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Explaining Accounting Structures Changes by Applying the Accounting Methodology of Radar-Polar Chart

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ABSTRACT

The manuscript analyzes the relationship between the dynamic activity of entities and its effects on accounting structures of their financial statements. Radar charts and tetragrams visually represent the dynamic activity of features, respectively. To overcome discrepancies in qualitative and quantitative comparative analysis, the manuscript introduces polar equation parameters that drive research towards qualitative analysis. Classes of management – kinds and types - are conductor threads for explaining relations between charts and diagrams, and level of employment as well as market prices are environment variables for confirming hypothesis of manuscript. The Euclidean distances of the accounting relative centers in the tetragrams and the management optima are indicators developed for both stakeholders and managers to explain the evolution of decision making over time. The accounting applied is an economic science.

Keywords: Accounting methodology; Economic behavior; Radar charts; Piper diagrams; Clusters.

INTRODUCTION

The adaptation of human action to the environment where the entities are located supposes making-decisions according to the change of cultural factors [1] [2] y [3]. The accounting transforms economic, financial, and monetary transactions into accounting transactions, and therefore financial statements are a synthesis of human action that reports on the activity of entities in the markets along a period, since the valuation of the transactions recorded in an accounting system is one of the main objectives of this science [4] y [5]. The latter is the reason why human action can be valued economically, financially, and monetarily, and at the same time it can be measured quantitatively and qualitatively. The indicators obtained from geometric figures and tetra-diagram - adapted Piper diagrams –, allowing us to perform both analyzes on the activities of an entity. Thus, an observer must be able to understand the financial situation of the entities and know the way in which making-decision has been managed. On the other hand, as a methodology that analyzes the behavior of Homo economicus, it can be applied in other sciences that share the same research object.

The first works in the analysis of the economic behavior of León Walras research exchange values for explain general equilibrium of economy [6] y [7]. The application of the double entry principle in the accounting record of national transactions proposed by Irving Fisher [8] is included in System of National Accounts 2008 (2008 SNA) of United Nations (UN) [9], which is a statistical framework that provides a comprehensive, consistent, and flexible set of macroeconomic accounts for policymaking, analysis, and research purposes. The radar chart

accounting methodology measures the dynamic activity of entities through the internal relationships of their angles, depending on the class (kind and type) of management that it represents. The axes of a radar chart are the average periods of maturaty of a company. Consequently, changes in a period have effects in the consume, sales, and financial activities at the same time. The effect of dynamic activity on accounting financial statements is explained by tetragram – Piper diagrams adapted - to inform stakeholders about activity performed.

The observer is the main actor in this methodology because their perception of the management results influences on their decision to stay or not in a common project. According to this aim, the manuscript has considered contributions on the role that medical image perception research [10], the development of deep-learning-based methods for their capabilities in analyzing complex visual data and inferring valuable insights [11], the research that confirms 50% of our brain function is dedicated to find and interpret visual information [12] and the development and implementation of a custom-designed Excel-based visual management [13]. The accounting structures of balance sheet as well as profit and losses account are Gibb's triangles to form Piper's diagram adapted to aims of this research, which inform about economic and financial positions of entities and results of their activity.

The manuscript explains the application of the accounting methodology on sample of seven non-financial entities listed in the Dow Jones Industrial Average and Nasdaq-100. According to aims of the manuscript, the management optimums justify the accounting structures adopted by the companies in their activity, which are represented in tetragrams. So that, there is a cause-effect among classes of management and accounting structures of balances and results. The radians obtained from the relationships by ratios between the Euclidean distances in the radar charts and the tetragrams justify why they be the guiding thread of this research.

The Accounting Methodology of Radar-Polar Chart

Perimeter Distances

The management of companies are human actions on continued activity of entities. Nevertheless, location of companies, perturbations of markets, means of communication, political decisions are factors which define economic, financial, and cultural environments where entities make transactions and decisions. The average periods measure the dynamic activity of entities, and these variables are axes of radar charts (polar) to research geometry figures generated. Entities in the same sector do not have to adopt the same kind and type of management. The accounting methodology applied in the research explores this topic, evaluating the management of companies through angular indicators generated from a radar chart. These geometric figures are the different classes of management generated from decision making. The perimeter distances between axes are tension between maturity periods and a change on one of them has effects in several management activities of a radar-polar chart at same time. The number perturbations without repetition of perimetral distances are classes of management generates, which depend on numbers of activity that researcher likes to assess.

The manuscript assesses three activities on radar charts, according to average periods obtained. The graphic of radar charts of Amgen Incorporated are on figure 1 for three period of maturity: sales (pv), payment (pp) and collect (pc). These periods measure dynamic activity of companies obtained from next equation, which measure the speed of transactions in a period.

$$Speed = \frac{ET\ or\ FT}{t(365)} = \frac{BVk}{Pk} \quad (1)$$

$$Pk = \frac{BVk * t(365)}{ET\ or\ FT} \quad (2)$$

In the Equation (1) and (2) ET and FT are values of economic and financial transactions in an annual period (365 days), BVk is the value of the simple interannual averages of the accounting balance variables that do not leave the economic, financial, and monetary domain of the companies at the end of the fiscal year, and generated from Et and FT. These Balance Variables (BV) are stock inventories, debtors, and creditors, which allow to obtain respective periods of sales (pv), collect (pc) and payment (pp). The index K takes words v, p and c, according to nature of transactions and balance variables. The axes of radar charts in figures 1 and 2 are the sales period (pv), collect period (pc) and payment period (pp), and perimeter distances between pv and pc is DPV for sales activity, DPC is distance between pv and pp for consume activity and DPT is distances between pc and pp for treasure activity.

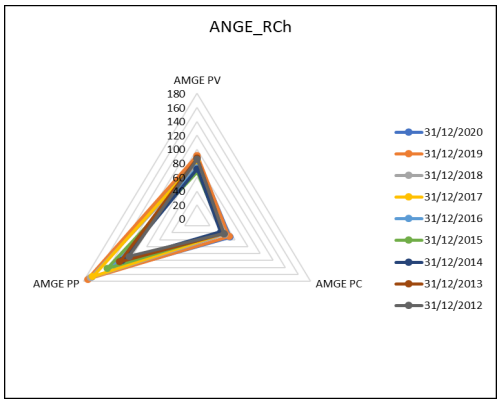


Figure 1. Radar chart of Amgen Incorporated

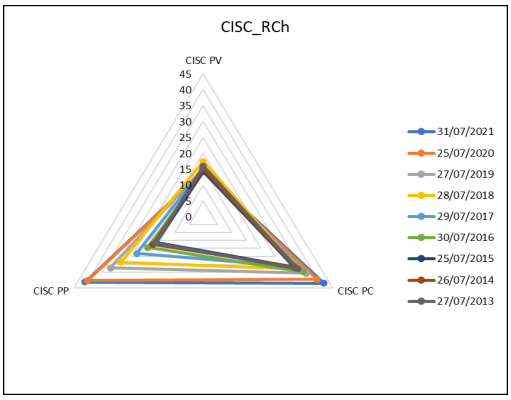


Figure 2. Radar chart of Cisco Systems Inc

The accounting information consolidated of Amgen Incorporate allows to obtain radar charts (classes of management) in Figure 1 and radar charts of Cisco Systems Inc are in Figure 2. The management classes that can be generated are in table 1.

Table 1. Classes of management

DPT>DPC>DPV (1F)	DPC>DPT>DPV (1M)	DPC>DPV>DPT (1E)
DPT>DPV>DPC (2F)	DPV>DPT>DPC (2M)	DPV>DPC>DPT (2E)

Companies (entities) can sell their product by two financial strategies, giving credit to customers or obtaining debt from creditors. The first strategy is figure 2 and is marked by (2) on second row of table 1 when DPC is higher than DPV. The second strategy is figure 1 and is marked by (1) on first row of table 1 when DPC is lower than DPV. The perimeter distance of treasure (DPT) can be on the first (F), intermeddle (M) or end (E) position, explaining tensions on treasure activity. The classes of management adopted by companies of sample are on table 2 in ten period of study.

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Table 2. Classes of management of sample companies

ENTITIES (Acronym)	1F	1M	1E	2F	2M	2E	SUMA
Amgen Incorporated (AMGE)	0	9	1	0	0	0	10
Apple Inc. (APPL)	10	0	0	0	0	0	10
Cisco Systems Inc. (CISC)	1	0	0	8	1	0	10
Honeywell International Inc (HONE)	3	1	0	5	1	0	10
Intel Corp (INTEL)	0	6	4	0	0	0	10
Microsoft Corporation (MICR)	9	0	0	1	0	0	10
Walgreens Boots Alliance, Inc. (WALG)	0	7	3	0	0	0	10
SUM OF CLASSES MANAGEMENT	23	23	8	14	2	0	70

The annual classes of management are in table 3, and entities adopt preferability classes of first row of table 1. The p-value of J2 (Chi2=0,9435) confirms the alternative hypothesis and explain high level of association among sample entities because there are perturbations on markets. The sample companies have tendency to adopt same classes of management, and markets finance them.

