telco API's was done by Liu & Xu [46] who analyzed the most popular authentication mechanism for the telco domain and presented a use case on how it should work. In the article Liu and Xiu [46] explain how open API's are a risk for mobile operators because it opens up their network directly to the internet. But that by using the correct authentication protocols this risk can be mitigated. The OAuth protocol being an open and standard protocol will be able to protect the services while keeping the network safe.

Something that keeps coming back in the literature on telco API's is that the mobile operators have all the power and that it is a very slow process to open up their services to companies. This is due to many different reasons but one being regulations and lack of developers.

The literature gap that can be derived from the existing research on telco API's while keeping CPaaS in mind is that there was a big problem with the adoption of telco API's. This makes it even more important to research CPaaS adoption and intention to use. The literature gap is also that there is no literature available using both CPaaS and telco API's an how the history of telco API's can be used to learn of its mistakes. Also, the literature showed that there were problems with the fact that there were not enough developer working with telco API's but no literature on how to solve this was found. This by itself shows that there is a big literature gap on research in to the intention to use telco API's.

2.4 Communications platform as a service

The studies done on communications platform as a service are focused on the future of the space and are done by research firms. CPaaS is different from its precursor (telecom API's) due to it being way less technical and having more capabilities like AI, chatbots and ecommerce. The focus in the research done follows the trend that the most of CPaaS vendor spend is on investing in these kinds of capabilities while their revenue comes for 85% from messaging services [13].

The need for more research into CPaaS was found in an article by Fawzi [47] who outlined an article about business communication needs. Fawzi [47] states that the pandemic caused an acceleration of the adoption of cloud-based platforms. Fawzi [47] found that most companies are familiar with

Unified communications as service (UCaaS) and Contact center as a service (CCaaS) but that most organizations are less familiar with communications platform as a service(CPaaS). Fawzi [47] also found that CPaaS providers focus on two verticals being: Developer or Co-creator with developer being a self-service model and co-creator giving a custom development environment. Ing [48] is an expert on telecommunications and wrote an article on the difference between CPaaS, CCaas, an UCaaS to teach the public about the differences. Ing [48] describes how CPaaS differs from UCaaS in several ways. First of all, the user can be any employee of a company. A user of CPaaS is a developer who wants to add communication features to an application. The difference between CPaaS and CCaaS is that CCaaS is contact center software and is focused on that type of communication where CPaaS is an API which can be integrated in different ways with multiple purposes. UCaaS differs from CPaaS in the way that UCaaS is a platform that a person uses to collaborate and CPaaS is an API that provides communication features. The difference between CCaaS an UCaas is that CCaaS is focused on outside the business and UCaaS inside the business. CCaaS differs from CPaas in the way that CCaaS is a platform and CPaaS an API that get provided. CCaaS differs from UCaaS in the way that CCaaS integrates with multiple other contact center software.

The importance of the adoption of CPaaS was researched by Cooter maxwell in computer weekly [8] who wrote an article about the future of CPaaS. In the article Maxwell discusses the adoption of CPaaS during the pandemic and how companies had to come up with quick ways to keep in contact with their customers. Maxwell [8] also discusses that part of the adoption of CPaaS is driven by the fact that CPaaS allows for a simple way to work with complex technologies. Also, this article highlights the low code part of CPaaS being that because CPaaS providers provide simple API's to work with its not necessary to even be a developer to create apps. More drivers for adoption of CPaaS can be found in an article by Joe O'Halloran [9] who in computer weekly wrote an article after an IDC study on CPaaS. This article found that one of the main drivers of Communication platform as a service in the upcoming years will be conversational customer engagement which facilitates conversations between messaging channels while keeping the context of the conversations. The article found that a significant number of companies using multichannel communications were planning to implement conversational customer endearment using a CPaaS platform.

Other research into CPaaS looks at the opportunities and benefits. Munroe [10] wrote a white paper on digital customer experience using CPaaS. In this white paper Munroe [10] discusses that most companies have started the journey to adopt digital and cloud infrastructure. Munroe [10] also describes that leveraging AI provides significant opportunities for companies using CPaaS. Also, Munroe [10] mentions the challenges of implementing conversational customer engagement. He mentions that choosing the correct CPaaS provider is important to create ROI on new customers. One of those CPaaS providers is CM.com. CM.com [6] wrote an article on CPaaS as one of the market leaders in this space to create more awareness and educate its clients. In this article CM.com [6] defines CPaaS as a cloud-based communications platform that integrates SMS, voice and Ott chat apps into your existing software using API's. CM.com [6] also describes the benefits of CPaaS being: Scalability, cost efficiency and customization.

The literature on CPaaS shows that there is a lot of interest on the future of the space and that companies are unaware of the possibilities of CPaaS. The literature also shows that the concept of CPaaS still needs more explanation to get across to the customers.

The literature gap that can be derived from the existing research on CPaaS is that there is almost no research being done in the space and that there has not been any research done on the adoption of CPaaS using technology adoption theories. There is also a knowledge gap at a lot of companies that have never even heard of CPaaS.

2.5 Intention to use

The relevance of the literature on intention to use for intention to use CPaaS is to look at the existing theories and how they are used.

The research to date has produced many accepted and proven theories to research technology adoption and the intention to use technology. Taherdoost [4] wrote an editorial article about user acceptance by summing up the most important technology acceptance theories. Taherdoost [4] claims that the most important frameworks that impact the user acceptance are: Theory of reasoned action, theory of interpersonal behavior, social cognitive theory, theory of planned behavior, diffusion of innovation, technology acceptance model, extension to tam, motivation model, uses and gratification theory, model of pc utilization, Igbaria's model, unified theory of acceptance and use of technology, combability UTAUT, perceived characteristics of innovating theory and e service technology acceptance model. Taherdoost [4] mentions that the most important factor to get technology to be implemented is user acceptance. And that the focus of researchers should be on factors before the actual usage of the technology. The most used and accepted model from this list is the technology acceptance model by Davis. Davis [3] in 1989 created the most impactful article on technology adoption and intention to use in which he described the technology acceptance model. Davis [3] posits that the perceived ease of use and perceived usefulness determine the intention to use a new technology. Davis [3] also found that perceived usefulness directly impacts perceived ease of use. Another theory that Taherhoost mentions and that is based on TAM is created by Venkatesh et al [15] who created the unified theory of acceptance and use of technology. The authors aimed to explain users' intention to use a new technology by consolidation of 8 models that had earlier been used to explain usage behavior. Venkatesh et al [15] found that Performance expectancy, effort expectancy, social influence and facilitating conditions had a direct impact on the intention to use new technologies. While gender, age, experience and voluntariness of use moderated these relationships. While TAM and UTAUT focus on the individual TOE looks at the organization. Depietro et al [17] created the technology-organization-environment framework which is a framework on how organizations can adopt innovative technologies. Depietro et al [17] found that to all three elements are both constraints and opportunities for innovation. Depietro et al [17] found the following factors to be important for users to adopt a certain innovation: Industry characteristics and market structure, technology support infrastructure, government regulation, availability, characteristics, formal and informal linking structures, communication processes, size and slack.

To research the intention to use multiple theories can be used and factors can be conciliated to merge different theories Agarwal & prasad [49] researched how individuals adopt new information technologies using existing technology acceptance methods and adding new factors. Agarwal & prasad [49] found that perceived usefulness, ease of use and compatibility had a significant effect on the intention to use new technologies. The authors also found that personal models in IT implementation can be used to enrich more broadly focused models. More research was done by Ababneh [50] who used a survey approach to extend the technology acceptance model to make it fit in the context of cloud computing. Ababneh [50] merged the technology acceptance model and the information system success model to find out users' intention to use cloud computing the model that this created he called the cloud computing acceptance model. Ababneh [50] found support for the extension of the technology acceptance model with more social variables. Perceived ease of use and perceived usefulness are major factors when it comes to the intention to use cloud computing. More research on intention to use has been done by Aggarwal et al [51] who examined why certain users adopt a new technology and continue to use the technology while others may only use new technology once. Aggarwal et al [51] found that the level of IT knowledge predicts the intention to continue to use a technology. The authors also found that those users to quickly adopt a new technology are not always most likely to persist in using the technology. Aggarwal et al [51] found that his might be the case because of the difference between actual knowledge and self-perceived knowledge Finally,

Aggarwal et al [51] found that experience with a certain type of technology predicts a higher rate of continuing to use technology.

More research has been done which shows the fit between intention to use and cloud computing. For instance, an article by Lin & Chen [52] who used a survey by interview approach to find out how cloud computing is understood by IT professionals and their attitude towards adoption. Lin & Chen [52] used the diffusions of innovation theory and where focused on the intention to use more so than actual usage. Lin & Chen [52] mention that intention to use is the best measure of the likelihood of implementing a new technology in its early lifecycle. Lin & Chen [52] found that the main concern to adoption for managers and developers is compatibility of cloud with company policy. Besides this the authors also found that the knowledge base on cloud wasn't very big and that this led to IT Professionals not being aware of all potential benefits. Finally, Lin & Chen [52] found that case studies would make companies realize the opportunities of the cloud and lead to more adoption.

The literature on intention to use comes from the top journals like Mis Quarterly and Information system research. The literatures shows that the existing literature can be used to measure the intention to use cloud computing which neighbor's CPaaS.

The knowledge gap that can be derived from the literature on the intention to use is he lack of literature on CPaaS or PaaS adoption. As well there is has not been a lot of research done specifically on IT professionals. The research that has been done was done on cloud computing which shows that there is a high likelihood that this can also be done for CPaaS. Another literature gap that can be found in this section is that the top journals have not focused on the adoption of CPaaS.

