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BIANCA QUIRANTES CHECON

Limited attention, the use of accounting information and its impacts on individual investment
decision making

*Atenção limitada, o uso da informação contábil e seus impactos na tomada de decisão de
investimento individual*

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BIANCA QUIRANTES CHECON

Limited attention, the use of accounting information and its impacts on individual investment decision making

Tese apresentada ao Departamento de Contabilidade e Atuária da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo como requisito parcial para a obtenção do título de Doutora em Ciências.

Área de concentração: Controladoria e Contabilidade.

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essencial de tudo que fui, sou e serei.*

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*“Viver — não é? — é muito perigoso. Porque
ainda não se sabe. Porque aprender-a-viver é
que é o viver mesmo.”*

(Guimarães Rosa, 1994, p. 840)

RESUMO

Checon, B. Q. (2018). *Limited attention, the use of accounting information and its impacts on individual investment decision making* (Tese de Doutorado, Universidade de São Paulo, São Paulo)

A medida que a complexidade da tecnologia e dos mercados de capitais aumentou, o montante da informação contábil divulgada pelas empresas em seus relatórios financeiros também aumentou. Atualmente, chegamos a um impasse, onde é questionável se mais informações reduzem a assimetria de informações. Autores anteriores criticam fortemente o tamanho das demonstrações financeiras e relatórios anuais, argumentando que eles devem comunicar mais ao invés de apenas serem volumosos, já que o atual volume de informações pode ser contraproducente para o indivíduo médio adquirir, reter e processar todas as informações disponíveis. Com base na evidência de literatura contábil anterior sobre o formato de apresentação e as teorias de psicologia, teoria da atribuição e teoria da carga cognitiva, temos a hipótese de que, ao manipular informações contábeis através de um formato amplamente mais acessível, como a narrativa, os investidores individuais serão capazes de compreender melhor as informações contábeis e, posteriormente, ter um uso mais proeminente delas em relação às atuais informações não fundamentais disponíveis para uma avaliação de decisão de investimento. Para alcançar nosso objetivo de pesquisa, utiliza-se uma estratégia de pesquisa de método misto com um Desenho Sequencial Exploratório, o método qualitativo atua como uma preparação para o quantitativo. Como método qualitativo, entrevistou-se - usando a abordagem da Metodologia Q - 31 sujeitos, sendo 13 analistas/investidores profissionais e 18 investidores individuais. O objetivo nesta fase foi entender o padrão de comportamento de uso de informações contábeis/não-contábeis por analistas/investidores profissionais, em comparação com as escolhas de informações de investidores individuais. Ao fazê-lo, puderam-se usar os resultados obtidos das entrevistas para basear as escolhas de informações experimentais em relação a (a) quais peças de informação contábil eram mais preferíveis aos investidores profissionais e (b) a sequência de apresentação de informações a seguir na configuração experimental. Em seguida, desenvolve-se um design experimental 2 x 2 entre os sujeitos em que manipulamos o formato de apresentação de uma empresa hipotética entre o design tradicional 'tabular e notas explicativas' versus o design narrativo apenas de conteúdo. Foi alterado também o desempenho financeiro entre 'bom' e 'ruim' para verificar se as variáveis de interesse impactam (a) propensão de investimento nas ações da empresa e (b) a quantidade de informações recuperadas da memória. Como nossos principais resultados, identificamos que o formato narrativo individualmente não afeta a propensão de investimento e que o formato de apresentação alternativa beneficiou os participantes com menos de 5 anos de experiência de investimento nos mercados de capitais na condição de má performance financeira, ajustando sua propensão ao mesmo nível de investimento de investidores mais experientes.

Palavras-chave: Informação contábil; Sobrecarga informacional; Investidores individuais; Teoria da Atribuição; Teoria da Carga Cognitiva.

ABSTRACT

Checon, B. Q. (2018). *Limited attention, the use of accounting information and its impacts on individual investment decision making* (PhD dissertation, University of São Paulo, São Paulo)

As technology and capital markets complexity increases, so does the amount of accounting information disclosed by companies in their financial reports. Nowadays, we reached an impasse, where it is questionable if more information will in fact reduce information asymmetry. Previous authors strongly criticize the length of financial statements and annual reports, arguing that they should communicate more rather than just be voluminous as the current volume of information can be counterproductive to the average individual to acquire, retain and process all available information. Based on evidence of previous accounting literature on presentation format and the psychology theories of attribution theory and cognitive load theory, we hypothesize that, by manipulating accounting information using a more general accessible format such as the narrative one, individual investors are able to better understand accounting information and, thereafter, make a more effective use of it versus the concurrent non-fundamental information available in a standard investment decision making setting. To achieve our research goal, we use a mixed method research strategy with an Exploratory Sequential Design: the qualitative method act as a preparation for the quantitative one. Concerning the qualitative method, we interview- using the Q methodology approach - 31 subjects, being 13 analysts/professional investors and 18 individual investors. Our objective in this phase is to identify patterns in the usage of accounting/non-accounting information by analysts/professional investors, in contrast to individual investors' information choices. By doing so, we can use the obtained results to base our experimental information choices regarding (a) which accounting information pieces were most preferable to professional investors and (b) the information presentation sequence to be followed in the experimental setting. Next, we develop a 2 X 2 between-subjects experimental design in which we manipulate the presentation format of a hypothetical company between the traditional 'tabular and footnotes' design *versus* the narrative content-only design. We also vary the financial performance between 'good' and 'bad' to check if the variables of interest would impact (a) investment propensity on the company's shares and (b) the amount of information retrieved from memory. As our main results, we find that the narrative format *per se* does not impact investment propensity and that the alternative presentation format is beneficial for participants with less than 5 years of investment experience in capital markets in the poor financial performance condition, adjusting their investment propensity to the same investment propensity level of more experienced investors.

Key words: Accounting information; Information overload; Individual investors; Attribution theory; Cognitive load theory.

LIST OF FIGURES

Figure 1. Mandatory disclosure for section 3 of the reference form (CVM). Adapted from Annex no. 24 from CVM Instruction no. 480/2009 (CVM, 2009).	45
Figure 2. Example of the summarized accounting information from Ambev's FR (Ambev, 2017, p. 9).....	46
Figure 3. The summary profit and loss account of IHL PLC for 2009. Available at IHG PLC (2010b).	51
Figure 4. The summary balance sheet of IHL PLC for 2009. Available at IHG PLC (2010c).	52
Figure 5. Content elements of the strategic report. Note: adapted from FRC (2014, p. 20). ...	54
Figure 6. Definitions of linkage elements for the strategic report to reduce information load. Note: Adapted from FRC (2014, pp. 32-3).	57
Figure 7. Content elements of <IR>. Adapted from IIRC (2013, p.5).	59
Figure 8. Diagram for the Cognitive load theory, adapted from Ragland and Reck (2016, p. 80).	63
Figure 9. Classification of mixed methods design when priority method is quantitative. Adapted from Bryman and Bell (2015), p. 645.	68
Figure 10. Exploratory sequential design. Adapted from Bryman and Bell (2015, p. 647). ...	68
Figure 11. Q-samples categories and connection between 'information sources' and 'information'.....	74
Figure 12. Q-samples dimensions.	78
Figure 13. The condition of instruction presented at the interview.....	79
Figure 14. Interview script during the Q-sorting process.....	80
Figure 15. Scale, Q-sample, and condition of instruction on pre-test session.	82
Figure 16. Age profile by gender of individual investors in B3 (in R\$ billion; position on May 2017).....	88
Figure 17. Original and transformed weights of Q-sorts columns.	94
Figure 18. Control variables considered while performing components analysis interpretation.	99
Figure 19. Expected effects of presentation format on investment propensity (varying with financial performance).	113
Figure 20. Control variables' measures.....	114

Figure 21. Predictive validity framework (adapted from Libby et al., 2002, p. 795).	115
Figure 22. Experimental protocol.....	117
Figure 23. Sequence for experimental screens.....	119
Figure 24. ‘Moving bar’ to collect answers from experimental questions.....	123
Figure 25. Example of a Stroop Test question.	123
Figure 26. Graphical criteria of components extraction (analysts/professional investors). ...	134
Figure 27. Colors label for Q-samples dimensions.	141
Figure 28. Graphical criteria of components extraction (individual investors).	146
Figure 29. Graphical criteria of components extraction (complete P set).....	160
Figure 30. 'Investment propensity (0 to 100)' versus presentation format and financial performance.....	182
Figure 31. 'Investment propensity (in R\$)' versus presentation format and financial performance.....	182
Figure 32. Normal Q-Q plot for ‘Investment propensity (0 to 100)’.	184
Figure 33. Normal Q-Q plot for ‘Investment propensity (in R\$)’.	185
Figure 34. Normal Q-Q plot for ‘Investment propensity (0 to 100) - ln transformation’.	186
Figure 35. Normal Q-Q plot for ‘Investment propensity (in R\$) - ln transformation’.....	186
Figure 36. Histogram for 'Previous investment experience' (in years).	192
Figure 37. Histogram and frequency table for 'Amount of accounting information' (retrieved from memory).	197
Figure 38. Histogram and frequency table for 'Amount of non-accounting information' (retrieved from memory).....	197

LIST OF TABLES

Table 1. Q-samples dimensions description.....	73
Table 2. Gender profile for Brazilian individual investors (spot market; position on May 2017).	87
Table 3. P set characteristics of individual investors (II).	91
Table 4. P set characteristics for analysts/professional investors (IP).	92
Table 5. Previous investment experience and investment profile (P set).....	93
Table 6. Descriptive statistics of Q-sorts for 'information itself' Q-samples dimension (IP and II).	128
Table 7. Descriptive statistics of Q-sorts for 'sources of information' Q-samples dimension (IP and II).	129
Table 8. Multivariate normality tests.	130
Table 9. Descriptive statistics and univariate normality tests for P set.	131
Table 10. MSA indexes for analysts/professional investors (IP).	132
Table 11. MSA indexes for individual investors (before and after excluding variable II_7).	132
Table 12. MSA indexes for the complete P set (before and after excluding variables II_13, II_16 and II_17).	133
Table 13. Global MSA indexes (before and after variables' exclusions).	133
Table 14. Correlation coefficients and components loadings (analysts/professional investors).	136
Table 15. Indication of similarity between z-scores of each pair of components (analysts/professional investors).	137
Table 16. Fourth quartile for simulated Q-sorting for each component (analysts/professional investors).	139
Table 17. First quartile for simulated Q-sorting for each component (analysts/professional investors).	140
Table 18. Distinguishing/consensus Q-samples between components (IP).	142
Table 19. Descriptive statistics for IP components considering investment experience and percentage of investment (stocks versus fixed income assets).....	144
Table 20. Descriptive statistics for IP components considering risk taking profile, portfolio characteristics and time horizon.	145
Table 21. Correlation coefficients and components loadings (individual investors).	148

Table 22. Indication of similarity between z-scores of each pair of components (individual investors).	149
Table 23. Fourth quartile for simulated Q-sorting for each component (individual investors).	151
Table 24. First quartile for simulated Q-sorting for each component (individual investors).	153
Table 25. Distinguishing/consensus Q-samples between components (II).	155
Table 26. Descriptive statistics for II components considering investment experience and percentage of investment (stocks versus fixed income assets).	158
Table 27. Descriptive statistics for II components considering risk taking profile, portfolio characteristics and time horizon.	159
Table 28. Correlation coefficients (P set).	162
Table 29. Components loadings (P set).	164
Table 30. Indication of similarity between z-scores of each pair of components (P set).	165
Table 31. Fourth quartile for simulated Q-sorting for each component (P set).	166
Table 32. First quartile for simulated Q-sorting for each component (P set).	167
Table 33. Distinguishing/consensus Q-samples between components (P set).	168
Table 34. Descriptive statistics for P set components considering investment experience and percentage of investment (stocks versus fixed income assets).	171
Table 35. Descriptive statistics for P set components considering risk taking profile, portfolio characteristics and time horizon.	172
Table 36. Valid responses for each experimental condition.	173
Table 37. Descriptive statistics for the full sample.	175
Table 38. Descriptive statistics for the full sample (by investment experience).	176
Table 39. Descriptive statistics for experimental conditions 1 and 2 (Traditional presentation format versus good and bad financial performances).	178
Table 40. Descriptive statistics for experimental conditions 3 and 4 (Narrative presentation format versus good and bad financial performances).	179
Table 41. Descriptive statistics for presentation formats' experimental conditions.	180
Table 42. Descriptive statistics for financial performances' experimental conditions.	181
Table 43. Shapiro-Wilk test performed on dependent variables and their respective In transformations.	185
Table 44. Shapiro-Wilk test for normality of OLS residuals.	187
Table 45. Investigation of multicollinearity problems through Generalized Variance-Inflation Factors (GVIF) for models 1-4.	188

Table 46. Models 1-4 considering presentation format, financial performance and their interaction effect (H1).	190
Table 47. Model 5 considering 'Little investment experience' and its interaction with presentation format and financial performance (H1a).	194
Table 48. Model 6 considering 'Non-accounting undergraduate' and its interaction effects with presentation format and financial performance (H1b).	196
Table 49. Lambda tests to the identification of super dispersion for count variables.....	198
Table 50. Models 7-9 considering 'Amount of accounting information', 'Amount of non-accounting information' and 'Mental Effort' as DVs.	199
Table 51. Models 10-12 considering 'Amount of accounting information', 'Amount of non-accounting information' and 'Mental Effort' as DVs and 'LittleInvestExp' interactions.	202
Table 52. Models 13-15 considering 'Amount of accounting information', 'Amount of non-accounting information' and 'Mental Effort' as DVs and 'NotAcct' interactions.	204

LIST OF EQUATIONS

Equation 1. Q-sort flagging criterion.	97
Equation 2. Model 1 for 'Propensity01' as VD (without interaction effects between presentation format and financial performance).	189
Equation 3. Model 2 for 'InvestmentR\$(%)' as VD (without interaction effects between presentation format and financial performance).	189
Equation 4. Model 3 for 'Propensity01' as VD (including interaction effects between presentation format and financial performance).	189
Equation 5. Model 4 for 'PropensityR\$(%)' as VD (including interaction effects between presentation format and financial performance)	189
Equation 6. Model 5 including 'Little Investment Experience' and its interactions between presentation format and financial performance.	191
Equation 7. Model 6 including 'Non-Accounting undergraduate' and its interactions between presentation format and financial performance.	195
Equation 8. Model 7 for 'Amount_acctinfo' as VD (including interaction effects between presentation format and financial performance).	198
Equation 9. Model 8 for 'Amount_nonacctinfo' as VD (including interaction effects between presentation format and financial performance).	198
Equation 10. Model 9 for 'Mental Effort' as VD (including interaction effects between presentation format and financial performance).	198
Equation 11. Model 10 for 'Amount_acctinfo' as VD and including 'LittleInvestExp' interactions.	200
Equation 12. Model 11 for 'Amount_nonacctinfo' as VD and including 'LittleInvestExp' interactions.	200
Equation 13. Model 12 for 'MentalEffort' as VD and including 'LittleInvestExp' interactions.	201
Equation 14. Model 13 for 'Amount_acctinfo' as VD and including 'NotAcct' interactions.	203
Equation 15. Model 14 for 'Amount_nonacctinfo' as VD and including 'NotAcct' interactions.	203
Equation 16. Model 15 for 'MentalEffort' as VD and including 'NotAcct' interactions.	203

ACRONYMS

ANBIMA	<i>Associação Brasileira das Entidades dos Mercados Financeiro e de Capitais</i>
APA	American Psychology Association.
B3	<i>Brasil, Bolsa, Balcão.</i>
BM&FBovespa	<i>Bolsa de Valores, Mercadorias e Futuros de São Paulo.</i>
CA 1985	Companies Act 1985.
CA 2006	Companies Act 2006.
CETIP	<i>Central de Custódia e de Liquidação Financeira de Títulos.</i>
CODIM	<i>Comitê de Orientação para Divulgação de Informações ao Mercado.</i>
CPF	<i>Cadastro de Pessoa Física.</i>
CVM	<i>Comissão de Valores Mobiliários.</i>
DV	Dependent variable.
FASB	Financial Accounting Standards Board.
FEA/USP	School of Economics, Business, Accounting and Actuarial Sciences of University of São Paulo.
FRC	Financial Reporting Council.
GVIF	Generalized Variance-Inflation Factors.
GVcef/EAESP/FGV	Center for Finance Studies of the São Paulo Business Administration School at the Getulio Vargas Foundation.
HMSO	Her Majesty's Stationery Office.
IASB	International Accounting Standards Board.
Ibovespa	Bovespa index.
IFRS	International Financial Reporting Standards.
IHG PLC	InterContinental Hotels Group PLC.
II	Individual Investors.
IP	Analysts/Professional Investors.
<IR>	Integrated Reporting.
IR	Investor Relations.
IV	Independent variable.
KMO	Kaiser-Meyer-Olkin index.
KPI	Key Performance Indicator.
MSA	Measure of Sampling Adequacy.
OLS	Ordinary Least Squares.
PCA	Principal Components Analysis.
P set	Person sample.
RJ	Rio de Janeiro.
SEC	Securities Exchange Commission.
SED	Standard Error of Differences.
SP	São Paulo.
UK	United Kingdom.

CONTENTS

1. INTRODUCTION	27
1.1 Institutional environment and previous research	27
1.2 Thesis development	31
1.3 Research contribution	32
1.4 Dissertation structure	34
2. LITERATURE REVIEW AND BACKGROUND	35
2.1 Accounting information, cognitive biases, and information overload effects	35
2.2 Alternative presentation formats to financial statements: summarized and integrated reports	41
2.2.1 Examples of ‘summarized’ content from financial statements	41
2.2.2. The summary financial statements and the integrated reports (Strategic report and the <IR>)	46
2.2.3 A brief consideration between alternative presentation formats	60
2.3 Attribution theory, cognitive load memory and hypotheses development	61
3. METHODOLOGY	67
3.1 The qualitative approach: field interviews	69
3.1.1 The Q methodology	70
3.1.2 Concourse, Q-samples and the ‘condition of instruction’: construction and validation process	71
3.1.3 Q-sorting process, interview protocols and control questions	82
3.1.4 The interviewees (P set)	86
3.1.5 Data analysis	94
3.1.6 Challenges (and tips) when interviewing	101
3.2 The quantitative approach: the experiment	107
3.2.1 Experimental design, internal and external validities	108
3.2.2 Pre-test, protocols and screens’ content	115
3.2.3 Participants	125
3.2.4. Data analysis	125
4. DATA ANALYSIS	127
4.1 The interviews	127
4.1.1 Descriptive statistics for Q-sorts	127
4.1.2 Correlation and Principal Components Analysis (PCA)	130
4.2 The experiment	173
4.2.1 Descriptive statistics and OLS assumptions	173
4.2.2 Linear models	188

5. FINAL REMARKS	205
REFERENCES	207
APPENDIX A: Q-sample design used on interviews and condition of instruction (written in Brazilian Portuguese)	223
APPENDIX B: Standard e-mail sent to potential interviewees (in Brazilian Portuguese)	232
APPENDIX C: Term of Consent used for the interview process (in Brazilian Portuguese)	233
APPENDIX D: Profile questions (socio-economic and risk suitability) administered after the interviews (in Brazilian Portuguese)	234
APPENDIX E: R scripts (Q methodology and linear regressions).....	238
APPENDIX F: Q-sort database	247
APPENDIX G: Q-sorts (labeled) for analysts/professional investors	249
APPENDIX H: Q-sorts (labeled) for individual investors	254
APPENDIX I: Spearman’s correlation matrix (Q-sorts) between professional and individual investors	259
APPENDIX J: Simulated Q sorting for analysts/professional investors’ components..	261
APPENDIX K: Simulated Q sorting for individual investors’ components.....	262
APPENDIX L: Simulated Q sorting for the complete P set	263
APPENDIX M: Distinguishing/consensus Q-samples when determining IP components	264
APPENDIX N: Distinguishing/consensus Q-samples when determining II components	266
APPENDIX O: Distinguishing/consensus Q-samples when determining full P set components	269
APPENDIX P: Discount test (matrix of results).....	273
APPENDIX Q: Experimental screens (in Brazilian Portuguese)	274
APPENDIX R: Financial statements, financial notes and KPIs for XYZ’s good and bad performances	288
APPENDIX S: Narrative format for XYZ’s good and bad financial performances (in Brazilian Portuguese).....	292
APPENDIX T: Spearman’s correlation matrix between experimental variables (DVs and IVs).....	295
APPENDIX U: Models 5 and 6 considering ‘Propensity (in R\$)’ as a DV	296
ANNEX 1: Example of a financial overview from Fuller’s Brewery strategic report... 	298

1. INTRODUCTION

1.1 Institutional environment and previous research

Companies play several functions to many agents in society, depending on the objective these individuals have regarding the firms. It is possible to represent enterprises as a set of contracts among agents (Coase, 1937). It is intuitive to think that those who are inside the company have more information than the ones who are outside it, a condition which demonstrates an informational asymmetry situation between managers and external agents (such as investors) (Jensen & Meckling, 1976).

