
Key Factors Influencing the Adoption of SaaS: A Case Study of Microsoft Exchange Online

Submitted 08/09/24, 1st revision 20/10/24, 2nd revision 06/11/24, accepted 30/11/24

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Abstract:

Purpose: The purpose of this article is to present the factors behind the choice of cloud services as on-premise alternatives, with a particular focus on services that support electronic communications and office operations. The organization's environment greatly influences decisions on the choice of architectures or service model. Some of the factors of the external environment such as the Covid-19 pandemic or the decisions of large technology companies to update their business models towards a subscription model are presented.

Design/Methodology/Approach: The article presents some of the determinants of migration of services from an on-premise solution to a SaaS model using the example of Microsoft's family of email products and online communication tools due to their long embedding in the IT infrastructure of many organizations (since 1996) and the native ability to co-opt both models of operation. The article's literature review section presents advantages and disadvantages regarding cloud and on-premise working models, issues regarding a systemic approach to implementing cloud services, and some aspects related to security and management of cloud or hybrid infrastructure. Details of Microsoft's choices related to the licensing of its products are also presented, as well as the basics of the architecture of Microsoft's cloud solution Exchange -Teams and the ecosystem of integrated applications of the O365 environment.

Findings: service providers that offered their solutions in the on-premise model are developing most of their services in the cloud model and this type of model is preferred. Using Microsoft's cloud as an example, it can be seen that in the family of communication tools, the company is targeting the development of cloud solutions at the expense of on-premise solutions and in multiple ways (licensing mechanisms, lack of development of on-premise services, attractive environment of integrated applications, possibility of hybrid architecture and migration to the cloud) stimulates organizations to choose the cloud model.

Practical implications: the findings presented in the article can alert organizations to trends in the development of ICT services and the models in which they are implemented. Understanding the opportunities and risks of using cloud services allows better decisions to be made about the infrastructure used and better weigh the advantages and costs of SaaS services.

Originality/Value: The publication addresses topics that largely affect organizations with their own ICT resources.

Keywords: SaaS, cloud computing, on-premise, hybrid infrastructure, Teams, Exchange.

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JEL codes: L86, O33, D22, M15.

Paper type: Research article.

1. Introduction

Cloud computing services are solutions increasingly used by organizations regardless of the size and nature of their business. Cloud solutions are not just ICT resources used by companies around the world. Many have local computing resources that supported organizational productivity before the Internet and mobile services revolution and the expansion of cloud computing.

The purpose of the article is to analyze the situation of organizations that use their own computing services and make a decision to continue with the current state or move some functionality to the cloud. Numerous factors may be behind such a decision.

The article seeks to answer the question of what functionality determinants may lead to the decision to abandon on-premise solutions using Microsoft Exchange as an example. The first part of the article presents the characteristics of SaaS (Software as a Service) services with a focus on how they can be used by different organizations, and analyzes the potential factors behind the choice of on-premise or cloud-based services.

Then the elements of the external environment that have influenced the evolution of cloud models and their use by organizations over the past few years are presented. Due to the fact that the article uses a case study of a specific service, a brief history of the service was presented along with an indication of its position in the market, and technical issues regarding the operation of this solution in on-premise, hybrid and cloud models were outlined.

The next part of the article describes the ecosystem of the O365 integrated application environment.

The article is based on the example of one system, while the conclusions of the analysis of this case can be universal and repeated with other systems.

2. Literature Review

Office 365 software is a cloud solution in a SaaS model. We can find many voices in the literature presenting the advantages of such a software sharing model (Ali, 2019;

Fuzes, 2018; Kavis, 2014) so as to reconcile business needs with IT requirements. Such services can offer very simple functionality as well as very sophisticated systems.

For example, “The rise of SaaS ERP solutions” (Walko, Olney, and Hunt, 2020) analyzed the process of transforming healthcare units from a classic ERP (Enterprise Resource Planning) system to software in the SaaS model. The change of software to a cloud version in the case of the organizations discussed significantly affects the evaluation and implementation of ERP service providers' solutions from the point of view of security and cost as well as the creation of a value chain with the software provider. Switching to SaaS software also allows to approach business process changes in a more flexible way, which can be very difficult in the case of the on-premise model.