3. Theoretical development

The literature review did not find an accepted model to examine the intention to use CPaaS. The literature review did however find several factors which have the potential to influence the intention to use CPaaS being: Perceived usefulness, perceived ease of use, voluntariness of use, experience, social influence, facilitating conditions and top management support. All these factors are derived from the top journals and neighboring literature to CPaaS. Some factors are conciliated by merging different acceptance theories. Other factors from neighboring literature were not found fit for this research by an industry expert or did not appear in top journals. A nomological research model was created by using the relationships reported in prior literature. This research model exists of 8 factors at 2 levels. The perceived ease of use does not only affect the intention to use CPaaS but also affects the perceived usefulness. The factors in this model are separated into 3 categories being cognitive factors, individual factors and organizational factors. There are several research models that use similar factors to find out the intention to use cloud computing however there has not been any models found that use these exact factors to research the intention to use CPaaS. It's important to keep in mind that by comparing the research model in figure 1 to existing research models the contributions of this paper to the literature gets clearer.

The goal is to answer the following research question: How IT Professionals intention to use CPaaS is affected by cognitive, individual and organizational factors?

The definition of intention to use is as follows: The degree to which an IT Professional has the intention to use CPaaS [53].

The unit of analysis for this research as stated before are IT professionals.

The next subsections go in depth on each factor from the research model. The factors are introduced by giving examples of when they were used in neighboring literature to CPaaS and in one of the top IS journals being Mis Quarterly or Information systems research. For each factor hypotheses are developed to show the expected relationships between factors. The relationships of the factors to intention to use are supported using top journals and neighboring literature. The measurement of the factors is discussed in the research methodology.
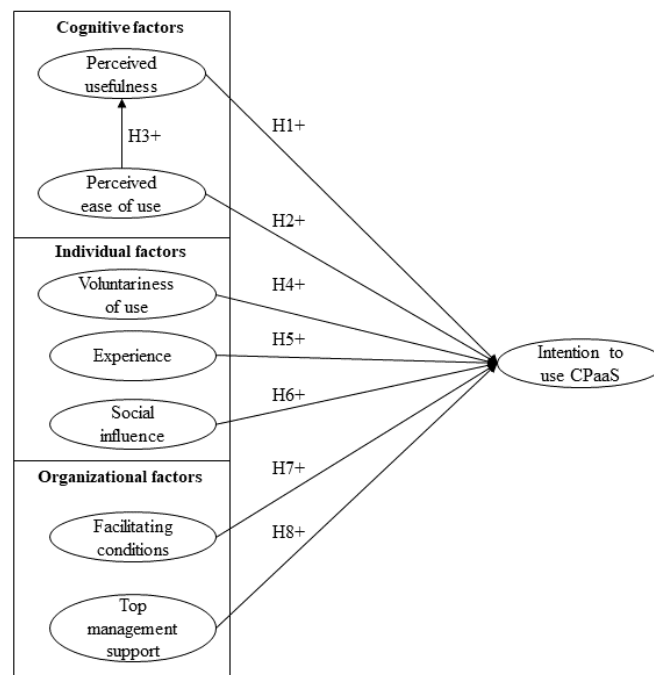

Figure 1: Nomological research model

3.1 Cognitive factors

The first category in which factors can be categorized is cognitive factors. In this research perceived usefulness and perceived ease of use are categorized as cognitive factors.

3.1.1 Perceived usefulness

The definition of perceived usefulness using our unit of analysis is as follows: "The degree to which an IT Professional believes that using CPaaS would enhance his or her job performance [3]."

Perceived usefulness is also known in other literature as Performance expectancy or perceived benefit.

According to Davis [3] perceived usefulness is a strong predictor of intention to use because users are driven to adopt an application primarily of the functions it performs for them. According to Wu [34] perceived usefulness in the adoption of cloud computing mainly focuses on functional factors. Nikolopoulos & Likothanassis [19] note that perceived usefulness played a positive role in the intention to use. Ooi et al [33] found that like predicted by Davis the perceived usefulness had a positive effect on the intention to use cloud computing. Haile et al [39] found strong evidence that perceived benefit had a positive impact on the intention to use cloud computing. Mohammed et al [16] found support for the positive impact of perceived usefulness on intention to use.

H1: The level of perceived usefulness will positively impact the level of intention to use CPaaS.

3.1.2 Perceived ease of use

There is evidence in the technology acceptance literature that perceived ease of use has a positive effect on the intention to use.

The definition of Perceived ease of use using our Unit of analysis is as follows: "The degree to which an IT Professional believes that using CPaaS would be free of effort [3]."

Davis [3] notes that perceived ease of use leads to higher perceives usefulness and that perceived ease of use is significantly correlated with intention to use. Raiker et al [36] suggest that perceived ease of use has a major effect on the attitude towards using cloud computing. According to Wu et al [34] perceived ease of use impacts to intention to use cloud computing.

H2: The level of Perceived ease of use will positively impact the level of intention to use CPaaS.

H3: The level of Perceived ease of use will positively impact the level Perceived usefulness.

3.2 Individual factors

The second category in which factors can be categorized is individual factors. In this research voluntariness of use, experience and social influence are categorized as individual factors.

3.2.1 Voluntariness of use

There is evidence in the literature that indicates that voluntariness of use increases the intention to use.

The definition of Perceived ease of use using our unit of analysis is as follows: "The extent to which CPaaS adoption is perceived to be under the IT Professional's volitional control. [54]"

According to Venkatesh et al [15] the voluntariness of use has a strong effect on the intention to use. Plouffe et al [55] noted that voluntariness was a significant predictor of adoption intent According to Nikolopoulos & Likothanassis [19] voluntariness of use played a positive role in intention to use cloud computing.

H4: The level of Voluntariness of will positively impact the level of intention to use CPaaS.

3.2.2 Experience
There is evidence in the literature that indicates that experience increases the intention to use.

The definition of experience using our unit of analysis is as follows: "The degree to which an IT Professional has worked with systems similar to CPaaS [56]."

According to Bassellier et al [56] showed that certain levels of experience with a system influence their intention to use the system in the future. Wulf [43] notes that experience may improve intention to use. According to kubacz-szumska & Szumski [26] the level of experience directly impacts the intention to use and actual usage of a communication system positivly.

H5: The level of Experience will positively impact the level of intention to use CPaaS.

3.2.3 Social influence
There is evidence in the literature that indicates that social influence increases the intention to use.

The definition of social influence using our unit of analysis is as follows: "The degree to which an IT Professional perceives it important others believe he or she should use CPaaS [15]."

According to Venkatesh [15] social influence is a significant driver into intention to use. According to Wu [34] social influence directly impacts intention to use.

H6: The level of social influence will positively impact the level of intention to use CPaaS.

3.3 Organizational factors
The third category in which factors can be categorized is organizational factors. In this research Facilitating conditions and top management support are categorized as organizational factors.

3.3.1 Facilitating conditions
There is evidence in the literature that indicates that Facilitating conditions increases the intention to use.

The definition facilitating conditions using our Unit of analysis is as follows: "The degree to which an IT Professional believes that an organizational and technical infrastructure exists to support use of CPaaS [15]."

According to Venkatesh [15] facilitating conditions was a significant driver of intention to use.

H7: The level of Facilitating conditions will positively impact the level of intention to use CPaaS.

3.3.2 Top management support
There is evidence in the literature that indicates that top management support increases the intention to use.

The definition of Top management support using our Unit of analysis is as follows: "The degree to which an IT Professional feels like there is active engagement of top management with CPaaS adoption [57]."

According to Thong [57] et al top management support is an important driver op adoption intention in IS implementation. Alkhatar et al [31] notes that top management support has a positive impact on intention to use cloud systems.

H8: The level of Top Management Support will positively impact the level of intention to use CPaaS.

4. Methodology

This chapter goes in on the research design choices and why these were chosen and finally has a concluding summary which finishes the chapter.

4.1 Research design

The research design sub-chapter is an in-depth detailed explanation and justification of the chosen methodology. The research design consists of 7 chapters covering the research philosophy, research type, research strategy, time horizon, sampling strategy, data collection methods and data analysis method.

4.1.1 Research philosophy

When we chose the research philosophy for this research, we had to look at the existing research in the IS paradigm. The research philosophy can be defined as: "A belief about the way in which data about a phenomenon should be gathered, analyzed and used. "

When looking at the published papers in the top journals most are positivist. According to Dube and pare [58] positivist case research is the dominant variant in IS case study research over Interpretivism or post modernism. From the period of 1990 to 1999 in the top IS journals 87% of the case study research was positivist [58]. A second reason to go with a positivist approach over an interpretivism or post modernism is the existing guidelines for case study research. The guidelines by Yin [59] were more suitable for positivist research.

This research of the intention to use was fit for a positivist study because we researched causal relationships and believe that the relationships should be falsifiable. Interpretivist case study research would not have been a good match because interpretivists believes that relationships can be anything you interpret.

4.1.2 Research Type

The research took a deductive approach which means that we took existing theory's we found in the literature review and use data to confirm our theory. The reason for choosing this type of research is because we were able to find antecedent to the intention to use CPaaS in multiple different papers published in top journals. This theory we developed and want to test which can be found in chapter 3: Theoretical development is not known to be ever tested before in another paper.

This study takes a mixed-method approach which means that we use qualitative and quantitative methods. The choice for a mixed-method approach came while looking at existing positivist case study research. Yin [59] found that in case studies mostly interviews and documentation were used when it came to qualitative evidence but that there were also questionnaires that were used in case studies. The reasoning to not only use qualitative research comes from the small sample size of 5 cases. By using a mix of questionnaire's and interviews we have a greater amount of triangulation. For all cases we had 2 interviewees who we interviewed about the same unit of analysis.

