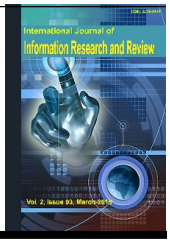
IJIRR

International Journal of Information Research and Review
Vol. 2, Issue, 03, pp. 565-570 March, 2015



Research Article

SPREADSHEET TO FINANCIAL MODELING SCENERIES TO ESTIMATE LEASING OPERATIONS FOR ACQUISITION COMPUTER EQUIPMENT

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ARTICLE INFO

Article History:
Received 28th December, 2014
Received in revised form
20th January, 2015
Accepted 26th February, 2015
Published online 31st March, 2015

Keywords:
Obsolescence cost,
Finance or Capital lease,
Operating lease

ABSTRACT

Computer and Communications equipment are the backbone for any Company (Regardless of their size). These elements allows Enterprises to operate in order to produce goods and services that are then offered to create value and in consequence profits. Those elements are even more relevant for Companies orientated to the Information Technology (I.T.) sector. As any other active, computer equipment depreciates with time, and more important: it gets obsolete very fast, as technological advances are incorporated to the mainstream consume products at an accelerated speed. In the light of the two facts mentioned previously, it becomes vital to the Enterprise to make the best decisions about how to invest its resources in order to make the best from the technology available and at the same time, keep the pace to avoid an "obsolescence cost" if it takes too long to update its equipment. Common practice now is to lease the equipment, in other words: To lease the benefit of the use of the equipment, the operating Lease is a better financial choice. Then it becomes mandatory to establish criteria to perform the more convenient negotiation when financing this kind of operations, is carried out. The current work, proposes to use Information & Communications technology tools in order to help Management to make the best decision regarding costs and convenience comparing two options for lease operations: 3 and 4 Years.

INTRODUCTION

In recent years, innovation (especially technological) is considered and strategic factor for proficiency of the Companies. Innovation is considered as a value generator activity and provides a competitive edge for Enterprises that promoted it and use it. Globalization of markets demands new technologies to be incorporated on business process on any Company that wants to remains competitive, otherwise it will stay behind the innovative and adapted Enterprises. It is a fact that innovation is not synonym of TI´s, but it is true that the last ones help to automate and improve the Company from within and in consequence to innovate both: their business processes and their products. If that is the case, it becomes very important to invest wisely when acquiring or getting IT resources for the Company. The investment has to take in account the newly rapidly pace that a modern world imposes in Company, as globalization increases pressure allowing a very competitive commercial sectors. Companies often choose to lease long term assets rather than buy them for a variety of reasons (tax benefits are greater to the lessor than the lessees, leases offer more flexibility in terms of adjusting to changes in technology and capacity needs). Lease payments create the same kind of obligation that interest payments on debt create, and have to be viewed in a similar light. There are two ways of accounting for leases. In an operating lease, the lessor (or owner) transfers only the right to use the property to the lessee. At the end of the lease period, the lessee returns the property to the lessor. Since the lessee does not assume the risk of ownership, the lease expense is treated as an operating expense in the income statement and the lease does not affect the balance sheet. In a capital lease, the lessee assumes some of the risks of ownership and enjoys some of the benefits. Consequently, the lease, when signed, is recognized both as an asset and as a liability (for the lease payments) on the balance sheet. The firm gets to claim depreciation each year on the asset and also deducts the interest expense component of the lease payment each year. In general, capital leases recognize expenses sooner than equivalent operating leases.

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Current Situation

In the case of study of this work, we will take a Company that was having the practice to acquire its own computer equipment, later shifting to incorporate the use of the equipment as a service or lease (Operating Lease specifically). It is pertinent to clarify that the shifting on the schema was in part motivated by the fact the Company shifted hands, and the new Owners (part of a huge conglomerate of global business and sectors) have the power to make worldwide negotiations with big IT manufacturers. With the shift form acquisition to lease, came some restrictions regarding brand and manufacturers to use in the Company as evidently those having a global contract where preferred. This fact conditioned as well that in order to lease equipment form the preferred manufacturer, it was necessary to use their own financial branch or entity dedicated to this kind of operations. This restricted the options and for a time there was no open competition or analysis performed in order to lease the IT equipment, and the periods where established on a three year basis. Recently conditions changed, allowing submission of the lease operations to open bidders (lessees). Now we are in the position to evaluate several suppliers of financial services: analyze each ones terms and conditions, lease interest factors, added values etc. And; at the same time, we will be in the position to evaluate what is better for the Company in terms of duration of the lease operation: three (3) or four (4) years.