In this context, the disclosure of accounting information serves to reduce information asymmetry (Healy & Palepu, 2001), with the financial statements being its main vehicle. However, as technology improves and capital markets complexity increases, the amount of accounting information disclosed raises progressively (Iannaconi & Sinnett, 2011; IASB, 2013a). Nowadays, we have reached an impasse, where we are questioning if more information will always improve the decision making process. Concerning the decision making process, accounting information can be considered as relevant when it allows “. . . ratification or alteration of its users’ opinion about activities from a company” (Yamamoto & Salotti, 2006, p. 5).

Radin (2007) strongly criticizes the length of financial statements and 10-K reports, arguing that they should communicate more rather than being voluminous. Thereby, the author points out three main points about this issue:

1. *The length of financial reports discourage reading*: financial reports must comply with standard setters and regulators’ requisitions, but the accounting information users (such as investors) might not have their informational needs satisfied. The content of financial reports is, most of the time, repetitive and immaterial, making it tiring to the reader;
2. *Relevant information is kept ‘hidden’ in between footnotes*: relevant information is present with no differentiation from ‘day-to-day’ data;
3. *The cost related to this information generation is higher than the benefits related to the information acquisition*: there is a great number of professionals involved in this process, from preparing and checking financial statements by employees and managers to external auditing.

Bringing a recent situation as an example, Ariely (2009, p. 80) points out the 2008 financial crisis. He argues that the crisis did not have its triggering due to information omission by banks;

instead, it was caused by cognitive biases from market participants. Given adequate knowledge about these biases and cognitive limitations, the information supplied by companies could be much more effective in avoiding this kind of market distress than the system that we have in place, which puts on the hands of the information-users the choice about which information is relevant. As noted by Ripken (2006), “. . . Requiring the disclosure of more and more information can perhaps be counterproductive for the average investor who is unsuccessful in effectively processing the available information.” (p. 163).

The International Accounting Standards Board (IASB) has undertaken a discussion forum on January 2013 to review the amount of available information on financial statements based on the International Financial Reporting Standards (IFRS) (IASB, 2013a). The Committee has done a survey in which statement preparers and accounting information users have pointed out as critical issues regarding financial statements the generic language and immaterial information (IASB, 2013b). This is consistent with the argument that a greater amount of information does not equate with higher information quality (Miller, 2010).

Since 2016, the Disclosure Initiative project has focused on the materiality research topic (IASB, 2016a; 2016b). The board has already presented an exposure draft on this subject-matter (‘IFRS Practice Statement - Application of Materiality to Financial Statements’), which received comments from market participants, academia, and other stakeholders until February 26th, 2016 (IASB, 2016c). As this project runs concomitantly with accounting standards (such as ‘Financial Instruments’ on 2015, ‘Insurance Contracts’ in 2016 and ‘Revenues’ in 2017) and because of the complexity of the subject (as previous standards can be updated with amendments, which was the case for ‘IAS 1 – Presentation of Financial Statements’ and ‘IAS 7 – Statement of Cash Flows’ – IASB (2016d)), there is not a ‘due date’ to finish all of it, as it works out as a continuous cycle of revision, research, and discussion.

In Brazil, the Accounting Pronouncements Committee (CPC, acronym in Portuguese¹) has released in November 2014, a guidance document in advance to IASB issuing its Practice Statement. Looking into the Brazilian accounting disclosure guidance, CPC has focused on the relevance of information as the main concern regarding financial statements disclosure, urging financial statement preparers to consider which information they perceive as more relevant to be disclosed at the same time as they keep compliance to international accounting standards requirements (CPC, 2014).

¹ ‘Comitê de Pronunciamentos Contábeis’.

The popularity of two specific informational pieces reported in financial statements provides some evidence that accounting users may prefer less information: Martins, Diniz e Miranda (2012) argue that analyzing the relationship between profitability and liquidity, and between profit and cash flow is key to determining corporate financial performance. In this context, the Balance Sheet, Income Statement, and Cash Flow Statement should receive more focus by the accounting information user, thus rendering other financial statements less worthy of attention from the reader.

On the other hand, the amount of available information is vast (including accounting and non-accounting sources), and the cost to access it is very low (Sims, 2005) – as it is easy to find it on the Internet era. When we consider the Efficient Market Hypothesis (EMH) in its semi-strong form, increasing the disclosure of relevant information leads to a better market functioning (Fama, 1970). Nevertheless, if the rationality assumption is relaxed, information excess can disrupt decision making, since information receptors cannot easily distinguish ‘relevant’ from ‘non-relevant’ information. Besides, it is very likely that the information is not used in its completeness, inasmuch as the standard individual investor has limited capacity of informational processing (Sims, 2005, p. 4).

According to Simon (1955), Tversky and Kahneman (1974), Kahneman and Tversky (1979), Tversky and Kahneman (1981), and Hirshleifer and Teoh (2003), human cognitive abilities have not evolved as much as necessary to make it possible to understand and consider all available information in the decision-making process. Evidence of this limitation comes from the vast literature on cognitive biases and their effects on decision-making. This kind of research challenges the assumption that the Expected Utility Theory reflects the actual decision-making model that individuals use and show that full economic rationality is generally an unrealistic assumption. This critique still holds even if we consider technology as a way to compensate for the cognitive limitations that the human brain naturally presents (Peng & Xiong, 2006, p. 566).

Here, it is important to mention the Bounded Rationality Theory, according to which individuals search for satisficing alternatives instead of the one that optimizes their results – when there are information search costs for decision making (Simon, 1955). In Dietrich, Kachelmeier, Kleinmuntz, and Linsmeier (2001), the authors present the bounded rationality hypothesis in opposition to the classic economic rationality assumption in the usage of accounting information. To test that, Dietrich et al. (2001) use financial statements and prospective information in a market experiment, but the latter could also be deducted from financial statements by the participants (all participants received both reports). The authors

aimed to see if the prospective information - when disclosed in a more 'salient' way - would impact experimental market efficiency. As one of their results, Dietrich et al. (2001) find that the explicit, more salient disclosure increases the experimental market efficiency, even though this information could also be extracted from financial statements (which is inconsistent with the Efficiency Market Hypothesis, as it was redundant information).

As a complement to the previous topic, Hirshleifer and Teoh (2003) have modeled investment decision making using a limited attention perspective, assuming that most accounting information users prefer informational pieces that are more salient and 'ready-to-use'; other accounting informational pieces that are not that salient (and need more cognitive effort to be acquired and processed) end up being ignored (which is the case for the content of footnotes). Also, Peng and Xiong (2006) have studied how investor attention impacts asset-price dynamics. To investigate it, they developed a model showing that ". . . an attention-constrained investor tends to allocate more attention to market- and sector-level factors than to firm-specific factors" (p. 565). In other words, this is evidence that, when the investor searches for information, s/he will allocate attention to informational pieces which are more salient and are easier to process. Stango and Zinman (2014) have defined 'limited attention' in a broader way – it is ". . . [an] incomplete consideration of elements and/or prices in one's choice set" (p. 990). Previous research that connects stock behavior with limited attention suggests that the latter interfere on how stock prices incorporate current information and that the relative strength of different attention requisitions for investors indicate that it influences how investor allocate their attention among these requisitions (Stango & Zinman, 2014).

Loewenstein, Sunstein, and Golman (2014, pp. 397-9; 413) argue that economics should treat attention as a scarce resource and suggests that individuals make rational decisions on how to allocate it. However, people hold little control about how they allocate their attention due to the vast variety of factors that impact the subjective salience of information, with some items vanishing from the informational background even if these items are relevant for judgment and decision making. Using the same logic, Ripken (2006, p. 162) states that information overload can make the decision-making process even more difficult – counteracting what the increase in disclosure stands for (i.e., to increase decision making quality).

One way to 'escape' from limited attention is by decreasing information complexity to make information more understandable. However, the problem that emerges is how to simplify information: if simplification is the main goal, the most obvious change (and, in the same way, the most challenging to implement with regulators) is to limit the disclosure of items that are less important (Loewenstein et al., 2014, pp. 405-6). This would lead to an increase in salience

of the relevant items (as they will not be hidden in between other pieces of information anymore).

At this point, it is important to define what ‘salience’ is. Augoustinos and Walker (1995) define it as the degree to which a stimulus is highlighted in a certain situation. Considering the definition of Albers (2007), ‘information salience’ can be considered as “. . . the prominence given to an information element” (p. 81). In this context, any information that is salient is information that stands out from others by a visual element.

Therefore, information presentation can be a visual way to increase salience. Sousa (2006) states that design principles applied to communication texts aim to attract readers as an aesthetic/appellative function and to arrange, to articulate and to rank content as a journalistic function. In this sense, the way accounting information is disclosed can affect how users will use it in their decision-making process.

1.2 Thesis development

Previous accounting research has already shown some evidence that the presentation of information matters in decision making processes – see Hodge (2001), Vera-Muñoz, Kinney Jr. and Bonner (2001), Sedor (2002) and Hirst, Hopkins, and Wahlen (2004) as examples of studies on this subject. Evidence raised by this body of work suggests that presenting information differently may increase relevance perception for accounting information users.

Recent initiatives have included arguments in favor of narrative reports and ‘interconnected’ information, stating that this kind of presentation format may be beneficial to a wider range of information users (IIRC, 2013; FRC, 2014). Therefore, we argue that accounting information can be more salient in a narrative format compared to the traditional format of tables and financial notes and reduce the cognitive load on less sophisticated investors (Chandler & Sweller, 1991; Ginns, 2006). The traditional format may increase the investment myopia of investors for short-term results (Lavery, 1996; Bushee, 1998; Souder, Reilly, Bromiley, & Mitchell, 2016), since the information from different financial statements (and their respective footnotes) does not have the same ‘linkage’ principles as narrative reports do, leaving to the investor her/himself to make information connections.

Thereafter, this dissertation *thesis* states that, by manipulating accounting information through a more generally accessible format such as the narrative one is (Mungioli, 2002; Barthes, 2011; Shiller, 2017), individual investors will be able to better understand accounting information,

and they will have a more adequate use of it vis-à-vis the concurrent non-fundamental information available.

By changing the presentation of accounting information from the traditional/tabular to the narrative format, we aim to investigate whether individuals will perceive information linked through a narrative as ‘more relevant’ and will process it using less extraneous load compared to the traditional/tabular presentation. The narrative presentation format can help mitigate the information overload and may enable subjects to acquire more effectively the performance information from the firm, as information is linked through the narrative report and it may reduce the working load memory.

We present the development of our research hypotheses on Chapter 2

1.3 Research contribution

Previous studies assume, based on the extant literature, that investors would use certain types of information in specific decision-making settings. In practice, the information set in these studies is usually restricted to the available financial information (i.e., Tuttle & Burton., 1999; Elliott et al., 2008; Kelton & Pennington, 2012). We observe that there is a lack of studies on what type of information investors *actually* incorporate in their decision making: Pennington and Kelton (2016) have directly asked nonprofessional investors which information cues they used, and they have indicated that financial information ". . . is not always part of the mix" (p. 60). Nevertheless, Pennington and Kelton (2016) do not address the theoretical prediction from Attribution Theory (Kelley, 1967; Plous, 1993): individuals may use accounting information as a 'baseline' (dispositional attribute, as this type of information has a less 'timely' disclosure when compared to other information sources), and not retrieve it when they are asked directly to do so. Other situational attributes (such as news media or past market events), stimulates memory retrieval in detriment of accounting/financial information by being more salient and available to users in a day-today basis.

The present research differentiates from others by two approaches. The first one is the investigation of how analysts/professional and individual investors use accounting information in comparison to other information sources, and their perception of its relevance on an investment setting through a pioneering application of the Q methodology in accounting. As its main advantage, this methodological approach allows the researcher to study a person's *subjectivity*, which is based on an ‘internal’ reference framing (‘self-reference’) (McKeown & Thomas, 1988). When the subject relates something meaningful about a personal experience,

the Q methodology provides for both researcher and interviewee “. . . systematic means to examine and reach understandings” (p. 12) about the investment decision-making experience. Then, by comparing both rankings of relevance, we are able to see individuals’ ‘self-references’ (McKeown & Thomas, 1988) and identify the pattern of information usage for analysts/professional and individual investors to trace a starting point in order to manipulate the presentation format of accounting information.

The second is the investigation of how presenting accounting information using the narrative format contributes to easing the cognitive load (Chandler & Sweller, 1991; Sweller, 1994; Ragland & Reck, 2016) of individual investors, and if it increases the relevance perception of accounting information by individual investors. Similar papers include Elliott et al. (2008), Kelton and Pennington (2012) and Bucaro, Jackson, and Lill (2017).

In contrast to Elliott et al. (2008), our design addresses the concurrent presentation of accounting and non-accounting information when inquiring participants about their information sources, which is more realistic when considering an actual investment decision setting. Kelton and Pennington (2012) consider specifically the impact on the cognitive effort of the presentation format of the Internet financial reporting environment (hyperlinked financial information versus paper-based financial information). Nevertheless, they do not address the presentation format of the financial statements themselves as the present research does by comparing the traditional tabular format versus the alternative narrative report format.

To conclude, Bucaro et al. (2017) investigate the effect of integrated versus non-integrated corporate social responsibility information in financial report/separate report, but they focus on identifying specifically how investors would perceive the relevance of corporate social responsibility information depending on the way it was presented. We aim to investigate how accounting information presented in a more ‘user-friendly’ report (i.e., narrative format) would impact the information relevance perception of individual investors. Also, we investigate in more detail which pieces of information are deemed more relevant to investors and incorporate these findings into the design of our experiment. In summary, to the best of our knowledge, this is the first research to investigate the relative advantage of a narrative versus traditional presentation of accounting information in the context of investment decision-making.

It is expected that this research will contribute to the discussions about financial statements design and corporate disclosure systems, aiming to understand how the increase in the perception of accounting information relevance can affect its use by individual investors. Besides that, we also expect that this research will contribute to the literature on investment decision making and presentation of accounting information, by collecting more evidence on

how financial disclosure can help individual investors in their decision-making process, a topic that remains underexplored (Lawrence, 2013).

Another expected contribution is to inform standard setters, helping them to understand how information overload affects investment decision making (as accounting disclosure is under discussion in IASB, and the board considers investors as one of the main accounting information users – IASB (2010)). This research may provide standard setters with a ‘first glance’ towards a proposal aiming at accounting information reduction (but not as a full substitute to financial statements), generating insights to future revisions of required disclosures.

1.4 Dissertation structure

This chapter has briefly introduced the study subject through its contextualization, research justification, hypothesis, thesis and expected contributions to the accounting literature. The second chapter presents the theoretical background to base the methodological approach and to interpret the results that will be obtained in this study, and the hypotheses. The third chapter presents the research operationalization plan - in other words, the methodology proposed to reach the research goal and test the proposed hypotheses. The fourth chapter presents the data analysis for both the interviews and the experiment and, finally, the fifth presents the concluding remarks.

2. LITERATURE REVIEW AND BACKGROUND

2.1 Accounting information, cognitive biases, and information overload effects

If markets were perfect and complete, it would not make sense to have financial disclosures nor demand for any accounting regulation. However, in a world where markets are incomplete and imperfect, the demand for accounting and its regulation implies that accounting disclosures and contracts based on them are efficient ways to solve imperfections originated by informational asymmetry (Watts & Zimmerman, 1979; Fields, Lys, & Vincent, 2001; Healy & Palepu, 2001; Paredes, 2003).

In this sense, it is important to clarify what accounting information is. Yamamoto and Salotti (2006) argue that accounting information is a type of information that encompasses economic, financial, physical and/or productivity dimensions and might change the state of the art of knowledge of the information receptor regarding the firm, who interpret this information in order to solve problems. More importantly, Yamamoto and Salotti (2006) point out that the consequence of accounting information is the ratification or modification of the receptor's opinion about the firm's activities.

With the increase in financial transaction complexity, it is natural that financial disclosures will need to report them, and will also increase its information amount, as pointed out on Radin (2007)'s critique and on the survey by Iannaconi and Sinnett (2011). Because these studies are relevant for the present research, we briefly describe them below.

Radin (2007) makes a severe critique pointing out that financial statements and 10-K reports are longer than they should be: he argues that those reports should communicate more instead of being just 'extensive'. Radin (2007) presents three main points about this issue: (a) the length of financial statements does not stimulate its reading (as these reports aim mainly to comply to accounting standards rather than to communicate with the user, also releasing repetitive/immaterial information which makes it tiresome to the reader); (b) relevant information gets 'hidden' in footnotes (as it is presented without salience or differentiation from other 'day-to-day' information); and (c) generating financial reports nowadays is more costly than ever (as there are many professionals involved in this information disclosure, such as companies' managers and other employees involved in information production/checking, and external auditors to validate generated reports).²

²Similarly, Ripken (2006) argues that disclosures which are too long and complex can actually defeat the very purpose of disclosure requirements, and investors may perform worse in the market.

Iannaconi and Sinnett (2011) analyse accounting information overload by surveying the opinion of financial statements preparers, who identify that there is an informational excess on reports. However, an interesting point is that “. . . companies are reluctant to omit disclosures other than those that are clearly immaterial, out of concern that an SEC comment or an auditor comment will require the issuer to revise its reporting to include the immaterial item.”. Therefore, preparers perceive that there is information on financial reports which could be disclosed differently, but they are concerned about how enforcement agents would react to it (and, consequently, how the market would react to a revised report).