On the other hand, in “Why as-a-service operating models are the future of banking technology” (Elfeki and Perkins, 2022), the authors present how market trends have evolved around the adaptation and acceptance of solution hosted in as-a-service models. The evolution of markets in parallel with the development of technologies for delivering functionality through the cloud has contributed to a paradigm shift in the trading market industry allowing Trading Systems as-a-service. The authors argue that the transformation towards as-a-service models can bring many advantages over ossified and conservative on-premise solutions, provided organizations prepare well for business transformation.

Table 1. *On-premise and SaaS features comparison*

On-Premises Solutions	SaaS Solutions
Time consuming and requires many human and material resources to install	Rapid and simple installation
Need to purchase and maintain hardware	No hardware needed
Long-term planning and strong commitment	Lower commitment needed based on subscription model
Large monthly fees	Small monthly fees
Upgrades are time consuming and costly	Rapid and cost-effective upgrades
Additional software needed for security	Monitored network and server security
Need to purchase backup facility	Off-site backup facilities
Need to physically access servers and storage on-premises	No need to physically access servers and storage
No need for internet connection (optional)	Need for internet connection

Source: Ali, Wood-Harper, and Ramlogan, 2020.

Ali, Wood-Harper, and Ramlogan (2020) look more broadly at the overall impact of value creation in the customer-supplier relationship with a particular focus on the role of the SaaS model. They point out the impact of services delivered by this model on many aspects of an organization's life with an emphasis on changing the

business-IT strategy by providing on-demand, flexible, centralized and customizable SaaS application solutions.

As can be seen from the above examples, SaaS solutions can be successfully used in critical sectors such as health care or the trading market and, given the potential benefits in the table above, are an attractive option for any type of business using ICT services.

Mentioning the advantages of the SaaS model and outsourcing, it is important to mention aspects that are relevant to the organization from the point of view of security, among others. In the literature (Rakovic, Sakal, Matkovic, Maric, 2020)(Gozman, Willcocks, 2015) we can come across attempts to formalize and structure aspects that should be taken into account by, among others, IT departments when deciding to use SaaS services. These elements include, among others:

- Lack of Visibility and Control of the IT Estate
- Understanding Privacy Obligations and SaaS Architectures
- Evaluating SaaS Vendor Reliability and Longevity
- Monitoring and Auditing Outsourcing Risks, Policies and Practices
- Managing Intra-Group Outsourcing Arrangements
- Shifting Regulatory Landscapes
- Shifting Technical Landscapes.

3. Research Methodology

The research method used in the article is a case study based not on the example of one company but one service. The service in question is a rather unusual solution, as it has been around for years in the form of on-premise products and for several years has been available in a cloud or hybrid model. Using its example, it is possible to trace the factors that affect the change in preference for an organization to choose one of the models of this service. The service in question is Microsoft Exchange email service.

Microsoft's policy of preferring the development of cloud services at the expense of on-premise solutions was a known policy, but one that was geared for the long term. The article outlines the external factors that influenced the acceleration of this process. The main factor that caused this was the Covid-19 pandemic, which triggered processes that definitely increased the use of cloud computing.

The second factor that, according to the author, influences the preference for migration to the cloud is the very quality of on-premise services and the sense of maintaining hybrid solutions. To illustrate this phenomenon, the assumptions of the functioning of the hybrid environment for the described service and the elements responsible for the erosion of the functionality of this working model are presented.

The last factor described is the ecosystem of applications that integrate with the environment of Microsoft systems, which allows you to extend the functionality of, for example, email with functionalities offered by third-party service providers, or to combine your Exchange system with a SaaS application that the organization already owns (such as SAP). The described application system theoretically can function with on-premise as well as cloud environments, but increasingly, applications in the app store support only the cloud model or stop developing support for the on-premise model.

The aforementioned factors mean that even without paying attention to costs, developing on-premise solutions for certain services is simply impossible and the functionality of such platforms is losing its appeal with each passing year.