Table 3. Classes management by year

Class management	1F	1M	1E	2F	2M	2E	SUMA
2021	2	1	0	1	0	0	4
2020	3	4	0	0	0	0	7
2019	3	2	1	1	0	0	7
2018	3	2	1	1	0	0	7
2017	3	2	1	1	0	0	7
2016	2	2	1	2	0	0	7
2015	2	3	0	2	0	0	7
2014	2	2	1	2	0	0	7
2013	2	2	1	2	0	0	7
2012	1	2	1	2	1	0	7
2011	0	1	1	0	1	0	3
Sum Class management	23	23	8	14	2	0	70
Chi2 Class management	1,00000	0,9994	0,9998	1,00000	1,000000	np	
CHI2 years	0,9435						

The contingency tables of classes of management indicates companies maintain same behavior along of period of research. According to alternative hypothesis, classes of management are the relevant elements to get consistence in the research.

Quantitative analysis

The research is carried out with the hypothesis that there is a relationship between management activities and annual account structures, which are represented visually. Management activities are assessed by contrasting internal angles of radar charts. The changing conditions of the transactions are changes in the environment, which alter the perimeter distances. These changes of tension are compensated between activities of the radar charts, generating management classes (table 1). The angular indicators in table 4 explain the levels of financial and economic sufficiency of each activity, as well as the cause-effect relationships between them to obtain an optimal management. When companies reach management optima in all their activities, they are self-sustaining in their activities without the need for financial

support from the markets. The variable applied for observing this evolution criterion is level of employment or human recurs applied, as nominal variable.

The relations among internal angles are on table 4, which are deduced from management classes of table 1 contrasting them through combinations of three elements (PDh) taken two by two. The research has been carried out through the Excel program. This requires the incorporation of controls in the development of the research, and, among them, the sine theory and the tangents of the angle differences have been used to contrast the angular results. Obtaining a general criterion to measure changes in activity management has given rise to the generation of a relative management centers in radar charts through polar equations. When research requires to assess more activities than radar chart of manuscript has, the relative center of management open the application of this accounting methodology to other structures of management following COSO framework [14]. The relative management centers are the intersection of lines through the polar coordinates of the mean periods in a racial chart, and tangent lines are mean of their respective angles.

The angular indicators are in table 4 to evaluate the management of the companies. The table shows how to obtain angular indicators to assess activities as well as their acronyms. Making deductions from table 1 and considering the strategies of the companies, the classes of management are marked according to criteria of above section: the distances of the perimeters are identified with a one when DPC is greater than DPV and according to the length of the DPT, the letters F, M and E mark when it occupies the first, an intermediate, and a last position, respectively.

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Table 4. Angular Coefficients

CLASSES OF MANAGEMENT (2F / 1M / 1F)	**CLASSES OF MANAGEMENT (2M / 2E / 1E)**
DPT>DPV (CONSUME)	**DPV>DPT (CONSUME)**
DPV/SEN120 = PV/SENBv = PC/SENAv	DPV/SEN120 = PV/SENBv = PC/SENAv
DPT/SEN120 = PC/SENBt = PP/SENAt	DPT/SEN120 = PC/SENBt = PP/SENAt
Financial Sufficiency (FSC) (*)	**Financial Sufficiency (FSC) (*)**
PC/SENBt > PC/SENAv	PC/SENAv > PC/SENBt
SENAv/SENBt > 1	SENBt/SENAv > 1
Av / Bt > 1 (*)	Bt / Av > 1
Economic Sufficiency (FSCGr > ESPs) (*)	**Economic Sufficiency (FSCGr > ESPs) (*)**
PP/SENAt > PV/SENBv	PV/SENBv > PP/SENAt
SENBv/SENAt > PV/PP	SENAt/SENBv > PP/PV
Bv/At > PV/PP (*)	At / Bv > PP/PV
CLASSES OF MANAGEMENT (1M / 1E / 1F)	**CLASSES OF MANAGEMENT (2M / 2E / 2F)**
DPC>DPV (TREASURE)	**DPV>DPC (TREASURE)**
DPV/SEN120 = PV/SENBv = PC/SENAv	DPV/SEN120 = PV/SENBv = PC/SENAv
DPC/SEN120 = PP/SEBc = PV/SENAc	DPC/SEN120 = PP/SEBc = PV/SENAc
Financial Sufficiency (FST) (*)	**Financial Sufficiency (FST) (*)**
PV/SENAc > PV/SENBv	PV/SENBv > PV/SENAc
SENBv / SENAc >1	SENAc / SENBv >1 (*)
Bv / Ac >1 (*)	Ac / Bv >1
Economic Sufficiency (FSCGr & ESPs) (*)	**Economic Sufficiency (FSCGr & ESPs) (*)**
PP/SENBc > PC/SENAv	PC/SENAv > PP/SEBc
SENAv/SENBc > PC/PP	SENBc/SENAv > PP/PC
Av/Bc > PC/PP (*)	Bc/Av > PP/PC (*)
CLASSES OF MANAGEMENT (2E / 1M / 1E)	**CLASSES OF MANAGEMENT (2M / 2F / 1F)**
DPC>DPT (SALES)	**DPT>DPC (SALES)**
DPT/SEN120 = PC/SENBt = PP/SENAt	DPT/SEN120 = PC/SENBt = PP/SENAt
DPC/SEN120 = PP/SEBc = PV/SENAc	DPC/SEN120 = PP/SEBc = PV/SENAc
Financial Sufficiency (FST) (*)	**Financial Sufficiency (FST) (*)**
PP/SEBc > PP/SENAt	PP/SENAt > PP/SEBc
SENAt/SENBc > 1	SENBc/SENAt > 1
At/Bc > 1 (*)	Bc/At > 1 (*)
Economic Sufficiency (FSCGr & ESPs) (*)	**Economic Sufficiency (FSCGr & ESPs) (*)**
PV/SENAc > PC/SENBt	PC/SENBt > PV/SENAc
SENBt/SENAc > PC/PV	SENAc/SENBt > PV/PC
Bt/Ac > PC/PV (*)	Ac/Bt > PV/PC (*)

The result of application above indicators allows obtaining management optima for Amgen Incorporated (Table 5) and Cisco Systems Inc (Table 6), which radar chart are on figure 1 and 2.

Table 5. Optimal Management of Amgen Incorporated

YEARS	2020	2019	2018	2017	2016	2015	2014	2013	2012
Classes of Management	1M	1M	1M	1M	1M	1M	1M	1M	1M
AMGE_OP^C	1	1	1	1	1	1	1	1	1
AMGE_OP^T	1	1	1	1	1	1	1	1	1
AMGE_OP^V	1	1	1	1	1	1	1	1	1

The classes of management of Amgen Inc have PDCs (consume) higher than PDVs (sales) along period of study, and DPTs (treasure) maintain its position in the middle of them. On de contrary, Cisco S. Inc maintains DPVs are higher than DPCs along of period, and DPTs are on first positions. So management tensions in Cisco are lower than Amgen Inc on treasure area.

Table 6. Optimal Management of Cisco Systems Inc

YEARS	2021	2020	2019	2018	2017	2016	2015	2014	2013
Classes of Management	2F	1F	2F	2F	2F	2F	2F	2F	2F
CISC_OP^C	1	1	1	1	1	1	1	1	1
CISC_OP^T	1	1	1	1	1	1	1	1	1
CISC_OP^V	1	1	1	1	1	1	1	1	1

Companies of Amgen Inc and Cisco S Inc have differences on management and achieve optima management on all activities. The figures 3x and 4x are their respective evolutions of sufficiency indicators of management and referred to secondary y-axes are the level of employment or volume of human resource applied on their activities.