Justification

The use of Information Technology tools will be fundamental in the development of the mentioned evaluation, as it will be necessary to design a simulator of diverse leasing scenarios, using as input the different terms and conditions offered for each financial supplier. The simulator will provide a common platform for the analysis and an easy and fast process of information. After all information is processed and results are obtained, we will incorporate them in a TI presentation tool, in order to present the findings and recommendations to the Financial Department and Top Management of the Company, in order to help in the decision making process for the Operations (García-Santillán, and Escalera-Chávez, 2011). This evaluation process takes special relevance as it could set precedent for all lease operations involving the Company and even other Companies belonging to the Group. (In fact the power of lease acquisition of the complete Group will be expressed to the possible lessees, so they can take this factor in consideration when preparing their proposals).

Theorical framework

Leasing of equipment is in fact a form of financing. It is common believe that when it comes to management to make a decision regarding getting new equipment for the Company, it have to decide between buying and leasing the equipment. What is really happening is; that, once management made the decision of getting new equipment, it should evaluate whether it uses equity or debt financing to purchase the equipment or to lease it (Harrington, 2002). This is more clearly expressed if we consider the next scenario: A Company needs to incorporate and use new computer equipment, it could borrow money at a determined interest rate and acquire the equipment or, it could lease the same equipment for a fixed period of time. The decision has to be analyzed from the financial point of view, in order to select to must convenient option for the Company.

The adequate financial tool is the Net Present Value Analysis, as it allows the comparison of both (obligations) at the present time. (Consideration: Leasing benefits from the fact that lease payments are tax deductible expenses). After the analysis is completed for both scenarios, it is then possible to select the best options in terms of which one has the lower Net Present Value. In our study, we will not be evaluating nor considering borrowing money, as the strategic is clearly defined by top Management of the Company and is orientated to leasing operations. Management is constantly advised by the Financial Planning Department when establishing financial policies. Some policies are even dictated by the Corporate Headquarters whom are continuously evaluating global agreements and contracts that impact local policies. Since the analysis of the present studio is located in México, it is subject to the Mexican legal framework regulating leasing operations, as main reference we have: "Basic Rules for the Operation of Financial Lessors" (1990), which are complement of México´s Strategic Development Plan and the "General Law of Organizations and Credit Auxiliary Activities" (Siu, 1999). For México's Internal Revenue Authority, two modalities of leasing exist: Operative and Capital. We will be focusing in the first one, moving within what is established in the legal framework of this kind of operations. Leased assets thru operative leasing often have a useful life that is longer than the period of the lease contract. In general they will become less technologically efficient and obsolete if they are leased for extended periods of time (Gitman, 1999). Computer equipment is clear example of how relative efficiency diminishes as state of the art equipment is continuously introduced in the markets. For this reason, operative leasing is the common practice for obtaining electronic and computer equipment, as it is too for those assets with relatively short live span (i.e. automobiles). This aspect it is very relevant, as in fact it provides a basic guideline when leasing computer equipment in the operative modality: Short periods are desirable as technology advances affect negatively the value and use of these assets.

MATERIALS AND METHODS

It was necessary to evaluate diverse lessor´s proposals, each one with their own considerations, factors and conditions. First of all, investigative and administrative work was performed in order to make a list of suppliers (financial entities) that were considered able to cope with Company's requirements. The Mexican market of financial services was then examined in order to produce a short list of strong financial institutions, as the amounts to be involved in future operations were considerable (tens of thousands of USD). From past experiences and references a final short list was obtained. The list included three (3) strong and reliable financial lessors. The next step consisted in establishing direct contact with the mentioned financial institutions. Special care was taken in order to make sure that specialists in the area (Lease of computer equipment) attended the requirements, and that the requests reached the adequate levels on the financial organizations, as the economic amounts involved permitted particular attention. Once contact was established with each one of the possible Lessors, a series of executive meetings took place in order to get first hand knowledge of the particular lessors and their personnel. During each meeting it was established that the Company would send information to each possible Lessor regarding the next lease operation.