4.1.3 Research Strategy

The research strategy that was chosen for this research is an explanatory multi-case study approach. As seen in the research philosophy and research type this research has a positivist deductive approach. The reasoning for choosing an explanatory case study is because we wanted to test our theory that we developed using the literature review. The phenomenon of CPaaS is a new phenomenon that cannot be researched outside of the context of the phenomenon. According to Yin [59] a case study is an empirical inquiry that investigates a contemporary phenome- non within its real-life context, especially when the boundaries between phenome- non and context are not clearly evident.

The reason to not choose a grounded theory or exploratory approach is that we were able to find antecedents to intention to use in the literature review. Where an exploratory approach is inductive and used to develop a theory using data collection, we want to test our theory that we derived from existing literature.

The reason to go for a multi-case study design over a single case design is because Yin found that most research efforts require multiple cases [59]. A multi-case design also counters the critique of generalizability [58].

4.1.4 Time Horizon

For this research we used a cross-sectional approach. The choice for a cross sectional was supported by the fact that only 15% of all positivist case studies in top journals between 1990-1999 had longitudinal design according to Dube and Pare [58].

A cross sectional approach is the best fit for this research because of the time restrictions of 6 months which would make a longitudinal approach impossible. Besides that a cross sectional approach, which means that the data was collected at one point in time, allows for enough data to be collected to either reject or not reject (support) a hypothesis. The interviews were all planned in the span of one week for convenience reasons.

4.1.5 Sampling Strategy

This research used the non-probability sampling technique of purposive sampling. As can be seen in the previous chapters we needed to find a sampling strategy that fit a positivist explanatory multi-case study.

The reason for selecting a non-probability sampling technique was that a probability sampling method is not possible within the CPaaS space the pool of companies using CPaaS and their accessibility does not allow for this. Besides this to create greater generalizability a certain industry that actively uses CPaaS was chosen.

The industry that was chosen is the delivery industry this industry is a good fit for the research of the intention to use CPaaS because they are often clients of CM.com and have a lot of communication with their customers via messaging and other platforms. This is also one of the main industries that CM.com focusses on when it comes to sales.

4.1.5.1 Case selection criteria

Cases were selected based on 2 sets of criteria being: organizational fit and interviewee fit. For a case to be selected the organization needed to be a customer of CM.com using CPaaS for at least 12 months. The reason for this timeframe is because after 12 months a customer should be ready for upsell and had enough experience. The organization needed to be active in the delivery industry. The reason for this is because this creates more generalizability. The organization needed to have its own IT team implementing CPaaS in which 2 IT professionals worked on CPaaS. One being a technical IT Professional like a developer and one less technical IT professional like a product manager. The reason for this is that according to Gartner these are the people spreading CPaaS throughout the organization [13].

The interviewee should be someone who has worked with CPaaS in the last 12 Months. The interviewee should have at least 5 years of experience in their field of work. The reason for this is because this will allow us to talk to more senior staff with more experience which will have a higher likelihood of being able to express themselves.

The unit of analysis for this research is IT professionals we want them to have been working on the same CPaaS project.

4.1.5.2 Case Selection

First of all, to find the correct cases a list was made of delivery companies which use CPaaS. This list of companies was held against the organizational criteria which resulted in a list of 7 potential cases.

All these 7 companies used CPaaS in the last 12 months and had their own IT team. A short informal call was planned with a representative of the 7 companies to get a better understanding of their use of CPaaS and the possibilities to do an interview with employees of their companies.

In table 1 you will see that 5 out of the 7 companies were found fit to be used in this research. All these companies were active in the delivery industry which makes the results more generalizable. Below table 1 is explained why the 2 companies that were not selected were excluded.

Case:	Unit of analysis		Organizational criteria	Company answer	Roles of interviewees	Interviewee criteria	Interviewee answer
Case 1	Company A	IT professionals	Customer of CM.com for at least 12 months	Yes, Company A has been a customer of CM.com for 3 years.	Portfolio manager	Has at least 5 years of experience in field of work.	12 years of experience in product management
						Worked on a CPaaS project in the last 12 months	Yes
			Active in the delivery industry	Yes, for over 20 years	Senior Developer	Has at least 5 years of experience in field of work.	Yes 7 years of experience as a developer.
			Has its own IT team implementing CPaaS	Yes, 200 dedicated IT staff		Worked on a CPaaS project in the last 12 months	Yes
			Has a Technical and non-technical member working on the project.	Yes, a portfolio manager and a senior developer			
Case 2	Company B	IT professionals	Customer of CM.com for at least 12 months	Yes, company B has been a customer of CM.com for 5 years.	Product Owner	Has at least 5 years of experience in field of work.	8 years of experience in product management.
			Active in the delivery industry	Yes for 23 years.		Worked on a CPaaS project in the last 12 months	Yes
			Has its own IT team implementing CPaaS	Yes, 750 dedicated IT staff	Lead developer	Has at least 5 years of experience in field of work.	15 years of experience

			Has a Technical and non-technical member working on the project	Yes, a Product owner and a lead developer		Worked on a CPaaS project in the last 12 months	Yes
Case 3	Company C	IT professionals	Customer of CM.com for at least 12 months	Yes for 2 years.	Product strategist and manager	Has at least 5 years of experience in field of work.	18 years of experience
			Active in the delivery industry	Yes for 7 years		Worked on a CPaaS project in the last 12 months	Yes
			Has its own IT team implementing CPaaS	Yes, has 40 dedicated IT staff	Developer manager	Has at least 5 years of experience in field of work.	14 years of experience
			Has a Technical and non-technical member working on the project	Yes, a product strategist & manager and a developer manager		Worked on a CPaaS project in the last 12 months	Yes
Case 4	Company D	IT professionals	Customer of CM.com for at least 12 months	14 Months	Product owner	Has at least 5 years of experience in field of work.	Yes 5 years of experience
						Worked on a CPaaS project in the last 12 months	Yes
			Active in the delivery industry	Yes for 9 years.	Developer	Has at least 5 years of experience in field of work.	Yes 6 years of experience
			Has its own IT team implementing CPaaS	Yes, has 10 dedicated IT staff		Worked on a CPaaS project	Yes

Case	Company	Type	Criteria	Value	Role	Experience criteria	Value
			Has a Technical and non-technical member working on the project	Yes, a product owner and a developer.		in the last 12 months	
Case 5	Company E	IT professionals	Customer of CM.com for at least 12 months	Yes for 3 years.	Product manager	Has at least 5 years of experience in field of work.	12 years of experience in product management
						Worked on a CPaaS project in the last 12 months	Yes
			Active in the delivery industry	Yes, for over 50 years.	Developer	Has at least 5 years of experience in field of work.	5 years of experience.
			Has its own IT team implementing CPaaS	Yes has 40 dedicated IT staff		Worked on a CPaaS project in the last 12 months	Yes
			Has a Technical and non-technical member working on the project	Yes, a product manager and a developer			

Table 1: Case selection criteria

The issue with company F on why they did not meet the criteria: Company F did not have 2 people available to interview. Only one employee who worked on the project was available

The issue with company G on why they did not meet the criteria: Company G did not meet the criteria of having worked on the CPaaS project in the last 12 months. Also, the person who managed the project has left Company G.

4.1.6 Data Collection Method

To collect data to find out which factors influence the intention to use CPaaS this research used interviews and a questionnaire. First of all, an informal meeting was held with 7 companies to make sure that they were a fit for this research by using the case selection criteria mentioned in the sampling strategy. Of these 7 companies 5 companies remained who were a fit. Each of these 5 companies had 2 employees who would have to be interviewed and during the interview they would be asked to fill in the questionnaire.

The reason to do an interview and a questionnaire links back to the chosen research strategy. To find out what factors influence the intention to use CPaaS we have to have triangulation. In this study we do a case study which means that to get triangulation we have to interview 2 people per case. If these employees do not align a third interview is needed to find out what went wrong. According to Dube and Pare [58] interviews is the most used type of data collection for positivist case studies.

The questionnaire and interview were administrated at the same time. The interview started with the questionnaire and ended with a semi-structured interview. The reason for this order was that by having the questionnaire first question could be asked about the results of the questionnaire if necessary.

4.1.6.1 Interview process

The interview process describes the way that the interview was set up. The entire interview can be found in appendix D.

1. Introduction:
   To start of the interview some general information was given on how long it would take and the interviewee was asked if he was okay with the interview being recorded. First some general questions were asked to make sure that the right person was being talked to. This was done by asking the interviewee criteria which can be found in table 1.
2. Clarify the unit of analysis:
   Secondly the unit of analysis was clarified to make sure that the 2 employees per company were going to talk about the same project.
3. Questionnaire:
   First a questionnaire is being administrated by way of google forms. The interviewee has the ability to ask questions about the questionnaire and the results get discussed during the interview.
4. Questions about factors:
   Starting with the Dependent variable the definition of the factor is given and the interviewee is asked to give a score between 1 and 7. Assume 4 ask why deducted 3 from 7. Assume 4 ask why 4.
5. Finalizing the interview:
   At the end of the interview the interviewee is asked if they want to mention something that did not got asked during the interview. Also, the interviewee is asked if they want to receive notes from the interview.

4.1.6.2 Questionnaire

Every factor has 3 questions based on a 7-point Likert scale. The full questionnaire can be found in appendix E.

4.1.6.3 Measurement factors

The factors were measured using 3 questions in the questionnaire and 1 open question. The questions in the questionnaire are based on the sources from the measurement supporting literature column.