4. Research Results

In recent times, the technology that most captures the imagination of employees and managers is artificial intelligence and the possibility of its use in, among other things, automating and streamlining business processes. The advantage of AI solutions is the ability to support and extend the functionality of existing platforms and applications. Software that has been supporting office productivity for a long time is a wide range of applications that improve communication, document work, data management.

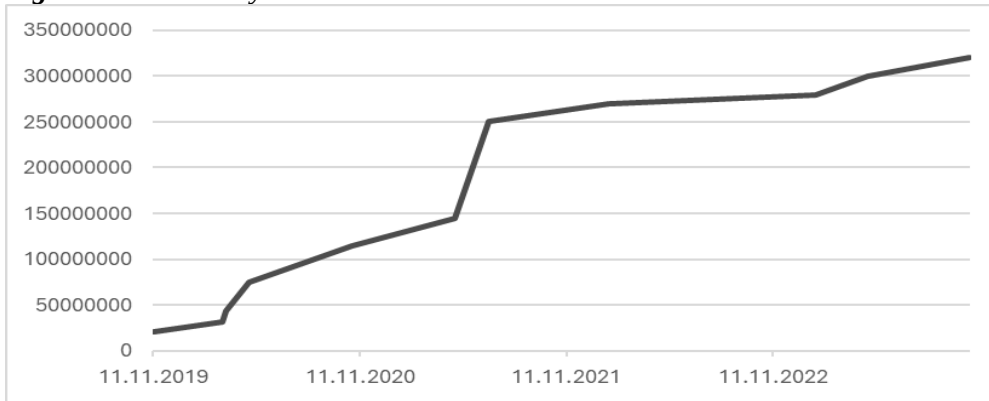
Among the leading solutions in this area are Google Workspace (formerly G Suite (Wikipedia, 2024) and Microsoft Office 365 (Wikipedia, 2024). Google's suite of tools was released on Aug. 26, 2006 and Office 365 on June 28, 2011. Both companies provide their own statistics on market share, and they can differ significantly. However, they are undoubtedly the most popular solutions. According to Statista (Statista, 2024), the market split between these solutions is as follows: Google Workspace 44%, Microsoft Office 365 30% , other solutions 26%.

The development of cloud-based solutions has given wide access to modern tools to support online communication - from chatting to video calls and video conferencing. The pandemic has left many companies struggling to provide their employees with adequate ICT resources, which has empowered public cloud providers. The significant increase in daily use of communication and collaboration platforms in the short term has also challenged ICT giants. The surge in demand for services has forced them to expand their data centers and emergency transfer of computing resources (Novet, 2020; Langston, 2020).

However, after the initial demand shock, they have managed to control the situation and meet customer demands. For example, the number of active Microsoft Teams users has virtually doubled over the past year, increasing from 75 million in April 2020 to 145 million in April 2021. The number of users using MS Teams, for

example, continues to grow, reaching 320 million active users in 2023 (Redmond, 2024).

Figure 1. Active daily Teams users



Source: Own research.

During the COVID-19 pandemic, access to electronic communication tools in organizations was supported in various ways by large technology corporations such as Cisco and Microsoft.

For example, Microsoft, in response to the lockdown associated with Covid-19, made the MS Teams solution available for free to everyone for a period of 6 months. In addition, it offered free licenses to charitable institutions and education. After the pandemic action expired, Microsoft continued to offer a free trial period (up to 12 months) for any organization that was not already using MS Teams. The program was called Teams Exploratory.

Although the service was offered for free, it included a wide range of functionality: Users with Teams Exploratory can access essential features of Microsoft Teams, including chat, video meetings, file sharing, and collaboration in Teams channels. At the end of the trial period, users with Teams Exploratory would need to transition to a paid Microsoft 365 subscription that includes Microsoft Teams to continue using the service.

According to Sid Nag, research vice president at Gartner *“The ability to use on-demand, scalable cloud models to achieve cost efficiency and business continuity is giving organizations the impetus to rapidly accelerate their digital business transformation plans. The increased use of public cloud services has reinforced cloud adoption as the ‘new normal,’ now more than ever”* (Gartner, 2020).

