

Cloud Computing SaaS Pricing Strategies/Patterns

Anas Sayed

Student, Master of Computer Application

Late Bhausaheb Hiray S S Trust's Hiray Institute of Computer Application, Mumbai, India

Abstract: *Developments are important to ride the unavoidable tide of progress. The greater part of endeavours are endeavouring to decrease their figuring cost through the method for virtualization. This interest of lessening the figuring cost has prompted the advancement of Cloud Computing. Distributed computing offers better figuring through superior usage and decreased organization and framework costs. Distributed computing is the amount of Software as a Service (SaaS) and Utility Computing. Distributed computing is currently at its baby stage and an exceptionally new innovation for the ventures. Consequently, the vast majority of the undertakings are not extremely certain to embrace it. This report handles this issue for ventures with regards to Cost/Pricing and administrations. In this paper I have examined the issues of evaluating a venture can have while they embrace Cloud Computing. Programming sellers deal with issues with evaluating their business SaaS applications. A run of the mill normal for a business SaaS application is that it ought to be accessible to various sort of clients that have their particular wishes. Hence, business SaaS applications ought to help configurability and subsequently a multi-tenure design is the best arrangement. Different results of provisioning business SaaS applications are that the expense structure relies upon the picked arrangement strategy and that measurements are required for estimating utilization. Estimating issues are distinguished at the contextual analysis organizations (enormous business programming merchants, arrangements are created and specialists assessed the arrangements. This brought about an outline of fitting valuing designs for business SaaS applications, depicting the issues, arrangements, models and outcomes tracked down in this review.*

Keywords: IaaS, PaaS, SaaS, Fixed Price, Variable Price, Usage Dependent Pricing, Situation Based Pricing, Cost Based Pricing, Flat Fee Pricing, Two Part Tariff Pricing, Peak Load Pricing, Bundle Pricing, Dual Pricing, Evaluation, Primary pattern, Secondary pattern, requirements Gathering, Transparent, Easy for administration, Recurring costs, Normalized Principal Eigenvector, Repeating costs, AHP, Fleiss kappa

I. INTRODUCTION

Distributed computing has become quite possibly of the most discussed innovation as of late and has stood out enough to be noticed from media as well as examiners due to the open doors it is advertising. The statistical surveying and examination firm IDC proposes that the market for Cloud Computing administrations was \$385 billion of every 2021 and will see a build yearly development rate (CAGR) of more than 21.0% through 2025, coming to \$809 billion.

There have been numerous meanings of Cloud Computing by various specialists. Barkley RAD characterizes Cloud Computing as:

"Distributed computing alludes to both the applications conveyed as administrations over the Internet and the equipment and frameworks programming in the datacentres that offer those types of assistance. The actual administrations have for quite some time been alluded to as Software as a Service (SaaS). The datacentre equipment and programming is what we will call a Cloud. At the point when a Cloud is made free in a pay-more only as costs arise way to the overall population, we call it a Public Cloud; the help being sold is Utility Computing. We utilize the term Private Cloud to allude to interior datacentres of a business or other association, not made accessible to the overall population. Individuals can be clients or suppliers of SaaS, or clients or suppliers of Utility Computing." [1]

According to NIST, Cloud processing is a model for empowering helpful, on-request network admittance to a common pool of configurable figuring assets (e.g., networks, servers, capacity, applications, and administrations) that can be quickly provisioned and delivered with negligible administration exertion or specialist co-op collaboration.

Distributed computing is a classification of registering arrangements in which an innovation or potentially administration allows clients to get to processing assets on request, depending on the situation, whether the assets are physical or virtual,

committed, or shared, and regardless of how they are gotten to (through an immediate association, LAN, WAN, or the Internet). The cloud is many times portrayed by self-administration 3 connection points that let clients gain assets when required insofar as required. Cloud is likewise the idea driving a way to deal with building IT benefits that exploits the developing force of servers and virtualization advancements.

It depicts calculation, programming, information access, and capacity benefits that don't need end-client information on the actual area and arrangement of the framework that conveys the administrations. Lined up with this idea can be drawn with the power matrix where end-clients consume power assets with no vital comprehension of the part gadgets in the framework expected to offer the assistance.

Distributed computing's significance rests in the cloud's capability to save speculation costs in framework, to save time in application advancement and sending, and to save asset portion above.

II. LITERATURE REVIEW

[1] In this paper May Al-Roomi, Shaikha Al-Ebrahim, Sabika Buqrais and Imtiaz Ahmad observe that Cloud computing is emerging as a promising field offering a variety of computing services to end users. These services are offered at different prices using various pricing schemes and techniques. End users will favour the service provider offering the best QoS with the lowest price. Therefore, applying a static pricing model will attract more customers and achieve higher revenues for service providers.