This information would include: brands, part numbers, models and quantities of all necessary equipment and of course its cost. (Costs were obtained via Company's Procurement Department). The information was collected, prepared identically and sent to each possible Lessor, in order to obtain three different quantitative and qualitative proposals from each one. (It was clarified in the executive meetings that the exercise will be open to several contenders and each one was exhorted to prepare their best proposal since the beginning). After a period of clarifications and mutual feedback, three complete proposals were obtained for the next lease operation. Each proposal was sub-divided itself into two possible lease period scenarios: three and four years. The comprehensive data involving all proposals needed to be processed properly and efficiently in order to produce information useful for the decision-making process. In this stage is when the I.T. tools took a very special relevance.

The main purpose of this study is to describe the use of spreadsheet in the decision-making process of operative lease transactions involving computer equipment. As such, the spreadsheets as tools in this exercise were used as the backbone of the cited process. They were grouped into two main activities or tasks:

- As the main tool used for simulating diverse leasing scenarios and conditions
- As an assistance for presenting the final results to top Management

Spreadsheet for Simulating Leasing Scenarios

A financial simulator was designed in order to input data from each possible Lessor, and obtain processed data useful for Company's management when deciding the best lease option.

The simulator was designed by I.T. Department using MS Excel. The design, very simple and straightforward, allows easy input of conditions, factors, rent amounts, etc. expressed on each possible Lessor's proposals. It calculates and compares several aspects such as rent factors or rates, totals amounts for complete lease periods, final value at the end of the lease, etc. The simulator was later enriched by Financial Planning Department, which included in it calculations on Net Present Value (NPV) of all the different scenarios. (As mentioned before, this analysis is basic when evaluating lease operations). The final result was a tool that ultimately helped Management made the final decision for the upcoming lease operations of the Company.

Spreadsheet as Assistance for Presenting the Final Results

When presenting final results of qualitative, quantitative and NPV analysis to top Management, it was necessary to transform the information obtained via the simulator to something more practical and useful for them. Of course, the simulator was presented as such to them, but the output was transformed via spreadsheet to present diverse graphics and schemas illustrating the findings provided by the simulator. The presentation itself was prepared and ran on a spreadsheet that makes the presentation activity accessible, easy and useful. All process described here in the methodology section was presented to Management using images and animations that enriched the work being presented.

RESULTS

Find below the main simulator result set, in which main input from three possible Lessors was added:

Here all relevant information from the three potential Lessors is presented at a glance, making easy to compare key items. The description of the compiled information was structured as follows:

X Axe: Used for the periods to analyze (three and four years) for each Lessor, within this division, it was also segregated in payment options: Monthly and quarterly.

Y Axe: Analysis Columns are:

Amount: Base cost of the operation. Meaning the real cost of all computer equipment to acquire, based on quotations form several hardware suppliers;

Lease Payment: is the proposed amount of lease payments proposed by each Lessor (Could be based monthly or quarterly);

Number of Payments: Quantity of lease payments to cover, 36 and 12 for monthly and quarterly payments when leasing for three years, also 48 and 16 for monthly and quarterly payments when leasing for four years;

Period: Indicates the lease periodic payment;

Years: Indicates if the operation is considered for three or four years;

Factor: Rate applied to the total amount of the operation for each Lessor (it is actually is used to obtain the Lease payment amount);

Total Lease Payments: summary of the total lease payments;
Interest: Difference between Total Lease Payments and the Original amount;

Other payments: Other expenses associated to the operation (legal fees contracts etc.);

Total F: Addition of Other Payments and Total Lease Payments;

$/$ Factor: Customized factor used only as additional reference. It is obtained from the product of dividing the original amount by Total F. This indicator was designated by I.T. Department in order to have a clear measure of the financial cost for each proposal; and finally,

Residual Value: Estimated final value of the leased assets at the end of the lease exercise. (Used only as reference and not relevant to the study, it would be employed if some hardware may be acquired at the end of lease period).

From this basic simulator, the identification of the best options for both periods is very clear and straightforward: For a 3 year period, the best option is #2 with monthly payments, while for the four year period the best option seems to be #3 with quarterly payments.