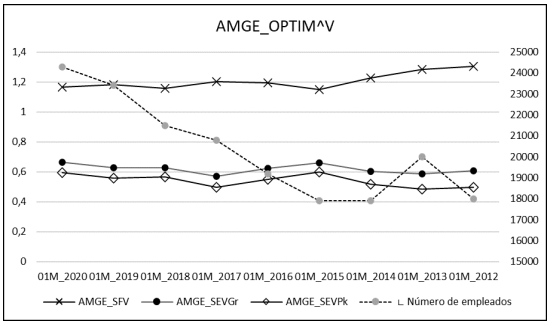


Figure 3SA. Sales Area of Amgen Inc

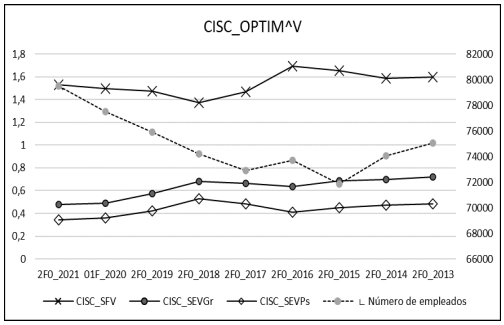


Figure 4SC. Sales Area of Cisco S Inc

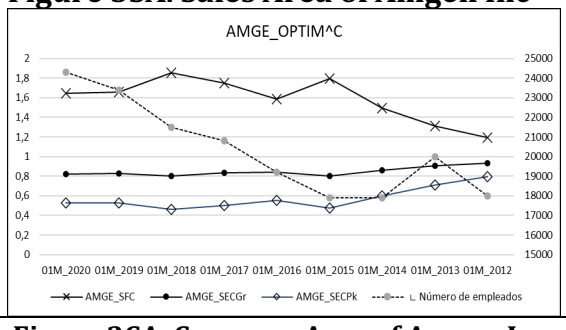


Figure 3CA. Consume Area of Amgen Inc.

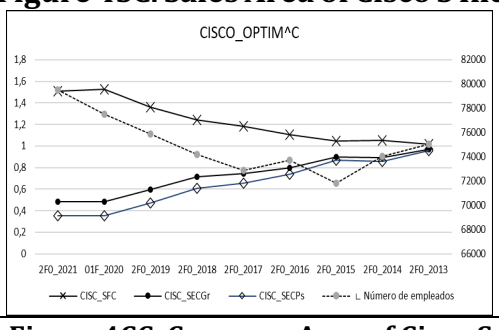


Figure 4CC. Consume Area of Cisco S Inc

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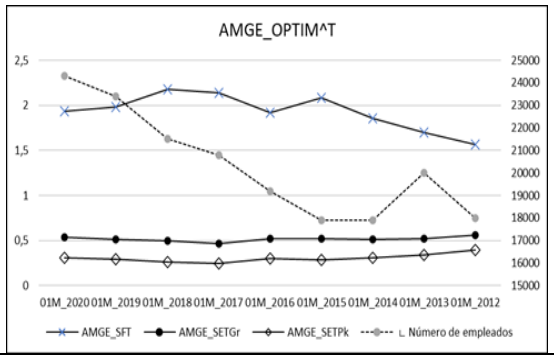


Figure 3TA. Treasure Area of Amgen Inc.

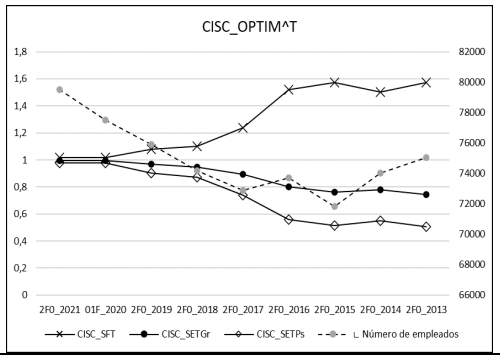


Figure 4TC. Treasure Area of Cisco S Inc

The evolution represented of Economic Sufficiency Indicators are a bred (●) symbol for relation by ratio of angles (SEGr) and fish (◊) symbols for relation by ratio of maturity periods (SEPs), the financial sufficiency (SFT) is a cross (x) symbol, and labor resources are dashed line (- -) referred to secondary y-axes. The treasure activity is a function of evolution sales and commune activities because the ratio of sinus of treasure angles are product of sinus of sales and sinus of consume. That is, the product of the sine of the Beta angles (Bx) divided by product of the sine of the Alpha angles (Ax) is the unity, according to equation 3 and 4.

$$\frac{SenBv}{SenAv} * \frac{SenBc}{SenAc} * \frac{SenBt}{SenAt} = 1 \quad (3)$$

$$\frac{SenBv}{SenAv} * \frac{SenBc}{SenAc} = \frac{SenAt}{SenBt} \quad (4)$$

The equation 4 is deduced from expression 3, and it is the management effect on indicator evolutions of Amgen Inc. and Cisco S. Inc. companies. These equations are controls on resalts of the research and they are the explanation that there are interactions among areas of a radar chart. The evolution of the indicators can be contrasted because there is the same criterion on their construction in table 4. The ratios of financial sufficiency must be greater than unity and to measure the economic sufficiency the angular ratios must be greater than ratios of the average periods of maturity.

The timeline evolution of the ratios in the graphs of Figures 3xx and 4xx is from right to left, and the x-axis labels refer to the year and the management class adopted. Comparing the behavior of the companies, visually the purchase activities (consume) have different evolutions and there are compensations between financial sufficiency indicators that have relation on evolution of same indicators in treasure activity. The management optimum condition assumes that the indicators of financial sufficiency must be higher than the economic ones. This condition is fulfilled in all the activities of the two companies, but in Cisco the sufficiency indicators are close, and this means that the level of employment will stop increasing. This inconsistency influences treasury activity and the following section explains why Cisco needs a source of funding outside of shareholder funds to maintain the ongoing management of the activity.

The Contrasting results: relative centers of management activities

The evolution of level of employment is same on companies but indicators of financial sufficiency of treasury are different. The above section explains treasure indicators depend on other areas. This section includes the analysis of their differences, contrasting their respective

Euclidean distances between Cartesian centers of radar chart and relative centers of management activities of polar chart. These last centers are polar centers obtained by intersections among lineal projections from cartesian coordinates of respective periods of maturity. These relative centers are represented by interjections of dashed lines on figures 5 and 6 for Amgen Inc and Cisco System Inc.

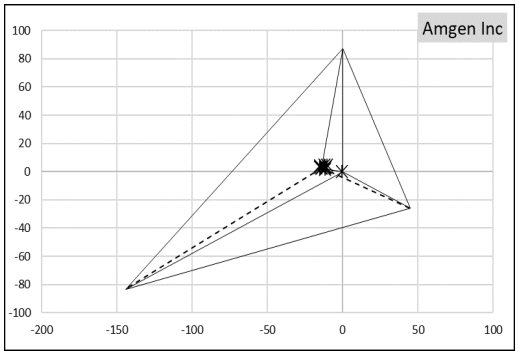


Figure 5. Management Relative Center Amgen

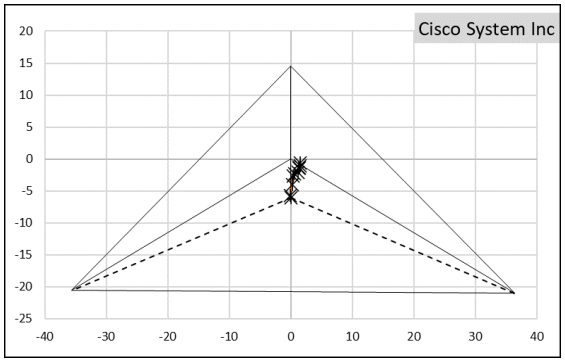


Figure 6. Management Relative Center Cisco

The Relative Center of Management (RCMs) have asterisk symbols (*) and they are a synthesis of management variations to adapt the company's behavior to market changes. So that, the Euclidean distances between Relative and Cartesian Centers are global effects of management changes and there will be relation with accounts of annual financial statements. The tetragrams of figure 7 and 8 are the relative value on percentage of annual accounts for first and last years of Amgen and Cisco, respectively.

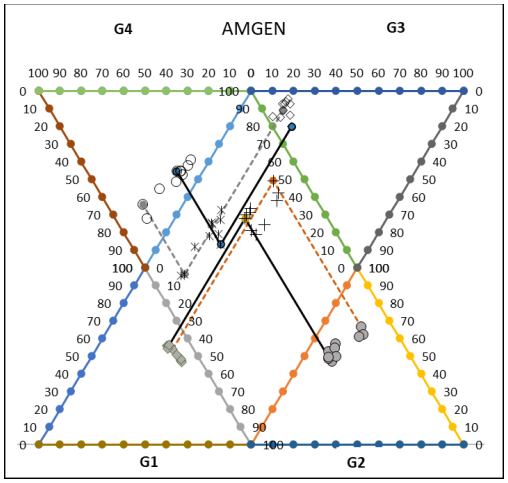


Figure 7. Piper diagram Amgen

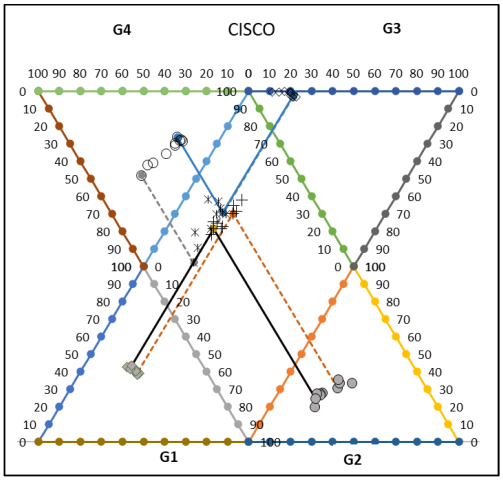


Figure 8. Piper diagram Cisco

The relative value of the Amgen and Cisco accounts is found in the respective tetragrams and, tables seven and eight are values from the tetragrams and those marked with an asterisk (*) are parallel lines on the y-axes of the Gibbs triangles and are obtained from bottom to top by moving the base side of the Gibbs triangle from the minimum value (0%) to the maximum value (100%) on the respective right or left side of the triangle.

