

## Microsoft's Cloud Computing and Customer Satisfaction

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### ABSTRACT

With the development of technology, more and more enterprises have begun to use cloud computing. As the main service provider in the cloud computing field, Microsoft's cloud computing has attracted much attention. At the same time, customer satisfaction is a key factor in measuring and supporting corporate performance. The purpose of this research is to attain the status of customer satisfaction, discover any influencing factors, and the reasons for customer satisfaction by using online review data. Overall, the research results indicate that the number of satisfied reviews of Microsoft cloud computing is much higher than the number of dissatisfied ones. Quantitative data show that customers' online reviews mainly come from companies of different sizes, three main industries, and three main departments and qualitative data show that the main factors affecting customer satisfaction are products, support services, and business value.

*JEL Classification: O14*

*Keywords: cloud computer (CC), customer satisfaction (CS), Microsoft cloud computing, support services, business value*

## I. INTRODUCTION

With the development of the economy, more organizations are developing rapidly. They run their business across countries, hire a great number of employees, require complex information systems, and pursue higher revenue at a lower cost. Meanwhile, facing dynamic changes, organizations also require their business to be adaptable fast and on time (Teece, 2018). To support the spread of this kind of business requirement and for being in operation, business requires technology to be more scalable, flexible, and valuable. Cloud computing (CC) is one technology that can be adopted effectively by different organizations to fulfil these requirements. It is provided by cloud providers that develop CC products and supply cloud services to customers. There are many types of cloud services, different ways of deployment, and various categories of services (Surianarayanan and Chelliah, 2019; Chang, 2020). Different customers choose different services according to their specific situation. Cloud providers keep improving their products and services according to feedback from customers, which can help to attract more clients.

CC is a technology that offers an innovative business model for companies to utilize IT resources (Almorsy et al., 2016). It is delivered over the Internet and supplies software, platform, and infrastructure resources as services (Mehta and Panda, 2018). Major benefits of CC include pay-as-you-go, scalability on-demand, lower complexity, reduction of the cost of the up-front investment, and access to services from anywhere at any time. Technology has been quickly and fully developed which can fulfill more and more requirements coming from businesses. Microsoft is one of the biggest CC providers globally (Kshetri et al., 2017). According to Katy (2020), in the CC market. Microsoft is one of the major providers which gained 17.6% market share in the fourth quarter of 2019. Its two main competitors are: 'Amazon Web Service' which held 32.4% market share, and 'Google Cloud' which had a 6.0% market share in the same quarter. To keep or expand its market share, Microsoft must improve its CS. This research investigates what cloud service Microsoft supplies, how its customers evaluate its services, what aspects impact its CS, and how to improve them, thereby contributing to success for both Microsoft and its customers.

Customer satisfaction (CS) relates to gross sales and net profits of a company, which results in its growth and improvements of its products or services (Buttle and Maklan, 2019). That is why more organizations are running their business in a customer-centric way. Satisfied customers are more willing to pay for further products or services which contribute to the growth of the business. Many aspects have effects on CS such as the product, price, usability, and the services. The satisfaction generates from the comparison between the customer's expectations and their actual experiences of using a product or service. CS measures how a business' product, service, and overall experience either falls short, meets, or exceeds customer expectations (Agwu et al., 2018). It contributes to both customer retention and attraction.

CS is the first thing to be considered when a company is going to start a business (Khadka and Maharjan, 2017), as that decides whether clients will keep purchasing a service from a company which contributes to their profits. CS is critical for Microsoft as its growth is supported by its CS. In Microsoft cloud services, customers evaluate whether they are satisfied with some specific aspects, such as product, service, and price. The customer also requires broad in-depth satisfaction which requires the cloud

provider to keep improving its services and technologies, thereby boosting its business growth (Bhat and Yattoo, 2019).

Currently, many business organizations treat CS as their core focus because the level of customer satisfaction has an impact on their income (Ahmad et al., 2019; Alam, 2020; Badshah et al., 2020). They invest more money and involve more resources to make improvements to acquire a higher performing CS. However, at times some of the providers would not exactly know the status which leads to decrease in customer service. It is the same for Microsoft in facing this kind of problem. Firstly, Microsoft retains the development of its cloud products and service. It gives customers more and more choices. However, it is critical to know whether there are issues in these choices. Secondly, there is feedback from customers about its services and products which affects its CS. There will be decrease of clientele if they cannot handle customers' feedback properly and in a timely fashion. At the same time, there are so many choices for CC services for the customers. Facing so many cloud providers, customers have difficulty making a decision about which one is a proper fit for their business (Rittinghouse and Ransome, 2016). To implement a cloud service usually means investment and replacement of existing IT solutions. If they cannot make the right decision, they may lose a lot of money in adopting CC. Further, in using cloud computing, customers encountered all kinds of problems; they wished providers could hear from them and make improvements to address these issues to enhance their experience in the usage of cloud computing.

This research is designed to investigate two aspects of CC: the technology and business sides. From the technical view, CC is the right choice for the topic as it is one popular technology that is different from traditional information technology (IT). This changes the way a company implements IT services (Sapuram et al., 2017). Meanwhile, more and more new features are being added to the CC solutions to enhance the development of cloud technology. From a business perspective, CS is the right choice as organizations are perusing higher income which comes from greater CS. To connect both these two sides, the research is designed to analyze data about one specific cloud provider which supplies cloud technology, and CS which has an impact on its business performance. There are problems for both Microsoft and customers. For Microsoft, the key point is how to improve CS. To do that, it should address the problem by investigating how to make improvements relying on the experience of customers. From customers, the problem is how they can learn from other real experiences of using Microsoft cloud computing.

### **A. Research Questions**

The research for CS is based on customer classifications and customer considerations. These come from services and the impact on the satisfaction of customers. To identify them can help Microsoft CC understand the core influential factors and how to improve them to consequently improve CS. The corresponding research questions are listed below:

1. Who are the potential customers using Microsoft CC?
2. What is the level of customer satisfaction while using Microsoft CC services?
3. What are factors impacting the CS in the use of Microsoft cloud computing?