Table 1. Sceneries to 3 years

	to 3 years					
	Monthly payments			Quaterly payments		
	OP1 36M	OP2 36M	OP3 36M	OP1 12	OP2 12T	OP3 12T
Amount	$190,000.00	$190,000.00	$190,000.00	$190,000.00	$190,000.00	$190,000.00
Rent	$5,808.88	$5,623.55	$5,836.44	$17,626.56	$16,906.47	$17,518.00
Payments	36.00	36.00	36.00	12.00	12.00	12.00
Periods	Monthly	Monthly	Monthly	Quaterly	Quaterly	Quaterly
Years	3.00	3.00	3.00	3.00	3.00	3.00
Factor	0.03	0.03	0.03	0.09	0.09	0.09
Total rents	$209,119.68	$202,447.67	$210,111.84	$211,518.72	$202,877.64	$210,216.00
Interests	$19,119.68	$12,447.67	$20,111.84	$21,518.72	$12,877.64	$20,216.00
Other payments	$120.00	$1,900.00	$950.00	$120.00	$1,900.00	$950.00
Total	$209,239.68	$204,347.67	$211,061.84	$211,638.72	$204,777.64	$211,166.00
$/$	1.10	1.08	1.11	1.11	1.08	1.11
Value at the end	$19,000.00	$26,923.02	$10,673.97	$19,000.00	$27,050.35	$10,673.97

Source: own

Table 1b. Sceneries to 4 years

	To 4 years					
	Monthly payments			Quaterly payments		
	OP1 48M	OP2 48M	OP3 48M	OP1 16	OP2 16T	OP3 16T
Amount	$190,000.00	$190,000.00	$190,000.00	$190,000.00	$190,000.00	$190,000.00
Rent	$4,779.13	$4,718.75	$4,640.14	$14,457.84	$14,330.94	$13,880.80
Payments	48.00	48.00	48.00	16.00	16.00	16.00
Periods	Monthly	Monthly	Monthly	Quaterly	Quaterly	Quaterly
Years	4.00	3+1	4.00	4.00	3+1	4.00
Factor	0.03	0.02	0.02	0.08	0.08	0.07
Total rents	$229,398.24	$226,500.00	$222,726.72	$231,325.44	$229,295.00	$222,092.80
Interests	$39,398.24	$36,500.00	$32,726.72	$41,325.44	$39,295.00	$32,092.80
Other payments	$120.00	$1,900.00	$950.00	$120.00	$1,900.00	$950.00
Total	$229,518.24	$228,400.00	$223,676.72	$231,445.44	$231,195.00	$223,042.80
$/$	1.21	1.20	1.18	1.22	1.22	1.74
Value at the end	$6,650.00	$12,120.00	$4,797.41	$6,650.00	$14,624.48	$4,797.41

Source: own

Table 2. Cost Differential Analysis

	to 3 years					
	Monthly payments			Quaterly payments		
	OP1 36 M	0P2 36M	OP3 36M	OP1 12T	OP2 12T	OP3 12T
Total	$209,239.68	$204,347.67	$211,061.84	$211,638.72	$204,777.64	$211,166.00
Minimum	$204,347.67			$204,777.64		
difference	$ 4,892.01	$ -	$ 6,714.17	$ 6,861.08	$ -	$ 6,388.38
Minimum	$204,347.67					
difference	$ 4,892.01	$ -	$ 6,714.17	$ 7,291.05	$ 429.97	$ 6,818.33

Source: own

Table 2b. Cost Differential Analysis

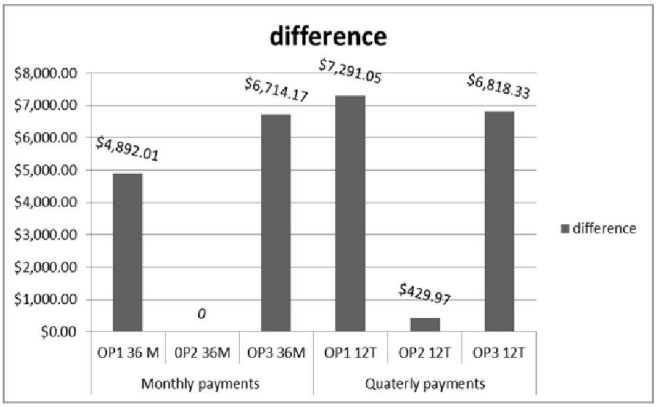
	to 3 years					
	Monthly payments			Quaterly payments		
	OP1 48M	0P2 48M	OP3 48M	OP1 16T	OP2 16T	OP3 16T
Total	$229,518.14	$228,400.00	$223,676.72	$231,445.44	$231,196.00	$223,042.80
Minimum	$223,676.72			$223,042.80		
difference	$5,841.52	$4,723.28	$0.00	$8,402.64	$8,152.20	$0.00
Minimum						
difference	$25,170.57	$24,052.33	$19,329.05	$27,097.77	$26,847.33	$18,695.13