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Table 7. Piper's diagram of Amgen

AMGEN	**Gibbs 2**	**01M_2020**	**01E_2011**	**AMGEN**	**Gibbs 4**	**01M_2020**	**01E_2011**
ShF	Left	15%	39%	AC^ECO	Left (*)	64%	46%
No-CL	Right (*)	67%	49%	AC^MON	Right	17%	42%
CL	Bottom	19%	12%	AC^FIN	Bottom	19%	12%
Total Liability	Sum	100%	100%	Total Assets	Sum	100%	100%
AMGEN	**Gibbs 1**	**01M_2020**	**01E_2011**	**AMGEN**	**Gibbs 3**	**01M_2020**	**01E_2011**
OOE	Left (*)	54%	56%	P&G^Period	Left	79%	71%
EBIT	Right	36%	33%	P&G^FIN	Rigth (*)	11%	20%
CMR	Bottom	10%	11%	CORP^TAX	Bottom	10%	9%
SALES	Sum	100%	100%	EBIT	Sum	100%	100%

Table 8. Piper's diagram of Cisco

CISCO	**Gibbs 2**	**2F0_2021**	**2M0_2012**	**CISCO**	**Gibbs 4**	**2F0_2021**	**2M0_2012**
ShF	Left	42%	56%	AC^ECO	Left (*)	48%	26%
No-CL	Right (*)	31%	25%	AC^MON	Right	25%	53%
CL	Bottom	27%	19%	AC^FIN	Bottom	27%	21%
Total Liabilities	Sum	100%	100%	Total Assets	Sum	100%	100%
CISCO	**Gibbs 1**	**01M_2021**	**01E_2011**	**CISCO**	**Gibbs 3**	**01M_2020**	**01E_2011**
OOE	Left (*)	40%	44%	P&G^Period	Left	77%	78%
EBIT	Rigtj	28%	23%	P&G^FIN	Right (*)	3%	2%
CMR	Bottom	33%	34%	CORP^TAX	Bottom	19%	20%
SALES	Sum	100%	100%	EBIT	Sum	100%	100%

The Right side of Gibs 1 - lower left triangle on tetragrams – is EBIT (Earnings before interests and taxes) and the opposite Left side on Gibs 3 - upper right triangle on tetragrams- is P&G^Period (Profit and Gains period). Therefore, the variation of the results of the activity can be observed, comparing the Profits and losses with the Earnings before interests and taxes. The Left side of Gibs 2 - lower right triangle on tetragram – is Shareholders Fund (ShF) and its opposite Right side on Gibs 4 - upper left triangle on tetragram – is the Monetary Assets (AC^MON). Consequently, it is possible to observe variations in the financial structure of the company (financial value) contrasted with the variation in cash (monetary value) at the end of the fiscal year.

Comparing Euclidean distances from Relative Centers of Management (RCMs) to Cartesian centers in figure 5 and 6 between Euclidean distances among Relative Centers of Financial Statement Accounts in tetragrams - Piper's diagrams -, it is possible to explain why companies adopt different economic and financial structures according to the cause-effect relationship of making-decision represented through radar charts. Euclidean distances as well as variables of alternative method to measure their relations are in table 9 where G^R&P X are means of Euclidean distances on Radar and Polar charts, G^DPPs Y are means Euclidean distances of Piper's diagrams between relative centers CC(1^PP) and CC(2^PP), Radians are arctangent values of G^DPPs (Y) divided by G^R&Ps (X) and Module are values obtained from polar equations (5) and (6). The accounting relative centers CC(1^PP) are interjections of projections from Gibbs 1 (G1) and Gibbs 2 (G2), and accounting relative centers CC(2^PP) are interjections of projections from Gibbs 3 (G3) and Gibb 4 (G4) in figures of tetragrams 7 and 8.

Table 9- Means distances of relative positions

YEAR/Num.	OP^MAG	G^R&Ps X	G^DPPs Y	CC(1^PP)	CC(2^PP)	Radian	Module
2021//4	4	4,242531	0,567227	0,237760	0,398417	0,132943	4,279291
2020//7	7	8,751445	0,543968	0,263258	0,386310	0,062078	8,768335
2019//7	6	8,935906	0,441630	0,245178	0,347600	0,049382	8,946813
2018//7	6	8,212031	0,375671	0,240669	0,315901	0,045715	8,220620
2017//7	6	8,414890	0,363219	0,205143	0,312550	0,043137	8,422725
2016//7	6	7,938152	0,316134	0,191873	0,296268	0,039804	7,944444
2015//7	7	7,857040	0,318758	0,192700	0,281435	0,040548	7,863503
2014//7	6	7,511364	0,302999	0,189732	0,315206	0,040317	7,517473
2013//7	6	7,563117	0,312168	0,205339	0,320161	0,041252	7,569556
2012//7	6	6,541755	0,286232	0,220155	0,300515	0,043727	6,548014
Correlation	//	1,000000	-0,242452	0,033864	-0,329548	0,789874	-0,237452
Pearson's CV	//	0,179515	0,265711	0,119065	0,117316	0,530034	0,178346
Test White (L~X2(m))	//	NP	0,443260	0,914720	0,297354	0,012497	0,452720
Test White (F~(K,n-k-1))	//	NP	0,499729	0,926008	0,352433	0,006561	0,153141

According to the results obtained, it cannot be inferred that there is a linear relationship between G^R&Ps (X) and G^DPPs (Y) due to the values obtained by correlation coefficient and White's test heteroscedasticity. However, respective Pearson coefficients allow us to consider

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there are no variations of the variables with respect to their means. These results contrast with those obtained in the Chi2 parametric test, which measures the behavior of companies in a qualitative sense. To overcome the differences between the quantitative and qualitative results, the research considers that the polar equations 5 and 6 can explain lineal relation of the variables G^R&Ps (X) and G^DPPs (Y) through radians (θ) and vector modules (Mo).

The relationship between the variables of interest in the research can be obtained explained by polar equations as follows.

$$G\text{^}DPPs\ (Y) = \sin\theta * Module(Mo) \quad (5)$$

$$G\text{^}P\&Rs\ (X) = \cos\theta * Module(Mo) \quad (6)$$

The cause-effect relation of Euclidean distances allows to obtain radians of the polar equations through its arctangent.

$$\frac{Y}{X} = \frac{G\text{^}DPP}{G\text{^}P\&G} = \frac{sin(\theta) * Module(Mo)}{\cos in(\theta) * Module(Mo)} = \frac{sin(\theta)}{\cos(\theta)} = \tan\theta \quad (7)$$

$$\text{atan}(\theta) = \theta\ radians \quad (8)$$

The radian (θ) and module (Mo) can be obtained for each relation of variables, but their behavior is not same. Considering the radian explains behavior of entities and module their tension, the radian can be positive or negative and its values have limits, the minimum and maximum values are zero (+/-0º) and 6.283185307 (+/-360º) respectively. The values in radians in table 9 justify the explanatory estimation of the behavior of the companies by this explanatory variable, and according to this criterion, the quantitative and qualitative dispersions of the accounting variables of the companies in the respective tetragrams - Piper diagrams - are in table 10.