Factor	Definition	Measurement	Scale	Measurement Supporting literature
Perceived usefulness	The definition of Perceived usefulness: The degree to which an IT Professional believes that using CPaaS would enhance his or her job performance. [3]	Questionnaire: 1. My job would be difficult to perform without CPaaS. 2.Using CPaaS gives me greater control over my work. 3.Using CPaaS improves my job performance. Give me a value between 1-7 for perceived usefulness. Assume 4. Why not 7? Assume 4: What lead to 4?	Likelihood	Davis [3]
Perceived ease of use	The definition of perceived ease of use: The degree to which an IT Professional believes that using CPaaS would be free of effort. [3]	Questionnaire: 1. I never become confused when I use CPaaS. 2. I make no errors when using CPaaS. 3. I find it easy to get CPaaS to do what I want it to do. Give me a value between 1-7 for perceived ease of use. Assume 4. Why not 7? Assume 4: What lead to 4?	Likelihood	Davis [3]
Voluntariness of use	The definition of voluntariness of use: The extent to which CPaaS adoption is perceived to be under the	Questionnaire: 1. The use of CPaaS was voluntary. 2. Although suggested to me, using CPaaS was not compulsory. 3. My superiors do not expect me to use CPaaS	Agreement	Plouffe et al [54]

		IT Professional's volitional control. [54]	Give me a value between 1-7 for Voluntariness of use. Assume 4. Why not 7? Assume 4: What lead to 4?		
Experience		The definition of experience: The degree to which an IT Professional has worked with systems similar to CPaaS. [56]	Questionnaire: 1. I have experience in and/or led in initiating new CPaaS projects? 2. How knowledgeable are you about finding people to help you with CPaaS withing your company? 3. What is your general experience with cloud computing? Give me a value between 1-7 for Experience. Assume 4. Why not 7? Assume 4: What lead to 4?	Scale: Frequency, knowledgeable, good-bad	Bassellier et al [56]
Social influence		The definition of social influence: The degree to which an IT Professional perceives it important others believe he or she should use CPaaS. [15]	Questionnaire: 1. People who influence my behavior think that I should use the system. 2. People who are important to me think that I should use the system. 3. The senior management of this business has been helpful in the use of the system. Give me a value between 1-7 for social influence. Assume 4. Why not 7? Assume 4: What lead to 4?	Agreement	Venkatesh et al [15]
Facilitating conditions		The definition of facilitating conditions: The degree to which an IT Professional believes that an organizational and technical infrastructure exists to support use of CPaaS. [15]	Questionnaire: 1. I have the resources necessary to use CPaaS. 2. I have the knowledge necessary to use CPaaS. 3. A specific person (or group) is available for assistance with CPaaS difficulties. Give me a value between 1-7 for facilitating conditions. Assume 4. Why not 7? Assume 4: What lead to 4?	Agreement	Venkatesh et al [15]

Top management support	The definition of top management support: The degree to which an IT Professional feels like there is active engagement of top management with CPaaS adoption. [57]	Questionnaire: 1. There is CEO attendance at project meetings. 2. There is CEO involvement in decision-making. 3. There is CEO involvement in monitoring project. Give me a value between 1-7 for top management support. Assume 4. Why not 7? Assume 4: What lead to 4?	Agreement	Thong et al [57]
Intention to use	The definition of intention to use: The degree to which an IT Professional has the intention to use CPaaS. [53]	Questionnaire: 1. I intend to use the system in the next 3 months. 2. I predict I would use the system in the next 3 months. 3. I plan to use the system in the next 6 months. Give me a value between 1-7 for intention to use. Assume 4. Why not 7? Assume 4: What lead to 4?	likelihood	Sykes et al [60]

Table 2: Measurement of factors

4.1.7 Data Analysis Methods

The data analysis method that is chosen for this research is a within-case analysis and cross-case analysis.

4.1.7.1 Within-case analysis

The first step in the data analysis is to create case reports for every case that was selected by sampling. In this case that means that there were 5 cases each containing 2 interviewees. The case report consists of a short summary of the business in which the case exists and an explanation of the project in which CPaaS was used by the IT professionals.

The second step of the within case analysis is to find the value for the factors. To do this each interviewee had taken a questionnaire which had questions on a 7-point Likert scale. Each factor had 3 questions asked about that factor. The results of the questionnaire were extracted to SPSS and a mean for each of the factors was derived ranging from 1-7.

In the within-case analysis we wanted to find out if the factor was either Low, Medium or High. This is why the following system was set up:

If a factor had a mean of 1 or 2 the factor would be scored: Low.
If a factor had a mean of 3, 4 or 5 the factor would be scored: Medium.
If a factor had a mean of 6 or 7 the factor would be scored: High.

Triangulation is created by interviewing 2 interviewees per case. The idea is that these interviewees should have a similar response. If this is not the case the interviewees should do an extra interviewing together in which we look at why they gave different answers.

During the interview the first question that gests asked is to give a score between 1-7 for each factor based on the definition of set factor. The score that gets given for this factor can be used as an extra argument to give either a low, medium or high to a factor. The quote's that were derived from the interviews are being used in the cross-case analysis.

4.1.7.2 Cross-case analysis

The cross-case analysis takes the 5 cases and looks if the data supports the hypothesized relationships from the theoretical development chapter. A case-factor table is formed by using the results from the within-case analysis. Between the factors there are correlational relationships which can be negative or positive. You can only reject a hypothesis when A is high and B is low. If A is high and B is medium it cannot be rejected (supported). We try to disconfirm the theory. Either we reject or not reject (support).

The data analysis in the cross-analysis section consists of the case-factor table and a report quote table. The Quotes are to support the hypothesized relationships.

Finally, all the results are put into the summary of findings in which the number of cases that was supported is shown the hypothesis are either supported or rejected in this section.

4.2 Concluding summary

The research methodology that has been used for this research is an Explanatory Positivist Multi-case study. The research is deductive and created a theory using the literature review. The aim of this research is to test this theory to answer the research question. The cases that were selected were selected based on case selection criteria which are in place to align the unit of analysis. This type of sampling is a non-probability sampling. The data analysis part exists of a within-case analysis and cross-case analysis. Within-case analysis is used to create case report and get values for the factors per case. In the cross-case analyses the results from the within-case analysis are held up against each other to try to reject the formulated hypothesis. The aim of this research is to reject or not reject the hypothesis based on the literature.

5. Data Analysis

In this chapter we use a within-case analysis and cross-case analysis to support or reject the theory that was developed in chapter 3: theoretical development.

5.1 Within-case analysis

The within-case analysis looks at the 5 cases that were selected using the selection criteria.

5.1.1 Case report 1: Company A

Company A is a company that has been active in the delivery industry for over 20 years. The company has in total over 37000 employees making it one of the leaders in the delivery industry. Company A has more than 200 IT employees working on different projects. The project in which Company A has used CPaaS was in a project on delivery notifications towards customers and a chatbot who can help with lost packages.

Interviewee 1 is a portfolio manager and has worked in the field of work of product management for over 12 years. The reason that Interviewee 1 was involved into the CPaaS project was because he had experience with other cloud type applications project within the company.

Interviewee 2 is a senior developer and has worked in the field of development for over 7 years. The reason that interviewee 2 was involved into the CPaaS project was because he had worked with interviewee 1 on cloud type application projects within the company.

5.1.1.1 Questionnaire mean
The mean of each factor is based on the results from the questionnaire that can be found in appendix E.
The aim is for both interviewees within the case to have similar results.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 1	6,00	4,67	5,33	5,67	4,67	5,67	1,00	6,00
Interviewee 2	6,00	4,33	5,33	6,00	4,67	5,33	1,00	6,00
Case Mean	6,00	4,5	5,33	5,84	4,67	5,5	1,0	6,0

Table 3:Questionaire mean case 1

5.1.1.2 Score based on definition of factor
Each interviewee was asked to give a score between 1-7 for each factor based on its definition. The interview question can be found in appendix D.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 1	6	5	5	6	5	6	2	6
Interviewee 2	7	6	5	6	4	5	2	6

Table 4: Definition score case 1

5.1.1.3 Case score

	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Case 1	High	Medium	Medium	High	Medium	Medium	Low	High

Table 5: Case score case 1

5.1.2 Case report 2: Company B

Company B is a company that has been active in the delivery industry for 23 years. Company B is a market leader in food delivery and is active all around the world. The company employs over 9000 people worldwide and has a dedicated IT staff of over 750 people working on various projects. The project for which company B used CPaaS was a project in which they tried to enable their merchants to have more contact with the person ordering the food. This was done by a mix of SMS, Voice (phone calls) and chatbots.

Interviewee 3 is a product owner with 8 years of experience in product management. Interviewee 3 started off in a more technical-product manager role but over the years went to a more product-based view.

Interviewee 4 is a lead developer with 15 years of experience. Interviewee 4 has worked on various projects concerning cloud computing over the years.

5.1.2.1 Questionnaire mean
The mean of each factor is based on the results from the questionnaire that can be found in appendix E.
The aim is for both interviewees within the case to have similar results.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 3	4,67	3,00	1,67	2,00	5,00	2,67	1,00	2,00
Interviewee 4	6,00	4,67	4,33	5,33	4,67	3,67	1,00	5,00
Case mean	5,34	3,84	3	3,67	4,84	3,17	1	3,5

Table 6: Questionaire mean case 2

5.1.1.2 Score based on definition of factor
Each interviewee was asked to give a score between 1-7 for each factor based on its definition. The interview question can be found in appendix D.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 3	6	3	1	2	5	3	1	2
Interviewee 4	6	4	4	4	5	4	1	6

Table 7: Definition score case 2

	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Case 2	High	Medium	Medium	Medium	Medium	Medium	Low	Medium

Table 8: Case score case 2

5.1.3 Case report 3: Company C

Company C is a company that has been active in the delivery industry for 7 years. Company C is a scale up company who tries to stand out from its competitors by doing deliveries after 17:00. The company employs around 1000 people and has 40 dedicated IT staff. The project for which company C used CPaaS was sending delivery notifications with live locations via WhatsApp.