Source: own

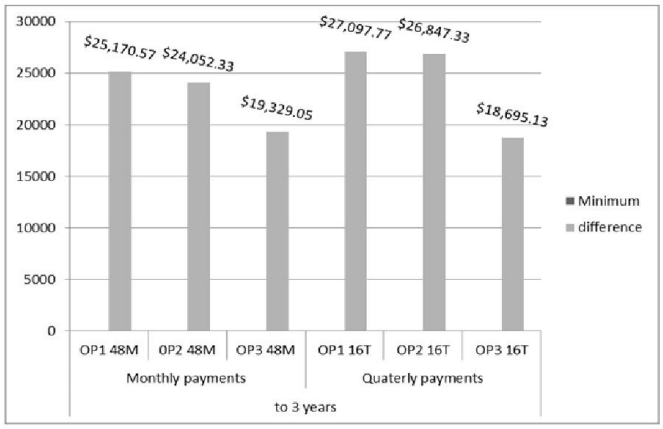
(Result obtained from observing *TOTAL F* values. This outcome was obtained from raw data analysis previous to any special financial analysis. In order to complement the results listed previously, and using the I.T. tools as a means for presenting the study to Management, additional graphics and schema were prepared. All of them originated from the main result set (table 2 and tabla2b): This schema was prepared in order to the differences among Lessors from the perspective of the total cost of the operation. The lower cost value was used and base, and from there the differences (above this cost) were expressed. As complement the next graphics were also designed: The customized Factor $/$, was also expressed graphically in order to clarify its meaning: The explanation given for the $/$ Factor was based on the next argument:

"This factor expresses the interests or extra costs incurred for each dollar involved in the leasing operation". As such, is it very clear that this factor matches the results obtained thru the *Total F* analysis, giving us confidence that is in fact a useful tool for lease operations' analysis.Information obtained so far, was clear and seemed reliable. It was then necessary to validate the data financially. The Financial Planning Department of the Company was inquired in this matter. They solicited all material collected and analysis performed so far, so they could used to apply their own tools and financial models (which it is pertinent to clarify, are also I.T. based). The Net Present Value analysis was selected for the Financial Department to perform their evaluation. This was consistent with our documental investigation in the matter, as NPV is the preferred tool used to evaluate leasing operations.

The results of the mentioned analysis are presented below: Financial Department discarded form the beginning Option #1 because the amount of payments was elevated compared against the two others. The analysis became then comparison amonge two remaining options. Results provided by financial specialist are clearly marked in the above schema. We will discuss them along with other considerations in the Proposals section. The NPV analysis marks the end of the quantitative analysis. But it is necessary when evaluating lease operations (especially those involving computer and telecommunication equipment), that a qualitative analysis is performed in parallel, as other factors (independent of the financial discipline) are also determinant of the decision-making process. Qualitative analysis is an important part of the evaluation process. For this study, the next qualitative comparison schema was prepared and presented to both Financial Department and Management: With quantitative and qualitative data collection and analysis completed, it is then possible to propose a line of action.



Graphics 1. Cost Differential Analysis (Period Comparison) source: own

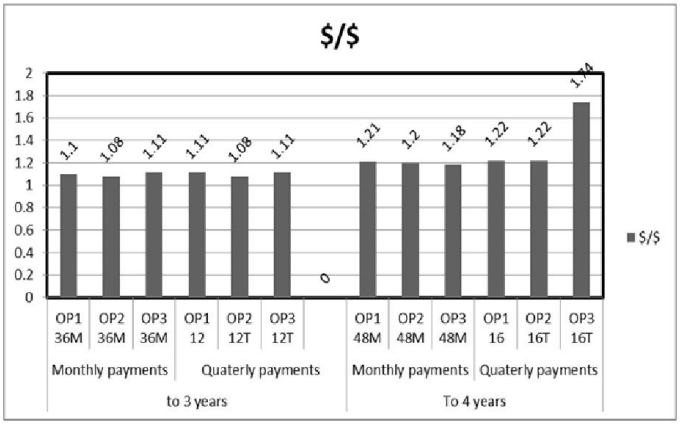


Graphics 1b. Cost Differential Analysis (*TOTAL F*) source: own

Proposals

From the financial perspective, it is convenient to lease the equipment for 4 years with quarterly payments. With a 4 years period, the financial cost increases as the Lessee gains time in the lease period, which viewed financially (only) it is convenient. On the other hand, a short period of time reduces interests and a monthly capitalization improves the Lessor´s cash flow which in return can offer a better lease factor or rate. The relation between time and interest is very clear.