Table 10. Accounting information of Piper's diagram

Entity (1)	CC	Ty E	Mx	PCV	AsC	D > 0,5	D< 0,5	Sum	CL	OP^MAG	Num.
AMGE^D^ShF	-0,83	0,06	-0,11	-0,50	-0,85	**0**	**10**	10	1F^ 0	C	10
AMGE^D^EBIT	0,78	0,04	0,17	1,36	0,57	6	4	10	**1M^ 9**	T	9
AMGE^D^AC^MON	-0,79	0,08	0,02	-1,04	-1,00	**1**	**9**	10	1E^ 1	V	10
AMGE^D^P&G^Per.	0,10	0,04	0,32	0,12	-1,49	10	0	10	2F^ 0		
Entity (1)	CLC	Ty E	Mx	PCV	AsC	D > 0,5	D< 0,5	Sum	CL	OP^MAG	Num.
APPL^D^ShF	-0,87	0,08	0,17	-1,42	0,53	**2**	**8**	**10**	**1F^ 10**	C	10
APPL^D^EBIT	-0,81	0,02	-0,15	-0,15	0,95	0	10	**10**	1M^ 0	T	10
APPL^D^AC^MON	0,36	0,06	-0,20	-0,19	0,60	**0**	**10**	10	1E^ 0	V	10
APPL^D^P&G^Per	0,55	0,05	0,36	0,21	0,66	10	0	10	2F^ 0		
Entity (2)	CLC	Ty E	Mx	PCV	AsC	D > 0,5	D< 0,5	Sum	CL	OP^MAG	Num.

CISC^D^ShF	-0,47	0,08	0,08	*-4,20*	-0,47	**6**	**4**	10	1F^ 1	C	10
CISC^D^EBIT	0,41	0,03	-0,21	*-0,11*	-0,39	0	10	10	1M^ 0	T	10
CISC^D^AC^MON	-0,40	0,11	0,04	*-2,06*	-0,89	**5**	**5**	10	1E^ 0	V	10
CISC^D^P&G^Per	0,27	0,04	0,38	0,13	0,90	10	0	10	**2F^ 8**		
Entity (2)	CLC	TyE	Mx	PCV	AsC	D > 0,5	D< 0,5	Sum	CL	OP^MAG	Num
HONE^D^ShF	0,07	0,05	-0,11	*-0,27*	0,16	**0**	**10**	10	**1F^ 3**	C	10
HONE^D^EBIT	0,85	0,02	-0,30	*-0,12*	-0,94	0	10	10	**1M^ 1**	T	10
HONE^D^AC^MON	0,75	0,03	-0,26	*-0,11*	-0,41	**0**	**10**	10	1E^ 0	V	10
HONE^D^P&G^Per	-0,18	0,05	0,35	0,21	1,10	10	0	10	**2F^ 5**		
Entity (3)	CLC	TyE	Mx	PCV	AsC	D > 0,5	D< 0,5	Sum	CL	OP^MAG	Num
INTEL^D^ShF	-0,82	0,02	0,15	0,36	-0,46	**10**	**0**	10	1F^ 0	C	10
INTEL^D^EBIT	0,35	0,03	-0,17	-0,15	-0,19	0	10	10	**1M^ 6**	T	6
INTEL^D^AC^MON	-0,73	0,04	-0,25	-0,17	0,06	**0**	**10**	10	**1E^ 4**	V	10
INTEL^D^P&G^Per	0,03	0,04	0,38	0,13	0,90	10	0	10	2F^ 0		
Entity (1)	CLC	TyE	Mx	PCV	AsC	D > 0,5	D< 0,5	Sum	CL	OP^MAG	Num
MICR^D^ShF	-0,28	0,09	0,05	-1,23	0,40	**3**	**7**	10	**1F^ 9**	C	10
MICR^D^EBIT	-0,28	0,05	-0,08	-0,29	-0,28	0	10	10	1M^ 0	T	10
MICR^D^AC^MON	0,41	0,05	0,08	11,36	-0,81	**6**	**4**	10	1E^ 0	V	10
MICR^D^P&G^Per	-0,11	0,08	0,39	0,27	-1,77	10	0	10	2F^ 1		
Entity (3)	CLC	TyE	Mx	PCV	AsC	D > 0,5	D< 0,5	Sum	CL	OP^MAG	Num
WALG^D^ShF	-0,52	0,10	0,05	-1,32	-0,18	**3**	**7**	10	1F^ 0	C	10
WALG^D^EBIT	-0,17	0,01	-0,44	-0,03	-1,63	0	10	10	**1M^ 7**	T	7
WALG^D^AC^MON	-0,03	0,04	-0,37	-0,09	1,47	**0**	**10**	10	**1E^ 3**	V	10
WALG^D^P&G^Per	-0,03	0,22	0,22	3,54	-1,93	8	2	10	2F^ 0		

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The dispersions accounting variables in tetragrams - Piper's diagrams - are explained in table 10 where rows are company accounting variables on rhombus sides of tetragrams and columns are quantitative and qualitative indicators. The rows are identified by acronyms of the company (Table 2) and accounting variables (Tables 7 and 8). The column are quantitative indicators as correlation coefficients (CC) of accounting variables and Euclidean distances of radar charts, estimated error (TyE), maximum differences (Mx), Pearson coefficient (PCV) and asymmetry coefficients (AsC). The quantitative indicators (Table 9) do not allow get conclusions about what effects have making-decisions on respective economic and financial accounting structures of companies. The alternative research way is to analyze the behavior of the sample entities through the qualitative variables.

The center of a tetragram is a Cartesian center when the percentages of the accounting variables on the sides of its rhombus obtain a percentage of 50%. The projecting this value to the center of a tetragram allows one to obtain the Relative Accounting Centers for the variables in Gibbs triangles 1 and 2 (G^R&Ps X) and for those in Gibbs triangles 3 and 4 (G ^ DPPs Y). When variables of Gibbs triangles are higher than 50% accounting relative centers are extended, and the centers cross when the percentages of the Gibbs triangle variables are lower than 50%. In this way, the alteration of the monetary assets (Gibbs 4) is observed when the fund of the shareholders (Gibbs 2) varies above or below 50%. Following this strategy, the changes in profits before taxes (Gibbs 1) are contrasted with the changes in the net profit of the entities (Gibbs 3). The results of these alterations are on columns D<0,5 and D>0,5 in table 10. Management classes are found in the CL column related to the number of times a company adopts one of them. For its part, the OP^MAG column shows the number of times that companies achieve optimal management in each of the management activities: Consume (C), Treasury (T) and Sales (V).

According to the aims of the manuscript, there is a relation between management class and changes on financial and economic accounting structures in the financial statements. The sample companies obtain a Profit after taxes (P&G^Per) greater than 50% (D>0.5) and an EBIT lower than this percentage in all periods, so there is no difference in the accounting results achieved. Companies also obtain management optimums annually in the analysis period, but accounting structures of balance accounts have differences as follows:

- 1.- Companies assigned by (1) on column <Entity> have percentage of Share Fund and Treasury lower than 50% and adopt 1F and 1M classes of management preferability.
- 2.- Companies assigned by (2) on column <Entity> preferability adopt 2F class of management and have their percentage distributed between Share Fund and Treasury, excluding Honeywell International Inc (HONE) which accounting structures belong to first group.
- 3.- Companies assigned by (3) on column <Entity> preferability adopt 1M and 1E classes of management have difference structures. Intel Corp (INTE) have accounting structures of second group and those to Walgreens Boots Alliance Inc (WALG) below to first group.

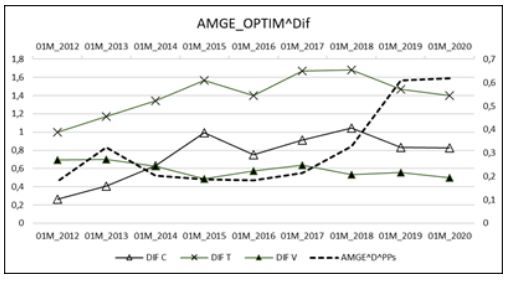
The explanation why companies adopt classes of management continued or not in a period, supposes understand their answers to markets perturbations and effects on Control Environment as component of COSO report. Consequently, companies have a convulsive management that is studied and analyzed based on this behavioral character, measuring decision-making on the continued management of their activity. Classes of management are

main components in this accounting methodology because they are the conductor thread – reason to be - for explaining the dynamic behaviors of entities and their effect on the accounting structures of companies. Valuation of products can be economic, financial, and monetary according to markets where they are trade. When there are concentrations of value on a nature of value in markets rises perturbations and companies adapt their behaviors. The exploring of common and different behaviors of companies analyzed in next section is contrasted by their share price for the knowing opinion of markets objectively.

The Contrasting results: management vs accounting statements

The contrasting among management activities and financial statements is the assessment of making-decisions. The management optima measure financial needs for maintaining the continued management of activity. So that, classes of management are conductive thread for explaining relations between internal activities and financial statement of companies, which is information that stakeholders evaluate in stock markets. This section visually analyzes evolution of share price of Amge and Cisco companies contrasting them by evolution of management optima.

The activities obtain optimal management when the differences between their indicators of financial and economic sufficiency are positive. The evolutions of management optima for activities of Amgen and Cisco are in figures 9 and 10, respectively. The continues lines are evolutions of their differences of sufficiency indicators in figures 3 and 4, and dashed lines, referred to y-secondary axes, are Euclidean distance of accounting relatives center in tetragrams in figures 7 and 8. Next to them are evolution of respective price shares.