## B. Research Questions

An increase in development of business relies on recognition and support from customers (Ronchi, 2018). So, the CS is becoming the organization's core attention. The final goal of these companies is based on and consists of pursuing high levels of CS by finding out influential facts and to keeping making adjustments for these facts. To study how the organization achieves the above goal successfully, in this project, the research objectives are given below:

1. To explore customers' satisfaction in the use of Microsoft cloud computing.
2. To analyze factors impacting CS in the use of Microsoft cloud computing.

There are several aspects of CC which are important to customers in choosing CC. Studies indicated that CC provides a pay-as-you-grow purchasing method. Compared to traditional software, there is no need to pay for the software license all at once, but better to pay monthly (Pandey, 2016; Diaby and Rad, 2017; Attaran and Woods, 2019). In addition to the flexibility of purchasing, CC has many ways to meet the needs of different companies including small business and large enterprise (Yangui, 2016; Maresova et al., 2017). Concurrently, according to the company's development, purchases can be made incrementally, without the need to pay large-scale licensing fees in advance. This meant CC can be used like housing utilities, such as water and electricity (Pandey, 2016). In addition to the flexibility of purchasing, CC has many ways to meet the needs of different companies. There are three types of cloud computing: infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS) (Yangui, 2016). IaaS provides computing resources such as storage, networking, and virtualization. PaaS provides hardware and software tools as a service for developers to develop applications. SaaS allow business users to have the ability to access software on the Internet.

The business managers considered a good rate of return as a key factor in using CC (Nayar, et al., 2018). The initial investment in CC has relatively higher costs due to factors such as implementation and migration, although long-term use can provide a better return on investment support for leadership decisions. This reflects upon management to be more cautious about investment in CC. Also, Attaran and Woods (2019) showed that price was an important factor influencing the intention of small businesses to adopt CC. Small businesses are often not sufficiently funded, so the price is a major consideration. Although the price is one key point for a customer to consider while using CC, it also brings business value to the customer in the investment. Al-Badi, Tarhini, and Al-Kaaf (2017) indicated that CC saved costs for companies. On the one hand, it was not necessary for the company to purchase a large amount of hardware or software in advance for a certain period of business development in the future, so they saved a lot of capital expenditure. On the other hand, the computing resources in self-owned data centers could not usually be used 100%.

The use of CC avoids the waste of computing resources, and thus saves the investment of procurement funds. In support, Attrana and Woods (2019) found that small businesses had weaker payment capability and required more flexibility in their purchasing method. CC allowed them to switch the computing resources they needed to be purchased at any time. Therefore, CC provides flexible support for on-demand

procurement for small businesses. Kumar et al. (2017) conducted a study that collected data from 271 companies. The analysis showed that large enterprises were also content with the price policy. They did not want to pay money in advance for future computing resources so they could also have money available to invest in business development.

Enterprises can choose different types of cloud computing, which can also deploy CC in different ways. Maresova et al. (2017) shared that there were three ways to deploy cloud computing. For large enterprises with the financial capability, they could conduct a private cloud deployment. To save money, small businesses can purchase a public cloud. Some companies preferred to deploy both private and public clouds. The two types of CC could be used in combination, forming a hybrid cloud deployment.

There are many factors that organizations count while using CC services. The most critical factor that affect the continued use of CC services in an organization is the security of data (Pandey, 2016). The cloud service is usually accessed via the Internet without the need for a relay hosting infrastructure. This service delivery method shifts data center management from customers to service providers. Because customers no longer control the data themselves, they are concerned about security. However, the resources of the public cloud are shared with multiple customers (Kash et al., 2018), so this make some customers concern about data leakage. Besides, the most critical factor that affect the continued use of CC services in an organization is the security of data (Liu, et al., 2016; Pandey, 2016; Srinivasan, 2016; Al-Sharafi et al., 2017; Kash et al., 2018; Nayar, et al., 2018; Khan, 2019).

The other customers' concerns about data is privacy which involve not only accessing collections of massive amounts of data from multiple sources, but also requires the ability to combine them to conclude the task (Srinivasan, 2016). In the procedure of data processing, CC accesses personal privacy data. Firstly, the accessed private data is saved to cloud storage. Secondly, in the procedure of data processing, private data would be used by applications in multiple business processes. Therefore, the data might be stolen or leaked while being acquired and processed by CC. This is the reason that customers pay attention to privacy when using cloud computing. Moreover, the business users pay more attention to the ease of use of CC. Al-Sharafi, et al. (2017) indicate that ease of use is the basis for the organization to continue to gain user recognition. Business operations are becoming more and more complex, which requires more complex computing resources. Therefore, the ease of use of CC has become the focus of users. Because they want to focus more on business instead of spending time to learn CC (Liu, et al., 2016).

Support services are the other customer concern (Khan 2019). Such reasoning is dependent upon customers encounter any problem, they could be supported quickly. Further, a good support service could help clients resolve an issue as soon as possible, which could reduce losses for them. Interruption of the CC service might ultimately interrupt the client's business operation. Although security is a key concern, more and more customers are coming to trust CC's security. CC providers have complied with the many laws and regulations on information security and customer privacy (Goeke et al., 2018). This aspect reflects the ability of cloud service providers to meet the requirements of information security laws and regulations. On the other hand, compliance with the law also requires that if problems arise, they would be willing to pay for customer losses. This improves customers' trust in cloud security.

CC promotes communication and collaboration (Ahmed, 2016; Al-Samarraie

and Saeed, 2018; Wang et al., 2020). With the international development of business, more and more companies hope to conduct remote collaboration across regions. Large-scale CC services have deployed data centers around the world. This makes cross-regional communication smoother and more convenient because the data transfer speed between the cloud centers around the country is fast. Secondly, cloud services enhance the communication and collaboration capabilities of the company and its customers. Previously, the systems of the company and the client were independent of each other, and it was difficult to communicate effectively. Currently, many companies and customers use the same set of public cloud services. This makes data sharing and transmission more convenient and safer.