Though applying static pricing model definitely bring higher revenues for service providers and attract more customers, but as the cost cannot change, the scope of work is much less flexible. Requirements develop over time, as functionality becomes clearer and this can cause conflicts and delays. Good developers want to build the best possible solution, but a static-price project can hamper their ability to do this. static -price projects are not well-suited to projects that cannot compromise on features and quality. Hence, we have to pick or choose pricing model for cloud computing wisely.

[2] In this paper Se-Hak Chun observe that there are three pricing schemes commonly used by firms: subscription pricing, pay-per-use pricing, and two-part tariff pricing. It shows that the pay-per-use pricing is the best solution from the perspective of social welfare, this study stating that social welfare is maximized under a two-part tariff. This paper also shows that the two-part tariff is the most profitable pricing scheme for firms.

This paper has number of drawbacks like limitations with respect to customer's contracts for pricing schemes. Hence the choice of contract by customers and pricing differentiation for heterogeneous customers groups need to be analysed.

[3] In this paper Aishwarya Soni , Muzammil Hasan concludes that the dynamic pricing models are much more fair and adequate for the users because they adjust to different variable needs. Also, they are also fair for the service providers because they support multi-Tenants and changes in the price either increase or decrease depending on the circumstances of the market state.

But that doesn't mean customers aren't opposed to something other than a fixed-price strategy. They just don't like it when they are targeted by a dynamic pricing strategy. Even though it can be used to save money, it is often used to boost the margins of the business instead. That means customers feel like they're being overcharged for what they need and there isn't anything they can do about it. For that reason, a pricing strategy should always match a company's brand identity.

III. PROBLEM STATEMENT

Due to the distinctions with on-premises introduced programming, programming sellers deal with new issues on the grounds that their application is provisioned as SaaS. Laid out approaches to evaluating programming probably won't be appropriate for business SaaS applications. Moreover, contrasts with customer SaaS exist since business SaaS applications expect configurability to serve various types of associations.

Programming sellers deal with issues with estimating their business SaaS applications. The evaluating issues could emerge as a result of the configurability of the product, the requirement for serving various clients, contrast in utilization or one more issue brought about by provisioning a business SaaS application.

Hence, programming sellers of business SaaS applications ought to be given answers for evaluating their application. In light of these issues, the issue articulation is planned as follows:

Programming merchants deal with issues with evaluating their business SaaS applications, and don't have any idea how to take care of these estimating issues. The motivation behind this study is to:

1. Recognize estimating issues at a product seller.
2. Foster answers for these issues.
3. Assess the created arrangements.

Answers for estimating business SaaS applications are created, in light of the fact that it is obscure how the valuing issues they face can be tackled, so those sellers can be prompted which cost design they ought to use for their business SaaS application to boost benefit.

IV. RESEARCH METHODOLOGY

4.1 Research Approach

This article is a result of a cooperative exploration project with Hashir Labs and a few different organizations since they especially fascinating in the investigation of evaluating models in light of the fact that the speed of improvement in the business drives them to consistently reevaluate their estimating models. As they have a separated portfolio both as far as clients and contributions, they experience business circumstances where totally different value models might be proper. Cooperative exploration empowers imaginative connection among researchers and experts with various perspectives and approaches that can add to both hypothesis and practice. There are numerous methodologies use in this examination paper where research information gathered like eye to eye interview, by means of google structure, through email or through study these methodologies are taken to gather information for research paper.

4.2 Research Process and Data Collection

The examination was embraced between March 2022 to May 2022 and there are two organizations who partook in this exploration. from these organizations I have figured out an eye to eye meetings and studies through google structure. The interviewees members were organization workers or CFOs were distinguished by reference examining. Their normal element was that they had critical experience from improvement and arrangement of cost models. They came from various levels of the association: e.g., corporate chiefs managing key issues (counting valuing), evaluating supervisors answerable for creating value models, and business administrators working with execution of cost models..

Data Collection have been done in four stages:

Stage 1: we have to find out the appropriate pricing patterns for business SaaS applications.

Stage 2: we have to find out the what are the characteristics of the pricing pattern.

Stage 3: we have to find out Which characteristics are more important for SaaS pricing model?

Stage 4: Matching the requirements to the pricing patterns. And give point to statement.

Collection of data is done via goggle forms and face to face interviews and via email.