There is evidence that the selection of ‘relevant’ and ‘non-relevant’ information for decision-making is made by the reader, who may end up preferring a more salient source (such as news from media) than financial statements due to the high amount of available information and his/her expertise level. Hendriksen and Breda (2010) argue that, to the standards boards, such worry is not so urgent: they recognize that reports with specific approaches have their merits, but, even so, they argue that using financial statements with generic purposes as it is done today is still preferable.

The argument for this preference for generality comes from the fact that generic reports meet the demands of most information users at the same time (in the sense that they would have common informational needs) (Hendriksen & Breda, 2010, pp. 94-5). It is because of the great heterogeneity of potential users of accounting information that the financial statements may be considered as a “. . . cost-effective information source.” (Scott, 1997, p. 60).

In trying to cater to all information needs, financial disclosures are increased to the point that they serve, at the same time, many and few users. Due to cognitive restraints towards identifying which informational piece is relevant among the non-relevant ones (in a specific decision making context), report generalization loses its advantage, especially when we consider less sophisticated users (such as individual investors).

Bloomfield (2002) proposes the Incomplete Revelation Hypothesis, stating that statistics³ that are costlier to be extracted from companies’ disclosed data are not fully reflected on market prices. This argument goes in the opposite direction from the Efficient Market Hypothesis in its semi-strong form, which states that publicly available information should be fully reflected in prices (Fama, 1970). Therefore, if accounting information users do not process information effectively, it might not be clear for them the distinction between relevant and non-relevant disclosure. In addition to that, if the accuracy level of the decision strategy is not adjusted (i.e.

³ Bloomfield (2002) considers as ‘statistics’ useful facts extracted from data (e.g. ink marks on paper or bits stored on a computer), as financial indexes or results.

from a simpler to a more complex strategy) as the information disclosure load increases, the obtained decision will be inferior (Paredes, 2003). Paredes (2003) also remarks that there is not much research that investigates how investor searches and processes influence the availability of accounting information for decision-making.

The difficulties associated with processing accounting information may be justified by cognitive limitations intrinsic to human beings. Simon (1955) documented such condition when he developed the Bounded Rationality Theory: in the presence of search and information processing costs when making decisions, individuals will choose - consciously or not - the option which satisfies them and not the one which optimizes their objective function (Bailey, 2005). In other words, in a context in which the pursuit of more information is not free of costs, current information acquisition will depend on a marginal cost *versus* marginal benefit analysis. When considering this in an accounting information search and acquisition context, Scott (1997) underlines that the definition of information must consider that it is a "... cost-free" (p. 60) information source. To take that into account is of extreme importance, as, if the informational source presents a high cognitive processing cost (to the point that the decision maker might not be able to process it), it will not be considered as 'information' as it will not be used by individuals (even if that piece of 'information' has potential to affect the decision-making process).

Paquette and Kida (1988) argue that, when the task complexity is low, decision makers usually choose information-processing strategies that are full and/or complete, but when complexity is enhanced, generally they will choose reduced and/or simplified information processing strategies, in order to reduce cognitive effort. Kerstholt (1992) also argues that information search varies according to task complexity - when the level of complexity is high, usually the ". . . depth of search decreases . . . and search variability increases" (p. 186), which indicates that decision makers have limited and varying capacity of processing information, demanding 'shortcuts' to help in the decision making process.

These 'facilitated paths' when making decisions were documented by Tversky and Kahneman (1974), who introduce the concept of 'decision heuristics'. They are defined as 'mental shortcuts', reducing complex tasks of probability attribution and value prediction to simpler judgment tasks. Generally, on a day-to-day basis, heuristics are very useful, but they also can negatively interfere with judgment and the decision-making process, leading to systematic biases (or errors).

Among the heuristics discussed by Tversky and Kahneman (1974)⁴, the availability heuristic is particularly relevant for this research (p. 1127): it concerns the assessment of frequency or probability of an event by the easiness of recovering previous occurrences from memory. Information salience is a factor strongly relates to the ‘availability’ heuristic, since it affects positively the ease of recovery of information from memory. Also, Albers (2007, p. 81) points out that when relevant and non-relevant information has the same salience, the reader must work harder to identify which information is important for the decision-making process, running the risk of focusing on the wrong type of information.

Bringing information salience to decision making on capital markets, Hirshleifer and Teoh (2003) propose an investor decision model assuming that investors present limited attention and cognitive capacity when processing information. Because of that, information which is presented in a more salient way (i.e., with a facilitated processing) is absorbed more easily by the individual than information that is less salient (or only implicit in an available informational set). For example, because of the lack of salience of information related to the economic environment, investors might neglect it, even if this information is relevant to the decision-making process.

Empirical studies on limited attention, information overload, and information salience include Church and Ely (2007), Miller (2010), Da, Engelberg and Gao (2011), Lawrence (2013), and Stango and Zinman (2014). Due to their relevance to this research, we have summarized them below.

Church and Ely (2007) investigate how investment decision is influenced by the salience of Research and Development (R&D) information obtained from an alternative information source (i.e., analysts’ reports) other than financial statements. The authors compare the investment decision of non-professional investors using a 2X2 between-subject experiment. In the experimental conditions, a software company presents losses and a reduction in Shareholders’ Equity during the three periods of analysis. The manipulation between conditions occurs on the company’s choice between capitalizing R&D as a non-current asset (which indicates an expectation of future financial benefits) or recognizing it as expenses in the income statement.

As a complement to the financial statements available to the participants, Church and Ely (2007) also release analysts’ reports about the company, which could vary their opinion between ‘probable’ or ‘possible’ when considering if the R&D which had been recognized as

⁴ The other ones are ‘adjustment and anchoring’ and ‘representativeness’.

an asset would indeed turn out to give a future financial benefit. That was the ‘salient information’ to the participants, who could choose between this salient informational piece and their previous (and recent) knowledge acquired about R&D recognition by SFAS 86. As their main result, Church and Ely (2007) report that the participants’ decision seems to have been driven by their trust in the external source (which was more salient than the information obtained in the financial statements), independently of whether the company had an expected financial benefit from its R&D activity (i.e., if the company had R&D recognized as a non-current asset – showing expectation of future financial benefits - or as an expense).

Miller (2010) examines 13,000 10-K reports released from 1995 to 2006 and traces how investors behave around the disclosure periods. He observes that firms with reports classified as ‘more complex’ had lower aggregate share trading volume (after controlling for operational complexity inherent to the company and other factors that may influence disclosure attributes). This influence on investors’ behavior was more pronounced for those identified as ‘small traders’.

Also, Miller (2010) compares which of two factors had more influence on small investor’ behavior: (1) complexity versus (2) report length. He noted that, when analyzing both factors jointly in his model, report length remained statistically significant, but not readability measures, which suggests that report length and readability could be substitutes, “. . . but the effects of longer reports dominate the readability of the filings” (Miller, 2010, p. 2109).

This result conflicts with regulators’ common knowledge, which rationalizes that, the higher the amount of disclosed information, the lower the information asymmetry between managers and investors, leading to better decision making. Therefore, the excess of information may work just as the lack of information: ‘more disclosure’ does not always mean ‘better disclosure’ (Levitt, 1997 as cited on Miller, 2010).

Da, Engelberg, and Gao (2011) use the Search Volume Index (SVI) tool from Google Trends as a measure of investors’ attention to shares available in the USA stock market. When comparing this ‘attention index’ with share prices analyzed in the specific period, Da et al. (2011) observe that share prices over-performed two weeks after the highest point of search on Google (this effect was almost totally reverted by the end of the year).

Also, Da et al. (2011) observe that the overperformance was ‘stronger’ when companies’ shares were traded mostly by individual investors. The authors pointed out that this indicates that these investors need other types of information besides the ones presented in financial statements (which have a higher amount of information, and a higher complexity in their presentation).

Lawrence (2013) aimed to investigate if individual investors are benefited from more concise and clearer financial disclosures. This study was made with transactional data from individual investors, who were clients of a major US discount-brokerage firm between January 1994 and December 1996. The author reports a positive relationship between individual investors' transactions and clear and concise disclosures in financial statements. The results obtained by Lawrence (2013) remain robust even after controlling for individual characteristics and negotiation frequency (among other factors).

The evidence in Lawrence (2013) suggests that there is a need to improve disclosure practices, which could help individual investors identify investments with positive net present value. Also, the author points out that when the quality of the financial disclosure is higher (i.e., when disclosure is clear and concise), individual investors can reduce their informational disadvantage compared to other market participants (pp. 141-2).

Finally, Stango and Zinman (2014) investigate how attention shocks may impact overdrafts acquisition in banks. The authors use questionnaires sent periodically by a market research company to panelists⁵, and the surveys are always about household financial services topics. In a subset of these questionnaires, questions about overdrafts were included, but in a way to avoid conscious attention to it (they comprised less than 5% of the total amount of questions). Stango and Zinman (2014) find that questionnaires which contained questions about overdraft reduced the probability of incurring in any overdraft fee by an estimated 3.7 percentage points on a sample mean of 0.26 (OLS regression with cluster standard errors on panelist). Considering that the questionnaire is a weak shock on attention, the effect looks somewhat strong, as the authors have identified that, after answering the questions, the probability of a bank client paying overdraft fees dropped on 1.7 percentage points within a two-year period (those are significant results for individuals who have lower educational level and lower financial literacy).

The available evidence also suggests that cognitive limitations may be one of the main reasons behind the success of financial signaling (documented in finance studies broadly). Considering that individuals have difficulty in extracting information from financial statements – besides the time restriction which is intrinsic to decisions in stock markets, investors may end up basing their judgment on information that is more salient as performance proxies (as is the case of 'relevant facts' disclosed in the Investor Relations' websites). An example of this situation would be the increase in dividend payout: it would work out as a 'signal' to the market that the

⁵ To enroll in this kind of panel ('Ultimate Consumer Panel' from Lightspeed Research database), panelists made available some their financial data for two bank accounts and received an incremental payment of \$20 (average).

company has the expectation of having higher earnings than today. Then, it would generate a positive reaction on share prices when the company announces the new dividend level (Kalay & Lemmon, 2008, p. 37).

2.2 Alternative presentation formats to financial statements: summarized and integrated reports

In this section, we present some of the previous attempts at designing ‘summarized’ financial statements (as the main report or as a complementary report). This includes the IAS 34 and its ‘condensed interim report’, the Brazilian orientation on relevant information and the CVM ‘selected financial information’, and the ‘summary financial statements’ from United Kingdom. Then, we briefly discuss the recent initiatives on integrating information: the strategic report and the Integrated Report initiative.

2.2.1 Examples of ‘summarized’ content from financial statements

One of the first ‘attempt’ at summarizing financial statements is the ‘IAS 34 – Interim Reports’⁶, in force since January 1999. An ‘interim financial report’ is a financial report that “. . . contains either a complete or *condensed* set of financial statements for an interim period” [EMPHASIS ADDED], which is shorter than a fiscal year (a quarter or six-month period) (IASPlus, 2017). Considering the emphasized option on the last paragraph, the IAS 34 defines as ‘condensed’ the interim report that discloses the minimum content described by the standard (IASPlus, 2009, p 2)⁷: (a) a condensed statement of financial position; (b) a condensed statement of comprehensive income (as a single statement or the separate version of condensed income statement and condensed statement of comprehensive income); (c) a condensed statement of changes in equity; (d) a condensed statement of cash flows; (e) selected explanatory notes and (f) any additional lines and/or notes that, if omitted, could render the interim financial statements misleading (IASPlus, 2017).

For condensed statements, companies are required to include “. . . at a minimum, each of the headings and sub-totals included in the most recent annual financial statements and explanatory notes required by IAS 34” (IASPlus, 2017). In practice, the financial statements disclosed in a condensed manner are very similar to the content of complete financial statements (i.e., both

⁶ In Brazil, it relates to ‘CPC 21 (R1) – Divulgação intermediária’.

⁷ Also, if the annual statements are consolidated, so must be the interim report (IASPlus, 2017).

can present very similar headings and sub-totals), but the main difference comes from financial notes. The IAS has the assumption that any person that had access to the interim report will also be able to get the company's most recent annual report, so the financial standard “. . . avoids repeating annual disclosures in interim condensed reports” (IASPlus, 2017).

It is important to mention that condensed interim reports do not need to comply fully to the 'IAS 1 – Presentation of financial statements', so the 'condensed' terminology comes from the reference point of the complete set of interim financial statements, which must have “. . . a full note presentation consistent with the annual presentation” (IASPlus, 2009, p. 6).

Regarding information reduction approaches, we highlight that IASB deems information overload on financial statements a relevant concern. The International Board has started a 'disclosure initiative' on January 2013 through a Discussion Forum (IFRS, 2017). The main goal of that Forum was to create a dialogue between both preparers and users of financial statements, auditors, standard setters and regulators about how to address, as they have called, the 'disclosure problem' (IFRS, 2013a). In addition, we highlight the intention that IASB has indicated to improve and simplify accounting information considering the existing disclosures requirements (IFRS, 2013a).

On May 2013, the international board released a document called 'Feedback Statement on Disclosure Forum', which is a summary of 44 pages from the Forum held in January 2013. At that Forum, representatives of IASB, preparers, auditors, regulators, and users of financial statements were together to dialogue “. . . about how to improve usefulness and clarity of financial disclosure”, which included the thought on which factors had contributed to increase the volume of the financial statements, while the quality and usefulness of those disclosures have been perceived as declining (IASB, 2013c).

Considering that initial point, IASB had shown intention to act in three main areas (IFRS, 2013c): (1) Amendment to IAS 1 (Presentation of Financial Statements), to make it possible for preparers to exercise their judgment in presenting financial statements; (2) Materiality; and (3) Separate project on disclosure, aiming to include in the IASB research agenda “. . . broader challenges associated with disclosure effectiveness”.

Nevertheless, the Chairman of the IASB, Hans Hoogervorst, has pointed out that a behavioral change in preparers was needed in addition to the international board's standards revision, so that financial statements could be regarded as 'tools of communication' and not just as documents of compliance to rules (IFRS, 2013c).

Regarding the Disclosure Initiative in Brazil, the accounting standards committee CPC issued on November 2014 an orientation called 'OCPC 07: Disclosure on generic Financial Reports'

release’⁸. Although CPC is the accounting regulatory body responsible for IFRS translations in Brazil, this document has not an international ‘equivalent’ one. It was a Brazilian initiative as a response to the global concern of continuous growth in the length of financial reports which are lacking in adherence to the principle of ‘relevance’ of the information disclosed (CPC, 2014).

The OCP 07 is a ‘compilatory’ document, in the sense that it has not brought any additional information about financial disclosures. On the contrary, it has summarized into a single document the concepts from the IFRS Conceptual Framework regarding information relevance and it is a faithful representation. Also, it has compiled the demands from the IAS 1 on disclosing relevant accounting information:

“A. All disclosed information must be relevant to users. Moreover, it will be only relevant if they influence the decision-making process of investors and creditors. Consequently, non-relevant information must not be disclosed.

B. Relevance, in its turn, includes concepts related to the magnitude and the nature of the information from the point of view of the information users.

C. Only relevant and specific information related to the company must be disclosed, including accounting policies, as well as other financial notes, including those related to the most likely effects of accounting policies to be adopted in the future.

D. The Standards, Interpretations, and Orientations of CPC and Law of disclosure demands must always be interpreted in the light of the relevance of the information to be disclosed, even when expressions such ‘minimum disclosure’ and ‘at a minimum’ are used.

E. On the other hand, any relevant information that may influence the financial statements users should be disclosed, even if there is no explicit mention to it in the Law or any CPC issued document.

F. The exercise of mere check-listing does not comply with the disclosure purposes of the general financial statements.” [EMPHASIS ADDED] (CPC, 2014, pp. 6-7)

As the application of the relevance criterion is largely subjective, the OCPC07 has not included further specifications on how to do it. For instance, when Ambev released their annual financial statements in 2017 (fiscal year: 2016; Ambev, 2017), they decided to apply OCPC 07 by releasing just the consolidated financial statements rather than also including individual

⁸ ‘OCPC 07: Evidenciação na Divulgação dos Relatórios Contábil-Financeiros de Propósito Geral’ (free translation)

statements in the year-to-year comparison. In this manner, they have released individual financial statements in their financial notes to comply with Brazilian legislation requirements. Related to mandatory disclosures in Brazil, as Instruction no. 480/2009 from the Brazilian Securities Commission (CVM, acronym in Brazilian Portuguese for *Comissão de Valores Mobiliários*) states, all listed companies in Brazil must disclose the following reports periodically: (a) identification form (annually), (b) financial statements (annually), (c) reference form (annually), (d) standardized financial statements (annually), (e) quarterly financial information (quarterly) and (f) other requirements from 6404/1976 Brazilian Company Law ('Lei das S/As') (CVM, 2009).

From the listed reports required by CVM, our focus goes to the reference report⁹ since its third section is dedicated to 'selected financial information', in which the company must present a minimum of accounting and non-accounting information. CVM is very specific about the information compliance to this section in the reference form, as it is possible to see on Figure 1 below. It is important to say that the information content requirements for 'selected financial statements' (and for the rest of the reference form) are the same for all companies regardless of their business model/business sector. Also, CVM requires that all accounting information included must be from consolidated statements.

⁹ The reference form is a document in which several types of information about the shares' issuer (such as main activities, risk factors, capital structure, financial information, managerial structure and securities issued) are disclosed (CVM, 2018).

Tabular presentation format content			Narrative format content
<i>Summarized accounting information</i>	<i>Dividend distribution</i>	<i>Debt measures and obligations</i>	
- Shareholders' equity	- Adjusted profit (to dividend distribution)	- Total liabilities	- Subsequent events after closing of the last fiscal year
- Total assets	- Dividends distributed by class/sort, JSCP, mandatory dividend, priority fixed and minimum dividends	- Debt ratio (current liabilities summed up with non-current liabilities and divided by total equity)	- Dividend policy for the last three fiscal years
- Net revenue	- Percentage of distributed dividends related to adjusted profit	- Other debt measures (optional)	- Other information the preparer may judge as relevant*
- Gross income	- Date of dividend payment	- Debt obligations (by category and by maturity)	
- Profit/loss	- Return on equity		
- Number of shares (except treasury stocks)	- Retained earnings		
- Shares' book value	- Date of earnings retention approval		
- Earnings per share (basic)	- Dividends distribution of retained earnings and/or reserves of the last 3 fiscal years		
- Earnings per share (diluted)			
- Other accounting information (chosen by the preparers of financial statements)			
- EBITDA and/or EBIT (optional)			

Figure 1. Mandatory disclosure for section 3 of the reference form (CVM). Adapted from Annex no. 24 from CVM Instruction no. 480/2009 (CVM, 2009).

As an illustrative example of the summarized accounting information, we have presented the first table from section 3 of Ambev's reference form (Figure 2). It is important to note that the disclosed items are not followed by any financial notes nor any narrative content to explain the composition of the numbers (as financial statements already present that information). As noted on Figure 1, the summarized content from the reference form is generic and brings information without further explanations about its composition for the information user – we understand that it adheres more to the practice of 'check-listing' to comply with regulation than to the principle of meeting relevant information demands from users.