A Gartner survey of 2,000 CIOs found that “cloud adoption is becoming a significant way to stay ahead in a post-COVID-19 world focused on agility and digital touchpoints” (Gartner, 2020). This also translates into increased IT spending

and increased spending on the cloud itself. The percentage of IT spending moving to the cloud will accelerate in the wake of COVID-19, with the cloud expected to account for 14.2% of total global enterprise IT spending in 2024, up from 9.1% in 2020. (Gartner, 2020).

“SaaS spend is driven by applications being modernized by independent software vendors to run in a SaaS-based consumption model,” said Nag (Garnter, 2024). “Organizations continue to increase their usage of cloud for specific use cases such as AI, machine learning, Internet of Things and big data which is driving this SaaS growth.”

Projections from 2020 turned out to be underestimated. Projections from 2020 turned out to be underestimated. According to the same analytical team, spending on cloud services looks like the table below, which is a 100% increase over 4 years.

Table 2. *Worldwide Public Cloud Services End-User Spending Forecast (Millions of U.S. Dollars)*

	2023 Spending	2023 Growth (%)	2024 Spending	2024 Growth (%)	2025 Spending	2025 Growth (%)
Cloud Application Infrastructure Services (PaaS)	142,93	19,50	172,45	20,60	211,59	22,70
Cloud Application Services (SaaS)	206,00	18,10	247,20	20.0	295,08	19,40
Cloud Business Process Services (BPaaS)	66,16	7,50	72,68	9,80	82,26	13,20
Cloud Desktop-as-a-Service (DaaS)	2,71	11,40	3,06	13,10	3,44	12,30
Cloud System Infrastructure Services (IaaS)	143,30	19,10	180,04	25,60	232,39	29,10
Total Market	561,10	17,30	675,44	20,40	824,76	22,10

Source: *Gartner, 2024.*

While Google Workspace is a completely cloud-based solution, the ecosystem of organizational productivity software offered by Microsoft has a much longer history. The first version of the popular MS Word word processor was created in 1981 and Microsoft Exchange Server, which is a distant ancestor of the current Microsoft Exchange Online email service, was created in 1996. Identity servers, mail servers, file servers, database servers, have long been used in organizations in the on-premise model.

More than 90% of Fortune 1000 organizations use Microsoft's Active Directory directory service, so it is strongly tied to the company's products . ENlyft.com

(Enlyft, 2024) has information on 88704 organizations that own and use on-premise Microsoft Exchange. The companies using Microsoft Exchange are most often found in United States and in the Information Technology and Services industry. Microsoft Exchange is most often used by companies with 50-200 employees and 10M-50M dollars in revenue.

The peculiar situation with Microsoft solutions, in which organizations often have many of the company's on-premise server solutions and base their operations on them and, on the other hand, Microsoft itself is consistently developing cloud versions of the same services, can in many cases lead to the decision to migrate services to the cloud. All the more so since the company provides tools and tutorials that make it possible to co-opt between Microsoft's cloud and on-premise services and migrate to a cloud environment and partially or completely abandon the traditional on-premise model.

The company's focus on the cloud model also results in the announcement of discontinued development of many on-premise products or very limited development - consisting mainly of fixing bugs that are detected and adapting the product to technical requirements that may arise in the future) as in the case of Exchange Server (Schnoll, 2024). MS Teams is a tool that makes heavy use of meeting information and thus needs access to users' calendars, which are in their mailboxes.

Microsoft Teams contacts the Teams Backend Services in Microsoft 365 to get calendar information from the Teams Backend Services to display the users' calendar. The Backend Services get the required information from the Exchange mailbox. This access is not a problem for mailboxes hosted in Exchange Online, as Microsoft 365 provides the required access paths and permissions for your tenant.

On-premises Exchange Organization must meet specific requirements to provide access for Microsoft Teams. These technical prerequisites bring additional complexity into daily operation, which has its troubleshooting challenges. IT administrators need to know the individual components involved and their interaction to handle problems efficiently.