The other business value is efficiency. Four hundred and three Indian manufacturing companies were surveyed by Gangwar (2017). His study showed that when the company focused on the integration of hardware, software, information systems, and employee training, CC helped them create a consistent performance. CC made multiple systems or applications that could be used in an integrated manner to avoid switching between multiple systems, thereby increasing efficiency. Also, Allam et al. (2018) showed that CC gave help in collaboration by using scheduling, video, and messaging functions. These resources are helpful for communication and teamwork, which enhance the efficiency of collaboration. CS contributes to a company's financial situation. To persuade customers to purchase products or services, a company implements some activities, which include hiring sales staff, implementing marketing plans, or purchasing advertising. These activities increase the company's expenses. CS can potentially reduce such costs because it can increase customer retention and loyalty and generate more repurchasing behavior (Lim et al. 2019). For example, persuading satisfied customers is more likely to achieve a higher success rate than unsatisfied customers. It can reduce the cost of persuading customers to buy, such as advertising and marketing expenses. Also, CS can support customers to have a positive impression of the company's products and services. The positive attitude of the customer would affect the future purchase of products or services. Satisfied customers would repurchase goods in the same store, even if they could get a lower offer from other stores.

After understanding the significance to improve CS, it is also necessary to understand what factors can affect it. After surveying 110 customers, Khairawat (2020) concluded that CS depended on the quality of the products and services provided by the company. Therefore, service and product improvements would meet customer expectations. Dale et al. (2019) surveyed 500 small and middle enterprise' customers and found that the customers alone were the factor that create competitiveness. Therefore, enterprises must carry out effective quality management to improve CS. If the organization would not consider quality, the customer would be dissatisfied. This might lose customers and lose competitiveness. This meant that in addition to improving product quality control and after-sales service capabilities, it is also necessary to meet and exceed customer expectations through their participation and feedback. This requires comprehensive efforts in the organization.

This comprehensive work is called Total Quality Management (TQM). Effective implementation of TQM can improve CS. It can also improve quality and reduce waste, thereby reducing production costs. The reduction in production costs directly reduces the prices of products and services, and consequently, lower prices would bring higher CS. Khairawat (2020) emphasized the importance of quality of product and service and

price for CS. Lim et al. (2019) further pointed out that CS was seen as a post-consumption comparison of customers' expectations and the actual quality of the product or service. That is, the assessment of CS can be obtained by comparing customer expectations with their actual experience. High satisfaction come from the fact that the experience is higher than or equal to the expected value. If the experience is lower than expected, the user will be dissatisfied. Higher CS is valuable, but how cloud service providers get higher satisfaction is the key point.

Mei and Li (2017) explored how cloud service providers configured their cloud service platforms to maximize CS. The study found that cloud configuration affects service quality, which was an important factor affecting CS. These configurations include the various functions provided by the cloud service, as well as the consistency and connectivity between the various functions. Moreover, price allocation is an aspect that affects CS. On the one hand, cloud services provide price distribution for different functions. On the other hand, different service levels also affect price allocation. To this end, cloud service providers need to consider factors such as CS, service level agreements, rental prices to formulate and solve the problem of maximizing profits. To create the best configuration means to potentially maximize profits.

Finally, in addition to implementing effective methods to improve CS, Suchanek and Kralova (2018) also pointed out that companies should conduct CS investigations, because CS could reflect company performance. From the perspective of the company, there are significant differences in the evaluation of CS, and these differences are also reflected in the differences in company performance. Compared with customer evaluations, company self-evaluation is often overestimated. Whether the company is a high- or low-performance company, customers can distinguish one from the other. High-performance companies receive better customer reviews, so therefore, the analysis of data is essential to improve CS. This allows the company to objectively understand CS, thereby reducing self-assessment errors. This is why many companies engage in CS analysis. Its purpose is to truly evaluate the company's performance, and also includes a true assessment of the degree to which customers expect their products and services to be implemented, thereby providing positive assistance for improvement. This is the rationale why this study investigates and studies Microsoft CS.

## II. METHODS AND MATERIALS

As the Internet is becoming more and more popular, it is much easier for users to express their satisfaction online. The open-source information from the Internet reduces the time cost and makes data sharing more convenient. Also, if the data comes from a qualified company's website, the quality of data is also high. To ensure the data reflects the real CS of Microsoft CC objectively, this research collects data from a trusted third party, TrustRadius. It shows us that the online review is the proper data resource as scoring and reviews are posted by verified Microsoft cloud customers. This helps us validate the reliability of the data.

The secondary data from online reviews available on TrustRadius includes two main parts. The scores in one kind of measurement named 'scorecard' which reflect customers' satisfaction levels. The scorecard contains one to ten scoring points which are analyzed quantitatively. On the other hand, in the customer online review, some text is written by Microsoft customers to express how they felt or thought about their

experiences while using the Microsoft cloud service or product and this data is analyzed qualitatively. To select sampling from all data, systematic sampling is employed in which sample members in a larger population are selected based on a random starting point but are collected at regular periodic intervals (Nordgaard and Correll, 2018). To make the research up-to-date, this study chooses one year's data from 13<sup>th</sup> May 2019 to 13<sup>th</sup> May 2020. The total number of available online reviews for quantitative data is 1,091. For qualitative data, the total number is 245 reviews which represent the total number of reviews posted in one year. To save and analyze this kind of data this research used Microsoft Excel. It is also used to create data charts to show visual results that are easily understood. Table 1 shows the reviewers' profile and the total numbers of reviews posted on the scoreboard in one year.

Conversely, qualitative data consists of online reviews of customers' feedback and their point of view. It is used to find out the reasons why the customer was satisfied or not. To analyze this kind of data, this research used a text analysis tool called 'NVIVO 12' which is used to extract information from paragraphs posted by Microsoft's customers and to identify themes by coding. 'Themes' are features of participants' accounts about particular perceptions and/or experiences that the researchers find as relevant to the research question. 'Coding' is the process of identifying themes in accounts and attaching labels (codes) to index them. This research defines themes where they are written several times in the dataset of online reviews, and they are the core aspects customers paid attention to. NVIVO is also used to identify the sentiment of reviews. It helps the researcher to get data about the positive and negative sides of reviews. The themes were auto-coded and got the final resulting data shown in Table 2.