Interviewee 5 is a developer manager with 14 years of experience. Interviewee 5 worked with similar project to CPaaS before at other companies.

Interviewee 6 is a product strategist and manager with 18 years of experience. Interviewee 6 has had a lot of contact with cm.com over the years at different companies.

5.1.3.1 Questionnaire mean
The mean of each factor is based on the results from the questionnaire that can be found in appendix E.
The aim is for both interviewees within the case to have similar results.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 5	6,67	4,33	4,67	4,67	5,67	4,67	6,00	6,00
Interviewee 6	7,00	3,67	6,33	4,33	6,33	4,33	6,67	6,00
Case mean	6,84	4	5,5	4,5	6	4,5	6,34	6

Table 9: Questionaire case company 3

5.1.3.2 Score based on definition of factor
Each interviewee was asked to give a score between 1-7 for each factor based on its definition. The interview question can be found in appendix D.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 5	7	6	5	5	6	5	6	6
Interviewee 6	7	4	6	6	5	5	6	6

Table 10: Definition score case 3

5.1.3.3 Case score

	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Case 3	High	Medium	High	Medium	High	Medium	High	High

Table 11: Case score case 3

5.1.4 Case report 4: Company D

Company D is a company that has been active in the delivery industry for 9 years. Company D has been growing steadily and has 50 employees of which 10 IT staff. The company still has lots of characteristics of a startup and the CEO is tech savvy. The project for which company D used CPaaS is using WhatsApp, Apple business chat and Google RCS to deliver more rich notifications to their customers and try to upsell via this way.

Interviewee 7 is a product owner with 5 years of experience. Interviewee 7 sees a lot of potential for CPaaS within the company.

Interviewee 8 is a developer with 6 years of experience. Interviewee 8 has some experience with cloud and has worked in multi-disciplinary teams over the years.

5.1.4.1 Questionnaire mean
The mean of each factor is based on the results from the questionnaire that can be found in appendix E.
The aim is for both interviewees within the case to have similar results.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 7	7,00	4,67	4,33	5,33	6,00	5,00	7,00	7,00
Interviewee 8	6,67	3,33	5,00	5,00	7,00	5,00	7,00	7,00
Case mean	6,84	4,00	4,67	5,17	6.50	5,00	7,00	7,00

Table 12: Questionaire mean case 4

5.1.4.2 Score based on definition of factor
Each interviewee was asked to give a score between 1-7 for each factor based on its definition. The interview question can be found in appendix D.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 7	7	5	5	6	7	4	7	7
Interviewee 8	7	3	6	6	7	7	7	7

Table 13: Definition score case 4

5.1.4.3 Case score

	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Case 4	High	Medium	Medium	High	High	Medium	High	High

5.1.5 Case report 5: Company E

Company E is a company that has been active in the delivery industry for 50 years. This company employs around 500 employees of which 40 IT staff. The project for which company E used CPaaS is a delivery notification system using WhatsApp and SMS.

Interviewee 9 is a product manager with 12 years of experience. The reason why interviewee 9 was involved into the CPaaS project was because it was a fit with his existing portfolio of products.

Interviewee 10 is a Developer with 5 years of experience. The reason why interview 10 was involved into the CPaaS project was because of earlier success in working with interviewee 9.

5.1.5.1 Questionnaire mean

The mean of each factor is based on the results from the questionnaire that can be found in appendix E.
The aim is for both interviewees within the case to have similar results.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 9	5,00	4,00	5,00	3,67	4,33	2,33	1,00	4,00
Interviewee 10	5,00	4,67	5,67	4,33	4,33	2,67	1,00	4,00
Case mean	5,00	4,34	5,34	4,00	4,33	2,5	1,00	4,00

Table 15: Questionaire mean case 5

5.1.5.2 Score based on definition of factor

Each interviewee was asked to give a score between 1-7 for each factor based on its definition. The interview question can be found in appendix D.

Interviewee	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Interviewee 9	5	3	5	3	5	2	1	5
Interviewee 10	5	5	6	5	5	2	1	5

Table 16: Definition score case 5

5.1.5.3 Case score

	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Case 5	Medium	Medium	High	Medium	Medium	Low	Low	Medium

Table 17: Case score case 5

5.2 Cross-case analysis

Using the results from the within-case analysis a case-factor table is developed. The aim of the case-factor table is to find patterns into the values of the cases.

Case #	Perceived usefulness	Perceived ease of use	Voluntariness of use	Experience	Social Influence	Facilitating conditions	Top management support	Intention to use CPaaS
Case 1	High	Medium	Medium	High	Medium	Medium	Low	High
Case 2	High	Medium	Medium	Medium	Medium	Low	Low	Medium
Case 3	High	Medium	High	Medium	High	Medium	High	High
Case 4	High	Medium	Medium	High	High	Medium	High	High
Case 5	Medium	Medium	High	Medium	Medium	Low	Low	Medium

Table 18: case-factor

5.2.1 H1: Perceived usefulness (+) → Intention to use CPaaS

Case #	H1: Perceived usefulness (+) → Intention to use CPaaS
Case 1	Interviewee 1: Using CPaaS API's was easier than our old system because the old system was barely working anymore and was so complex that we could hardly change anything. Interviewee 1: The new chatbot functionality would not have been possible with our old systems. Interviewee 2: The CPaaS API's made the life of our developers a lot better due to being able to stop using our old system. Interviewee 2: Using the CPaaS API's enabled more employees to use the system an issue with the old system was that we did not have sufficient knowledge management.
Case 2	Interviewee 3: We needed less time than we pokered to create a new app using the API. Interviewee 4: The CPaaS API made it easier for me to perform my job. I needed less time to develop the chatbots then I thought would be necessary.
Case 3	Interviewee 5: We saw that the developers really liked the idea of the CPaaS API's. For me it was a good thing that we would potentially save a lot of time working with the API. Interviewee 6: We tried other small prototypes to fulfill the need to send notifications via WhatsApp but eventually this seemed to be the only way possible
Case 4	Interviewee 7: Using CPaaS increased our output tremendously. We spent less time on development and don't have to manage any systems. Interviewee 8: The new systems work faster and are more reliable than the old ones.
Case 5	Interviewee 9: Investing in CPaaS was a strategic investment for the future. But we already see results in less time in dealing with outages of notifications.

Table 19: Quotes about H1 per case

Case #	Perceived usefulness	Intention to use CPaaS	Result
Case 1	High	High	Supported
Case 2	High	Medium	Supported
Case 3	High	High	Supported
Case 4	High	High	Supported
Case 5	Medium	Medium	Supported

Table 20: Case score H1

H1: The level of perceived usefulness will positively impact the level of intention to use CPaaS.

Hypothesis 1 is supported using the quotes and case score. The support for H1 was the highest in Case 1, 3 and 4. In these 3 cases both scores were positive and there were quotes from the interviews which showed a positive relationship. In all the cases we were unable to reject the hypothesis.

5.2.2 H2: Perceived ease of use (+) → Intention to use CPaaS

Case #	H2: Perceived ease of use (+) → Intention to use CPaaS
Case 1	Interviewee 1: There was not a lot of complexity when working with the API. Interviewee 2: We were able to get started quickly with the API. Only after a while we had to wait on sales.
Case 2	Interviewee 4: Adding communications to our app was easy.
Case 3	Interviewee 5: I give a 6 out of 7 to perceived ease of use. When we had the correct details, everything worked fine.
Case 4	Interviewee 8: We had few issues with the API not responding or things that were unclear.
Case 5	Interviewee 9: We had a lot of developers wanting to do more with CPaaS. Interviewee 10: We needed less time for development than we normally plan for something this size.

Table 21: Quotes about H2 per case

Case #	Perceived ease of use	Intention to use CPaaS	Result
Case 1	Medium	High	Supported
Case 2	Medium	Medium	Supported
Case 3	Medium	High	Supported
Case 4	Medium	High	Supported
Case 5	Medium	Medium	Supported

Table 22: Case score H2

H2: The level of Perceived ease of use will positively impact the level of intention to use CPaaS.

Hypothesis 2 is supported using the quotes and case score. The support for H2 was the highest in Case 1, 3 and 4. In all the cases we were unable to reject the hypothesis.

5.2.3 H3: Perceived ease of use (+)→ Perceived usefulness

Case #	H3: Perceived ease of use (+)→ Perceived usefulness
Case 1	Interviewee 2: The new system was easier to use than the old one. This saved us a lot of time and headaches.
Case 2	Interviewee 3: While working with the API's more ideas keep coming up with what is possible for our line of business.
Case 3	*No quotes
Case 4	Interviewee 7: We had no real problems with the API once we got all the documentation which made us work quicker than expected.
Case 5	*No Quotes

Table 23: Case score H3

Table 24: Quotes about H3 per case

Case #	Perceived ease of use	Perceived usefulness	Result
Case 1	Medium	High	Supported
Case 2	Medium	High	Supported
Case 3	Medium	High	Supported
Case 4	Medium	High	Supported
Case 5	Medium	Medium	Supported

H3: The level of Perceived ease of use will positively impact the level Perceived usefulness.