	Expert 1	Expert 2	Expert 3	Expert 4
Transparent		✓	✓	
Relation between usage and price		✓		
Easy for administration	✓			
Predictable			✓	
Recurring costs		✓		
Easy to calculate			✓	
Usable to serve multiple markets				✓
Clear insight for the customer	✓		✓	✓

Results of Data Collection:

In first stage, we got the most common use pricing patterns in the cloud computing market. Which are:

Sr no.	Pricing Pattern
1	Usage-dependent pricing
2	Cost-based pricing
3	Flat fee pricing
4	Two-part tariff pricing
5	Peak load pricing
6	Bundle pricing
7	Dual pricing

In the second stage, we find the characteristics for the pricing pattern which are:

Sr no.	Pricing Pattern Characteristics
1	Transparent
2	Relation between usage and price
3	Easy for administration
4	Predictable
5	Recurring costs
6	Easy to calculate
7	Usable to serve multiple markets
8	Clear insight for the customer

In the third stage, we observe what attributes is more significant for SaaS valuing model. In this overview all potential blends are determined on qualities. Respondent should choose one trademark from two given qualities. This study is taken on google structure.

Matrix	Transparent	Relation between usage and price	Easy for administration	Predictable	Repeating costs	Easy to calculate	Usable for different markets	Clear insight for customer	Normalized Principal Eigenvector
Transparent	1	2 1/2	5	5	5	6	2 1/2	3/4	25.01%
Relation between usage and price	2/5	1	2 1/2	2 1/2	2 1/2	6	2 1/2	3/4	16.76%
Easy for administration	1/5	2/5	1	1 1/3	1 1/3	3/4	1/6	1/6	4.55%
Predictable	1/5	2/5	3/4	1	1 1/3	5	3/4	1/6	7.29%
Repeating costs	1/5	2/5	3/4	3/4	1	1/6	2/5	1/6	3.80%
Easy to calculate	1/6	1/6	1 1/3	1/5	6	1	3/4	1/6	6.92%
Usable for different markets	2/5	2/5	6	1 1/3	2 1/2	1 1/3	1	3/4	11.94%
Clear insight for customer	1 1/3	1 1/3	6	6	6	6	1 1/3	1	23.74%

Two of the responses are overlooked on the grounds that they are not helpful for estimating models: 'no space for markdown' and 'steady with market interest', in light of the fact that these are not necessities for an evaluating model as utilized in this examination. This results that eight attributes are utilized for the focusing on assessment.

In the fourth stage, there are eight qualities recognized from social occasion the prerequisites and there are eight estimating designs. Since every one of the qualities ought to be coordinated with each evaluating design, it results that there are 64 explanations that ought to be surveyed by the respondents. A five-point Likert scale is utilized to survey explanations, with the accompanying configuration:

1. Unequivocally conflict.
2. Clash.
3. Neither concur nor clash.
4. Concur.
5. Unequivocally concur.

This evaluation of articulations is additionally taken by google structures.

4.3 Data Investigation

As we finished with the information assortment. Presently we need to begin investigating the information. The information investigation comprised of two stages.

Stage 1:

In stage 3 of information assortment, we get the pair wise examinations result to dissect the pair wise correlations information we are utilizing logical progressive need (AHP) strategy is utilized. The AHP-technique permits focusing on pair wise correlations. Typically, the AHP-strategy expects that the respondent offer a load to every response. Since this weight was not asked in the overview, all loads are given 5 focuses on a size of 1 to 9, to similarly asses the pair wise correlations. The consequences of the prioritization utilizing the AHP strategy are portrayed in the table beneath. The standardized head Eigenvector[68] is a rate showing the need of the relating trademark. The higher the rate, the more significant it is.

While requesting the standardized head Eigenvector rates, the best 8 of most significant qualities is as per the following.

Position	Pricing Pattern Characteristics
1	Transparent
2	Clear insight for customer
3	Relation between usage and price
4	Usable for different markets
5	Predictable
6	Easy to calculate
7	Easy for administration
8	Repeating costs

The qualities 'Straightforward' and 'Clear understanding for the client' are fundamentally more significant due to their high Eigenvector rates (25.01% and 23.74%).

Stage 2:

Subsequent to finishing Phase 1 (match wise examinations) utilizing logical various leveled need (AHP) technique. We get what normal for evaluating design is more significant, presently in stage 2 of information examination we will apply Fleiss' kappa strategy on fourth phase of information assortment result. In forward phase of information assortment, we are giving all blend of trademark and estimating design articulation to survey in five-point Likert scale.