3.1 - Informações Financeiras - Consolidado			
(Reais)	Exercício social (31/12/2016)	Exercício social (31/12/2015)	Exercício social (31/12/2014)
Patrimônio Líquido	46.651.273.000,00	50.333.633.000,00	43.644.669.000,00
Ativo Total	83.841.418.000,00	90.176.234.000,00	72.143.203.000,00
Rec. Liq./Rec. Intermed. Fin./Prem. Seg. Ganhos	45.602.561.000,00	46.720.141.000,00	38.079.786.000,00
Resultado Bruto	28.924.602.000,00	30.658.770.000,00	25.265.198.000,00
Resultado Líquido	13.083.397.000,00	12.879.141.000,00	12.362.019.000,00
Número de Ações, Ex-Tesouraria (Unidades)	15.701.102.928	15.685.094.439	15.712.201.835
Valor Patrimonial da Ação (Reais Unidade)	2,971000	3,209000	2,778000
Resultado Básico por Ação	0,800000	0,790000	0,770000
Resultado Diluído por Ação	0,79	0,79	0,76

Figure 2. Example of the summarized accounting information from Ambev's FR (Ambev, 2017, p. 9).

We must emphasize that OCPC 07 is not applied to all regulatory information disclosure: strongly regulated sectors in the Brazilian economy (such as energy and gas) have disclosure regulations besides the ones imposed by CVM, sometimes with redundant information requirements.

Also, accounting information cues from all previously discussed reports are segregated from other sources of relevant information, and these alternative sources of information compete for the limited attention of individual investors (Paredes, 2003). To respond to this demand, some initiatives in integrating information within and between reports have shown up in recent years, such as the strategic report and the integrated report.

2.2.2. *The summary financial statements and the integrated reports (Strategic report and the <IR>)*

In the past few years, it has been discussed in the United Kingdom (UK) legislation amendments to improve communication with shareholders which are worth mentioning here. We bring this issue by providing below a brief historic account, which begins with the UK company law, the 'Companies Act'.

The 'Companies Act 2006' (thereafter CA 2006) (HMSO, 2006b), an Act from the UK Parliament, is a comprehensive (and the main) legislation ruling company law in the UK. It has superseded the 'Companies Act 1985' (thereafter CA 1985) (HMSO, 1985), as reforms in it were necessary to keep the legal framework updated in the face of the advances in the business environment (besides consolidating all existing company legislation, which made it the longest

Act in UK history) (ICAEW, 2014)¹⁰. It has taken about eight years of consultation before completion of the final Act (Company Bug, 2015), which had its Royal Assent on 8 November 2006 and its implementation plan completed on October 2009 (since it was a complex process and implementation was done gradually in stages) (HMSO, 2006a). For our purposes, it is important to highlight some parts of this legislation related to the disclosure of financial information.

As stated in section 423 (1) of CA 2006, companies must send “. . . a copy of annual accounts and reports for each fiscal year to (a) every member of the company” (HMSO, 2006b) - understanding ‘members’ as shareholders (HMSO, 2006b; Korchak, 2015; Summerfield & McKenzie, 2015) and individuals nominated by them (section 146 – HMSO, 2006b). The CA 2006 has included in section 426 the alternative of sending accounts disclosure to *all* companies (since they had their annual accounts audited)¹¹ to provide “. . . a *summary financial statement* instead of copies of the accounts and reports required to be sent out in accordance with section 423” [EMPHASIS ADDED] (HSMO, 2006b). This section was the amendment of CA 1985/1989¹² to apply summary financial statements under International Accounting Standards (IAS) accounts and to incorporate previous specific regulation into the Companies Act update (Statutory Instrument 1995/2092) (HMSO, 1995; HMSO, 2005). In 2013, the summary financial statement was replaced in the CA 2006 by the ‘strategic report’ (HSMO, 2013), which we will further address in this section. However, firstly, we present in more details the definition of the summary financial statement, its structure, and contents.

A summary financial statement was an additional and optional document made by a company. It had the objective to disclose *key elements* (established by a specific regulation) from annual accounts (HMSO, 2005). It means that: (a) a company could choose to do not make a summary financial statements to substitute the sending of annual accounts and reports and (b) if the company had chosen to do so, a summary financial statement would not substitute the elaboration of annual accounts (HMSO, 2006b). Also, to send a summary financial statement

¹⁰ The CA 2006 has a focus on small businesses, but also regulates UK public companies (ICAEW, 2014). All mentions that we have done in this section are related to public companies, with exceptions being highlighted.

¹¹ The extension is to “. . . whose full accounts have been audited and where the auditor expresses his opinion as to the consistency of the [summary financial statement] with the audited full accounts and as to its proper preparation”, in order to reduce risks concerned to private companies who would might “. . . take advantage of the audit exemption [and] could abuse the provisions in order to give shareholders a defective SFS or fail to make entitled persons aware of the limitations of the [summary financial statement] and of their right to receive the full report and accounts” (HMSO, 2005).

¹² CA 1985/1989 (section 251) already had the summary financial statements on its text, but only for public companies with shares or bonds listed upon the request of members (who, in the same manner as the CA 2006, could also receive a copy of the full accounts even if they had chosen to receive the summary financial statement). (HMSO, 2005).

as a replacement for annual accounts, shareholders must declare their wish to the company through a company's consultation (as the default is sending the annual accounts in the form of the Annual Report). Also, sending the summary financial statements would not necessarily exclude the sending of annual accounts to members: even if they had previously chosen to receive the summary financial statements, they could request the sending of the annual report as well (HMSO, 1995; HMSO, 2006b).

The content of a summary financial statement is stated on Statutory Instrument 1995/2092 'The Companies (Summary Financial Statements) Regulation 1995' (see Schedule 1 of the mentioned legislation) (HMSO, 1995). The content depended on if the company was part of a group of companies (i.e., if it must consolidate their investments in their financial statements), if it was in the banking/insurance sector and/or if the company was public. Due to our research objective, we have detailed the content for listed public non-banking/insurance companies that were obligated to consolidate their accounts.

The basic structure of a summary financial statement for group companies starts with a statement saying that the summarized report ". . . does not contain sufficient information to allow as full an understanding of the results of the group and state of affairs of the company or of the group as would be provided by the full annual accounts and reports" and members and bond holders can request, free of charge, annual accounts if they wish further information about the company (HMSO, 1995, Schedule 1, paragraph 4).

Then, the structure continues with the following subsections: (1) the summary director's report, (2) the summary profit and loss account (commonly known as 'income statement') and (3) the summary balance sheet. For items (2) and (3), all accounts must present the corresponding amounts for the previous fiscal year (to allow comparisons between adjacent years). The presentation order between subsections (1), (2) and (3) was not fixed and could be changed by the companies' managers in the way they believed it would be better for the readers to understand the selected information (the headings of the subsections could also change names). Nevertheless, it is important to say that the legislation did not allow managers to change the presentation order within the statements, i.e., they had to follow the order required on the paragraph that detailed the content for the specific subsection report. Also, the legislation stated that the information content specified in the law text is not exhaustive, in the sense that managers could disclose more information besides the one specified in the Act if they felt that supplemental information was necessary to ensure 'consistence' of the summary financial statement with the annual accounts and the directors' report (HMSO, 1995, Schedule 1, paragraph 1).

In this manner, we have briefly described the content for each summary financial statement section. For the *summary director's report*, it should contain all the parts (or a summarized version) of the directors' report that contained subjects of (a) business review; (b) the amount recommended to be paid as dividend (if not disclosed in the summary profit and loss account); (c) important post-balance sheet events; (d) likely future developments in the business; and (e) the names' list of directors (HMSO, 1995, Schedule 1, paragraph 2).

About the *summary profit and loss account*, the legislation was more specific than the other two summarized reports, and it required the disclosed consolidated content of : (a) turnover (i.e., total revenue for the period); (b) income from shares in group undertakings and participating interests (the combination of the two items); (c) other interest receivable and similar income and interest payable and similar charges (the net figure resulting from the combination of the two items); (d) the profit or loss on ordinary activities before taxation; (e) tax on profit or loss on ordinary activities; (f) profit or loss on ordinary activities after tax; (g) minority/non-controlling interests; (h) extraordinary income and charges after tax (the net figure resulting from the combination of those items) and after considering minority interests; (i) profit or loss for the financial year; (h) the aggregate amount of dividends paid and, if not disclosed in the summary directors' report proposed (HMSO, 1995, Schedule 1, paragraphs 3-4).

Finally, concerning the *summary balance sheet*, the consolidated content must present a “. . . single amount for each heading”, respectively, to the general chart of accounts' requirements from the CA 1985/CA 2006, and emphasizing 'minority/non-controlling interests' (HMSO, 1995, Schedule 1, paragraphs 5-6).

The main advantage pointed for companies when issuing a summary financial statement was to reduce the number of reports sent to shareholders and, thereafter, lowering costs - mainly when we consider complex big businesses that are also listed in the stock market and their respective full annual reports. It was also stated that, for some information users, the summary might be “. . . better suited to their needs” (HMSO, 2005, paragraph 2.6). Thus, we understand that non-sophisticated users would be the ones who were mostly benefited, as annual reports are continuously growing in complexity and length over the years, despite being a more complete source of information about the fiscal year of a company (Hussey & Ong, 2017).

On the other hand, as a reduced informational source compared to other reports, the summary financial statement could not fully substitute the annual accounts. This is the motive for obligating each summary financial statement to declare in their initial paragraph that (a) all information presented in the report has their sources from other reports, and (b) the summary

financial statements is not an exhaustive informational source (HMSO, 2006b), in order to mitigate possible corporate responsibility problems originating from the 'lack of salience' of other disclosed information in annual accounts.

It is also important to mention that summary financial statements must be audited and carry an auditor's statement of summary financial statements consistency with the full accounts and reports (HMSO, 2006b). It means that only companies that have their full accounts audited could opt to release a summary financial statement (HMSO, 2005).

Although the UK legislation has strived to summarize the information available for shareholders, it is important to emphasize that the greater amount of information available in financial statements refers to their notes, and the SI 1995/2092 had not stated any specific subject on them (i.e., if it should be suppressed or disclosed in any summarized way). We have understood that it was a choice to be made by the company when elaborating their summary financial statement, in which that kind of information (i.e., notes to financial statements) could be brought into the summary directors' report in some manner.

On Figure 3 and Figure 4 below, we have included an illustrative example of a summary financial statement presentation for InterContinental Hotels Group (for 2009) (IHG PLC, 2010a). In both summarized statements available in Excel® spreadsheets, it has stated that notes from financial statements are 'an integral part' of these statements – see that they also highlight which note refers to each mentioned account. On the other hand, when we retrieved the internet version of the document, no financial notes were available.

Group income statement							
		2009			2008		
		Before exceptional items	Exceptional items [note 5]	Total	Before exceptional items	Exceptional items [note 5]	Total
For the year ended 31 December 2009	Note	\$m	\$m	\$m	\$m	\$m	\$m
Revenue	2	1,538	–	1,538	1,897	–	1,897
Cost of sales		-769	-91	-860	-852	–	-852
Administrative expenses		-303	-83	-386	-400	-59	-459
Other operating income and expenses		6	-2	4	14	25	39
		472	-176	296	659	-34	625
Depreciation and amortisation	2	-109	–	-109	-110	-2	-112
Impairment	2	–	-197	-197	–	-96	-96
Operating (loss)/profit	2	363	-373	-10	549	-132	417
Financial income	6	3	–	3	12	–	12
Financial expenses	6	-57	–	-57	-113	–	-113
(Loss)/profit before tax		309	-373	-64	448	-132	316
Tax	7	-15	287	272	-101	42	-59
Profit for the year from continuing operations		294	-86	208	347	-90	257
Profit for the year from discontinued operations	11	–	6	6	–	5	5
Profit for the year		294	-80	214	347	-85	262
Attributable to:							
Equity holders of the parent		293	-80	213	347	-85	262
Non-controlling interest		1	–	1	–	–	–
Earnings per ordinary share	9						
Continuing operations:							
Basic				72.6¢			89.5¢
Diluted				70.2¢			86.8¢
Adjusted		102.8¢			120.9¢		
Adjusted diluted		99.3¢			117.2¢		
Total operations:							
Basic				74.7¢			91.3¢
Diluted				72.2¢			88.5¢
Adjusted		102.8¢			120.9¢		
Adjusted diluted		99.3¢			117.2¢		

Notes to the financial statements form an integral part of these financial statements.

Figure 3. The summary profit and loss account of IHL PLC for 2009. Available at IHG PLC (2010b).

Group statement of financial position			
		2009	2008
quinta-feira, 31 de dezembro de 2009	Note	\$m	\$m
ASSETS			
Property, plant and equipment	10	1,836	1,684
Goodwill	12	82	143
Intangible assets	13	274	302
Investment in associates	14	45	43
Retirement benefit assets	25	12	40
Other financial assets	15	130	152
Deferred tax receivable	26	95	-
Total non-current assets		2,474	2,364
Inventories	16	4	4
Trade and other receivables	17	335	412
Current tax receivable		35	36
Cash and cash equivalents	18	40	82
Other financial assets	15	5	10
Total current assets		419	544
Non-current assets classified as held for sale	11	-	210
Total assets	2	2,893	3,118
LIABILITIES			
Loans and other borrowings	21	-106	-21
Trade and other payables	19	-688	-746
Provisions	20	-65	-
Current tax payable		-194	-374
Total current liabilities		-1,053	-1,141
Loans and other borrowings	21	-1,016	-1,334
Retirement benefit obligations	25	-142	-129
Trade and other payables	19	-408	-392
Deferred tax payable	26	-118	-117
Total non-current liabilities		-1,684	-1,972
Liabilities classified as held for sale	11	-	-4
Total liabilities	2	-2,737	-3,117
Net assets		156	1
EQUITY			
Equity share capital	28	142	118
Capital redemption reserve		11	10
Shares held by employee share trusts		-4	-49
Other reserves		-2,900	-2,890
Unrealised gains and losses reserve		29	9
Currency translation reserve		215	172
Retained earnings		2,656	2,624
IHG shareholders' equity		149	-6
Non-controlling interest		7	7
Total equity		156	1
Signed on behalf of the Board			
Richard Solomons			
Monday, 15 February 2010			
Notes to the financial statements form an integral part of these financial statements.			

Figure 4. The summary balance sheet of IHL PLC for 2009. Available at IHG PLC (2010c).

The debate about improvements in corporate disclosures in the UK has continued after the CA 2006. In 2011, the UK government made a public consultation about new proposals on ‘narrative reporting’ for annual reports. In August 2013, The Companies Act 2006 (Strategic Report and Directors’ Report) Regulation 2013 (thereafter ‘CA 2006/2013’) was approved by the UK Parliament, which has established the ‘strategic report’ as the substitute for the summary financial statement (since the same legislation has withdrawn the latter) (Deloitte, 2013; HMSO, 2013).

The strategic report is the ‘up-front’ document in an annual report of a UK company¹³, working as “. . . the top layer of information for shareholders” (FRC, 2014, paragraph 3.19). It lies within the ‘narrative reporting’ definition since it is a corporate disclosure document with the main objective of providing information about the performance of the directors in their role to promote the success of the company, being this report separate from the directors’ one. It must be signed on behalf of the board by a director or secretary of the company (Deloitte, 2013; HMSO, 2013; Hussey et al., 2017). ‘Narrative reporting’ is related to annual corporate disclosures besides financial statements, notes and the auditors’ report (Deloitte *apud* Rowbottom et al., 2010), and it refers to “. . . all contextual information that accompanies the financial statements and, despite its name, is expressed in narrative, quantitative and financial and non-financial terms” (Rowbottom & Lymer, 2010, p. 90).

Also, the strategic report has to be audited and must “. . . contain the information that the directors [collectively] consider to be of strategic importance” (Deloitte, 2013, p. 3) and complement the information contained in the financial statements, in order to make the annual report a more ‘cohesive’ disclosure document also able to be read as a ‘standalone’ document (Deloitte, 2013; FRC, 2014).

The strategic report has three main sections to achieve its informational purpose (see Figure 5). The first one is the ‘strategic management’, in which is stated the intention of the company in generating and preserving value through the description of its strategy, objectives and the business model. Next, the ‘business environment’ section presents the internal and external environment in which the company operates (including the discussion of trends and factors, principal risks and uncertainties, environmental, employee, social, community and human rights matters). The third and last section refers to ‘business performance’, where it is presented how the entity has developed, performed and what is its position at the end of the fiscal year

¹³ The UK annual report is composed of five sections: (1) strategic report, (2) corporate governance report, (3) directors’ remuneration report, (4) financial statements and (5) directors’ report (Hussey et al, 2017).

considering the analysis of performance and position, Key Performance Indicators (KPIs)¹⁴ and employee gender diversity (FRC, 2014).

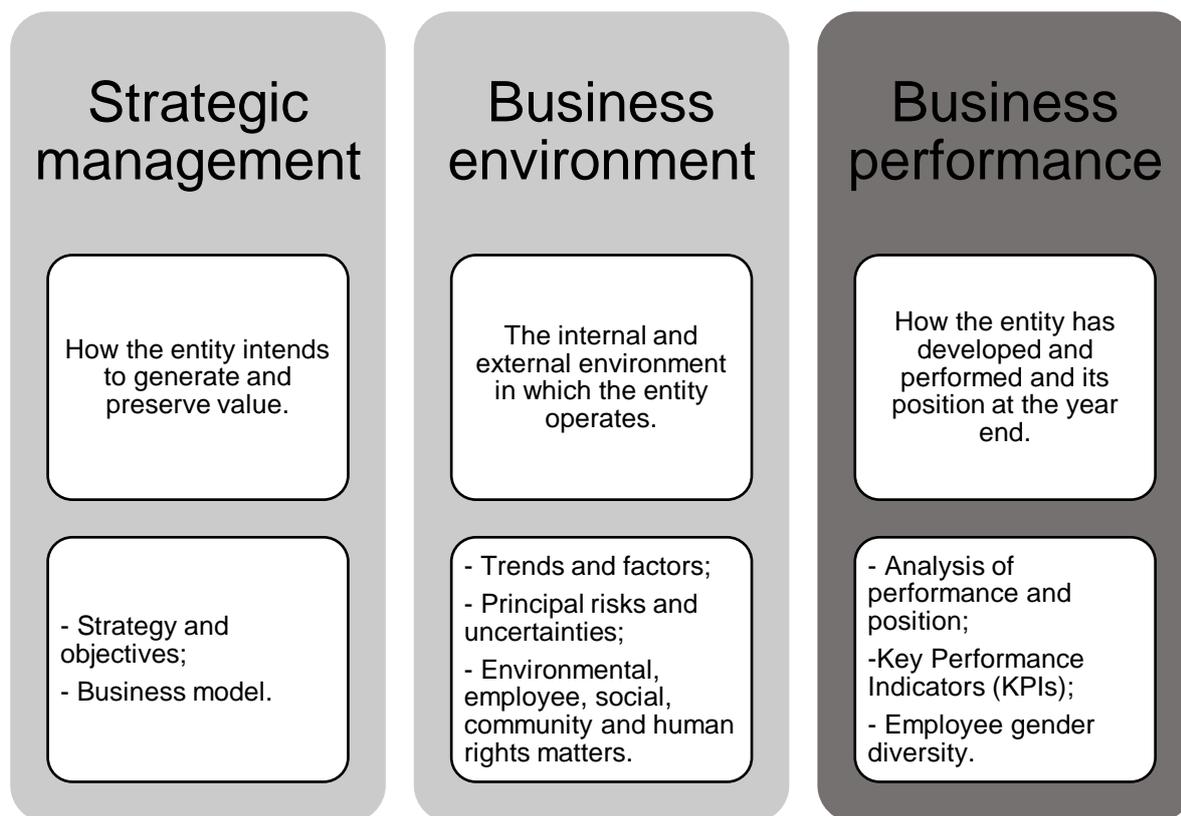


Figure 5. Content elements of the strategic report. Note: adapted from FRC (2014, p. 20).