**Table 1**  
Quantitative Data

Reviewers' Profile	No. of Reviews
Company Size	594
Industry	135
Department	362
Total	1,091

Source: Trust Radius

**Table 2**  
Coding of Identified Themes

Themes of reviews	Aspects	Total	Positive	Negative
Product	Easy to learn	46	45	1
	Easy to access	42	38	4
	Easy to update	25	23	2
	Easy to share	21	18	3
Support Service	Support ways	20	17	3
	Response time	18	18	0
	Technical skills	7	5	2
Business Value	Communication & Collaboration	32	32	0
	Data Management & Report	19	18	1
	Price	15	10	5
Total		245	224	21

### III. FINDINGS AND DISCUSSION

The findings of Microsoft customer satisfaction (CS) are explained and discussed in detail, which are found from scorecards and the content of online reviews.

#### A. Quantitative Analysis of Microsoft Cloud Computing

In quantitative data, findings are analyzed based on 1,091 reviews given on the scoreboard. The reviews based on company size, type of industry, and their specific department are given in Table 3 below:

##### 1. The Company Size and Microsoft Customer Satisfaction

Findings show that the Microsoft Office 365 service has been used in three sizes of customer groups, such as small businesses, mid-sized companies and other enterprises. The total reviews posted by various sizes of the companies are given below:

Table 3 shows the number of reviews from three different-sized companies and their respective percentages. It means that Microsoft Office 365 service has been used in all different-sized companies in the market. The result demonstrates that the largest customer group is the mid-sized companies, which are 40.2 percent of total customers. The second-largest customer group comes from small businesses that account for 31.6 percent. The third level of customer resource are enterprises, which are 28.1 percent. This is close in size to small business companies. CC has different benefits for different types of enterprises (Kumar et al., 2019). Different-sized companies have specific requirements for Microsoft cloud computing, thereby contributing to different levels of satisfaction (Saini et al., 2019). The finding of the current study reveals that the mid-sized companies are the largest customers of Microsoft.

**Table 3**  
Number of Reviews by Company Size

Company Size	No. of Reviews	Percentage
Small Businesses	188	31.6%
Mid-size Companies	239	40.2%
Enterprises	167	28.1%
Total	594	100.0%

Talking to satisfied customers, Table 4 shows that customers from the mid-sized companies present the largest number of high CS, which is 145 at the 9-10 level. Following the mid-sized companies closely, small businesses account for the second-largest satisfied customers, which posted 119 high satisfactions of 9-10. The next is enterprises which accounts for 95, which is the smallest customer-base compared to the other groups. Compared to the satisfaction category, Table 4 shows that the small businesses group contributes 10 in the 1-6 scoring level, which expresses dissatisfaction. The number is 12 for the mid-sized companies, which is slightly higher than the small business group. The customers from the enterprise group account for the most dissatisfied customers, scoring 16. Table 4 also shows findings of the overview status that shows the number of dissatisfied customers is far less than the satisfied customers. The findings show that only 38 reviews are accounted for in the 1-6 score level which

demonstrates low CS from all three different-sized companies, compared with 359 reviews which give the 9-10 score level, which expresses high CS.

**Table 4**

Number of Reviews by Company Size in Score Level (10: Highest satisfied to 1: Lowest satisfied)

Company Size	9-10	7-8	5-6	3-4	1-2
Small Businesses	119	59	7	0	3
Mid-size Companies	145	82	7	4	1
Enterprises	95	56	12	4	0
Total	359	197	26	8	4

Source: Trust Radius

## 2. Microsoft customer satisfaction among various industries

Quantitative data analysis shows that CC is the most widely used in the information technology and service industry. Findings show that 135 reviews come from three industries: information technology and services, computer software, and education management. The number of reviews in other industries is much smaller.

The findings from Table 5 shows that reviews of the information technology and services industry account for the largest group, which is 53.3% percent of total reviews. It is about twice the number of the second largest source which is computer software. The computer software industry accounts for 27.4 percent which is a little bit higher than the education management industry (19.3%). The finding of the current study is in line with Senyo et al. (2016) which mentioned that different industries have different applications of CC and they also have a different understanding of and ability to use CC technology. Customers in this IT industry also have a deeper understanding of technology, and most of their businesses rely on cloud computing. The IT industry customers are always active in sharing their satisfaction level. The application of CC was the earliest in the information technology industry (Schniederjans et al., 2016).

**Table 5**

Reviews Percentages of Three Main Industries

Industry	No. of Reviews	Percentage
Information Technology & Services	72	53.3%
Computer Software	37	27.4%
Education Management	26	19.3%
Total	135	100%

Source: Trust Radius

Table 6 shows us that the most satisfied reviews come from the information technology and services industry. There are 43 high scores in the 9-10 score level. The second-largest satisfied reviews come from the computer software industry which has 23 satisfied reviews in the 9-10 level. The education management industry only accounts for 16 which is less than half the number of information technology and services industry. The number of dissatisfied reviews compared to satisfied is very small. These findings indicate that few industry customers are dissatisfied with Microsoft cloud computing. Compared with more than 80 satisfied reviews which gave 9-10 points, only 8 reviews gave 1-6 points. Considering each industry, the number of dissatisfactions in the education management industry is 1, which indicates that

customers in this industry have the lowest dissatisfaction. The number of dissatisfied reviews in other major industries is also very low, which is about 3. The findings show the different satisfaction results of Microsoft CC in different industries. As the data is collected from the third party website so it has strong validity. It can be inferred that the majority of the Microsoft customers are satisfied by its services.

**Table 6**  
Number of Reviews by Industry in Score Level

Industry	9-10	7-8	5-6	3-4	1-2
Information Technology & Services	43	26	0	2	1
Computer Software	23	10	3	0	1
Education Management	16	9	0	1	0
Total	82	45	3	3	2

Source: Trust Radius

### 3. Microsoft Customer Satisfaction in Different Departments

The findings show that Microsoft CC is mainly used in the following departments: information technology, corporate, and engineering.

Table 7 shows that 78.7% of reviews of Microsoft CC come from the information technology department which is the largest group. This has been confirmed by the finding which is the common phenomenon. The second-largest number of reviews come from the corporate department which is counted as 13.3%, followed by the engineering department (8.0%).