Altogether, 11 respondents evaluated the proclamations. All respondents endured each of the 64 assertions. One respondent addressed all explanations however a while later he sent that he expediently addressed all inquiries and as a matter of fact required additional opportunity to precisely evaluate every assertion, bringing about questionable responses. To exclude that this influences the unwavering quality of the outcomes, his responses are erased and not piece of the investigation.

ID	Statement	1	2	3	4	5	(Pi)
24	Cost based pricing is clear insight for the customer	1	6	1	0	0	0.5357
48	Peak load pricing is clear insight for the customer	6	1	1	0	0	0.5357
1	Usage dependent pricing is transparent	3	5	0	0	0	0.4643
39	Two part tariff pricing is usable to serve multiple markets	0	0	5	0	3	0.4643

33	Two part tariff pricing is transparent	4	4	0	0	0	0.4286
63	Dual pricing is usable to serve multiple markets	0	0	0	4	4	0.4286
7	Usage dependent pricing is usable to serve multiple markets	0	0	2	1	5	0.3929
13	Situation-based pricing has recurring costs	0	0	2	5	1	0.3929
25	Flat fee pricing is transparent	0	0	2	1	5	0.3929
27	Flat fee pricing is easy for administration	0	0	2	1	5	0.3929

As multiple respondents assessed the statements there was a difference in the number of points given to a statement. The Fleiss' kappa is used as a statistical measurement to assess the reliability of the agreement between the respondents. With the Fleiss' kappa it is possible to measure the scale agreement among multiple raters (Fleiss, 1971[58]).

Equation:

$$K = \sum_{i=0}^N \frac{\bar{P} - \bar{P}e}{1 - \bar{P}e}$$

The above table depicts the top 10 statements with the highest strength of agreement. The full results of the assessment are included in the Appendix. For the interpretation of the Fleiss' kappa results the interpretation table by Landis and Koch (1977) is used which is depicted below. Although these divisions are subjective, they do provide valuable benchmarks (Landis & Koch, 1977 [26]).

No	Kappa Statistic	Strength of agreement
1	< 0.00	Poor
2	0.00-0.20	Slight
3	0.21-0.40	Fair
4	0.41-0.60	Moderate
5	0.61-0.80	Substantial
6	0.81-1.00	Almost perfect

In this exploration, a Kappa measurement of negligible 0.21, relating with basically a fair understanding, is considered as sufficient arrangement between the respondents. Since all assertions are planned 'positive', likewise proclamations with a low typical score are helpful in light of the fact that when they are figured out 'negative' they really do make a difference to the valuing design in the explanation.

Consequently the explanation 'top burden valuing is clear for the client' has a typical score of 1.2 on the five point scale, with a moderate strength of understanding (K = 0.53). This suggests that the respondents would have concurred with the assertion 'top burden evaluating isn't clear for the client'. Hence, in the event of a low typical score, the assertions are reworded to a negative assertion so they can be matched to the estimating design.

At the point when all assertions with a low strength of understanding are disregarded, the qualities can be matched to the evaluating designs as portrayed in the table 4. Following the standards of no less than 0.21 for the Kappa measurement and reword explanations with a low score, it results that the assertions portrayed in the table underneath can be matched to the valuing designs.

PATTERN CHARACTERISTICS

Usage dependent pricing: - is not transparent - is usable to serve multiple markets	Two part tariff pricing: - is not transparent - is not easy for administration - is usable to serve multiple markets
Situation-based pricing: - has recurring costs - is usable to serve multiple markets	Peak load pricing: - is not transparent - is not easy for administration

Cost based pricing:	- is not predictable
- is not transparent	- is not easy to calculate
- has no relation between usage and price	- has no clear insight for the customer
- is not easy for administration	
- is not usable to serve multiple markets	Bundle pricing:
- has no clear insight for the customer	- is easy for administration
	- is not easy to calculate
Flat fee pricing:	
- is transparent	Dual pricing:
- has no a relation between usage and price	- is not predictable
- is easy for administration	- has recurring costs
- is predictable	- is usable to serve multiple markets
- is easy to calculate	
- is usable to serve multiple markets	
- has clear insight for the customer	

Appropriate Pricing Patterns:

Now all that all consequences of the pricing patterns are gathered, it is possible to select the most appropriate pricing patterns.

Points are awarded to assess whether a pricing pattern is appropriate. The number of points awarded is the normalized principal Eigenvector percentage resulted from analysing the pair wise comparisons results. By using the percentages as points to award the pricing patterns, also the weight of the characteristics is taken into account.