Considering our research objective, the third section of the strategic report deserves special attention from us, since it can also be viewed as an ‘information reduction’ proposal for financial information (which includes the accounting one). As an illustrative example, we have used Fuller, Smith & Turner PLC. (thereafter Fuller’s Brewery) business performance section from its 2017 annual report (see Annex 1).

It is interesting to note that most of the information is presented in the narrative format, segregated by material topics of discussion for Fuller’s Brewery business model and operational context (such as ‘financial position and performance’, ‘finance costs’, ‘pension’ and ‘tax’). The focus of the narrative information was to compare accounts from 2016 to 2017 (selected from material subjects), trends of growth in accounts and KPIs between fiscal years, and how it all relates to the company’s strategy (considering a four-year time horizon).

¹⁴ KPIs is defined as “. . . measures that are used by management in determining how well the company is performing against its objectives and its overall strategy” (Deloitte, 2013, p. 17), quantifying the development, performance or position of the company (FRC, 2014). It can be of a financial or non-financial nature.

The company has also used two summary tables to complement its narrative content (one for income statement and other from cash flow statement) and one graph to emphasize total tax contribution, totaling three pages from the Fuller's Brewery business performance section.

Further, the Financial Reporting Council (FRC) have also stated in its guidance that the strategic report should “. . . provide information about the business and its development, performance or position that is not reported in the financial statements but which might be relevant to the shareholders' evaluation of past results and assessment of future prospects” (FRC, 2014, paragraph 4.4) and “. . . provide additional explanations of amounts recognised in the financial statements and explain the conditions and events that shaped the information contained in the financial statements” (FRC, 2014, paragraph 4.5), linking *narrative* with financial disclosures (Hussey et al., 2017)¹⁵.

The previous paragraphs show us one of the main advantages of the narrative reporting style of the strategic report: the connections made between information disclosed within both strategic and annual reports, also known as *linkage*. FRC (2014) defines it as “. . . relationships or interdependencies between, or the causes and effects of, facts and circumstances disclosed in the annual report” (paragraph 6.16), and Deloitte (2013) have highlighted its function of connecting accounting information from financial statements and other quantitative or qualitative information from the company, in a sense to ‘tell a story’ about the enterprise.

Although previous annual reports also had intended to communicate the business performance, the linkage work had to be done by the information users themselves. This major change in annual report structure has come as a response to the necessity to review both annual report's relevance and disclosure content, aiming to make the document more concise (i.e., reducing content duplications) and more linked within its sections (Deloitte, 2013; FRC, 2014).

There are two ways to do ‘linkage’ in the strategic report; the first one would be through the ‘signposting’ function. Complementary information from other parts of the annual report can be signposted on the strategic report - but the information *per se* is not disclosed in the strategic report, which reduces its content amount and/or even information duplications within the annual report. Since the strategic report is the introductory document to a UK annual report, it must contain only the ‘most relevant’ information to accomplish the report's objectives and ensure adherence to disclosure requirements from law/regulation (FRC, 2014).

¹⁵ Nevertheless, the strategic report content was not completely news to UK companies, as some of it has come from the business review included in the directors' report contained in annual reports. By obliging the strategic report in the front-end of annual reports, this disclosure requirement on directors' report was discontinued (Hussey et al., 2017).

On paragraph 3.20, FRC (2014) says that an item can be signposted in the strategic report if it is a “. . . detailed complementary information that is related to a matter addressed in a particular component, but that is not necessary to effectively communicate the information that is required by law or regulation in respect of that component”. In this manner, more sophisticated users (or even other information users that are willing to know further about a company’s subject) can acquire more detailed information about their topic of interest, but, at the same time, it is also a way to increase the salience of information perceived as the ‘most relevant’ by the company’s directors.

The second manner to linkage information is through ‘cross-referencing’, which relates to grouping similar or related disclosure requirements for the annual report from different legal/regulatory origins. Sometimes, these disclosures are better understood or can tell more effectively the company’s story if they are presented in other sections rather than in the original placement of the disclosure requirement. In this manner, to reduce information duplication and enable linkages, managers have to cross-reference where the information’s original placement should be and indicate where it is actually located (even if it is outside the annual report, such as CSR reports), in order to fulfill the disclosure legal/regulatory requirement (FRC, 2014, paragraphs 3.15-3.17)¹⁶.

In Figure 6, we have presented the definitions of linkage elements of the strategic report to allow a clear comparison between signposting and cross-referencing.

¹⁶ In the case when the strategic report is sent to shareholders in place of the annual report, all information cross-referenced must be included in the supplementary material to the strategic report (FRC, 2014).

Linkage
Relationships or interdependencies between, or the causes and effects of, facts and circumstances disclosed in the annual report. (Paragraph 6.16)

Information linkage depends on particularities such as the nature of the information and any regulatory requirements specific to the disclosures being made. Linkage can happen through (a) signposting, (b) cross-referencing or combining the related disclosures.

Where cross-referencing or signposting is used, care should be taken that the nature of the relationship or interdependency is adequately explained, rather than just highlighting its existence. (Paragraph 6.19)

(a) Signposting

A means by which a shareholder’s attention can be drawn to complementary information that is related to a matter disclosed in a component of the annual report. A component must meet its legal and regulatory requirements without reference to signposted information. Signposts should make clear that the complementary information does not form part of the component from which it is signposted. Signposted information may be located either within or separately from the annual report. (p. 33)

An entity in the extractive industry may include its total proven and probable reserves within the strategic report as one of its non-financial key performance indicators (KPIs).

The provision of the disaggregation of these totals is an example of complementary information that is not required to meet the objectives of a strategic report. (p. 13)

(b) Cross-referencing

A means by which an item of information, which has been disclosed in one component of an annual report, can be included as an integral part of another component of the annual report. A cross-reference should specifically identify the nature and location of the information to which it relates in order for the disclosure requirements of a component to be met through the relocated information. A component is not complete without the information to which it cross-references. Cross-referenced information must be located within the annual report. (p. 32)

Some accounting standards require the disclosure of large amounts of explanatory detail which may remain unchanged year to year. This information, while material to an understanding of particular items in the financial statements, may be of a nature or volume that would interrupt the flow of information in the components of the annual report (e.g. background information on share-based payment arrangements). The directors might consider locating these disclosures in a separate (audited) ‘other financial information’ section of the financial statements and linking the disclosures by cross-referencing. (p. 11)

Figure 6. Definitions of linkage elements for the strategic report to reduce information load. Note: Adapted from FRC (2014, pp. 32-3).

In the FRC argumentation, it is due to the integration of annual report structure and content through linkages (signposting and cross-referencing) that relevant connections between informational pieces can be “. . . properly identified and appropriately highlighted” (FRC, 2014, paragraph 3.21).

The 'linkage' concept is explored in a broader sense by the Integrated Reporting (<IR>), which is an initiative from the International Integrated Reporting Council (IIRC). This report focuses on disclosing the entity's creation of value over time by combining an emphasis on “. . . conciseness, strategic focus and future orientation, the connectivity of information and the capitals and their interdependencies” (IIRC, 2013, p. 2).

The <IR> Framework has a principles-based approach when companies are elaborating the <IR>; by this manner, in the same way as the strategic report, there is no mandatory disclosure of KPIs, methods of measurement nor disclosure of individual matters. Nevertheless, to guarantee some level of comparability across companies, the <IR> Framework has some requirements that must be applied to “. . . meet relevant information needs” of stakeholders (IIRC, 2013, p. 4).

The first requirement is related to the *fundamental concepts* of <IR>, which involves the report's six capitals (i.e., “. . . resources and relationships used and affected by an organization” – IIRC, 2013, p. 4): (1) financial, (2) manufactured, (3) intellectual, (4) human, (5) social and relationship, and (6) natural. The interconnectivity within <IR> and the materiality concept appears in here: IIRC argues that an entity will enable financial returns to financial capital providers according to its ability to create value for itself, which is directly interrelated with the value the entity creates for stakeholders through activities, interactions, and relationships. When an activity/interaction/relationship substantially affects the entity ability to create value over time, it is considered as ‘material’ in <IR> criterion, and it must appear in the report considering its nature, also connecting with other material subjects from related capitals (IIRC, 2013).

The second requirement concerns the *content elements* of the <IR>, which resembles the strategic report's content presented in Figure 5. As IIRC (2013) points out, content elements are fundamentally linked to each other and are not mutually exclusive (see Figure 7).

Organizational overview and external environment

(What does the organization do and what are the circumstances under which it operates?)

Governance

(How does the organization's governance structure support its ability to create value in the short, medium and long term?)

Business model

(What is the organization's business model?)

Risks and opportunities

(What are the specific risks and opportunities that affect the organization's ability to create value over the short, medium and long term, and how is the organization dealing with them?)

Strategy and resource allocation

(Where does the organization want to go and how does it intend to get there?)

Performance

(To what extent has the organization achieved its strategic objectives for the period and what are its outcomes in terms of effects on the capitals?)

Outlook

(What challenges and uncertainties is the organization likely to encounter in pursuing its strategy, and what are the potential implications for its business model and future performance?)

Basis of presentation

(How does the organization determine what matters to include in the integrated report and how are such matters quantified or evaluated?)

Figure 7. Content elements of <IR>. Adapted from IIRC (2013, p.5).

Like the strategic report case, the <IR> requires a statement made by directors (and/or other in charge with the entity's governance) that the information presented in the report is their responsibility (IIRC, 2013).

Regarding international accounting standards, it is important to say that the IFRS also have guidance on a type of 'preliminary' strategic report, called 'management commentary'. The IFRS (Practice Statement 1) has defined it as

"[a] narrative report that relates to financial statements that have been prepared in accordance with IFRSs. Management commentary *provides users with historical explanations of the amounts presented in the financial statements, specifically the entity's financial position, financial performance and cash flows*. It also provides *commentary on an entity's prospects and other information not presented in the financial statements*. Management commentary also serves as a basis for *understanding management's objectives and its strategies for achieving those objectives*." [EMPHASIS ADDED] (IASPlus, 2017).

IFRS (2017) has stated that the management commentary should provide “. . . integrated information” that contextualizes the financial statements. Also, it should present: (a) the nature

of the business, (b) management's objectives and its strategies for meeting those objectives, (c) the entity's most significant resources, risks and relationships, (d) the results of operations and prospects and (e) the critical performance measures and indicators that management uses to evaluate the entity's performance against stated objectives (IASPlus, 2017).

As it can be noted, the management commentary brought by the 'IFRS Practice Statement 1' on 2010 (IASPlus, 2017; IFRS, 2017) has intersection points with the CA 2006/2013 strategic report, although the first embraces less corporate content, and it has not a mandatory compliance even if the jurisdiction has adopted IFRSs.

2.2.3 A brief consideration between alternative presentation formats

If we compare the phased out summary financial statements with the strategic report, the main differences between them are the interconnections within sections from the annual report (even though managers were obliged to highlight the original sources in summary financial statements information) and the presentation format (as summary financial statements still maintain the resemblance of tabular form of financial statements and the strategic report uses a mainly narrative content).

Considering the strategic report as a summary document to the full annual report (which includes financial statements), individual investors with less expertise may benefit from the narrative reporting style since it does not require previously acquired knowledge on how to interpret accounting information (when we consider its traditional presentation format - tabular with notes). The narrative style presents an apparent cognitive advantage towards other presentation formats since it is a style that has been familiar to us from the early days of our lives (Barthes et al., 2008) in order to understand/to be understood by others and to interpret our relations with third parties (Munglioli, 2002; Mar, 2004).

About the interconnectivity proposal of the strategic report, it can be considered as ease on information users' working memory (see section 2.3), as users were the ones responsible for making those information connections through their reading of the annual report. On the other hand, the linkage strategy depends on the management's judgment of materiality and information connectivity, which, considering agency conflicts (Jensen & Meckling, 1976), might lead to - intentional or unintentional - misleading information cases. Here, auditing assuring strategic report content is of extremely importance to mitigate moral hazard from (a) increasing information salience of non-material information through signposting and cross-

referencing strategies and (b) blurring material information, i.e., when ‘all’ information is perceived as relevant by the directors.

Further, the main criticism of the strategic report relies on the selection of ‘what’ information the directors deem ‘strategically important’ (Deloitte, 2013), as it might not match the information cues the investors are willing to obtain from the company. Also, the information presentation format of the strategic report has a certain degree of flexibility to allow for materiality and understandability judgments, since information can be presented in narrative, tabular, pictorial and/or graphical formats – but they should be chosen in a way that does not mislead shareholders (FRC, 2014).

Thereafter, we can observe through strategic report and <IR> initiatives (including the narrative reporting approach) that there is a growing trend towards integrating financial and non-financial information, which may denote a reduction on the cognitive load of information users – mainly those with less expertise.

In the next section, we discuss psychology theories that may explain how individuals perceive information and the cognitive advantages (disadvantages) of presentation format for the working memory.

2.3 Attribution theory, cognitive load memory and hypotheses development

To better understand how accounting information users (in the specific case of individual investors) perceive the relevance of accounting information in their investment decision making setting, we have turned to the attribution theory.

The attribution theory is a psychological theory that aims to study how people attribute (or judge) an event or behavior by its cause (Plous, 1993). Kelley (1967) has categorized human behavior into three causes: (a) personal cause (internal aspects of the individual may have caused the observed behavior), (b) environmental cause (a pre-existing aspect from the situation that led to the behavior) and (c) circumstantial cause (something very specific from the occasion that caused the behavior).

Nisbett, Caputo, Legant, and Marecek (1973) have explained that, in the light of attribution theory, an individual’s behavior can be explained by two factors: (1) dispositional (i.e., internal/personal aspects) and (2) situational effects (i.e., external/environmental aspects). In an information overload environment, the dispositional effect may happen when the individual acquires accounting information, but as it is not as salient as others information sources. When s/he is asked to recover which information cues s/he has perceived as relevant to the decision-

making process, even though the person has used an accounting information acquired in a past moment, s/he will recover the information that is more salient to her/him.

The situational effect is linked to environmental information, such as news from media, economic crisis, investment discussion groups in social media and ‘investment tips’ from friends and family for instance, which has an increased salience when compared to accounting information contained in annual financial statements, for instance.

As examples from the accounting literature, we have focused on two previous types of research where the interpretation from attribution theory could be well accepted. The first one is Lipe (1998), who has made an experimental comparison between the use of market measures (variance and covariance of stocks’ returns) and accounting information in the evaluation of risk assessment. As the portfolio theory predicts, covariance information should be used more prominently by investors, but, instead, Lipe (1998) has found a relation between the use of accounting information and the participants’ risk evaluation in a concurrent information setting. In this sense, the accounting information has become the ‘situational’ effect (rather than the expected ‘dispositional’ effect that portfolio theory would predict): individuals could more easily understand the available accounting information, and they have incorporated it into their decision-making context rather than follow the rationale from portfolio theory and use the market measures at their disposal.

Pitre (2012) has tested through an experiment if increasing the frequency of earnings report (weekly *versus* quarterly) would impact the accuracy and dispersion of earnings predictions by individual investors. Besides giving support for his accuracy and dispersion hypothesis, his results have shown that investors that were attributed to the high-frequency disclosure have self-reported that they have received more influence from older historical data, whereas low-frequency condition investors have self-reported more influence from more recent historical data.

This latter research offers an example of how accounting information has played a role as a dispositional effect when it was more frequently disclosed versus a situational effect associated with less frequent disclosures, where the most easily retrieved information was the newer one. Nevertheless, besides disclosure frequency, the way that information is presented plays a role cognitively in the accounting information user, thus, presentation format should also be considered in the analysis. In this sense, we have complementary explored the cognitive load theory to explore our experimental results.

To investigate further the role of presentation format in alleviating information overload, we have turned to the cognitive load theory. This educational psychology theory has its focus on

design instruction and learning process; due to its similarities to accounting information environment, it can be also applied to the acquiring information from financial statements and applying it to an investment decision making environment (Ragland & Reck, 2016).

The cognitive load theory states that the working memory capacity for individuals is limited when considering a learning process (Chandler & Sweller, 1991; Sweller, 1994; Ragland & Reck, 2016) and it is impacted by three types of cognitive load:

- (1) the intrinsic load, which is related to the previous knowledge acquired by the subject against the complexity (or element interactivity) of the available content (Ginns, 2006).
- (2) the extraneous load is increased by cognitive processes that are not directly relevant in the learning process, such as integrating information mentally that is physically located in diverse sources (i.e., spatial contiguity effect – Ginns, 2006) and dealing with redundant information (Van Merriënboer, Schuurman, de Croock & Paas, 2002); and
- (3) the germane load, which is the mental effort allocated to the learning process from a motivating design of materials (Ginns, 2006).

On Figure 8 below, we have illustrated the relation between those three loads predicted on cognitive load theory (adapted from Ragland & Reck, 2016).

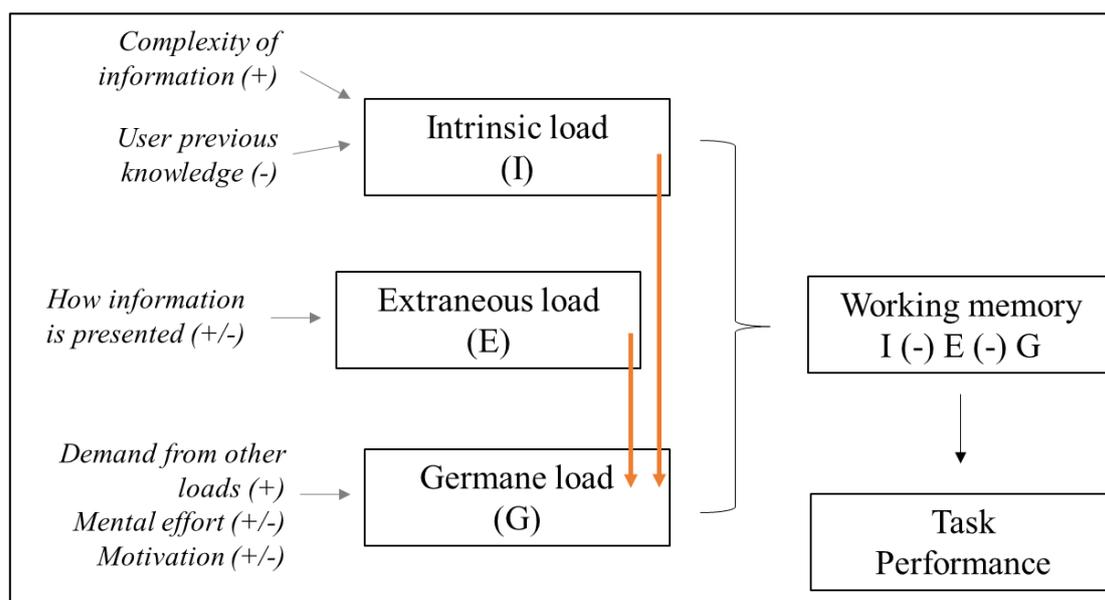


Figure 8. Diagram for the Cognitive load theory, adapted from Ragland and Reck (2016, p. 80).