Fundamental part of the study was to answer to a question expressed by Management: Are three years lease periods the best option for computer Equipment?. The argument behind this was that when the equipment is returned after the end of the period, it is in a pretty fair condition, as it is well treated and



OP2	**Monthly**	**3 Years**		
Months	1	2	3	4 - 36
Lease Payments & Others	$ 7,523.55	$ 5,623.55	$ 5,623.55	...
NPV	**$56,143.57**			
OP2	**Quarterly**	**3 Years**		
Months	1	2	3	4 - 36
Lease Payments & Others	$ 1,900.00	0	$ 16,906.47	...
NPV	**$51,151.92**			
OP2	**Monthly**	**4 Years**		
Months	1	2	3	4 - 48
Lease Payments & Others	$ 7,350.00	$ 5,450.00	$ 5,450.00	...
NPV	**$55,020.80**			
OP2	**Quarterly**	**4 Years**		
Months	1	2	3	4 - 48
Lease Payments & Others	$ 1,900.00	0	$ 16,061.15	...
NPV	**$49,289.37**			
OP3	**Monthly**	**3 Years**		
Months	1	2	3	4 - 36
Lease Payments & Others	$ 6,786.44	$ 5,836.44	$ 5,836.44	...
NPV	**$57,340.00**			
OP3	**Quarterly**	**3 Years**		
Months	1	2	3	4 - 36
Lease Payments & Others	$ 950.00	0	$ 17,518.00	...
NPV	**$52,076.04**			
OP3	**Monthly**	**4 Years**		
Months	1	2	3	4 - 48
Lease Payments & Others	$ 5,590.14	$ 4,640.14	$ 4,640.14	...
NPV	**$46,786.76**			
OP3	**Quarterly**	**4 Years**		
Months	1	2	3	4 - 48
Lease Payments & Others	$ 950.00	0	$ 13,880.80	...
NPV	**$42,367.34**			

Qualitative Comparison Schema

	OP1	OP2	OP3
Partial Acquisition of Equipment (at End)	YES	YES	YES
Return Location of Equipment	México D.F.	Mexico D.F. (Negotiable)	En Veracruz (Packing covered by Lessee)
Pre-established Final Value	YES, 8% to 10% estimated for 3 year period and 2% to 5% for four years	YES, to be Defined	Established from the beginning and defined by hardware category
Extraordinary orders of Equipment	Only Via Additional Contract	"Fast Track"	Only Via Additional Contract
Anticipated Technology Upgrade	-	YES, to be Defined	Only available trhu cancelation of current agreement and settlement of a new one
Documented Protocols and Processes	-	YES, Pending Delivery	YES, Flow chart
Lease Periods Offered	3 to 4 years	1 to 4 years	2 to 4 years
Sell of Equipment to Employees	-	YES, Invoicing directly to Employee	Viable but only trhu Lesse or third party Invoicing (elevated cost)
Extended Benefits for Company Employees	-	Payroll Discounts (To be Defined)	NO
Past or Current Lease Relationship	NO	CURRENT	PREVIOUS
Added Values	-	-	On-line application for asset management (e-flow)

maintained during its stay in the Company. Would it be better to lease for four years?. Both qualitative and quantitative analysis helped us when answering Management inquiry. Using as reference the NPV analysis previously presented, the Financial Department established the next facts that work as well as our conclusions:

- From the financial point of view the best of all options is from lessor #3 with a lease period of four years and quarterly payments. (But only considering quantitative factors).
- When involving qualitative factors, then the best decision shifts to Lessor #2 for a period of three years with quarterly payments. Qualitative factors were determinant in the final verdict, as the main qualitative factor is the nature of the leased assets: Computer Equipment. Time is essential when leasing this kind of
- assets, as it affects its value, utility and even performance. A four year period lease implies incurring on extra maintenance costs and expenses, and work on daily basis with obsolete technology. Because of all the previously exposed, we can affirm that when it comes to lease computer equipment, the qualitative factors prevail over quantitative ones.

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