Position	Characteristic	Points
1	Transparent	25.08
2	Clear insight for customer	24.90
3	Relation between usage and price	16.03
4	Usable for different markets	11.75
5	Predictable	7.05
6	Easy to calculate	6.63
7	Easy for administration	4.61
8	Repeating costs	3.95

When a pricing pattern is assessed to be transparent, 24 points are awarded, if the pricing pattern has repeating costs, 5.1 point is awarded. When the negative statement is accepted the points are subtracted. Every pricing pattern begins with zero points. The results of awarding the points are summarized in above table, a complete overview is included in the appendix.

Position	Pricing Pattern	Points
1	Flat fee pricing	63.99
2	Situation-based pricing	15.70
3	Dual pricing	8.65
4	Bundle pricing	-2.02
5	Usage dependent pricing	-13.33
6	Two part tariff pricing	-17.94
7	Peak load pricing	-68.27
8	Cost based pricing	-82.37

In the table above the pricing patterns are prioritized based on the awarded points. According to this study flat fee pricing is by far the most appropriate pricing pattern for business SaaS applications. At some distance, situation-based pricing

and the dual pricing pattern complete the three most appropriate pricing patterns for business SaaS applications. Cost based pricing and peak load pricing are the pricing patterns with the least awarded points.

V. LIMITATIONS

In this study the clients are not asked yet since the project supervisors and record administrators have close contact with clients it is normal that they have accounted sufficient for the client's desires while assessing the estimating designs.

One more impediment is that this study is completed at three contextual analysis organization. Hence, just issues that the contextual analysis organizations confronted are distinguished, while different organizations could deal with various or unexpected issues. In this way, the recognized evaluating examples probably won't be finished.

An impediment of this exploration is that it is approved at just three organizations. Despite the fact that it debilitates the outer legitimacy, this strategy was picked in light of the fact that it was feasible to play out a profound understanding into significant reports, for example, arrangements between contextual analysis organizations (Only HashirLabs PVT LTD and Pixiq Cinetech Inc.) and providers and other inside records. This will not have been imaginable assuming the review was led at different organizations, since it is normal that in the event that the outcomes are divided between the contenders the organization's readiness to take part in this examination would have been extremely low.

Consequently, it is decided to carry out the analysis at few organizations where it was feasible to broadly talk with specialists and gain knowledge by archive studies.

VI. CONCLUSION

The main purpose of this study was to find appropriate pricing patterns for business SaaS applications, from the point of view of a software vendor. In order to find those pricing patterns, the following research questions were formulated:

What are appropriate pricing patterns for business SaaS applications, from the point of view of a software vendor?

In light of examination, business SaaS applications can be valued utilizing one of the accompanying estimating designs: use subordinate, circumstance based, cost-based, level expense, two-section tax, top burden, packaging or double evaluating. This study shows that there are various approaches to estimating a business SaaS application. Issues in regards to evaluating were distinguished at the contextual analysis organization and arrangements were found for these issues. An assessment with specialists from the contextual investigation organization brought about an outline of prerequisites for evaluating models, which were matched to the estimating designs utilizing a review and measurable examination.

In light of the consequences of the prioritization and matching the necessities to the valuing designs, the most suitable evaluating designs for business SaaS applications could be chosen. The three most proper estimating designs are:

1. Level Fee Pricing
2. Circumstance Based Pricing
3. Double Pricing

This brought about the principal deliverable of this review: an outline of all evaluating designs, without further ado portraying the issue, the arrangement, a delineation of the arrangement, the outcomes and the come about because of surveying the fittingness of the estimating design

REFERENCES

- [1]. Cloud Computing Pricing Models: A Survey May Al-Roomi, Shaikha Al-Ebrahim, Sabika Buqrais and Imtiaz Ahmad,
- [2]. Department of Computer Engineering, College of Engineering and Petroleum, Kuwait University, Kuwait Eng.may87@gmail.com, shaikha_alebrahim@hotmail.com, eng_sabika80@yahoo.com, imtiaz@eng.kuniv.edu.kw International Journal of Grid and Distributed Computing Vol.6, No.5 (2013), pp.93-106 <http://dx.doi.org/10.14257/ijgdc.2013.6.5.09>
- [3]. Cloud Services and Pricing Strategies for Sustainable Business Models: Analytical and Numerical Approaches Se-Hak Chun, Department of Business Administration, Seoul National University of Science and Technology, 232 Gongreung-Ro, Nowon-Gu, Seoul 01811, Korea; shchun@seoultech.ac.kr; Tel.: +82-2-970-6487 Received: 9 November 2019; Accepted: 30 November 2019; Published: 19 December 2019