Our main interest is to explore the extraneous load in our investigation of the accounting information presentation format. The ‘linkage’ approaches from the strategic report may reduce this cognitive load as information users will not have to connect information from financial

statements by themselves (Chandler & Sweller, 1991). In the traditional presentation format, investors need to mentally integrate diverse placements of mutually referring information from financial statements. For instance, they have to: (a) select the accounting information from financial statements considered as ‘material’ to the business model that the company follows, (b) look at the respective financial notes for relevant subjects, (c) calculate variations within years for the account and (d) extract Key Performance Indicators (KPIs) in order to reconstruct the ‘fiscal year’ history for the company, which may lead to an information overload situation on the subject’s working memory through the high extraneous load and negatively impact task performance (Van Merriënboer et al., 2002).

On the other hand, when considering the strategic report (regarding its narrative content), this ‘linkage’ process described on the previous paragraph is facilitated (Chandler & Sweller, 1991; Sweller, 1994), since the company management has already brought all material accounts into discussion on a single narrative form, which has a previous discussion of advantages towards other formats (Munglioli, 2002; Mar, 2004; Barthes, 2011). Thus, information overload is reduced, and the investor may identify the company’s performance clearer than the traditional presentation format.

By this, we have stated our first hypothesis as followed:

H1: In an information overload environment, the narrative format will demand less on the working memory through the reduction of extraneous load.

H1 predicts that, when investors have access to the narrative report format, the company’s fundamentals are easier to access and to process due to the connectivity characteristics between information cues from financial sources (i.e., financial statements, notes and KPIs). In this sense, the prospective investors will be able to identify the company’s expectation of future cash flows (Harris et al., 2016) with lower demand on the working memory through the reduction of extraneous load. Considering the extant literature indicating that there is an asymmetric perception of potential gains and losses (Kahneman & Tversky, 1984; Tversky & Kahneman, 1992), the investment propensity for the narrative format presenting a bad financial performance condition will be more pronounced when compared to the good financial performance condition.

As the cognitive load theory suggests, previous knowledge diminishes working memory load by reducing the intrinsic load. Nevertheless, as Elliott et al. (2008) have pointed on their

research, nonprofessional investors that have less experience with capital market investing generally have difficulties to effectively incorporate ‘unfiltered’ accounting information into their informational setting, which negatively impacts their portfolio performance. This argument connects to the literature indicating poor performance of individual investors in capital markets in their initial years (Barber & Odean, 2013).

So, we expect that the narrative presentation format will increase the ability of less experience investors to process accounting information in a more effective way that they would do in a traditional presentation format environment. Under the same argument, we understand that investors with lower accounting literacy will also present cognitive advantages on their working load when they are faced with a more ‘user friendly’ format as the narrative is expected to be (Munglioli, 2002; Mar, 2004). Thus, two hypotheses emerge:

H1a: The effect of the narrative report format on investment propensity will be more pronounced for individual investors with less investment experience.

H1b: The effect of narrative report format on investment propensity will be more pronounced for individual investors with lower literacy on accounting information.

We have asked participants to indicate their previous investment experience in years, since past investment events may impact their propensity because of the lower demand on intrinsic load (Ginns, 2006). To identify the amplitude of lower and higher investment experience, we have followed a strategy similar to Dong (2017) by identifying the sample characteristics to establish the cutoff. Also, as a measure of accounting information literacy, we have considered all participants from undergraduate courses but B.A. in Accounting as proxies for lower accounting literacy (Libby, Bloomfield, & Nelson, 2002).

Finally, as a measure of relevance perception of accounting information, we have asked participants to recover all information they consciously recover as relevant to them in their task performance. As the cognitive load theory predicts, the germane load relates to accounting users as the short-term memory that is available to them to acquire information and turn it into knowledge (Ragland & Reck, 2016). If the narrative format uses less of the extraneous load, it will require less on the germane load and, consequently, on the working memory. So if accounting information has been acquired with a lower ‘cognitive burden’, it is expected that subjects will use it more in the decision-making process, thus they will recover more accounting information pieces. In this sense, the second hypothesis emerge:

H2: The amount of retrieved accounting information from short-term memory will increase in a narrative format when compared to the traditional presentation format.

Similarly to H1a and H1b, lower investment experience and accounting literacy individuals may benefit more from the narrative presentation format when they are accessing their information relevance perception on an information overload environment. Therefore, Hypotheses 2 a and b are stated as follows:

H2a: The effect of the narrative report format on short-term memory will be more pronounced for individual investors with lower investment experience when compared to the traditional presentation format.

H2b: The effect of the narrative report format on short-term memory will be more pronounced for individual investors with lower literacy on accounting information when compared to the traditional presentation format.

In the next chapter, we describe how we have planned the methodological strategies to test the enunciated hypotheses.

3. METHODOLOGY

Due to the investigation proposition that this research aims to fulfill, we have used a mixed method research strategy. Bryman and Bell (2015) define it as “. . . research that combines research methods that cross the two research strategies” (p. 641), a qualitative and a quantitative one. Considering a technical argument for mixed method research (Bryman, 2008, p. 606; Hesse-Biber & Leavy, 2011, p. 279), each applied method (which are associated with quantitative or qualitative research) is perceived as autonomous – but, at the same time, they can also be seen as synergistic - capable of being merged so that one method enables the other to be more effective.

There are many ways in which researchers can use this kind of methodological approach when investigating a research question, as pointed out by Bryman (2006). In our research, we have the main approach and a secondary one that, combined, justify our use of mixed methods strategy.

The main approach is ‘instrument development’; we argue that, as Bryman (2008) has pointed out, the “. . . in-depth knowledge of social contexts acquired through qualitative research can be used to inform the design” (p. 618) of instruments, which is our case with the development of an experiment having as a starting point the data obtained through interviews. By interviewing individual investors, analysts and professional investors, we could identify which informational accounting/non-accounting pieces subjects are perceived as the most/least relevant in their hypothetical investment decision-making scenario.

The secondary approach is ‘completeness’, as we might use the results from applying one method (semi-structured interviews or the experiment) as a complement to the results obtained using the other. For example, by doing only the experiment, we would not be able to acquire certain spontaneous information from the subjects such as capital markets’ previous experiences of gains and losses, the description of his/her information search strategy or how the subject handles information overload. In the same way, we could not replicate an investment decision making context in the interviews as we did in the experimental environment. Each technique has its stronger and weaker points and, by combining them, we can have a “. . . more complete answer” to our research question (Bryman, 2008, p. 612).

Also, Bryman and Bell (2015) say that two points must be addressed when determining which structure the mixed method research will take: (a) the priority decision (i.e. if the qualitative or quantitative method will have the same weight, or if one of them will be the main one) and (b) the sequence decision (i.e. if there is any method that precedes the other) (Bryman & Bell,

2015). In this research, our priority is the quantitative method (experiment) and the sequence is 'qualitative → quantitative' (see Figure 9 below).

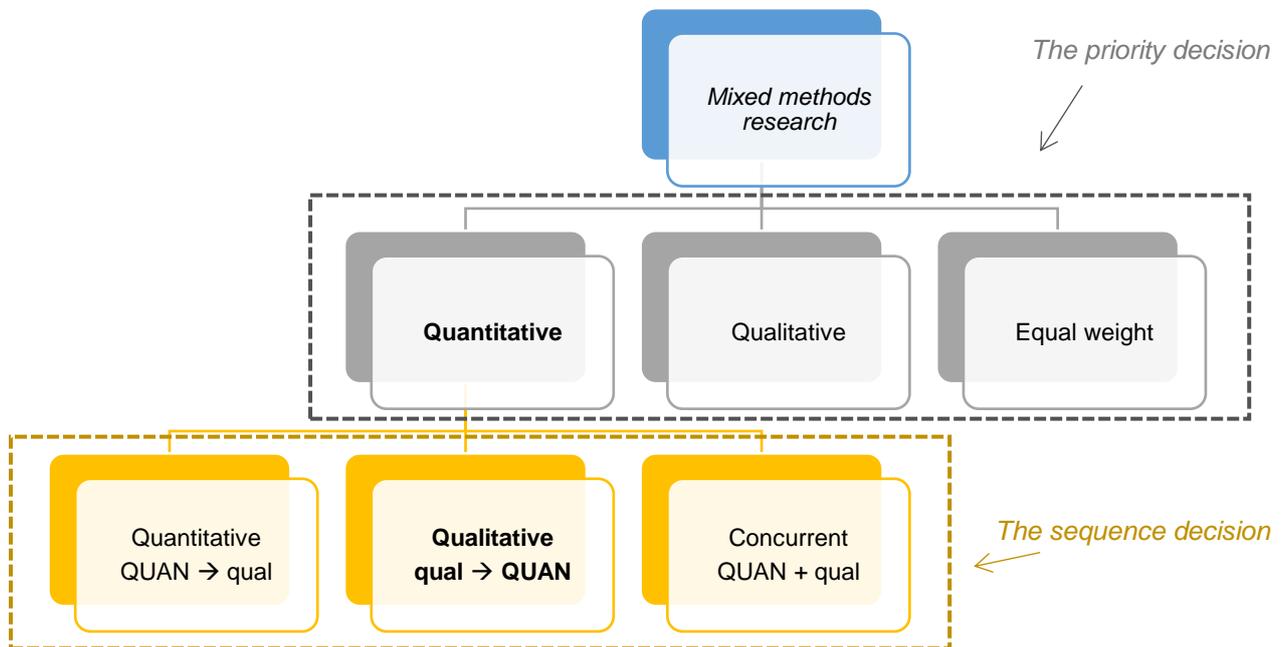


Figure 9. Classification of mixed methods design when priority method is quantitative. Adapted from Bryman and Bell (2015), p. 645.

Note: The strategy that we are going to follow in this research is highlighted in bold face. Upper case and lower case indicate priority (upper case letters meaning higher priority). Arrows indicate sequence and "+" indicates concurrent.

In this manner, the Exploratory Sequential Design (see Figure 10) was identified as the research priority and sequence decisions; under our approach, the qualitative method acts as a preparation for the quantitative one, as the former is secondary to the research goal (Hesse-Biber & Leavy, 2011). Bryman and Bell (2015) point out that this research strategy is used in research that has the goal to develop instruments which can be used in the quantitative investigation – that is the case of this research regarding the experiment that we have developed. We have used interviews to inform the experiment development (as we present in sections 3.1 and 3.2 below) and analyzed the obtained data.

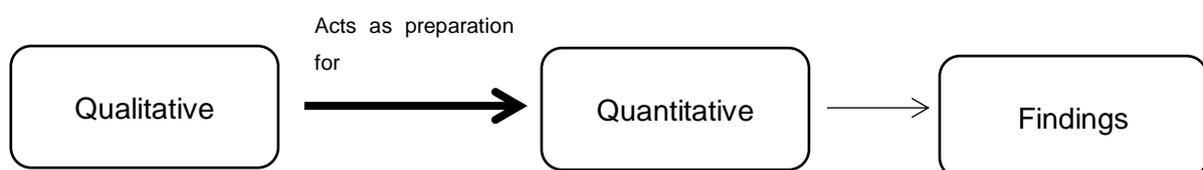


Figure 10. Exploratory sequential design. Adapted from Bryman and Bell (2015, p. 647).

3.1 The qualitative approach: field interviews

To support and increase the robustness of the experimental design (and its subsequent analysis), we have interviewed 21 individual investors and 14 professional investors (i.e., individuals who are analysts or trade actively in capital markets) from May to July 2017, to identify which information (accounting/non-accounting) they use more often in their investment decision process and in which environment the decision-making process occurs.

This step is important because we aim to identify how individual and professional investors make their investment decision based on accounting and non-accounting information (i.e. which information they perceive as the most relevant for their decision-making process), and compare both accounting information users (i.e., individual and professional investors/analysts) to identify how expertise plays its role in the identification of relevant information for investment decision making.

The data obtained through the interviews had the main goal to make it possible for us to develop an experiment that closely mimics a real investment decision making setting (as far as the information setting is concerned). We understand that, as a qualitative approach, the results from the interviews cannot be generalized, since the dynamic social nature of the interview will influence the nature of the generated knowledge (Fontana & Frey, 2000, p. 647). Nevertheless, it is not an impediment to use this knowledge/data collected through the interviews as subsidies to investigate more deeply the research problem using an experiment.

We have employed the Q Methodology using a semi-structured interview script, which proceeds under a ‘stimulus-response’ format so as to elicit rational responses from participants (Fontana & Frey, 2000, p. 650). As Horton, Macve, and Struyven (2008) have elucidated, the great advantage of semi-structured interviews is that they

“ . . . allow the interviewees a degree of freedom to explain their thoughts and to highlight areas of particular interest and expertise that they felt they had, as well to enable certain responses to be questioned in greater depth, and in particular to bring out and resolve apparent contradiction.” (p. 340) (EMPHASIS ADDED)

In this way, both researcher and interviewee have more flexibility during the interviewing process. This is our main argument for choosing a semi-structured interview script: in this format the researcher offers some interview guidance (as a baseline to all participants when considering questions content and sequence), but, at the same time, s/he has freedom to ask

additional questions when necessary. Also, as Horton et al. (2008, p. 348) have argued, semi-structured interviews (with its open format characteristic) also provides a valuable way to allow accounting researchers to investigate the adherence of theoretical priors to the behavior and perceptions of subjects.

All sessions were single, individual (with the presence of one researcher), face-to-face verbal interviews¹⁷, with an approximate duration of one hour (for both individual and professional investors). More details about the interview process are presented in section 3.1.1.

3.1.1 *The Q methodology*

We have based the qualitative part of our scientific investigation on the Q methodology strategy. This methodological approach allows the researcher to study a person's *subjectivity*¹⁸, which is based on an 'internal' reference framing ('self-reference') (McKeown & Thomas, 1988). When the subject relates something meaningful about a personal experience, the Q methodology provides for both researcher and interviewee ". . . systematic means to examine and reach understandings about such experience" (p. 12). In this research, the 'experience' of interest is the investment decision making process.

Such technique first appeared in Nature by the mid-1930s. In his paper, Stephenson (1935) suggested that, instead of factorizing measures collected from n individuals through m tests, researchers could invert and factorize n different tests which were measured/scaled by m individuals. By this analysis 'inversion', Stephenson (1935) argues that it has an interesting practical application, since the factorization technique - from group and field - can reach spheres of work so far ". . . untouched or not amenable to factorization" (p. 647).

Also, the Q methodology enables the study of subjectivity through the combination of a classification procedure with a pattern analysis considering each answer. In other words, ". . . [the] method employs a by-person factor analysis to identify *groups of participants* who make sense of . . . a pool of items in comparable ways" (Watts & Stenner, 2005, p. 68).

This classification procedure has three main parts (Stephenson, 1952; McKeown & Thomas, 1988; Brown, 1993): (a) 'Condition of instruction': rule in which the subject is instructed to

¹⁷ One interview took place via Skype®. The video was activated and we were able to identify the subject's reactions through the Q-sorting process and while we were asking questions.

¹⁸ 'Subjectivity' can be understood as the communication of a subject's point of view (e.g. "I believe. . .", "I think that. . .", "In my opinion. . .") (McKeown & Thomas, 1988). It is through communication of a person's point of view that the subjectivity appears in the interview process (Brown, 1993).

operate; (b) ‘Q-samples’: subset of statements from a certain concourse¹⁹ which the subjects are asked to rank-order into a rank scale; (c) ‘Q-sorting’: process of ranking the Q-samples, considering the subject’s own point of view, into a continuum of agreement (i.e., ‘most disagree’ → ‘most agree’) defined by the condition of instruction. Each part is explained in more detail on sections 3.1.2 and 3.1.3.

Brown (1986) points out that, although the Q methodology has subjective opinions as its focus, and they have a non-provable nature, this does not mean that they do not have a structure and form. The great advantage of this method is to enable the observation and study of individual experience manifestation through verbal speech.

The main argument for choosing the Q methodology in this research is that it is necessary to understand this individual subjectivity (from individual and professional investors) regarding the use of information in the investment decision making process. By this manner, we can structure each decision-making process (and trace group patterns), as subjects can also take notice of his/her use of information on an investment decision-making scenario, making this process more conscious.

In the next section, we explain with more detail the Q-samples and the construction of the ‘condition of instruction’.

3.1.2 Concourse, Q-samples and the ‘condition of instruction’: construction and validation process

As previously mentioned, the Q-samples are closely related to a specific concourse, which is defined by Brown (1993) as “. . . the flow of communicability surrounding any topic” (p. 95), which contains the contours of problems and the decisions about their solutions; in other words, it is the ‘stimulus domain’ (Durning & Brown, 2007). A concourse includes all types of communication - what makes its limits boundless - so the researcher is the one responsible for identifying the concourse of interest and transform it into Q-samples that can be systematically tested through the Q-sorting process (Ramlo & Newman, 2011). Considering our research goal, the selected concourse is the ‘investment analysis process in capital markets’, more specifically a prospective analysis of the purchase of new stock to be added to the investor’s portfolio.

Although the most common way to select Q-samples is by recorded interviews (Brown, 1993), other kinds of materials can also be used (McKeown & Thomas, 1988). Thereby, our concourse

¹⁹ More about concourses are presented on section 3.1.2.

was composed by financial and accounting analysis books and research papers with a fundamentalist analysis approach (Assaf Neto, 2012; Benetti, 2011; Bodie, Kane, & Marcus, 2009; Martins et al., 2012; Matarazzo, 2008; Palepu & Healy, 2008), media channels available in Brazil, including the ones which have a specific section about Economics and Finance (*BBC, Estadão, Época Negócios, El País, Exame, Folha, G1, InfoMoney, IstoÉ Dinheiro, New York Times, The Guardian, UOL, Valor Econômico*), Investor Relation (IR) and CVM websites, and social networks (Facebook and Whatsapp).

We have included Q-samples also from non-accounting sources of information because we were aiming to have an informational scenario closer to the one that individual and professional investors face when they are judging to invest in new stock (i.e., our condition of instruction). Thereby, we could be able to record which information interviewees have chosen as most or least relevant when there is alternative information concurring for the subjects' attention.

After collecting all materials, we started organizing them and creating 'categories' on gathered sentences. As Brown (1993) points out, this categorization is artificial (since it does not emerge from the field), 'superimposed' on the data by what the researcher understands as 'meanings', which ". . . are not to be found solely in the categorical cogitations of the observer, but as well (and even more importantly) in the reflections of the individual as he or she sorts the statements in the context of a singular situation" (p. 101).