In contrast to other software clients that access an Exchange mailbox, calendar access in Microsoft Teams is not done by the Teams client itself, but rather by the so-called Teams Middle-Tier, which is part of a set of Teams Backend Services, independently of the client. Client access to other Microsoft 365 services, such as SharePoint Online or OneNote, is done directly (Stensitzki, 2021).

As you can see, the designed hybrid solution in theory allows you to keep own email resources and at the same time enjoy the benefits of MS Teams communications hosted in the cloud. Unfortunately, this solution increasingly does not go hand in

hand with another key component of the O365 platform - the integrated application environment.

5. Integrated Application Environment

The Office 365 family of software described in the article is a service offered in a SaaS model. Both the Exchange Online service, Sharepoint and MS Teams are products that are sold in license plans or as add-ons to licenses (Microsoft, 2024). An organization buying a selected license containing specific products gets the opportunity to work in a ready-to-go, integrated, scalable and monitored ecosystem of services.

The cheapest license package (Microsoft 365 Business Basic) for a user in an organization of less than 300 users offers Web-only and mobile versions of Word, Excel, PowerPoint and Outlook applications, Custom business-class email, Online meeting capabilities, 1 TB of cloud storage for each employee and more than 10 additional applications (Bookings, Planner, Forms).

Table 3. *Microsoft App Store applications by category.*

App Category	Outlook	Teams	Sharepoint
Analytics	88	232	109
Collaboration	646	1265	447
Content management	178	0	365
CRM	320	0	35
Customer Service	0	0	
File Managers	85	0	64
Finance	92	59	73
Human Resources	229	458	150
IT & Management Tools	175	313	205
Learning & Training	57	0	1
Marketing	319	202	62
News & Weather	8	0	71
Operations & Supply Chain	364	517	229
Productivity	1125	1415	654
Project Management	204	282	156
Reference	19	0	41
Sales	319	202	52
Site Design	11	0	217
Social	95	0	164
Utilities	409	0	1

Source: *Own research.*

In addition, O365 also serves as a platform for integrating access to external applications. Third-party application developers offered in the SaaS model, by placing applications in the Microsoft store, provide the opportunity to integrate external systems with the O365 environment, such as email, or Teams. Table 3

shows the number of available applications that can extend the platform's functionality in three categories - for the three core platforms - Outlook, Teams, Sharepoint.

In the store alone, there are more than 5,500 applications that use artificial intelligence and allow you to deliver a variety of services to the O365 platform to support process automation, generative or optimization solutions. An example is the 'Meeting Summaries from Read AI' application, which allows you to extend the capabilities of MS Teams applications with:

- Full Transcript and Summary: the full transcript with key moments highlighted and summarized based on content, engagement, and sentiment
- Meeting Summary: AI-generated overview of the meeting
- Pre-Read: With recurring meetings, before the meeting starts see a summary of the past meeting, key questions that mattered to participants, and action items that include named owners
- AI Coaching: Recommendations just for you to improve pacing, use of fewer filler words, and less interruptions
- Quick Links to Reports: Shortcuts to review AI-generated meeting reports across meetings, emails, and messages

Many of these applications need access to a mailbox located on the O365 platform to function properly and will not work with a hybrid account.

6. Conclusions

Organizations are spending more and more on cloud services at the expense of investing in on-premise solutions. This is due, among other things, to the wide range of cloud services, the possibility of instant deployment of services and often a flexible payment model for the service. Even if the same service is available in a non-cloud version, in many cases the functionality, flexibility and scalability of the solutions are incomparable in both models to the disadvantage of on-premise solutions.

Using Microsoft Exchange services as an example, it was presented that service providers prefer to invest time and resources in subscription and cloud-based solutions rather than on-premise and one-time payment-based ones. They are updating their business model toward a controlled environment and often stop developing server-based versions of their services.

The evolution of the cloud is also fostered by unexpected events, such as the Covid-19 pandemic and its implications for the IT industry. The third factor to the disadvantage of on-premise solutions is that it is much easier to integrate different SaaS solutions in the case of a cloud platform and to get the network effect of

different service providers offering their solutions in, for example, the Office 365 application store. All these factors mean that in some branches, such as email and online communications, the use of on-premise services will continue to decline.

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