- [4]. Pricing schemes in cloud computing Aishwarya Soni* and Muzammil Hasan Department of Computer Science and Engineering, Madan Mohan Malaviya University of Technology, Gorakhpur, UP, India. Received: 07-November-2016; Revised: 15-February-2017; Accepted: 20-February-2017 ©2017 ACCENTS. International Journal of Advanced Computer Research, Vol 7(29) ISSN (Print): 2249-7277 ISSN (Online): 2277-7970 <http://dx.doi.org/10.19101/IJACR.2017.729001>
- [5]. Cost Optimization of Cloud Computing Services in a Networked Environment Eli WEINTRAUB and Yuval COHEN,
- [6]. Department of Industrial Engineering and Management Afeka Tel Aviv Academic College of Engineering Tel Aviv, Israel (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 6, No. 4, 2015
- [7]. Cloud Computing Cost and Negotiation: A Survey Jayasankar R M.tech RVCE, Bangalore.
- [8]. Poonam Ghuli Assistant Professor RVCE, Bangalore. International Journal of Computer Applications (0975 – 8887) Volume 129 – No.10, November2015
- [9]. Pricing Strategy for Cloud Computing Services HUANG, Jianhui.
- [10]. Pricing Strategy for Cloud Computing Services. (2014). 1-133. Dissertations and Theses Collection (Open Access). Available at: https://ink.library.smu.edu.sg/etd_coll/103
- [11]. Pricing and Profit Management Models for SaaS Providers and IaaS Providers: Lee, I.
- [12]. Pricing and Profit Management Models for SaaS Providers and IaaS Providers. J. Theor. Appl. Electron. Commer. Res. 2021, 16, 859–873. <https://doi.org/10.3390/jtaer16040049> Received: 23 December 2020 Accepted: 9 February 2021 Published: 20 February 2021
- [13]. Review of Pricing Techniques in Cloud Computing Sameera Dhuria , Anu Gupta , R.K. Singla
- [14]. Sri Guru Granth Sahib World University, Fatehgarh Sahib,(India) 2Panjab University, Chandigarh, (India)
- [15]. International Conference on "Recent Trends in Technology and its Impact on Economy of India" Guru Nanak College for Girls, Sri Mukstar Sahib, Punjab (India)) 24 October 2017, www.conferenceworld.in
- [16]. Dynamic Intelligent Customizable Benign Pricing Strategy for Cloud Computing.
- [17]. Wei-Tek Tsai, Guanqiu Qi, Department of Computer Science and Technology, Tsinghua University, Beijing, China
- [18]. School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, Tempe, AZ, USA. 2012 IEEE Fifth International Conference on Cloud Computing
- [19]. Cloud Services Pricing Models, Gabriella Laatikainen, Arto Ojala & Oleksiy Mazhelis, Department of Computer Science and Information Systems, University of Jyväskylä, Jyväskylä, Finland.
- [20]. Laatikainen, G., Ojala, A., Mazhelis, O. (2013). Cloud Services Pricing Models. In: Herzwurm, G., Margaria, T. (eds) Software Business. From Physical Products to Software Services and Solutions. ICSOB 2013. Lecture Notes in Business Information Processing, vol 150. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-39336-5_12 https://link.springer.com/chapter/10.1007/978-3-642-39336-5_12
- [21]. Research on Cloud Computing By using SaaS Model K.Naresh, P.Leela, P.Suneetha, Purandhar.N
- [22]. International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8, Issue-1S4, June 2019. Published By: Blue Eyes Intelligence Engineering Retrieval Number: A11210681S419/19©BEIESP & Sciences Publication.
- [23]. A Genetic Model for Pricing in Cloud Computing Markets Mario Macias, Jordi Guitart, Barcelona Supercomputing Center/TechnicalUniversity of CataloniaJordi Girona s/nBarcelona, Spainmario.macias@bsc.es
- [24]. <https://click.endnote.com/viewer?doi=10.1145%2F1982185.1982216&token=WzM3MjI2MjcsIjEwLjExNDUvMTk4MjE4NS4xOTgyMjE2Ii0.zhV1-v8ibez9TAEBTqwV535LJQ>
- [25]. Cloud Computing And Its Pricing Schemes, Varun Kamra, Kapil Sonawane, Pankaja Alappanavar
- [26]. Dept of Information Technology Sinhgad Academy of Engineering Pune, India varun_kamra@ymail.com
- [27]. International Journal on Computer Science and Engineering (IJCSSE).
- [28]. <https://billingplatform.com/blog/an-overview-of-saas-pricing-models>
- [29]. <https://www.cobloom.com/blog/saas-pricing-models#>