In other words, the previous categorization that we have made is not going to be noticed by the interviewees, since they are doing their *own* categorization by attributing their *own* meaning on the Q-samples through Q-sorting process (i.e., 'operant categorization'), what represents a functional distinction (rather than a logical one) between sentences (Brown, 1993). This categorization helps the researcher to provide criteria for selecting Q-samples from the concourse, and it serves as a way to provide some assurance regarding sample diversity (Durning & Brown, 2007).

We have selected *eight* dimensions (Table 1) from the concourse. As points of convergence started to arise when we were gathering Q-samples from the selected concourse, we have identified two focuses: (1) information sources (i.e., where information can be acquired) and (2) information 'itself' (i.e., informational pieces that participants may consider when they are answering to the condition of instruction).

Table 1. Q-samples dimensions description.

<i>Group label</i>	<i>Group name</i>	<i>Group criteria</i>	<i>Brief description</i>	<i>Number of Q-samples</i>	<i>%</i>
A	News from media	Information 'itself'	News related to the company somehow.	6	9,7%
B	Significant events released in IR and/or CVM website	Information source/Information 'itself'	Regulated and specific information released under regulator's rules.	2	3,2%
C	Past market data from the company itself and its stock	Information 'itself'	Information obtained about the company's performance in capital markets.	8	12,9%
D	Macroeconomic information	Information 'itself'	Information about the company's economic environment.	6	9,7%
E	'Pure' accounting information	Information 'itself'	Accounting information as found in financial statements	19	30,6%
F	'Transformed' accounting information (i.e., ratios)	Information 'itself'	Accounting information which is combined with other financial/accounting information.	8	12,9%
G	Information about information sources (I): friends, family, specialists	Information source	Information sources that include friends, family, and financial specialists.	3	4,8%
H	Information about information sources (II)	Information source	Various information sources (such as databases, newspapers and social networks).	10	16,1%
<i>Total</i>				62	100,0%

We have chosen this criterion aiming also to understand information search strategy individual investors follow (and compare it with the strategies from analysts and professional investors). As accounting information is not the only type of information considered in an investment decision making context, investigating how investors set up their informational setting can help us identify which information is considered in the decisional setting and, more importantly, how accounting information relevance is perceived when there are concurrent informational sources/pieces (which we understand to be a complement to the study by Elliott et al., 2008). As Pennington and Kelton (2016) have indicated, we argue that following interviewees' stopping rules through their speech, by directly questioning how s/he acquires information, and how this search process happens may allow us to build a more robust understanding about the choice of informational sources (mainly accounting ones) and to investigate if accounting information overload can exert an influence over individuals when they choose information from accounting/non-accounting sources.

Also, each Q-sample category has its relation between 'source' → 'information' and we present it in Figure 11 below.

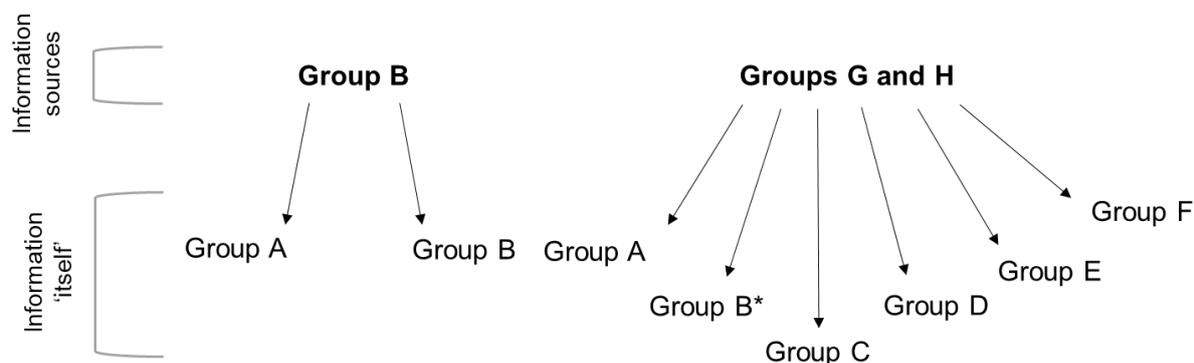


Figure 11. Q-samples categories and connection between 'information sources' and 'information'.

Note: (*) denotes that Group B has just Group H as a source of information.

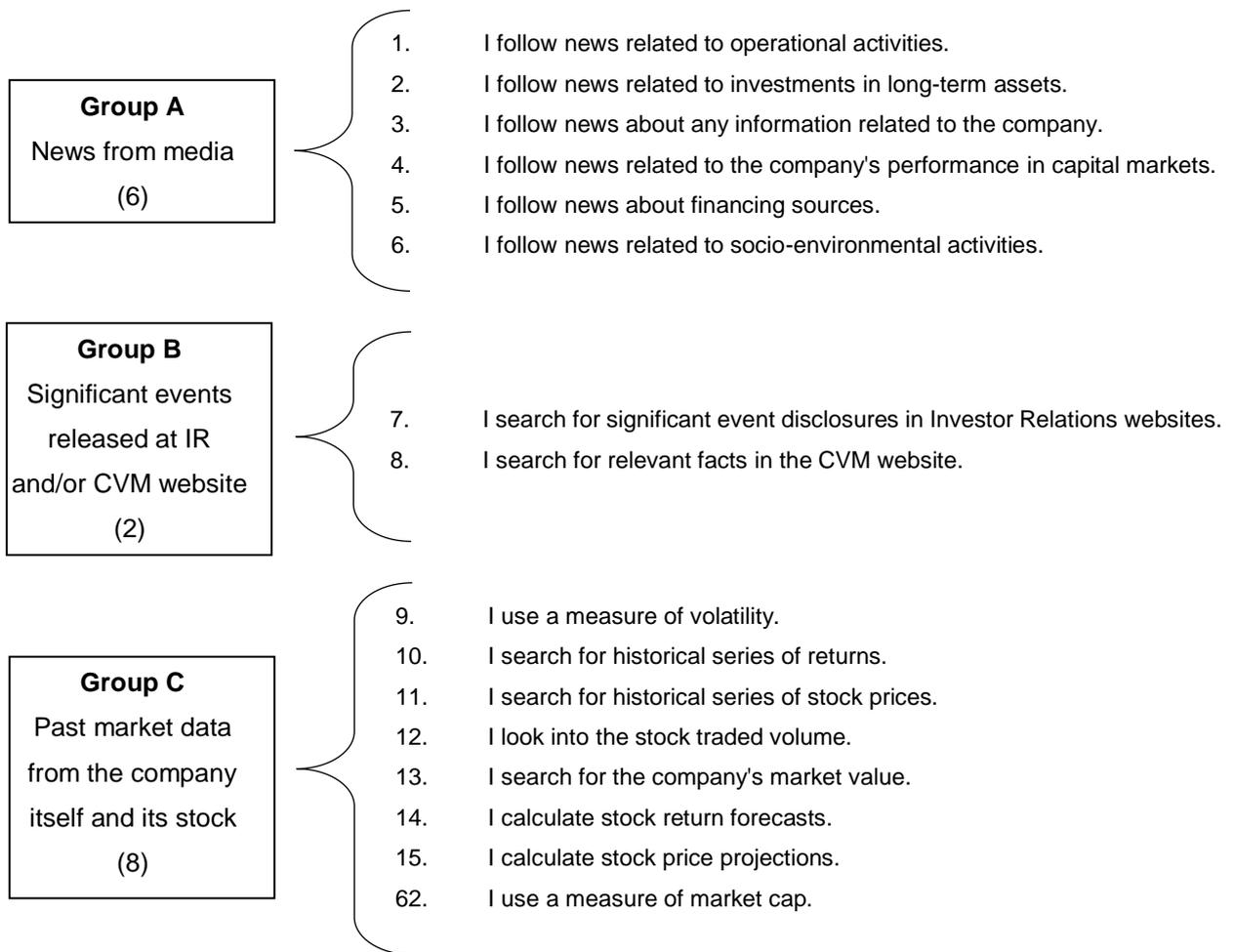
Group B is the only category that generates information for itself since those Q-samples include an informational piece ('significant events') and its source ('CVM website'/'company's website'). Considering accounting information (represented in Groups E and F), an information source that we did not explicitly stated on Q-samples was the financial statements themselves, since the direct use of financial statements was an aspect that we have planned to ask during the interviews through the Q-sorting (first phase), depending on the participant's relevance classification (more details about Q-sorting are on section 3.1.3). Also, financial statements

inquiry was somehow included on Q-sample no. 35 (“I read financial statements’ footnotes for subjects that I understand as important”).

As Stephenson (1952) states, the Q-samples are a ‘sample’ from the population obtained from the chosen concourse. It does not have the intention to be absolute nor exhaustive: the main objective when we are selecting Q-samples is to have a comprehensive miniature from the ‘big picture’ that we are interested in modelling (Brown, 1993).

To stimulate discussion and interviewees’ memory about their informational judgment path used during a prospective investment analysis, we have selected 62 Q-samples²⁰ (Figure 12). This amount was an attempt to be a comprehensive informational scenario when considering all possible information sources about a public company in an investment decision making scenario. As we understand that this selection is not exhaustive, we would ask the interviewees if they felt that relevant information was missing in the cards. Also, all Q-samples have received code in a way that participants could not identify Q-samples categorization nor be biased by the numerical sequence on Q-sorting process. Such design and coding are presented in Appendix A.

²⁰ 61 sentences when considering the pre-test version (more details are presented on section 3.1.2.1).



(Figure 12 continues at the next page)

(Figure 12 continuation)



(Figure 12 continues at the next page)

(Figure 12 continuation)

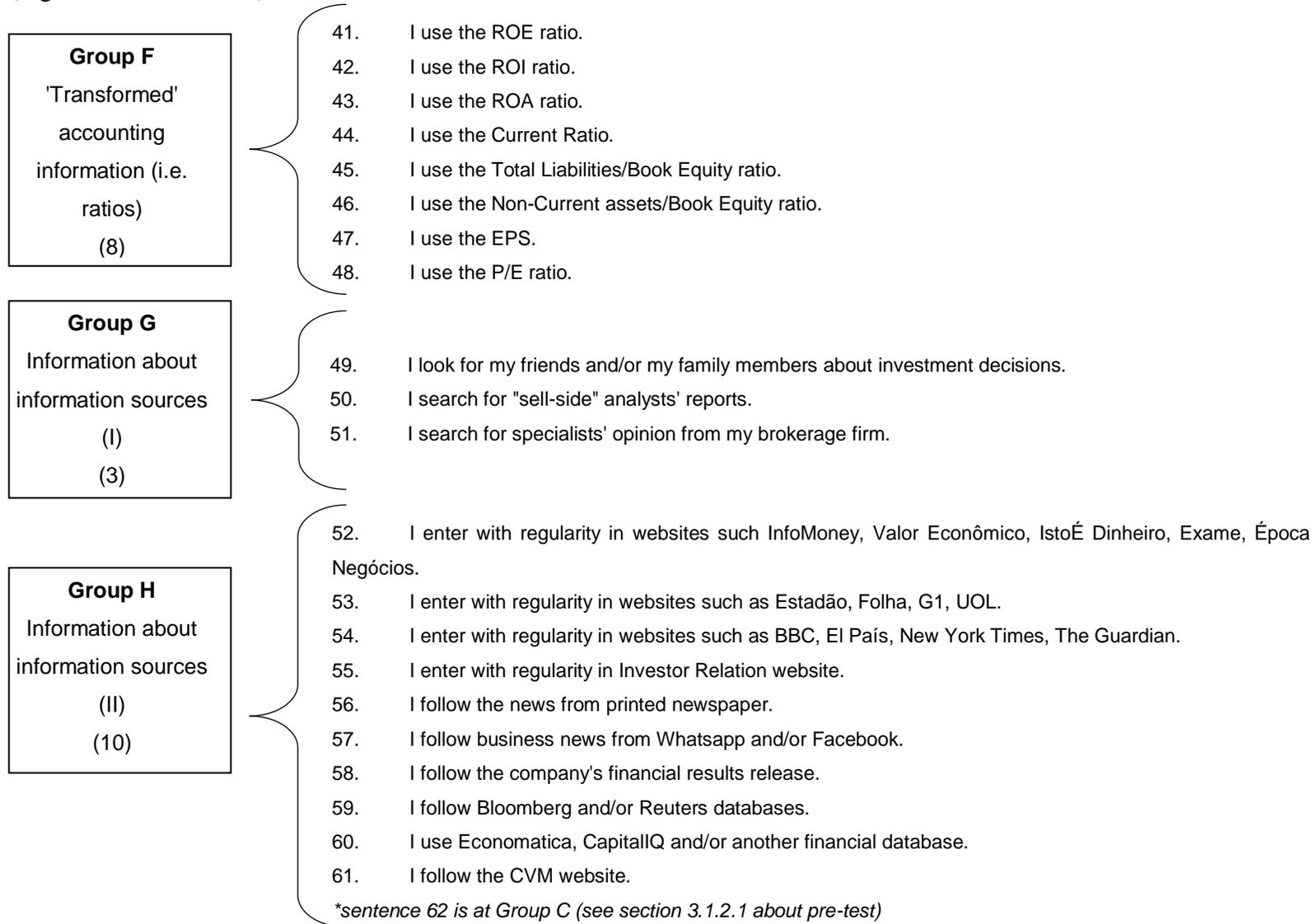


Figure 12. Q-samples dimensions.

The task that we have required in the ‘condition of instruction’ (Figure 13) is a judgment one, as we are not interested whether the subject will or will not decide to purchase stock from the hypothetical company (i.e., the decision itself). Aligned to our research goals, we are interested to understand the ‘mental path’ that individual and professional investors take in their investment decision-making process (and not the decision itself).

<p>CONDITION OF INSTRUCTION</p> <p>You are an active investor in capital markets. Your investment portfolio is carefully chosen striving for risk diversification and, considering that criterion, return maximization.</p> <p>The Z company operates in industrial/commercial sector and has its activities well established in the Brazilian market. Its stocks seem attractive to you to include them in your portfolio, but you still don't have a final opinion about it/the enterprise. Before making up your mind, you search for more information about the company to help you to decide.</p> <p>The sentences above are related to the Z company, macroeconomic factors and related information sources that may play a role on this judgment process. We ask you to read them carefully.</p>
--

Figure 13. The condition of instruction presented at the interview.

Note: original version written in Brazilian Portuguese is presented in Appendix A.

As Rachlin (1989, pp 44-5) argues, judgment is not the end of a process: the study of a judgment process is the study of part of the decision process (which also involves decisions, choices, and outcomes), and, considering it as an internal process (just as an investment decision making process generally is), judgment might not be verbally expressed or even the person herself be conscious of it. By this manner, we were able to acquire this judgment process by the Q methodology through the Q-sorting and the semi-structured interview script.

We present the interview script for both individual and professional investors (see Figure 14); as previously said in section 3.1, all questions were used as a baseline to start the interview. However, as the interviewee's narrative was taking place, we would ask additional questions which connected arguments brought by the participant, to make clearer to us how the investment decision-making process used the available information (i.e., Q-samples) and other which might not be listed in the sentences.

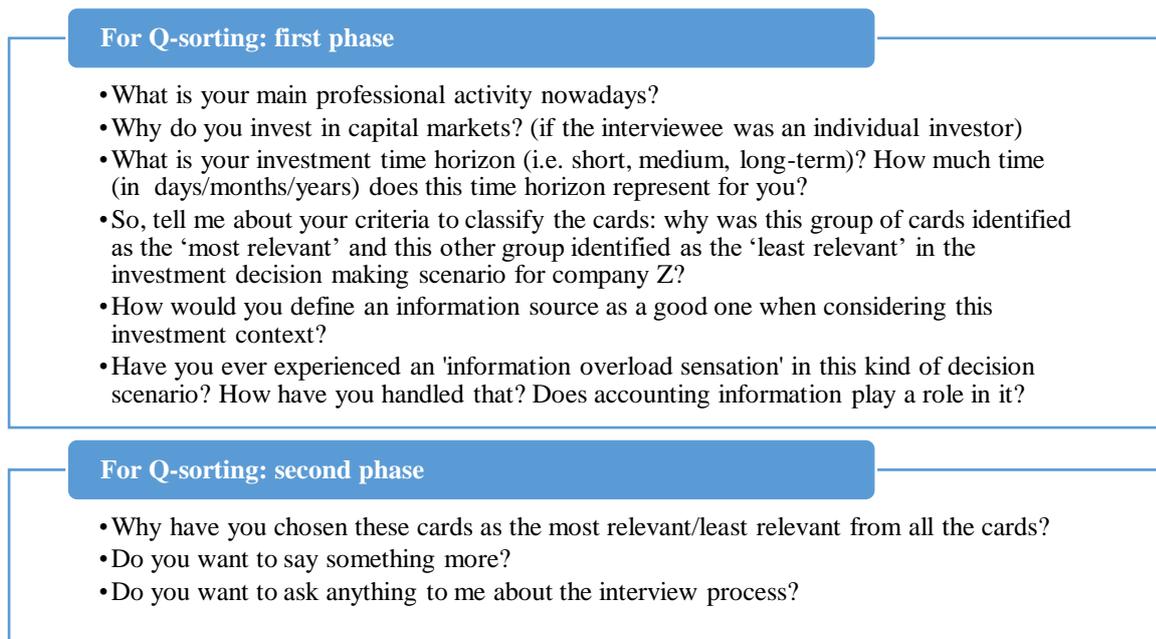


Figure 14. Interview script during the Q-sorting process.

All interviewees had access to the interview question only when they were asked by the researcher (i.e., questions were not sent previously to participants). The only difference between the interview script for individual investors and for professional investors was in the second question from the first phase of Q-sorting, as it would be irrelevant to ask it to analysts/professional investors.

3.1.2.1 Q-samples validation and pre-test

The first validation round for both Q-samples and condition of instruction took place on April 26th, 2017, during a monthly meeting from the Center for Finance Studies of the São Paulo Business Administration School at the Getulio Vargas Foundation (GVcef/EAESP/FGV, acronym in Brazilian Portuguese). During the session, we received comments from the group coordinators – prof. William Eid Junior, Ph.D., and prof. Claudia Yoshinaga, Ph.D., and some graduate students (Master's/ Ph.D.). The main comments were:

- (a) Q-samples sentences extension: they have pointed out that some words were repetitive in between cards and information groups source. Here, they suggested to leave the main information of the sentence in bold, as an attempt to drive the subjects' attention off the repetitive terms (such as verbs – see Appendix A);

(b) Number of sentences: there was also concern about the number of Q-samples (at the time, there were 62) because professional investors have limited time availability, and the number of cards could generate an initial negative perception of the interview (i.e., the subject could allocate on Q-sorting randomly to save time). Nevertheless, this worry is mitigated by the Q-sorting process, as (1) all sentences not perceived as ‘most relevant’ or ‘least relevant’ (i.e., the scale extremes) are classified as ‘neutral/indifferent’ (this process helps the subject to focus on the Q-samples that were classified at the extremes) and (2) the sentences are revisited in distinct moments of the interview (what makes possible for the subject to remember more easily the Q-samples content).