**Table 7**  
Number of Reviews by Department

Department	No. of Reviews	Percentage
Information Technology	285	78.7%
Corporate	48	13.3%
Engineering	29	8.0%
Total	362	100%

Source: Trust Radius

**Table 8**  
Number of Reviews by the Department in Score Level

Department	9-10	7-8	5-6	3-4	1-2
Information Technology	169	90	9	4	3
Corporate	37	17	2	2	0
Engineering	13	13	2	0	1
Total	219	120	13	6	4

Source: Trust Radius

Table 8 reveals that the largest number of high CS comes from customers of the information technology department. It has 169 satisfied scores in 9-10 which is far more than others. The findings also show that customers from corporate and engineering departments are the main groups that contribute to high satisfaction. The corporate department accounts for 37 satisfied scores in 9-10. The engineering department represents 13 high scores. The findings also show that 16 (1-6 scoring level)

dissatisfied reviews come from the information technology department. It is far less than the number of satisfied reviews (169). This is because they are familiar with technology and are willing to accept Microsoft cloud computing. However, in the corporate department, only 4 reviews give dissatisfied responses and only 3 in the engineering department.

According to data from findings, Microsoft CC is not only used in the information technology department but also provides services for businesses in other departments. CC provides computing, storage, and information support (Yang et al., 2017) for different departments. For example, the corporate department uses Office 365's online mail function to communicate with customers. Through the analysis of findings, it is clear that the information technology department gives the most reviews compared to other departments. Because the information technology department is more mature in understanding and mastering cloud computing, so more are satisfied with Microsoft CC services. This finding is in line with Vithayathil (2018) that CC had a larger user-base in the technical department.

## **B. Thematic Analysis of Microsoft Cloud Computing Review Data**

Using Nvivo, thematic analysis was employed to review the feedback of the Microsoft customers about its product, support service and its impact on the business value of the customers as given below:

### **1. Product Impacts Microsoft Customer Satisfaction**

CC is a new product that requires users to invest cost and time to learn how to use and manage it (Goeke, 2018). The Office 365 CC service is similar to Microsoft's traditional Office software experience, which makes Office 365 customers' learning and usage costs low. This not only enables Microsoft to maintain high CS but also makes many customers abandon other cloud products and choose Microsoft's CC products. Findings show that the user's highest interest in Microsoft CC is whether it is simple to use. Because all of the customers, including technical users and non-technical users are using Microsoft CC, the evaluation of the product gets 134 customers' reviews. Different customers have given evaluations on different aspects.

Table 9 shows that 134 reviews are posted about the ease of use of Microsoft CC products, including 124 positive reviews but only 10 negative reviews about 4 aspects of the product. Customers mentioned that the user interface and operational steps of Microsoft Office 365 CC products are similar to the traditional Microsoft Office software. This made the user's learning cost low, and additionally, many functions can be used without even learning about it. Microsoft CC therefore receives 45 positive reviews about 'easy to learn.' Many customers mentioned that because they were used to the operating experience of Microsoft Office, they gave up other CC products and chose Microsoft cloud products. One review rated it negatively showing that this user believed that the Microsoft CC product was too similar to the previous Office software user interface, not displaying enough flair or innovation. Findings in Table 8 show that there are 38 satisfactory evaluations in terms of 'easy to access.' This feature of CC made it easy for Microsoft customers to access cloud services, because they could access the network anywhere to use Microsoft CC products, such as at the company, at

home, or on the road. Office 365 also supports data synchronization between multiple devices. According to customer feedback, the data between multiple devices is automatically synchronized, so that customers could use the computer to work in the office or use the mobile device to work conveniently outside the office. At the same time, there were 4 negative evaluations. The findings in the review show that the negative evaluation mainly comes from the fact that when the network conditions were bad, the connection speed of the cloud service decreased, and even the page could not be opened at times.

**Table 9**  
Review Number of Microsoft Office 365 Product

Aspects of Product	No. of Reviews	No. of Positive Reviews	No. of Negative Reviews
Easy to learn	46	45	1
Easy to access	42	38	4
Easy to update	25	23	2
Easy to share	21	18	3
Total	134	124	10

Source: Trust Radius

Findings also show that 25 reviews were given in the evaluation of the upgrade function of Microsoft cloud computing, and that 23 reviews were positive. They mentioned some content, like when new functions were launched, that the web version of the cloud service could be automatically updated for users to utilize. Users could therefore always keep up-to-date with the latest features. At the same time, it was posted that the continuous update solved the problems of the product so that the users found the product more stable and efficient. Two customers give unsatisfactory customer reviews. One customer agreed that the function of the Microsoft update function was good, however, in actual work, the update service sometimes reported errors and wasted user's time.

Another customer expressed that many new features were not what he needed, and he preferred not to upgrade. Findings show that there are 21 reviews, while 18 of them mentioned that the share function of Microsoft CC is simple to use. The content of reviews shows that users can share files with simple steps. Also, the user interface experience is consistent with the traditional Office product. The right management function also enabled customers to set different levels of access to the share. File share transfer speed was fast, without much time waiting. Three customers mentioned that Microsoft's CC share function was helpful for their work, but there were indeed some problems. For example, OneDrive's file-sharing function may become a way for virus transmission. Both OneDrive and Share Point products have file-sharing features, which confused customers. Some customers worried that if improperly operated, sensitive data may be shared with the wrong person.

The essence of CC is the Internet connection service (Xie et al., 2016). Users can utilize CC products only as long as they are connected to the Internet (Stergiou et al., 2018). The quality of Microsoft's CC service is therefore very dependent on the network environment. In today's society, almost everyone has a mobile phone (Ahmed et al., 2019). Users are often in a mobile network environment to use a mobile phone network (Liang et al., 2017). However, the Internet stability in some countries and regions was bad, or the quality of mobile networks was not stable. Sometimes, the

network quality is not high which causes an unstable experience when using Microsoft CC. This aspect is where Microsoft CC needs to do improvement. Beloglazoy and Buyya (2016) state that no product can be 100% free of problems; consequently, Microsoft CC also has some errors.

Findings show that some of the negative evaluations of Microsoft CC come from problems that occurred during product operation and upgrades. The possible reason is that Microsoft CC was used in different scenarios in different countries and regions as it is a global product. Different environments caused problems for Microsoft products. Because it is hard for Microsoft CC to fully cover all usage scenarios in product development and testing. But if Microsoft CC could help customers resolve the problem as soon as possible they would get a better satisfaction rate. The support service is the help for addressing problems, which is analyzed in the next section.