APPENDIX

Results Pair Wise Comparison Characteristics

No.	Characteristic A	Characteristic B	Preference Per Respondent							
1	Transparent	Relation between usage and price	A	A	B	A	A	B	A	
2	Transparent	Easy for administration	A	A	A	A	A	A	A	
3	Transparent	Predictable	A	A	A	A	A	A	A	
4	Transparent	Repeating costs	A	A	A	A	A	A	A	
5	Transparent	Easy to calculate	B	A	A	A	A	A	A	
6	Transparent	Usable for different markets	A	A	B	B	A	A	A	
7	Transparent	Clear insight for customer	B	B	A	A	A	B	B	
8	Relation between usage and price	Easy for administration	B	A	A	B	A	A	A	
9	Relation between usage and price	Predictable	A	B	A	A	A	A	B	
10	Relation between usage and price	Repeating costs	A	A	A	B	A	A	A	
11	Relation between usage and price	Easy to calculate	A	A	A	A	A	A	B	
12	Relation between usage and price	Usable for different markets	B	A	A	B	A	A	A	
13	Relation between usage and price	Clear insight for customer	B	A	A	A	B	B	B	
14	Easy for administration	Predictable	A	B	B	A	A	A	B	
15	Easy for administration	Repeating costs	A	B	B	A	A	B	A	
16	Easy for administration	Easy to calculate	A	B	B	A	A	B	B	
17	Easy for administration	Usable for different markets	B	B	B	A	B	B	B	
18	Easy for administration	Clear insight for customer	B	B	B	A	B	B	B	
19	Predictable	Repeating costs	B	A	A	B	B	A	A	
20	Predictable	Easy to calculate	B	B	B	B	B	B	B	
21	Predictable	Usable for different markets	B	A	B	B	B	A	A	
22	Predictable	Clear insight for customer	B	A	B	B	B	B	B	
23	Repeating costs	Easy to calculate	B	B	B	A	B	B	B	
24	Repeating costs	Usable for different markets	B	B	B	A	B	A	B	
25	Repeating costs	Clear insight for customer	B	B	B	A	B	B	B	
26	Easy to calculate	Usable for different markets	B	A	B	B	B	A	A	
27	Easy to calculate	Clear insight for customer	B	B	A	B	B	B	B	
28	Usable for different markets	Clear insight for customer	B	B	A	A	A	B	B	

Results Assessment

ID	Statement	1	2	3	4	5	Pi
1	Usage dependent pricing is transparent	3	5	0	0	0	0.4643
2	Usage dependent pricing has a relation between usage and price	0	2	3	2	1	0.1786
3	Usage dependent pricing is easy for administration	2	2	2	2	0	0.1429
4	Usage dependent pricing is predictable	2	0	3	2	1	0.1786
5	Usage dependent pricing has recurring costs	2	2	3	0	1	0.1786
6	Usage dependent pricing is easy to calculate	2	1	3	1	1	0.1429
7	Usage dependent pricing is usable to serve multiple markets	0	0	2	1	5	0.3929

8	Usage dependent pricing is clear insight for the customer	1	2	3	2	0	0.1786
9	Situation-based pricing is transparent	1	1	2	3	1	0.1429
10	Situation-based pricing has a relation between usage and price	0	2	2	3	1	0.1786
11	Situation-based pricing is easy for administration	1	1	2	3	1	0.1429
12	Situation-based pricing is predictable	1	0	3	2	2	0.1786
13	Situation-based pricing has recurring costs	0	0	2	5	1	0.3929
14	Situation-based pricing is easy to calculate	0	1	2	2	3	0.1786
15	Situation-based pricing is usable to serve multiple markets	0	2	2	0	4	0.2857
16	Situation-based pricing is clear insight for the customer	0	1	2	3	2	0.1786
17	Cost based pricing is transparent	3	1	3	1	0	0.2143
18	Cost based pricing has a relation between usage and price	4	1	3	0	0	0.3214
19	Cost based pricing is easy for administration	2	4	1	1	0	0.2500
20	Cost based pricing is predictable	2	2	2	2	0	0.1429
21	Cost based pricing has recurring costs	1	2	2	3	0	0.1786
22	Cost based pricing is easy to calculate	2	2	2	2	0	0.1429
23	Cost based pricing is usable to serve multiple markets	3	2	3	0	0	0.2500
24	Cost based pricing is clear insight for the customer	1	6	1	0	0	0.5357
25	Flat fee pricing is transparent	0	0	2	1	5	0.3929
26	Flat fee pricing has a relation between usage and price	2	2	4	0	0	0.2857
27	Flat fee pricing is easy for administration	0	0	2	1	5	0.3929
28	Flat fee pricing is predictable	0	0	1	3	4	0.3214
29	Flat fee pricing has recurring costs	0	2	3	1	2	0.1786
30	Flat fee pricing is easy to calculate	0	0	2	2	4	0.2857
31	Flat fee pricing is usable to serve multiple markets	0	0	2	2	4	0.2857
32	Flat fee pricing is clear insight for the customer	0	0	1	2	5	0.3929
33	Two part tariff pricing is transparent	4	4	0	0	0	0.4286
34	Two part tariff pricing has a relation between usage and price	1	1	3	1	2	0.1429
35	Two part tariff pricing is easy for administration	2	3	3	0	0	0.2500
36	Two part tariff pricing is predictable	2	2	2	2	0	0.1429
37	Two part tariff pricing has recurring costs	0	2	3	1	2	0.1786
38	Two part tariff pricing is easy to calculate	1	2	3	2	0	0.1786
39	Two part tariff pricing is usable to serve multiple markets	0	0	5	0	3	0.4643
40	Two part tariff pricing is clear insight for the customer	3	1	2	2	0	0.1786