Hypothesis 3 is supported using the quotes and case score. The support for H3 was the highest in Case 1,2, 3 and 4. In all the cases we were unable to reject the hypothesis.

5.2.4 H4: Voluntariness of use (+) → Intention to use CPaaS

Case #	H4: Voluntariness of use (+) → Intention to use CPaaS
Case 1	Interviewee 1: We had discussions about using CPaaS for quite some time. Some of the team wanted to keep the old solution going for a bit longer. We came up with a solution in which we gradually migrated to the new systems. Interviewee 2: We got the choice from the team to choose what we wanted to do. We were not forced to use CPaaS in any way. But after discussions we agreed on that this would be important to have in the future.
Case 2	*The product owner was against using CPaaS because of a project that they ran not to long ago which had similar capabilities but only for Phone calls.
Case 3	Interviewee 6: The idea to use CPaaS came from me and a colleague so I was pro CPaaS API.
Case 4	Interviewee 7: We have a big voice in the decisions when it comes to working with new technologies. We are allowed to use whatever we think is best most of the time.
Case 5	Interviewee 9: We discussed most things in our project group and we decided together that we would start using CPaaS. Interviewee 10: We had to opportunity to work with CPaaS but also mention other options this helped to get all developers on board and try CPaaS.

Table 25: Quotes about H4 per case

Case #	Voluntariness of use	Intention to use CPaaS	Result
Case 1	Medium	High	Supported
Case 2	Medium	Medium	Supported
Case 3	High	High	Supported
Case 4	Medium	High	Supported
Case 5	High	Medium	Supported

Table 26: Case score H4

H4: The level of Voluntariness of will positively impact the level of intention to use CPaaS.

Hypothesis 4 is supported using the quotes and case score. The support for H4 was the highest in Case 3. In all the cases we were unable to reject the hypothesis.

5.2.5 H5: Experience (+) → Intention to use CPaaS

Case #	H5: Experience (+) → Intention to use CPaaS
Case 1	Interviewee 1: Working with the CPaaS API was not different than from other API's we work with. Interviewee 2: We did not make any beginner mistakes which helped us to start quickly with the API.
Case 2	Interviewee 4: Although this was a fairly new type of API for us and we did not have sufficient examples the fact that we have worked under these circumstances before helped tremendously in being able to ask the correct questions quickly.
Case 3	*No quotes about experience
Case 4	Interviewee 7: We had some experienced guys in the team who knew what pitfalls may lay ahead. Interviewee 8: I had worked with PaaS API's before.
Case 5	Interviewee 10: Having some experience with similar systems made it easier use the technology,

Table 27: Quotes about H5 per case

Case #	Experience	Intention to use CPaaS	Result
Case 1	High	High	Supported
Case 2	Medium	Medium	Supported
Case 3	Medium	High	Supported
Case 4	High	High	Supported
Case 5	Medium	Medium	Supported

Table 28: Case score H5

H5: The level of Experience will positively impact the level of intention to use CPaaS.

Hypothesis 5 is supported using the quotes and case score. The support for H5 was the highest in Case 1 and 4. In all the cases we were unable to reject the hypothesis.

5.2.6 H6: Social Influence (+) → Intention to use CPaaS

Case #	H6: Social Influence (+) → Intention to use CPaaS
Case 1	Interviewee 1: We had discussions about more standardization before so working with the same system is getting more important within the organization. Interviewee 2: We discuss often about what systems we use and how we can improve these.
Case 2	*No quotes
Case 3	Interviewee 5: There is some social influence going on from time to time when it comes to using new software. We do discuss when we use new EDI. Interviewee 6: Within the team there are a couple of employees who look more to new trends than others.
Case 4	Interviewee 7: We have a small group which means that we have a lot of contact on what others use. Interviewee 8: When everyone else starts using CPaaS you have to follow mostly because otherwise this will lead to more work in the future.
Case 5	*No Quotes

Table 29: Quotes about H6 per case

Case #	Social Influence	Intention to use CPaaS	Result
Case 1	Medium	High	Supported
Case 2	Medium	Medium	Supported
Case 3	High	High	Supported
Case 4	High	High	Supported
Case 5	Medium	Medium	Supported

Table 30: Case score H6

H6: The level of social influence will positively impact the level of intention to use CPaaS.

Hypothesis 6 is supported using the quotes and case score. The support for H6 was the highest in Case 3 and 4. In all the cases we were unable to reject the hypothesis.

5.2.7 H7: Facilitating conditions (+) → Intention to use CPaaS

Case #	H7: Facilitating conditions (+) → Intention to use CPaaS
Case 1	Interviewee 1: We had all tools we needed Interviewee 1: We had direct contact with support from CM.com.
Case 2	*Bad facilitating conditions according to interviewee 3 took it very long to get in contact with CM.com to fix an issue with the chatbots. Also, the API documentation wasn't up to date or difficult to find what was needed.
Case 3	*No quotes
Case 4	Interviewee 8: All the tools we needed were available. We could immediately start working with the API.
Case 5	*Bad facilitating conditions: We were unable to get in contact with CM.com at times directly because only one person in the team had contact with the account executive. Also, the API documentation wasn't up to date.

Table 31: Quotes about H7 per case

Case #	Facilitating conditions	Intention to use CPaaS	Result
Case 1	Low	High	Rejected
Case 2	Medium	Medium	Supported
Case 3	Medium	High	Supported
Case 4	Low	High	Rejected
Case 5	Medium	Medium	Supported

Table 32: Case score H7

H7: The level of Facilitating conditions will positively impact the level of intention to use CPaaS.

Hypothesis 7 is rejected using the quotes and case score. In case 1 and 4 we were able to reject the hypothesis. In the other cases we were unable to reject the hypothesis. Due to the quotes from table 31 and the low scores overall it was decided that this was enough to reject this hypothesis. Especially the quote which said that "only one person in the team had contact with the account executive. Also, the API documentation wasn't up to date" shows the lack of organizational infrastructure.

5.2.8 H8: Top management support (+) → Intention to use CPaaS

Case #	H8: Top management support (+) → Intention to use CPaaS
Case 1	Interviewee 1: We have no contact with the CEO or anyone from top management. The culture within the company is pretty much top-down.
Case 2	Interviewee 3: The CEO had no involvement in this project. Also, none of the other high level IT officers had any involvement
Case 3	Interviewee 5: The CEO was constantly available for questions and was also responsible for us even starting the project. The CEO has a lot of contact within CM.com.
	Interviewee 6: The CEO as always wants to be kept up to date with all the latest changes. He himself was a developer when he started so he knows quite a bit.
Case 4	Interviewee 7: The CEO would join most meetings and wanted to be kept in the loop. He himself was the one who kicked off the project.
Case 5	Interviewee 9: As always there was no real support from top management. We are not used to that in our industry. We do have a very good CIO who from time to time checks in on us but he does mostly everything that is bigger picture.
	Interviewee 10: We are busy with changing some infrastructure so that's were all the focus has been going to from top management.

Table 33: Quotes about H8 per case

Case #	Top management support	Intention to use CPaaS	Result
Case 1	Low	High	Rejected
Case 2	Low	Medium	Rejected
Case 3	High	High	Supported
Case 4	High	High	Supported
Case 5	Low	Medium	Rejected

Table 34: Case score H8

H8: The level of Top Management Support will positively impact the level of intention to use CPaaS.

Hypothesis 8 is rejected using the quotes and case score. In case 1,2 and 5 were able reject the hypothesis. In case 3 and 4 we were able to support the hypothesis. Case 3 and 4 were companies which had less employees than cases 1,2 and 5.

6. Discussion

The results of this research have provided insight into what factors influence the intention to use CPaaS by IT professionals. The research found that 6 of the 8 hypotheses were supported by qualitative and quantitative data. The 2 hypothesis that were rejected are: Facilitating conditions positively impact intention to use and Top management support positively impacts intention to use CPaaS.

Suggested hypotheses	Result of data analysis	Data support	Explanation
H1: Perceived usefulness (+) → Intention to use CPaaS	Supported	In 5 out of 5 cases, Perceived usefulness had a positive relationship with Intention to use CPaaS	When perceived usefulness was high the intention to use was also high in case in 1,3 and 4.
H2: Perceived ease of use (+) → Intention to use CPaaS	Supported	In 5 out of 5 cases, Perceived ease of use had a positive relationship with Intention to use CPaaS	All cases were supported.
H3: Perceived ease of use (+)→ Perceived usefulness	Supported	In 5 out of 5 cases, Perceived ease of use had a positive relationship with perceived usefulness	All cases were supported.
H4: Voluntariness of use (+) → Intention to use CPaaS	Supported	In 5 out of 5 cases, voluntariness of use had a positive relationship with Intention to use CPaaS	In case 3 when the voluntariness of use was high the intention to use was also high.
H5: Experience (+) → Intention to use CPaaS	Supported	In 5 out of 5 cases, Experience had a positive relationship with Intention to use CPaaS	In case 1 and 4 when experience was high the intention to use was also high.
H6: Social Influence (+) → Intention to use CPaaS	Supported	In 5 out of 5 cases, social influence had a positive relationship with Intention to use CPaaS	In case 3 and 4 when social influence was high the intention to use was also high.
H7: Facilitating conditions (+) → Intention to use CPaaS	Rejected	In 3 out of 5 cases, facilitating conditions had a positive relationship with Intention to use CPaaS	It was difficult to get in contact with CM.com and the API documentation at times wasn't up to date.
H8: Top management support (+) → Intention to use CPaaS	Rejected	In 2 out of 5 cases, Top management support had a positive relationship with Intention to use CPaaS	Smaller companies have higher top management support.