With the global development of a company's business, more and more users need to communicate and collaborate remotely (Atlaran and Woods, 2019). The share function is an important feature of this kind of work. On one hand, customers mentioned that sharing is simple to use, fast, and helpful for their jobs. On the other hand, they sometimes have concerns because they share confidential information. CC providers have complied with some laws and regulations related to safety requirements. Meanwhile, their products also include functions such as sharing permission management, data protection, and compliance. Measures for data and information security cannot be achieved overnight. This requires continuous improvement of products by Microsoft CC and continuous feedback from customers on security issues. Support service is a good way to listen to customers for Microsoft CC.

## 2. Support Service Impacts Microsoft Customer Satisfaction

To use CC services, users utilize Microsoft products, including computing resources and software. However, when users encounter problems, they need Microsoft's technical support service to help them solve the problems. The level of Microsoft CC support service directly affects CS. Meanwhile, the customers of the Microsoft CC support service mainly come from the information technology department. Most non-technology users do not contact the support service. So, there are 45 reviews of the performance of this service. As shown in Table 10 below, from the coding of the online reviews of Microsoft cloud customers who evaluated the support service of Microsoft cloud computing.

**Table 10**  
Review Number of Microsoft CC Support Service

Aspects of support service	No. of Reviews	No. of Positive Reviews	No. of Negative Reviews
Support ways	20	18	2
Response time	18	18	0
Technical skills	7	5	2
Total	45	41	4

Source: Trust Radius

Microsoft CC supports to clients gained 45 reviews, including 41 positive reviews and only 4 negative comments. Later, in the daily use of Microsoft CC by customers, Microsoft mainly provides remote technical support services. Remote

support services include phone, online (email and Internet), and ticket management. According to findings, a total of 16 customers had made comments on remote support. This amount consists of phone support (9), online support (5), and support ticket (2). It contains 14 positive comments and 2 negative reviews. The positive evaluations are given due to the diversity of remote support methods. Customers mentioned that they have more options to select. The time for the remote support service to contact the customer could be arranged according to a convenient time for the customer. Also, Microsoft's online document has been praised by customers. The content of the review shows that most of the customer's problems could be resolved from the online document. Findings also show that Microsoft manages customer service requests in the form of case tickets. The ticket includes opened, resolved, closed and other states to track the progress of problems. Using this ticket management method, customers could receive tracking emails at each stage of problem handling, which made it easy for customers to understand the progress of problem handling promptly. Therefore, both face-to-face and remote support methods are positively affirmed by users.

Additionally, findings also show that 2 customers expressed dissatisfaction with phone support. The reason is that Microsoft's support service is operated from a global support center. Therefore, customers may receive calls from engineers in non-native English-speaking countries. English communication and cultural differences in different countries made it difficult for customers to understand the language of Microsoft engineers. On the other hand, due to differences in time zones in different countries, sometimes a support engineer would be exchanged after the first engineer finished his shift in his time zone. This required customers to explain the same problem to several engineers. These two aspects lead to customer dissatisfaction.

In Table 10 findings show that the second aspect of the customer's focus on the Microsoft CC support service is response time, which contains 18 reviews. Findings show that all 18 customers give positive comments on the response. When they encountered any problems, the customer support team could quickly assign a support engineer. In a short time, the service support staff could contact the customer by email. When necessary, the service staff would also quickly call the customer to communicate the problem. Hence, in the process of service response, Microsoft has clear processes and steps, which makes customers satisfied. Findings show that the third area of customer focus of Microsoft CC support service is the technical skill. In this regard, only 7 customers give evaluations, including 5 positive evaluations and 2 negative evaluations. As the world's top CC company, Microsoft's engineer capabilities are generally high. Customers agreed with the capabilities of most engineers because their problems could be quickly located, and at the same time, the ability of Microsoft engineers was recognized by the customers of the Information Technology department. Findings show that there are still 2 negative evaluation reviews. On the one hand, Microsoft's CC deployment involves service integration between the cloud and local data centers. But some Microsoft cloud support engineers lack the ability to identify local data center technology. As a result, a problem happening between the cloud and the locality cannot be fully addressed. Another aspect is that individual engineers encountered by customers had insufficient experience. These engineers have less experience in dealing with complex problems and this consumed more customers time.

Customers care means to get different types of technical support. From the coding of reviews, findings demonstrate that Microsoft CC provides several ways of

supporting customers, as shown in Table 11. Findings show that there is a total of 20 reviews of technical support services.

**Table 11**  
Support Ways of Microsoft CC

Support ways	No. of Reviews	No. of Positive Reviews	No. of Negative Reviews
Direct support	4	4	0
Phone support	9	7	2
Online support	5	5	0
Support ticket	2	2	0
Total	20	18	2

Source: Trust Radius

Some of them mentioned that in the early days of Microsoft CC deployment, Microsoft and its partners provided some on-site support services. This direct support service includes solution communication, deployment support, problem-solving, and training. Findings show that 4 customers rated this service as positive. Customers expressed the reason is that direct support is face-to-face communication, and that both the depth of communication and the degree of understanding are good. When customers encounter problems, they need to have a way to give feedback about the problem (Lowdermilk and Rich, 2017). If there is no way to give feedback on the problem, the customer will easily switch to other products (Alvarez, 2017). At the same time, CS is not only because of the consumption of products but also the quality of after-sales service (Murali et al., 2016). Literature review findings indicate that customer support services are essential for collecting customer feedback and solving problems. Good customer support services can enable the company to retain customers, or strengthen customer loyalty (Shafei and Tahaa, 2016). Therefore, many companies did not stop service after the products were sold. On the contrary, they have established a perfect after-sales service system and recruited full-time service experts to meet the users' needs for solving problems in product use. Besides, after-sales support services are also a way to collect customer feedback. Effective customer service is beneficial to the product team to obtain user feedback and opinions, to continuously improve the product.