41	Peak load pricing is transparent	4	2	2	0	0	0.2857
42	Peak load pricing has a relation between usage and price	1	2	2	3	0	0.1786
43	Peak load pricing is easy for administration	4	1	3	0	0	0.3214
44	Peak load pricing is predictable	4	1	0	2	1	0.2500
45	Peak load pricing has recurring costs	2	1	2	2	1	0.1071
46	Peak load pricing is easy to calculate	4	2	0	2	0	0.2857
47	Peak load pricing is usable to serve multiple markets	2	1	3	1	1	0.1429
48	Peak load pricing is clear insight for the customer	6	1	1	0	0	0.5357
49	Bundle pricing is transparent	1	1	1	3	2	0.1429
50	Bundle pricing has a relation between usage and price	1	2	1	3	1	0.1429
51	Bundle pricing is easy for administration	0	0	1	4	3	0.3214
52	Bundle pricing is predictable	1	2	1	1	3	0.1429
53	Bundle pricing has recurring costs	1	1	2	2	2	0.1071
54	Bundle pricing is easy to calculate	0	1	1	3	3	0.2143
55	Bundle pricing is usable to serve multiple markets	2	0	2	3	1	0.1786
56	Bundle pricing is clear insight for the customer	0	1	3	2	2	0.1786
57	Dual pricing is transparent	2	1	3	2	0	0.1786
58	Dual pricing has a relation between usage and price	1	2	1	2	2	0.1071
59	Dual pricing is easy for administration	1	1	3	2	1	0.1429
60	Dual pricing is predictable	1	4	3	0	0	0.3214
61	Dual pricing has recurring costs	0	0	2	4	2	0.2857
62	Dual pricing is easy to calculate	1	2	3	2	0	0.1786
63	Dual pricing is usable to serve multiple markets	0	0	0	4	4	0.4286
64	Dual pricing is clear insight for the customer	2	1	1	3	1	0.1429
SUM		89	91	132	110	90	15.3929
Pj(SUM)		0.1738	0.1777	0.2578	0.2148	0.1758	
Pe		0.2053				P	0.2405
K		0.0443					

Points Awarded To Pricing Patterns

PATTERN	POINTS
Usage dependent pricing:	-13.33
- Is not transparent	-25.08
- Is usable to serve multiple markets	11.75
Situation-based pricing:	15.70

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- Has recurring costs	3.95
- Is usable to serve multiple markets	11.75
Cost based pricing:	-82.37
- Is not transparent	-25.08
- Has no relation between usage and price	-16.03
- Is not easy for administration	-4.61
- Is not usable to serve multiple markets	-11.75
- Has no clear insight for the customer	-24.90
Flat fee pricing:	63.99
- Is transparent	25.08
- Has no a relation between usage and price	-16.03
- Is easy for administration	4.61
- Is predictable	7.05
- Is easy to calculate	6.63
- Is usable to serve multiple markets	11.75
- Has clear insight for the customer	24.90
Two part tariff pricing:	-17.94
- Is not transparent	-25.08
- Is not easy for administration	-4.61
- Is usable to serve multiple markets	11.75
Peak load pricing:	-68.27
- Is not transparent	-25.08
- Is not easy for administration	-4.61
- Is not predictable	-7.05
- Is not easy to calculate	-6.63
- Has no clear insight for the customer	-24.90
Bundle pricing:	-2.02
- Is easy for administration	4.61
- Is not easy to calculate	-6.63
Dual pricing:	8.65
- Is not predictable	-7.05
- Has recurring costs	3.95
- Is usable to serve multiple markets	11.75