Table 35: Summary of findings

This research has contributed by being the first research being done on the intention to use CPaaS or CPaaS adoption in general. This research contributes mostly by rejecting facilitating conditions and top management support as positive impact on the intention to use CPaaS.

This research was deductive research which means that a theory was tested. In other research top management support and facilitating conditions do have a positive effect on the intention to use. One reason why this might not have been the case for this research is because of the difference in company size and specifically the CEO. From the quotes in the data analysis, we can see that some companies had more direct contact with CM.com about CPaaS than others and one factor in this case was the CEO. When the CEO was active in the CPaaS project the top management support factor was high.

This research also shows that the technology acceptance model is also accepted for the intention to use CPaaS. This because of the fact that both perceived usefulness and perceived ease of use are both supported by the research.

This research shows that Perceived usefulness, perceived ease of use, voluntariness of use, experience and social influence positively impact the intention to use CPaaS.
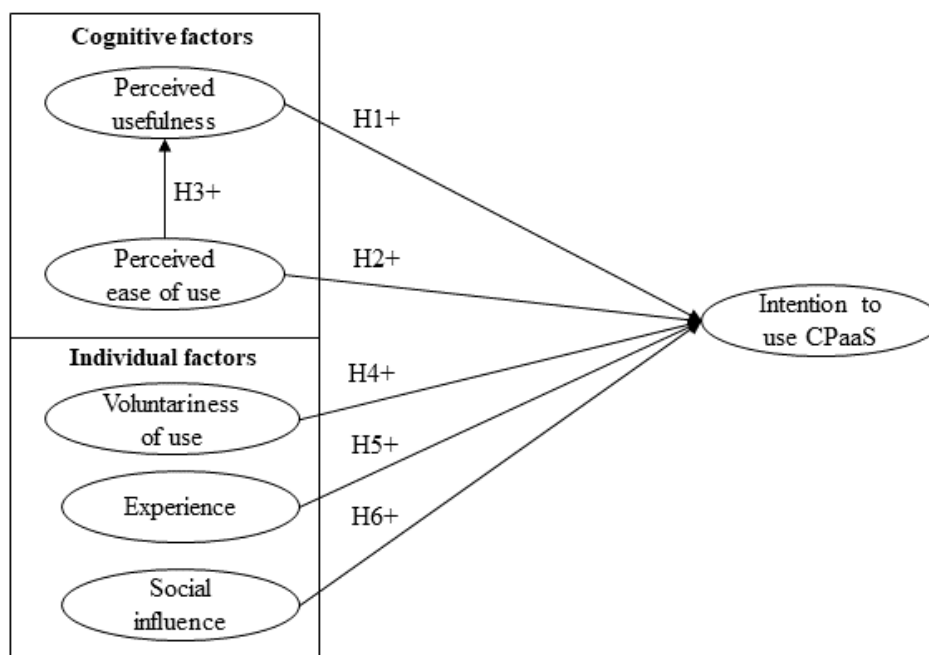

Figure 2: Supported nomological model

7. Conclusion

This research aimed to answer the following research question: "How IT Professionals intention to use CPaaS is affected by cognitive, individual and organizational factors?

It can be concluded that IT Professionals intention to us CPaaS is positively affected by 6 factors being: Perceived usefulness, perceived ease of use, voluntariness of use, experience and social influence. Also, we can conclude that perceived ease of use positively impacts perceived usefulness.

Another conclusion that we can make is that the technology acceptance model will most likely hold up for CPaaS just as it does for Cloud computing. The perceived ease of use and perceived usefulness were found to be supported and positively impact the intention to use.

The problem that CM.com had was that they wanted to find out what factors impacted the intention to use CPaaS so that they could use this to improve their processes and increase the intention to use CPaaS. CM.com can use the 6 factors to improve the intention to use CPaaS.

The chosen methodology to answer the research question was an explanatory positivist multi-case study. This method worked well to find the answer to the research question. The literature review gave enough factors and hypothesis to be able to test a theory. CPaaS is a completely new technology and as shown in this research needs to be researched within its context.

7.1 Contributions

The contributions of this research to the knowledge in the Information management field were first of all a start into researching a new phenomenon in its real-life context being CPaaS. No research has been done on CPaaS adoption and this research can be a starting point for another researcher to look more into CPaaS or PaaS. Besides that, this research also contributed by rejecting 2 hypotheses being that Facilitating conditions and Top management support has a positive effect on the intention to use. The research also showed the importance that the perceived ease of use and perceived usefulness were supported. These factors are from the well-known technology acceptance model and show that most likely the technology acceptance model will also be useful for CPaaS. Another contribution of this research is that it shows that it is possible to use factors from multiple different technology acceptance models and use them for research into CPaaS. This was already known about research in cloud computing but now is also known for CPaaS.

7.2 Limitations

The limitations that this research had were mostly time-based limitations. Due to a period of 6 months to complete the research certain mythological approaches like longitude studies were impossible. As well doing a pilot case study was impossible due to time constraints. Secondly a limitation was finding enough cases that were up to the case selection criteria. While this study had 5 cases which is enough to make a strong conclusion it would have been even better to have 10 cases. Another limitation of this research is the lack of good research into Platform as a Service and Communications Platform as a Service. None of the top journals have paid any attention to these verticals while they are getting more and more important for our everyday communications.

7.3 Further Research

More research into CPaaS is necessary due to its importance and impact on everyday life. It is the communication layer which helps companies connect to their customer in a way that was previously unimageable. A good starting point for more research into CPaaS could be looking into how company size effects the intention to use CPaaS. This is a factor that was found while testing the theory. Also, more general research in CPaaS would beneficial to the knowledge as of the information management field.

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Appendix A List of factors:

Categorie – type of factor	Factor	Definition	Measurement	Supporting literature or interviews	
				Neighboring literature CPaaS	MISQ or ISR
Dependant variable	Intention to use CPaaS	The degree to which an IT Professional has the intention to use CPaaS.	• I intend to use the system in the next 3 months. • I predict I would use the system in the next 3 months. • I plan to use the system in the next 6 months. Read out definition of factor and ask what number they would give out of 7 and why not 1 more or 1 less, What's good or bad.	[52]	[3]
Cognitive	Perceived usefulness	The degree to which an IT Professional believes that using CPaaS would enhance his or her job performance.	• My job would be difficult to perform without CPaaS. • Using CPaaS gives me greater control over my work. • Using CPaaS improves my job performance. Read out definition of factor and ask what number they would give out of 7 and why not 1 more or 1 less, What's good or bad.		[3]

Cognitive	Perceived ease of use	The degree to which an IT Professional believes that using CPaaS would be free of effort.	• I often become confused when I use CPaaS. • I make errors frequently when using CPaaS. • I find it easy to get CPaaS to do what I want it to do. • Read out definition of factor and ask what number they would give out of 7 and why not 1 more or 1 less, What's good or bad.		[3]
Individual	Voluntariness of use	The extent to which CPaaS adoption is perceived to be under the IT Professional's volitional control.	• The use of CPaaS was voluntary. • Although suggested to me, using CPaaS was not compulsory. • My superiors expect me to use CPaaS	[19]	[54], [61]

			Read out definition of factor and ask what number they would give out of 7 and why not 1 more or 1 less, What's good or bad.		
Individual	Experience	The degree to which an IT Professional has worked with systems similar to CPaaS.	- How often have you participated in and/or led in initiating new CPaaS projects? - How knowledgeable are you about finding people to help you with CPaaS withing your company? - What is your general experience with cloud computing?		[56]
Individual	Social influence	The degree to which an IT Professional perceives it important others believe he or she	People who influence my behavior think that I should use the system.		[15]

		should use CPaaS.	• People who are important to me think that I should use the system. • In general the organization has supported the use of the CPaaS		
Organizational Factors	Facilitating conditions	The degree to which an IT Professional believes that an organizational and technical infrastructure exists to support use of CPaaS.	• I have the resources necessary to use CPaaS. • I have the knowledge necessary to use CPaaS. • A specific person (or group) is available for assistance with CPaaS difficulties.		[15]

Organizational Factors	Top Management Support	The degree to which an IT Professional feels like there is active engagement of top management with CPaaS adoption.	• There is CEO attendance at project meetings. • There is CEO involvement in decision-making. • There is CEO involvement in monitoring project.	[31]	**[57]**

Appendix B List of hypothesis

H1	The level of perceived usefulness will positively impact the level of intention to use CPaaS.
H2	The level of Perceived ease of use will positively impact the level of intention to use CPaaS.
H3	The level of Perceived ease of use will positively impact the level Perceived usefulness.
H4	The level of Voluntariness of will positively impact the level of intention to use CPaaS.
H5	The level of Experience will positively impact the level of intention to use CPaaS.
H6	The level of Social influence will positively impact the level of intention to use CPaaS.
H7	The level of Facilitating conditions will positively impact the level of intention to use CPaaS.
H8	The level of Top Management Support will positively impact the level of intention to use CPaaS.