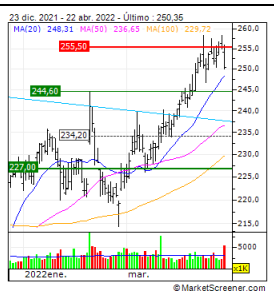


Figure 9. -Indicator Differences in Amgen Inc.

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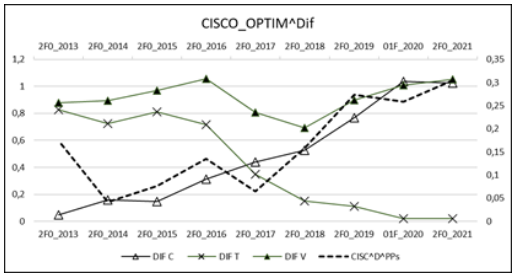






Figure 10. Indicators Differences in CISCO S. Inc.

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The share price movements are the same but there are substantial differences. Amgen's stock price appreciates above Cisco's because Amgen's financial sufficiency metrics are higher than Cisco's over the period. The conclusion of the last paragraph of section 2.2 above justifies why the level of employment is not consistent with the evolution of treasury activity. The evolution of indicator of treasury optima (X) are close to zero value in figure 10, and stock market takes note decreasing the price share of Cisco. In other words, the management risks measured by the indicator of the optimum in treasury activity anticipate the value of the share price. Therefore, there are relationships between the evolution of the share price and the optimum indicators.

The evolution of optima is according to the management classes adopted by the companies. The optimum of the activities of treasury (X) and consumption (Δ whit) of the company Amgen have the same evolution, and the latter is superior to sales (Δ black) activities. The perimeter distances of consume are higher than perimeter distances of sales (DPC>DPV). In the Cisco company, the same does not happen because their optimum treasure (X) evolve like that of the sales (Δ black) activity, but it is compensated by evolution of consume (Δ black), because Cisco evolves towards a change in management classes based on the evolution of the radar charts in Figure 2. Nevertheless, Cisco maintain the perimeter distances of sales higher than consume (DPV>PDC), and that is why there are contradictions between the management adopted and the accounting structure reflected in its annual accounts.

The stakeholders are informed by the financial statements of the companies, but the manuscript explains the evolution of the share price market through angular indicators. The manuscript reports the percentage accounting structures of assets, liabilities, and results of the companies by tetragrams, so that the Euclidean distances between the relative centers of the accounts in the tetragram are related to the optima of Figures 9 and 10.

The evolution of the dashed lines of Euclidean distances is related to those of the treasure optima because their increasing/decreasing suppose decreasing/increasing of treasure optima. When companies increase their financial sufficiency in treasure activity does not need external financial to management activity. The decreasing of treasure optima informs to companies lose financial sufficiency and increases their dependency of external financial to management activity. According to adopted class of management, that financing will be increased by liability for Amgen or by Shareholder Funds for Cisco. This conclusion is deduced from tetragram (figure 7 and 8) because EBIT and account of Profit and Loses do not change their respective percentages.

The respective annexes have same information about others sample entities. Appel and Microsoft belong group (1) and confirm the analysis for management classes when DPC is higher than DPV as Amgen; but the slack of the accounting relative centers for Apple (0,6) is greater than for Microsoft (0,25), meanly because the percentage of monetary assets is greater at Microsoft and, on the contrary, Apple needs more external financing to maintain the management activity.

The companies Honeywell (Hone) Intel corp. (Intel) and Walgreens Boots Alliance, Inc. (Walg) have contradictions among their classes of management and their accounting structures. The company Hone begins following behavior of Cisco (2F) and changes its management class in

2017 (1F, 1M) follows management of Amgen. These changes on classes of management from 2x to 1x have effects on their accounting structures. The external financial have same level of Amgen (1x) but percentage of monetary assets belongs to management classes of Cisco (2x). The share price continues evolution of optima treasure area.

The companies Intel-Cop. (Intel) and Walgreens Boots Alliance, Inc. (Walg) have sales optima higher than consume optima as Cisco, and treasure optima adjust their respective evolution to consume optima. Intel's accounting structures are like Cisco and Walg follows Amgen's. These companies have contradictions between class of management and accounting structures, and the stock market values Intel's management better than that of Walg. Consequently, the markets have a better opinion about the management of companies when the economic and financial sufficiency of the treasury activity is more adjusted. In other words, the market perceives better management when the treasury optima have a positive value, and their level must be between one and zero. However, this position is a limit to sustaining share price growth, as we have seen before at Cisco.

CONCLUSION

The accounting methodology of radar chart asses the management of companies by their activities represented on a radar chart. This way of analysis measures activities companies in a limited geometric space, where they are visually represented. This visual perception of the stakeholders are behaviors measured qualitatively and quantitatively in the manuscript. To avoid methodological refutation, the indicators generated from methodology have been contrasted with the level of employment and the share price of companies. The angular indicators are positive, normalized, objective and independent, so indeterminate, and infinitive values has an explanatory significance.

Management classes are threads of research pathways that explain company behavior. Contrasting for the ratio of Euclidean distances of radar-polar charts with those of tetragrams, the radians of the arctangent of this ratio have avoided heteroskedasticity in quantitative analysis. The radians can take positive or negative values as ratios, and they are used as indicators that measure the behavior of companies. For all these reasons, the applied orientation of the research has been following the qualitative analysis.

The stock market has a different sensitivity in relation to the class - kind and type - of management adopted in decision making because according to them the monetary offer and demand differ. So that, treasury activity indicators can anticipate the market's opinion by evolution of the share price. The explanatory capacity of this methodology is determined by the fact that the accounting records decision making, valuing them according to its own conceptual framework. The accounting is an economic science, and the limitation of this methodology is how the measurements of the axes of the radar chart are obtained.

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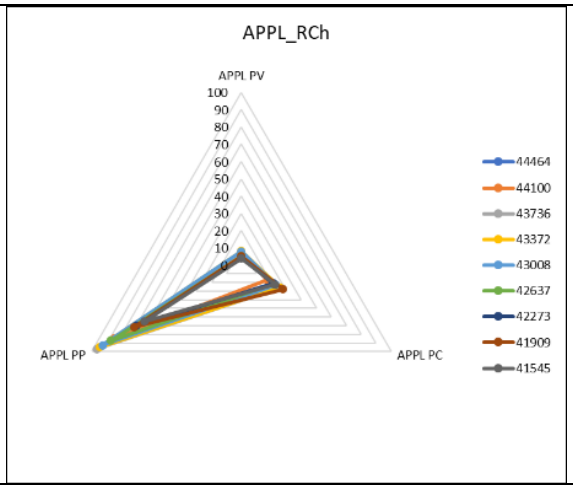
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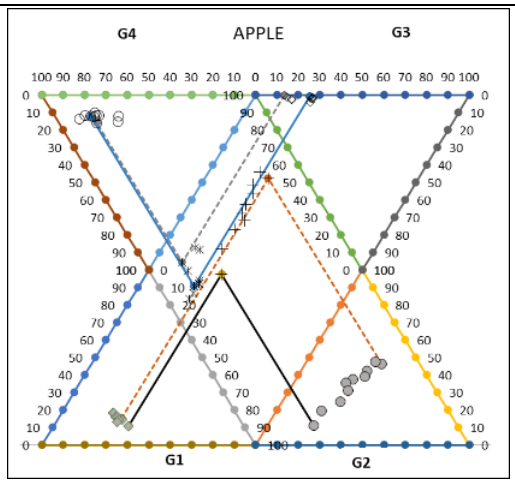
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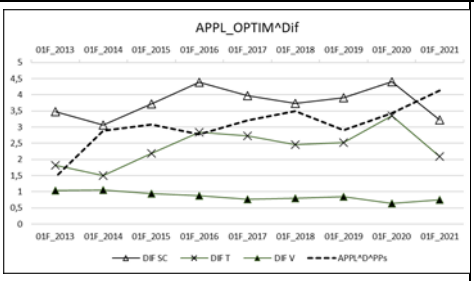
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ANNEX SAMPLE COMPANIES

Annex: Apple Inc. (APPL)











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Average Periods^Radar Charts