The findings show that Microsoft CC provides multiple support methods that guarantee comprehensive service quality. Telephone, email, and online services enable customers to easily report problems to Microsoft. A variety of service methods can also be more adapted to the way customers work. For example, if a customer wants to deal with problems when they are available, email is the best way. Some customers want faster communication, and the phone is a better way. It also shows that Microsoft's case management system is liked by customers. Customers always want to feel the provider is concerned. Each case keeps being followed up so that customers can feel that support engineers are dealing with their problems instead of ignoring them. With support from the support methods and case management system, the response time has been highly praised by customers. Response time refers to how long the engineer makes a response after receiving the service request from the user (Lampont, 2019). This affects CS because every customer wants a supporter to contact him as soon as possible after submitting a request for help. The longer the wait time, the lower the CS (Nelson, 2019). However, the online knowledge base is a good solution to the problem (Gupta and Yinping, 2016). As a technology company, Microsoft has built up an online library

which is comprehensive and can cover most technical issues. Findings showed that actually, some customers can handle some daily problems by themselves. This reduces the workload of support services and also creates better CS. Remote collaboration inevitably encounters language problems or time zone problems (Hossain, 2018). In Microsoft, the globalized support model invariably causes language barriers for customers and repeated communication due to different time zones. This aspect causes the most dissatisfaction with service support, because customers can't improve the language to use Microsoft cloud computing. It is also impossible to work overtime to cooperate with technical support staff. Therefore, this is an area that requires Microsoft to improve.

### 3. Microsoft customer satisfaction and business value

Using CC service, enterprises do not need to build their own data center; they only need to pay as they grow (Jonas, 2019). This service model has brought many benefits to the enterprise. In this part of the review, the main participants are from the management level who are responsible for teamwork, management, decision-making, and purchasing. There were 66 reviews about business value. Findings found that Microsoft CC customers using Office 365 mainly get three aspects of benefits: communication and collaboration, data management and reporting, and price.

**Table 12**  
Aspects of Business Value

Aspects of business value	No. of Reviews	No. of Positive Reviews	No. of Negative Reviews
Communication & Collaboration	32	32	0
Data Management & Report	19	18	1
Price	15	10	5
Total	66	60	6

Source: Trust Radius

Table 12 shows that the business value of Microsoft CC gains 66 reviews including 60 positive reviews and only 6 negative comments from 32 customers. Firstly, 32 reviews are posted in team collaboration and communication; all of these customers expressed positive satisfaction. They mention that the product 'teams' made communication between employees timelier. It not only supported message communication but also supports video and voice conference functions. The information-sharing function made team collaboration more efficient and closer. The stable mail transmission guaranteed smooth communication between the company and customers. The unified work interface allowed employees to understand project progress and to-do items consistently regardless of their location. Recently, customers in the education industry had a very high satisfaction rating for Microsoft CC in distance education.

Findings show that 19 reviews are rated in Office 365's data and reporting capabilities. Only one of them gives an unsatisfactory evaluation. The dissatisfied customer mentioned that Office 365 relied too much on the stability of computer hardware. When computer performance was low, Office 365 software response time was too long or timed out. Most customers though, expressed satisfaction. The main

content of their reviews is that Office 365 Excel is more efficient for data processing. Simple, easy to use, and efficient, allowing customers to save more time. Cloud storage has a larger storage space; OneDrive, for example, has 1TB of space. When using mail, you did not always have to clean up the mail as before to prevent the mailbox from exceeding capacity.

The addition of intelligent functions made the production of reports easier and more efficient. The drill-down function of the report could provide more in-depth data analysis. Enterprise management believed that data management and the report function provided more help for enterprise decision-making. Findings show that the price of Office 365 receives relatively more dissatisfied evaluations compared with dissatisfaction in other aspects. This number is 5, and the number of satisfied clients is 10. The main reason for dissatisfaction is that more and more products are provided to customers for free. Especially for small businesses, their ability to pay is limited and they are more price sensitive. At the same time, 10 satisfied reviews said that the price of Office 365 saved them more expenses. For example, traditional software needs to invest a large amount of money at one time, and the annual cost of Office 365 is relatively low. Findings show that although some customers paid a higher price in the early purchase of the license, they saved more hardware and other costs in the long run. Even small business customers who were satisfied agreed with long-term benefits. Some customers mentioned free products, which were attractive to them, but paid products were safer. They can also be guaranteed of technical support if they encounter problems.

#### IV. CONCLUSION

The following conclusions can be drawn from the findings: Firstly, technologies and markets of CC have matured and become popular (Lu, 2018). With the increasing demand for CC in the market, Microsoft CC has developed more rapidly. At the same time, Microsoft CC has many competitors. CS is an effective way to improve the competitiveness of Microsoft cloud computing. Therefore, this research studies Microsoft's CS. It is hoped that the research results are valuable reference to Microsoft and their customers. Secondly, this research collects online reviews of data from a third-party company. The findings point out the main customer groups of Office 365 cloud computing, high satisfaction groups, and low satisfaction groups. From the content analysis, the reasons were found why customers were satisfied and dissatisfied in three aspects of the product, support service, and commercial value.

The overall finding is that the satisfaction of Microsoft CC is much higher than the dissatisfaction. However, CS depends on the needs of the customer group, technical capabilities, and Microsoft's product and service capabilities. Thirdly, the research finds out where Microsoft could improve the satisfaction of CC services. Therefore, according to the possible opportunities and the problems that have been found, suggestions are proposed for targeted satisfaction improvement. The research suggests that Microsoft gives a better price to small businesses. This can enable Microsoft to acquire a larger number of small business customers in the short term and can develop a strong relationship with large and medium-sized customers in the long run. For potential customers of Office 365, they need to pay attention to three issues: network stability, computer stability, and the user's English ability.

### **A. Answer to Questions of the Research**

The three questions of this research have been answered.

#### 1. Who Are the Potential Customers Using Microsoft CC?

Through findings, this study discovers that the three industries of main Microsoft CC usage are information technology and services, computer software, and education management. Almost all online reviews of customers come from these three industries. This shows that the current Microsoft CC has few applications in other industries which means there is great potential for expansion. Therefore, Microsoft CC has a potential customer base in various industries other than these three.