Appendix C Case selection criteria:

Case :	Unit of analysis		Organizational criteria	Company answer	Roles of interviewees	Interviewee criteria	Interviewee answer
Case 1	Company A	IT professionals	Customer of CM.com for at least 12 months	Yes, Company A has been a customer of CM.com for 3 years.	Portfolio manager	Has at least 5 years of experience in field of work.	12 years of experience in product management
						Worked on a CPaaS project in the last 12 months	Yes
			Active in the delivery industry	Yes, for over 20 years	Senior Developer	Has at least 5 years of experience in field of work.	Yes 7 years of experience as a developer.
			Has its own IT team implementing CPaaS	Yes, 200 dedicated IT staff		Worked on a CPaaS project in the last 12 months	Yes
			Has a Technical and non-technical member working on the project.	Yes, a portfolio manager and a senior developer			
Case 2	Company B	IT professionals	Customer of CM.com for at least 12 months	Yes, company B has been a customer of CM.com for 5 years.	Product Owner	Has at least 5 years of experience in field of work.	8 years of experience in product management.
			Active in the delivery industry	Yes for 23 years.		Worked on a CPaaS project in the last 12 months	Yes

Case	Company		Criteria	Response	Role	Experience	Answer
			Has its own IT team implementing CPaaS	Yes, 750 dedicated IT staff	Lead developer	Has at least 5 years of experience in field of work.	15 years of experience
			Has a Technical and non-technical member working on the project	Yes, a Product owner and a lead developer		Worked on a CPaaS project in the last 12 months	Yes
Case 3	Company C	IT professionals	Customer of CM.com for at least 12 months	Yes for 2 years.	Product strategist and manager	Has at least 5 years of experience in field of work.	18 years of experience
			Active in the delivery industry	Yes for 7 years		Worked on a CPaaS project in the last 12 months	Yes
			Has its own IT team implementing CPaaS	Yes, has 40 dedicated IT staff	Developer manager	Has at least 5 years of experience in field of work.	14 years of experience
			Has a Technical and non-technical member working on the project	Yes, a product strategist & manager and a developer manager		Worked on a CPaaS project in the last 12 months	Yes
Case 4	Company D	IT professionals	Customer of CM.com for at least 12 months	14 Months	Product owner	Has at least 5 years of experience in field of work.	Yes 5 years of experience
						Worked on a CPaaS project in the last 12 months	Yes
			Active in the delivery industry	Yes for 9 years.	Developer	Has at least 5 years of	Yes 6 years of experience

						experience in field of work.	
			Has its own IT team implementing CPaaS	Yes, has 10 dedicated IT staff		Worked on a CPaaS project in the last 12 months	Yes
			Has a Technical and non-technical member working on the project	Yes a product owner and a developer.			
Case 5	Company E	IT professionals	Customer of CM.com for at least 12 months	Yes for 3 years.	Product manager	Has at least 5 years of experience in field of work.	12 years of experience in product management
						Worked on a CPaaS project in the last 12 months	Yes
			Active in the delivery industry	Yes for over 50 years.	Developer	Has at least 5 years of experience in field of work.	5 years of experience.
			Has its own IT team implementing CPaaS	Yes has 40 dedicated IT staff		Worked on a CPaaS project in the last 12 months	Yes
			Has a Technical and non-technical member working on the project	Yes a product manager and a developer			

Appendix D semi-structured interview:

Semi-structured interview

Introduction to this research/interview

Structure of interview

This interview will roughly take about 1 hour of your time. I would like to start with some general questions about the company and you specifically.

Interview Confidentially

For my thesis research I would like to record this interview, of course with your permission. Everything in this interview will be confidential and the companies privacy will be protected. The final data and results will be fully anatomized and cannot be traced back to a specific company. When I'm finished with this interview and the transcription I will put this in a case report and send it your way for a last inspection if you are okay with this?

<<Interview start and opening>>

Introduction Questions

1. What is your position and department in the company?
2. How many employees are working at the company?
3. How many IT employees are working at the company?
4. How many employees are working in your team?
5. What sector does the company operate?
6. Main activities of the company? (Primary and secondary if relevant)

Clarify unit of analysis:

The unit of analysis that I'm interested in for my research is IT professionals. The definition of IT professionals is:

This interview is about project A in which you were an IT professional working with CPaaS.

Recheck if interviewee is qualified:
How long have you been working for company A?

How long have you been working in your current field of work? If applicable, what did you do before?

<<Start with questionnaire>>

<<Start with Interview questions>>

I will now give you 8 definitions of factors that potentially influence the intention to use CPaaS. I want you to give me a rating between 1-7 on each of these factors.

1. We will start with intention to use:

The definition of intention to use is: The degree to which an IT Professional has the intention to use CPaaS.

What value would you give for intention to use on a 7 point scale?
Assume 4: why not 7?
Assume 4: what lead to 4?

2. Perceived usefulness:

The definition of perceived usefulness: The degree to which an IT Professional believes that using CPaaS would enhance his or her job performance

What value would you give for intention to use on a 7 point scale?
Assume 4: why not 7?
Assume 4: what lead to 4?

3. Perceived ease of use:

The definition of perceived ease of use is: The degree to which an IT Professional believes that using CPaaS would be free of effort.

What value would you give for intention to use on a 7 point scale?
Assume 4: why not 7?
Assume 4: what lead to 4?

4. Voluntariness of use:

The definition of intention to use is: The extent to which CPaaS adoption is perceived to be under the IT Professional's volitional control.

What value would you give for voluntariness of use on a 7 point scale?
Assume 4: why not 7?
Assume 4: what lead to 4?

5. Experience:

The definition of experience is: The degree to which an IT Professional has worked with systems similar to CPaaS.

What value would you give for experience on a 7 point scale?
Assume 4: why not 7?
Assume 4: what lead to 4?

6. Social influence:

The definition of Social influence is: The degree to which an IT Professional perceives it important others believe he or she should use CPaaS.

What value would you give for intention to use on a 7 point scale?
Assume 4: why not 7?
Assume 4: what lead to 4?

7. Facilitating conditions

The definition of facilitating conditions is: : The degree to which an IT Professional believes that an organizational and technical infrastructure exists to support use of CPaaS.

What value would you give for facilitating conditions on a 7 point scale?
Assume 4: why not 7?
Assume 4: what lead to 4?

8. Top management support

The definition of top management support is The degree to which an IT Professional feels like there is active engagement of top management with CPaaS adoption

What value would you give for top management support on a 7 point scale?
Assume 4: why not 7?
Assume 4: what lead to 4?

The final question: Is there anything you would like to add that we did not discuss?

The interview takes about 1 hour total

0-10 minutes: Person can be late, comes into the teams call.

10-30: Questionnaire and afterwards asking questions about why which score

30-60: Explaining Factor giving definition and asking to score the factor on scale 1 to 7. Do this for all 8 factors. And ask questions based on the answer of the question.

Appendix E Questionnaire:

Interview CPaaS

**Introduction to this
research/interview**

Dear interview participant, I want to sincerely thank you for your
involvement in my research and making the time for this interview. As
introduced in our correspondence and first informal conversation. My thesis
research is about the intention to use CPaaS by IT Professionals. The definition of CPaaS
is as followed: "CPaaS
(Communications Platform as a Service) is a cloud-based communications platform
that integrates SMS, Voice & OTT Chat Apps into your existing software with
the use of APIs. As businesses rely more on cloud-based services, CPaaS enables
a fully customizable communications infrastructure. With CPaaS, you can build
front-facing applications for your customers more easily without managing the
underlying communications infrastructure".

This interview will be about your experience working with the CM platform Api's.
Structure of interview
This interview will roughly
take about 1 hour of your time. The interview is spit up in 2 parts.
1. questionnaire: A set of questions with multiple choice answer possibilities.
2. Interview: A conversation about the results of the questionnaire and other questions
toget a better understanding about the intention to use CPaaS

Interview Confidentially
For my thesis research I would like to record this interview, of course with your permission.
Everything I this interview will be confidential and the companies privacy will be
protected. The final data and results will be fully anonymized and cannot be
traced back to a specific company or person. When I'm finished with this interview and
the transcription I will put this in a case report and send it your way for a
last inspection if you are okay with this? The recording will be deleted after the interview
in transcribed.

Figure 3: Export of questionnaire

1. My job would be difficult to perform without CPaaS.

Mark only one oval.

Unlikely

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Likely

2. Using CPaaS gives me greater control over my work.

Mark only one oval.

Unlikely

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

likely

3. Using CPaaS improves my job performance.

Mark only one oval.

unlikely

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

likely

4. I never become confused when I use CPaaS.

Mark only one oval.

disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

agree

5. I make no errors when using CPaaS.

Mark only one oval.

Unlikely

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Likely

6. I find it easy to get CPaaS to do what I want it to do.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Agree

7. The use of CPaaS was voluntary.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

8. Although suggested to me, using CPaaS was not compulsory.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

9. My superiors do not expect me to use cpaas

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Agree

10. In general the organization has supported the use of the CPaaS

Disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Agree

11. I have experience in and/or led in initiating new CPaaS projects?

Mark only one oval.

Disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Agree

12. How knowledgeable are you about finding people to help you with CPaaS withing your company?

Mark only one oval.

Not knowledgable

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Very knowledgable

13. What is your general experience with cloud computing?

Mark only one oval.

bad

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

good

14. People who influence my behavior think that I should use the system.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

15. People who are important to me think that I should use the system.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

16. The senior management of this business has been helpful in the use of the system.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

17. I have the resources necessary to use CPaaS.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

18. I have the knowledge necessary to use CPaaS.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

19. A specific person (or group) is available for assistance with CPaaS difficulties.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

20. There is CEO attendance at project meetings.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

21. There is CEO involvement in decision-making.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

22. There is CEO involvement in monitoring project.

Mark only one oval.

disagree

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

agree

23. I intend to use the system in the next 3 months.

Mark only one oval.

Unlikely

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Likely

24. I predict I would use the system in the next 3 months.

Mark only one oval.

Unlikely

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Likely

25. I plan to use the system in the next 6 months.

Mark only one oval.

Unlikely

1 ⬭

2 ⬭

3 ⬭

4 ⬭

5 ⬭

6 ⬭

7 ⬭

Likely