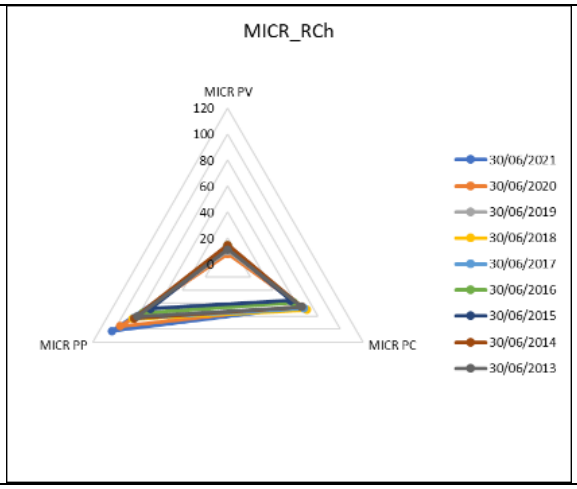
PERIOD	01F_2021	01F_2020	01F_2019	01F_2018	01F_2017	01F_2016	01F_2015	01F_2014	01F_2013
APPL PV	7,6043	7,4160	7,2933	8,1368	7,8505	5,2378	4,7631	5,2780	3,9075
APPL PC	20,9754	17,1467	25,7304	25,4911	22,7680	21,3327	21,0509	27,8909	22,3848
APPL PP	69,9196	84,7517	96,6653	94,8175	92,8151	87,2462	70,2734	71,4694	65,0463
Num Employ.	154000	147000	137000	132000	123000	116000	110000	92600	80300

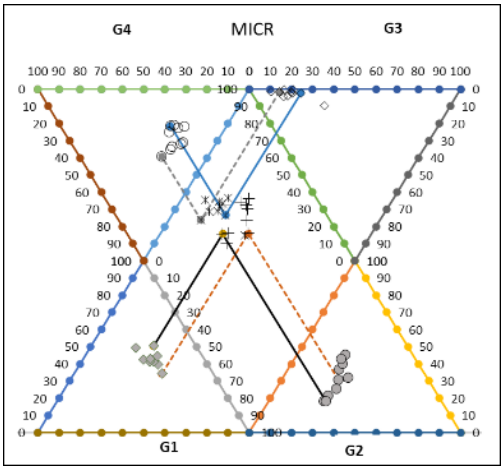
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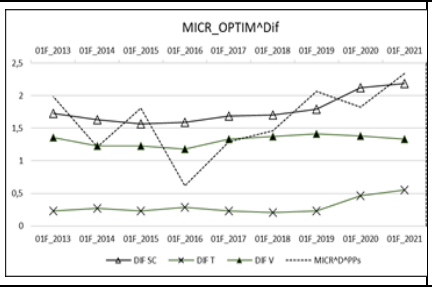
Accounting Percentages^Piper diagrams

APPL	Gibbs2	01F_2021	01F_2012	APPL	Gibbs4	01F_2021	01F_2012
ShF	Left	17,97%	67,14%	AC_ECO	Left (*)	15,98%	12,27%
No-CL	Right (*)	46,28%	10,97%	AC_FIN	Bottom	66,17%	71,19%
CL	Bottom	35,75%	21,89%	AC_MON	Right	17,85%	16,54%
Tot_L	Sum	100%	100%	Tot_A		100%	100%
APPL	**Gibbs1**	**01F_2021**	**01F_2012**	**APPL**	**Gibbs3**	**01F_2021**	**01F_2012**
CMR	Bottom	55,14%	54,08%	P&G_FIN	Rigth (*)	0,24%	0,93%
OOE	Left (*)	15,08%	10,62%	CORP_TAX	Bottom	13,27%	24,93%
EBIT	Right	29,78%	35,30%	P&G_Period	Left	86,49%	74,15%
SALES	Sum	100%	01F_2012	EBIT	Sum	100%	100%

Annex Microsoft Corporation (MICR)











https://es.marketscreener.com/cotizacion/accion/MICROSOFT-CORPORATION-4835/; 08/04/2022; 17:22

Average Periods^Radar Charts

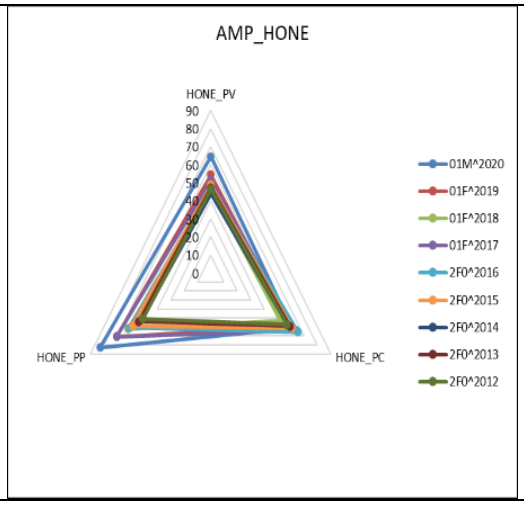
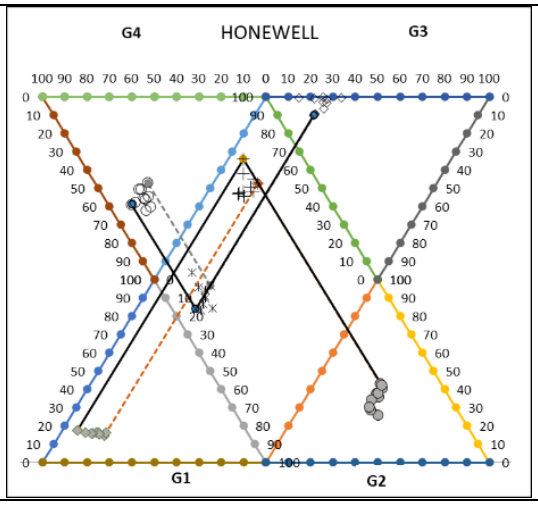
PERIOD	01F_2021	01F_2020	01F_2019	01F_2018	01F_2017	01F_2016	01F_2015	01F_2014	01F_2013
MICR PV	8,6930	7,9305	10,1950	11,9125	12,5451	14,2846	12,8138	14,6322	11,2645
MICR PC	66,0877	65,3583	68,5061	70,0657	67,8242	58,5480	55,8788	65,7221	65,5874
MICR PP	102,4823	95,4644	83,9642	84,0197	82,9639	75,0024	68,3581	83,2849	80,4667
Num Employ.	181000	163000	144000	131000	124000	114000	118000	128000	99000

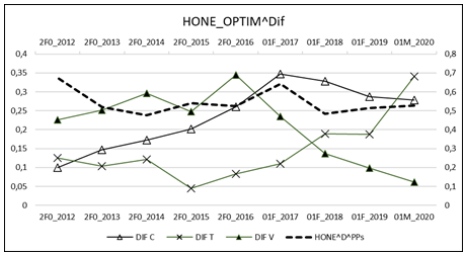
Accounting Percentages^Piper diagrams

MICR	**Gibbs2**	**01F_2021**	**2F0_2012**	**MICR**	**Gibbs4**	**01F_2021**	**2F0_2012**
ShF	Left	42,54%	54,72%	AC_ECO	Left (*)	39,23%	21,46%
No-CL	Right (*)	30,90%	18,32%	AC_FIN	Bottom	21,72%	26,55%
CL	Bottom	26,56%	26,95%	AC_MON	Right	39,05%	51,98%
Tot_L	Sum	100%	100%	Tot_A		100%	100%
MICR	**Gibbs1**	**01F_2021**	**2F0_2012**	**MICR**	**Gibbs3**	**01F_2021**	**2F0_2012**
CMR	Bottom	24,12%	20,04%	P&G_FIN	Rigth (*)	1,66%	2,21%
OOE	Left (*)	34,29%	50,44%	CORP_TAX	Bottom	13,60%	23,23%
EBIT	Right	41,59%	29,52%	P&G_Period	Left	84,74%	74,56%
SALES	Sum	100%	100%	EBIT	Sum	100%	100%

URL: http://dx.doi.org/10.14738/abr.105.12289

Annex Honeywell International Inc (HONE)

HONEYWELL INTERNATIONAL INC	HONEYWELL INTERNATIONAL INC
	







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Average Periods^Radar Charts