At the same time, from analysis of these departments, it can be seen that Microsoft CC is mainly applied in the three departments of information technology, corporate, and engineering. There are fewer users in other departments. Therefore, users in other departments are potential customers of Microsoft CC. In particular, in non-technical companies, the customer base of the non-technical department is much larger than that of the technical department. Therefore, Microsoft CC has a huge potential customer base in the non-technical sector.

#### 2. What Is the Level of Customers' Satisfaction While Using Microsoft CC Services?

In general, the Microsoft CS level is that the number of satisfied customers is far greater than the number of unsatisfied customers. Findings of both the scorecard and review content show that the number of satisfied customers is about 10 times the number of unsatisfied customers. The details of the five levels are as follows: 9-10 points review accounted for 60.5%; 7-8 points review accounted for 33.2%; 5-6 points review accounted for 3.8%; 3-4 points review accounted for 1.6%; and 1-2 points accounted for 0.9%.

#### 3. What Are the Factors Impacting the CS in the Use of Microsoft Cloud Computing?

The key factor that affects Microsoft CS is the ease of use of the product, which is the most evaluated part of the findings by both technical and non-technical customers. The second aspect is the CC support service which is mainly evaluated by technical users. The third aspect is the commercial value for customers which is mostly reviewed by the management level.

### **B. Recommendations**

Overall, findings show that the CS of Microsoft CC is mainly affected by the following three aspects: the company size, the specific industry and department. Combined with customer comments on products, support service, and business value, the research gives suggestions as below:

- In terms of enterprise size, small businesses are the second-largest customer group. They are relatively more price sensitive (Goek et al., 2018). Moreover, the number of small enterprises is larger than that of medium and large enterprises (Ayandibu and Houghton, 2017). This makes the opportunity for Microsoft because small businesses may become a medium or large company in the future. If they could be Microsoft's customers at that point, they might also be its medium or large customer in the long term. Besides, customers are satisfied with the long-term price benefits of Microsoft cloud computing. Their concerns come from short-term investments when they begin to use Microsoft CC. Therefore, the research suggests that Microsoft gives a better price to small businesses, especially the price discount at the beginning of the use period. This can enable Microsoft to acquire a larger number of small business customers in the short term and promote the cultivation of large and medium-sized customers in the long run.
- In terms of market changes, the increasing demand for remote working has given Microsoft a good market opportunity. The outbreak of COVID-19 has forced more industry customers to work from home. This has intensified the need for remote communication and collaboration. Microsoft can continue to enhance its product competitiveness in this area. This improvement in competitiveness can be considered in two aspects of product and technical support. In terms of the product, too much reliance on the Internet and computer stability has caused some customers to give dissatisfied evaluations. Therefore, it could consider optimising the low-quality network experience and reduce the software requirements on the client computer.
- Communication is the main customer complaint when talking to technical support. It is evident that English language acquisition and experience of some support engineers needs to be further improved. It is recommended to use technological methods to allocate support staff to neighboring countries as much as possible to reduce cultural differences, language differences, and time zone differences. At the same time, it is critical to standardize spoken pronunciation for support engineers. Besides, when the global technical support staff provides 7 x 24 hours of continuous support, they need to do a good job in handover between them to minimize the necessity of repeated explanations to customers.
- The findings show that the technical capabilities of customers have a decisive effect on the size of the customer group. Technicians are the main customer group because they are more capable of mastering the use of cloud computing. However, the number of non-technical personnel is far greater than technical personnel (Alenezi et al., 2017). To expand usage, Microsoft needs to continuously improve the ease of use of the product. According to the data of findings, it is especially important to reduce the chance of product errors, as ordinary users have a lower tolerance for product errors that affect their work. For many industries (except the three main ones), there are a great number of potential customers.
- Findings show that the most satisfied customers are 10 times that of the unsatisfactory evaluation. This shows that customers consider it is worth choosing Microsoft CC.

- If customers are users of traditional Microsoft Office software, they have been used to Office products. Then Microsoft CC can be the best choice for such customers. Because they do not have to change their usage habits or spend a lot of time learning new office software. This can save a lot of training costs for customers who switch from traditional software to CC products, as well as reducing the difficulty and errors in its use. Also, the promotion and use of CC in the company will encounter less user resistance.
- As Microsoft Office 365 products are deployed globally so information sharing and collaboration are easier. Also, Office 365 integrates a series of products, such as email, cloud drive, instant messaging, and video. This makes it unnecessary to choose more products when choosing Office 365. Therefore, customers can obtain a consistent experience using multiple functions without having to switch multiple times. This also makes data integration and processing more centralized and efficient. Therefore, for customers with remote communication and collaboration, and customers who need to unify multiple office software, Office 365 is the better choice.
- For potential customers of Office 365, they need to pay attention to three issues: network stability, computer stability, and the user's English ability. Findings show that most customers have high CS for Office 365 products and services. However, if the customer's network conditions are not stable, or the computer hardware configuration is unstable, it is still necessary to carefully evaluate the problems that may be encountered when using Microsoft cloud computing.
- When customers compare products and services of multiple CC vendors, they need specific data to support their decisions. Therefore, online reviews play a key role. Because potential customers can see the experience of real customers. For example, in the online review on the TrustRadius website, users can see the actual customer's classification, usage scenarios, satisfied and dissatisfied reasons. They can compare the information in the comments with their actual use scenarios to predict whether Office 365 is appropriate for them.

### C. Limitations and Future Research

For the evaluation of commercial products, individual customers rarely participate in it. Consequently, it is found that the Microsoft website has a lot of customer case data that can be used for CS evaluation. However, this data is released by Microsoft, and the fairness of customer evaluation is worth considering. This has led to Microsoft CC online review data being very difficult to obtain. Therefore, after a long search by the authors, it was finally decided to use the data from TrustRadius. For future studies, researchers can use primary data collection methods, such as interviews, questionnaires, etc., to obtain more comprehensive data.

For this study, the data comes from TrustRadius. This is an independent third-party company that verifies customers to ensure the authenticity of the data. Consequently, the data source of this study is relatively singular. The classification of CS scores has limitations, although there are classifications of enterprise size, industry, department and time. However, more classifications can be expanded to more

comprehensive data evaluation. The future research can make further comparison and discussion for different competitors in the same industry or different timelines and investigate customers' satisfaction.

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