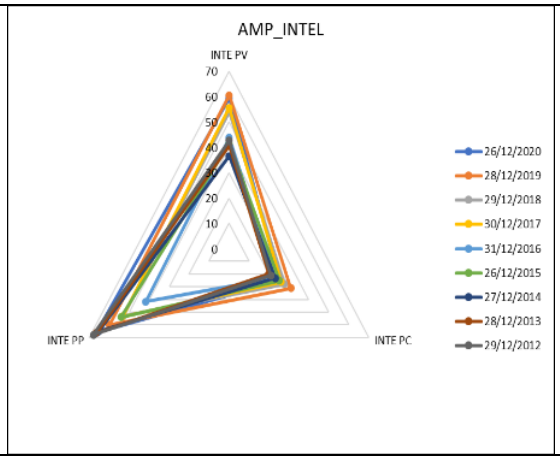
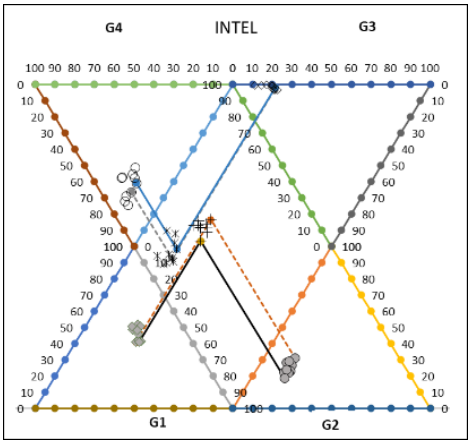
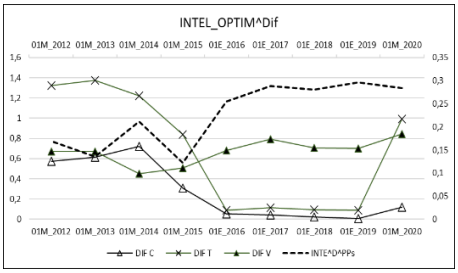
PERIODO	01M_2020	01F_2019	01F_2018	01F_2017	2F0_2016	2F0_2015	2F0_2014	2F0_2013	2F0_2012
HONE PV	64,5736	54,4526	46,2762	51,4569	47,8696	48,7950	44,1146	47,2267	46,5858
HONE PC	61,0805	59,6027	52,4457	63,8691	65,5146	61,1156	57,6668	59,2822	57,1828
HONE PP	82,8319	70,5242	62,1684	70,5330	60,7771	58,6782	51,6647	53,9962	51,0447
Num Employ.	103000	113000	114000	131000	131000	129000	127000	131000	132000

Accounting Percentages^Piper diagrams

HONE	**Gibbs2**	01M_2020	**2M0_2011**	**HONE**	**Gibbs4**	01M_2020	2M0_2011
ShF	Left	27,17%	27,15%	AC_ECO	Left (*)	47,15%	58,79%
No-CL	Right (*)	43,11%	42,02%	AC_FIN	Bottom	29,29%	30,70%
CL	Bottom	29,72%	30,84%	AC_MON	Right	23,57%	10,51%
Tot_L	Sum	100%	100%	Tot_A		100%	100%
HONE	**Gibbs1**	01M_2020	2M0_2011	**HONE**	**Gibbs3**	01M_2020	2M0_2011
CMR	Bottom	64,86%	75,58%	P&G_FIN	Rigth (*)	9,49%	10,09%
OOE	Left (*)	14,79%	17,47%	CORP_TAX	Bottom	17,27%	16,43%
EBIT	Right	20,35%	6,95%	P&G_Period	Left	73,25%	73,48%
SALES	Sum	100%	100%	EBIT	Sum	100%	100%

URL: http://dx.doi.org/10.14738/abr.105.12289

Annex Intel Corp (INTEL)

	INTEL CORP		INTEL CORP	
				
				
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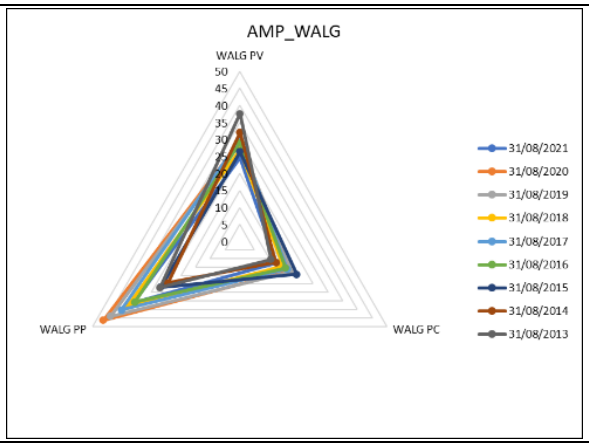
Average Periods^Radar Charts

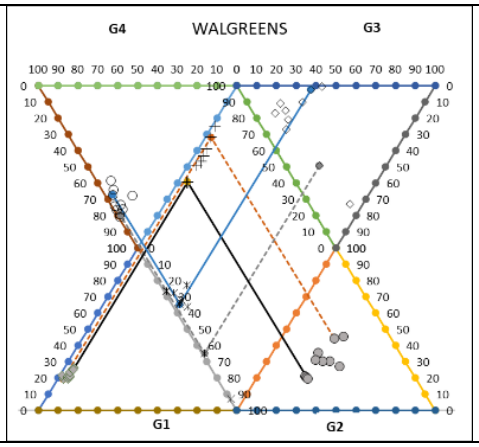
PERIODO	1M_2020	1E_2019	1E_2018	1E_2017	1E_2016	1M_2015	1M_2014	1M_2013	1M_2012
INTE PV	59,4503	60,4160	54,0299	55,5449	43,7937	41,4045	36,5657	40,6037	42,6314
INTE PC	25,4324	31,0766	27,7047	26,0870	23,0603	25,2516	23,1374	19,8441	20,9827
INTE PP	66,2953	59,9229	53,0252	53,3775	41,7024	54,0447	65,2024	66,5479	67,9284
Num. employ	110600	110800	107400	102700	106000	107300	106700	107600	105000

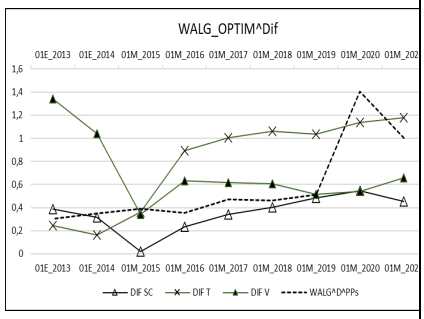
Accounting Percentages^Piper diagrams

INTEL	Gibbs2	01M_2020	01M_2011	INTEL	Gibbs4	01M_2020	01M_2011
ShF	Left	52,93%	64,56%	AC_ECO	Left (*)	66,37%	60,81%
No-CL	Right (*)	30,90%	18,53%	AC_FIN	Bottom	18,02%	18,33%
CL	Bottom	16,17%	16,91%	AC_MON	Right	15,61%	20,86%
Tot_L	Sum	100%	100%	Tot_A		100%	100%
INTEL	**Gibbs1**	**01M_2020**	**01M_2011**	**INTEL**	**Gibbs3**	**01M_2020**	**01M_2011**
CMR	Bottom	28,54%	26,74%	P&G_FIN	Rigth (*)	3,47%	2,03%
OOE	Left (*)	40,90%	41,14%	CORP_TAX	Bottom	19,44%	20,43%
EBIT	Right	30,57%	32,12%	P&G_Period	Left	77,09%	77,55%
SALES	Sum	100%	100%	EBIT	Sum	100%	100%

Annex Walgreens Boots Alliance, Inc. (WALG)











https://es.marketscreener.com/cotizacion/accion/WALGREENS-BOOTS-ALLIANCE-19356230/; 08/04/2022; 17:40

URL: http://dx.doi.org/10.14738/abr.105.12289

Average Periods^Radar Charts

PERIODO	01M_2021	01M_2020	01M_2019	01M_2018	01M_2017	01M_2016	01M_2015	01E_2014
WALG PV	24,6458	29,4866	29,3052	26,9736	29,9511	29,0204	26,4356	32,0107
WALG PC	12,4791	17,0726	17,5724	14,5915	16,1248	15,5765	19,3332	12,3005
WALG PP	36,0997	46,3763	43,9666	38,0455	40,2525	35,6208	26,8743	24,3762
Num Employ	315000	331000	342000	354000	345000	360000	360000	251000

Accounting Percentages^Piper diagrams

WALG	**Gibbs2**	**01M_2021**	**01E_2012**	**WALG**	**Gibbs4**	**01M_2021**	**01E_2012**
Neto	Left	28,811%	54,498%	AC_ECO	Left (*)	79,542%	67,303%
No-CL	Right (*)	44,057%	19,437%	AC_FIN	Bottom	18,990%	28,821%
CL	Bottom	27,132%	26,065%	AC_MON	Right	1,468%	3,876%
Tot_L	Sum	100%	100%	Tot_A	Sum	100%	100%
WALG	**Gibbs1**	**01M_2021**	**01E_2012**	**WALG**	**Gibbs3**	**01M_2021**	**01E_2012**
CMR	Bottom	77,725%	69,97%	P&G_FIN	Rigth (*)	49,340%	2,540%
OOE	Left (*)	19,304%	25,19%	CORP_TAX	Bottom	16,938%	36,057%
EBIT	Right	2,972%	4,84%	P&G_Period	Left	33,723%	61,403%
SALES	Sum	100%	100%	EBIT	Sum	100%	100%