(c) Time horizon specification in the condition of instruction: at first, the condition of instruction presented a long-term horizon of investment, but, in the GVcef session, both professors considered that interviewees might vary between their time horizons and it could negatively impact the interview process (i.e., if the condition of instruction stated a long-term scenario for a short-term-oriented person, the Q-sorting would not be reflecting the actual individual’s use of information). They suggested to exclude time horizon from the text and, instead, include a ‘time horizon’ question at the interview script;

(d) Description adjustment of informational sources: this feedback was more directed to H category of Q-samples, with regards to writing clarity and sources classification between sentences.

After making the adjustments, we did the interview pre-test on May 8th, 2017 with an accounting expert with a Ph.D. level and previous investment experience at the School of Economics, Business, Accounting and Actuarial Sciences of the University of São Paulo (FEA/USP, acronym in Brazilian Portuguese). The pre-test session had the main goal to provide feedback and adjust planning tasks about the field research, such as (a) ambient logistics (e.g., Q-samples distribution on the table and best disposal of the cards/scale/condition of instruction – see Figure 15), (b) clarity in condition of instruction writing, (c) adequacy of the interview script during the session, (d) interview duration, (e) presentation of interview materials (i.e., design issues - such as font and card sizes – and content analysis – if there was any missing or redundant information in or between Q-samples), (f) randomness perception about card numbers (i.e., if interviewees would note the card codes in a sequential manner) and (g) observation of task execution (i.e., if all instructions given by the researcher were clear and understandable by the interviewee).

The pilot interview took around one hour and twenty minutes, the last ten minutes were exclusively spent on feedback comments about the interview process and protocols. Flores has pointed out a redundancy between sentences 8 “I search for relevant facts on CVM website” and 61 “I follow CVM website” (Figure 12; see Appendix A for Q-samples codes). This redundancy had happened because each Q-sample was constructed and planned to be a part of different information sources group. The pre-test interviewee has also pointed out potential information that could be included as a Q-sample (in the case, ‘market capitalization’), which we have analyzed and included in the final Q-sample composition.

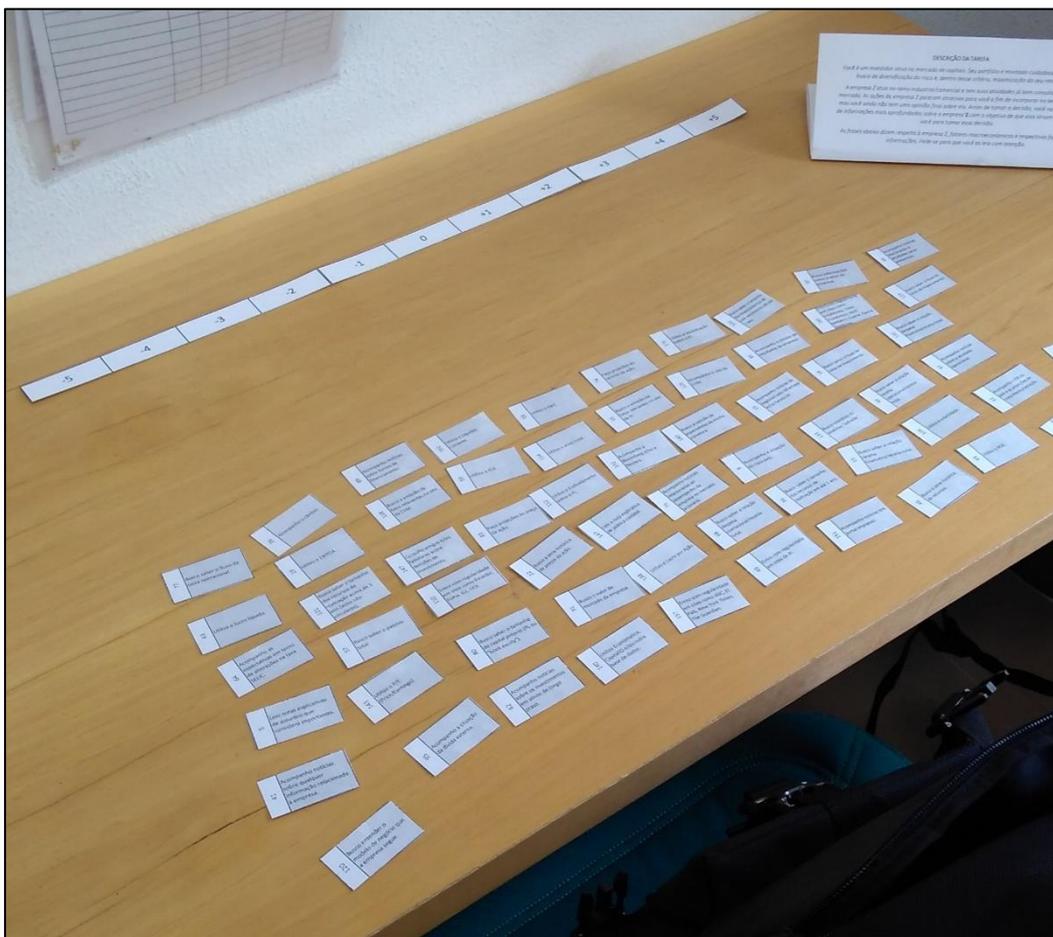


Figure 15. Scale, Q-sample, and condition of instruction on pre-test session.

3.1.3 Q-sorting process, interview protocols and control questions

The Q-sorting is a formal and explicit way in which interviewees can express their points of view (Durning & Brown, 2007, p. 543) taking into account a specific condition of instruction. During Q-sort, participants impose their meanings on Q-samples and provide a measure of meaning salience through a Q-sort scale (as a reflection of their constructed representation of

their Q-samples view) (Brown, 2009; Ramlo et al., 2011). Since they are the participants' views of meaning, there are no right or wrong answers when allocating statements into the scale (Ramlo et al. 2011).

As indicated in McKeown and Thomas (1988) and Brown (1993), we describe the Q-sorting process as follows:

- (1) We asked the subject firstly to read the condition of instruction and then the Q-samples (represented in printed cards, as shown in Appendix A). Then, in a flat area (such as a table with enough space²¹) the person would classify the cards into three main groups: information pieces that are 'most relevant/likely to use', 'least relevant/likely to use' and 'neutral/indifferent' considering the task presented at the condition of instruction. We call this part 'Q-sorting: first phase';
- (2) The three main card groups were organized following the scale logic (-5 → +5) to make it easier for the subjects to rank all the cards subsequently. The most relevant cards were allocated to the right side, the least relevant were allocated to the left side and the neutral/indifferent at the middle. Here, it is important to say that the interviewee does not rank into the scale logic at this Q-sorting moment;
- (3) After this initial classification, the researcher would ask the subject to choose about six cards (Pennington & Kelton, 2016) which were perceived as the most relevant/likely to use information pieces when considering an evaluation of a potential stock purchase and allocate them at the '+5' rank (Q-sorting: second phase);
- (4) The same process is repeated, but with the least relevant/likely to use cards allocated at the scale left side '-5' (Q-sorting: second phase);
- (5) The procedure is repeated until all cards are ranked within the scale. During and after the Q-sorting process, the interviewee can change card allocation between groups and/or reclassify cards within the rank scale.

The 'go back and forth' procedure on statements classification (which we have described previously on items '3' to '5) has its importance since the subject may revise/revisit the sentences in different moments, which enables a change in the comparative reference point between cards (McKeown & Thomas, 1988). Being said so, the interviewee could adjust his/her allocation and/or ranking choices throughout the interview process.

²¹ We have also brought a white metal board to interviews to ensure that all participants would have plenty space with Q-samples, in case that there was not enough room on the table for the Q-sorting activity.

It is important to elucidate that we have not worked with a forced Normal distribution on Q sorts, as our main objective with Q-sorting was to have an exploratory perception on how interviewees use and perceive the relevance of accounting information (in a way that would be closer to the reality of their use of information). The only forced allocation of Q-samples were to ranks ‘+5’ and ‘-5’, as we have asked participants to allocate about six cards (Pennington & Kelton, 2016). All other ranks were free to receive any quantity of Q-samples allocations.

We have described the interview protocol below; it is important to note that all sessions were conducted in Brazilian Portuguese:

Initial contact by e-mail or telephone call; it is important to say that all interview sessions have a physical record of interviewing schedule (including date, address and time). All interviews were scheduled through third-party indications, and we have included the standard invite text in Appendix B;

Before starting the interview, the researcher would greet the interviewee and thank him/her for accepting the interview invitation. After that, the Term of Consent²² (two copies already signed by the researcher) was given to the subject to be read and, if s/he had agreed to the terms, s/he would sign it and return the signed copy to the researcher.

After having the Term of Consent signed, the interview could start. The entire interview process had the following steps:

(1) *Initial interview instructions*: (i) “Before we start, I would like to say to you that there are no right or wrong answers – there is just your answer (Brown, 1993, p. 94; Ramlo et al., 2011). As said on Term of Consent, you are free to stop the interview at any moment, as you are not to answer any question that you do not feel comfortable to do so. Also, the data from the interview will not be disclosed in a way to identify you whatsoever, maintaining your identity confidential.”; (ii) “Here, we present to you a brief task to be considered during the interview. I gently ask you to read it carefully and, afterwards, to read all the cards that are presented below. As soon as you finish your reading, please let me know so that I can give you more instructions.”

(2) *Beginning of the Q-sort (first phase) and splitting Q-samples into three groups*: ‘most relevant/likely to use’, ‘least relevant/ likely to use ’ and ‘indifferent/neutral’: “After reading carefully all cards, I am going to ask you to classify all cards into three groups: on your right, those which you perceive as the most relevant/more likely to use to perform the task, on your left, those which you perceive as the least relevant/less likely to use and, in the middle, those which you perceive as indifferent/neutral (when considering the process of evaluation of company Z as a prospective investment).

²² See Appendix C.

(3) *Beginning of the interview script*

- (i) “What is your main professional activity nowadays?”
- (ii) “Why do you invest in capital markets? (if the interviewee was an individual investor)”
- (iii) “What is your investment time horizon (i.e., short, medium, long-term)? How much time does this time horizon represent for you in months/in years?”
- (iv) “So, tell me about your criteria to classify the cards: why was this group of cards identified as the ‘most relevant’ and this other group identified as the ‘least relevant’ in the investment decision making scenario for company Z?”
- (v) “How would you define an information source as a good one when considering this investment context?”
- (vi) “Have you ever experienced an information overload sensation in this kind of decision scenario? How have you handled that? Does accounting information play a role in it?”

(4) *Q-sorting questions (second phase)*

- (i) “Considering the most relevant cards, may I ask you to select around six sentences that you understand that are the most relevant of all?”; “Why do you perceive these cards as the most relevant of all sentences?”
- (ii) Repeat previous item, but for the Q-samples identified as least relevant by the interviewee.
- (iii) Next, we would ask to the subject to rank the remaining Q-samples in a “back and forth” strategy, between scale points defined as ‘most relevant’ - ‘least relevant’. The Q-samples classified as ‘indifferent/neutral’ were the last ones to be ranked.
- (iv) When the Q-sorting is over, we would ask the subject if s/he would like to make any adjustments to his/her Q-samples allocations within the scale. Also, we would ask if s/he would like to say and/or complement anything about his/her decision-making process.

(5) *Feedback to the interviewer*: at this stage, we would ask the subject what s/he thought about the interview process and if there were any doubts about it;

(6) *Feedback to the interviewee*: here, we would say to the participants that the interview may serve a way to structure his/her decision-making process (which can be improved in the next times that s/he applies this kind of investment judgment);

(7) *Interview closing*: to conclude the interview, we would reinforce that there were no right nor wrong answers, as the interview was a record of his/her decision process. After that, we would thank the participant for his/her time.

(8) *Filling in of control questions (socio-economic profile, risk suitability and Future Discount test* (Kirby & Maraković, 1995; Vanderveldt, Green, & Rachlin, 2015). While the participant was filling the questions, the researcher would take a picture of the Q-sorting for posterior data analysis.

As we have described in item 4, we have administered a questionnaire at the end of the interview including socioeconomic profile questions and risk suitability questions adapted from Brazilian asset management companies' forms under rules by the *Associação Brasileira das Entidades dos Mercados Financeiro e de Capitais* (ANBIMA, 2013; 2014; 2016). Risk suitability questions have the objective to trace risk tolerance and 'impatience' when participants are executing their portfolio analysis.

Also, we have applied the Discounting test (Kirby & Maraković, 1995; Vanderveldt et al., 2015) to have a measure of 'impulsive choice' to compare with risk suitability questions (i.e., if the participants' answers were consistent)²³. The complete questionnaire is presented in Appendix D.

The complete interview protocol has taken from one hour to one hour and 30 minutes since the time length would depend on the Q-sorting dynamic (e.g., if the interviewee has done any reclassifications of Q-samples).

3.1.4 *The interviewees (P set)*

Before giving details about our person sample (P set) characteristics, it is important to highlight the profile of Brazilian individual investors. Monthly, *Brasil, Bolsa, Balcão* (B3)²⁴, the Brazilian stock market, makes data available on individual investors' participation on the spot market in the previous month (regarding active accounts and the total amount of transacted Reais). Here, we present data available for May 2017 (see Table 2), which is the month during which we have finished planning and started the interview sessions.

²³ An interest fact in here was that almost all interviewees have complained that the test did not specified the discount rate that they should use in their intertemporal choice.

²⁴ Former *Bolsa de Valores, Mercadorias e Futuros de São Paulo* (BM&FBovespa). The name has changed to B3 in March 2017 due to a merger between BM&FBovespa and *Central de Custódia e de Liquidação Financeira de Títulos* (CETIP), the Brazilian over-the-counter market (B3, 2017).

Table 2. Gender profile for Brazilian individual investors (spot market; position on May 2017).

<i>State</i>	<i>Accounts</i>			<i>Amount (in R\$ billions)</i>		
	<i>Men</i>	<i>Women</i>	<i>Total</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
<i>SP</i>	189,243 (75.72%)	60,674 (24.28%)	249,917 (42.51%)	50.62 (75.76%)	16.20 (24.24%)	66.82 (48.45%)
<i>RJ</i>	71,577 (74.61%)	24,359 (25.39%)	95,936 (16.32%)	20.58 (70.01%)	8.82 (29.99%)	29.39 (21.31%)
<i>Other states</i>	193,122 (79.77%)	48,975 (20.23%)	242,097 (41.18%)	32.95 (79.03%)	8.75 (20.97%)	41.70 (30.23%)
<i>Total</i>	453,942 (77.21%)	134,008 (22.79%)	587,950 (100%)	104.15 (75.52%)	33.76 (24.48%)	137.91 (100%)

Note: Adapted from BM&FBovespa (2017). ‘Accounts’ refers to each account opened by a registered CPF (i.e., Brazilian security number) active in each custody agent. To be considered as an active CPF, the account must have shares or other negotiable assets available on B3 at the end of the period (in this case, May 31st. 2017). ‘Amount’ refers to how much was transacted on spot market on May 2017.

For that period, São Paulo (SP) and Rio de Janeiro (RJ) have added together 58.83% of 587,950 active accounts registered by custody agents and 69.76% of the amount of money (in billion Reais) negotiated. Although the remaining states together have a similar amount of active accounts as SP has, their amount of Brazilian Reais transacted accounts for only 30% of the country’s transaction volume. Considering gender, men are the majority of individual investors in Brazil (75.52%) - and in all states as well²⁵.

Considering age (Figure 16), individual investors who are 56 years old and older represent 67.22% from R\$ 137.91 billion transacted (approximately R\$ 62.39 billion). It also calls our attention the discrepancy between gender, as data for women are less than the half from data for men.

²⁵ Since a person can have more than one account per ‘security number’ (*Cadastro de Pessoa Física – CPF*), the accounts may be counted more than once in some cases which we are not able to identify (as data by CPF number is not publicly available). Thereby, we prefer to use data from transacted Reais for interpretation.

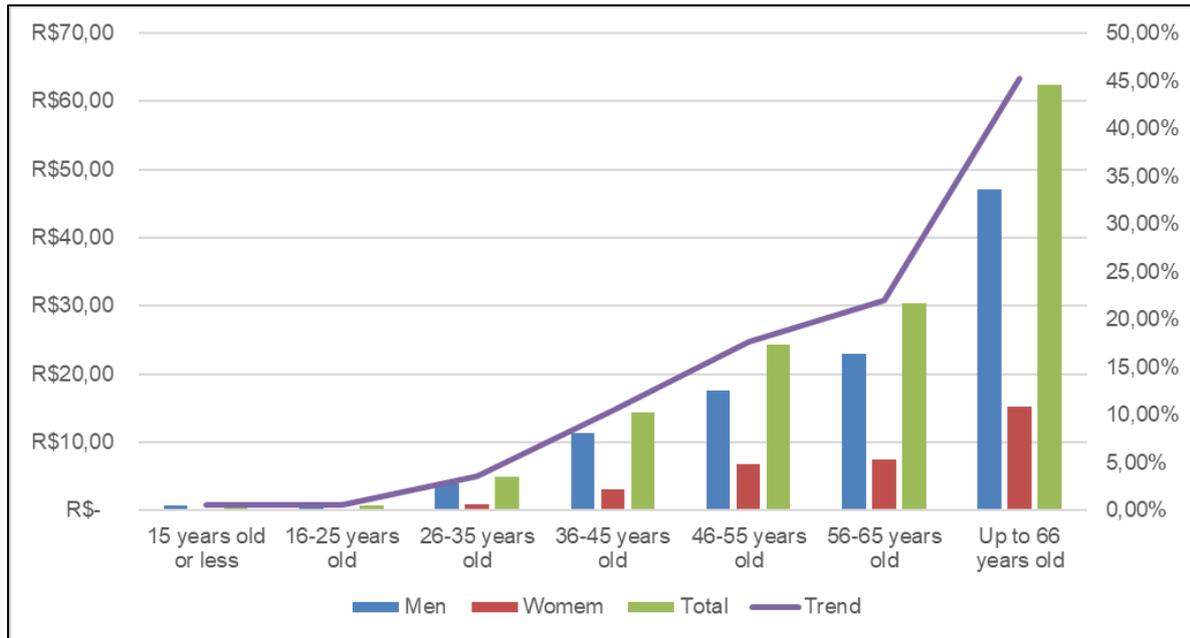


Figure 16. Age profile by gender of individual investors in B3 (in R\$ billion; position on May 2017).

Note: Adapted from BM&FBovespa (2017). Data refers to how much each age group (segregated by gender) has transacted in the spot market in May 2017. 'Trend' indicates the tendency of growth in transacted Brazilian Reais (R\$) amount when individual investors' age increases.

Our P set composition was 'extensive' since we have the intention to determine the variety of views about one issue (McKeown & Thomas, 1988). Our focus when we were determining the sample was on expertise, as our goal is to explore the attitudes about the use of accounting information in an investment judgment setting by both individual investors and analysts/professional investors²⁶ (see section 3.1). However, we were also careful about gender and age of participants as an attempt to ensure diversity on P as well as we have done with Q-samples. As Durning and Brown (2007) have pointed out, the purpose of categories ". . . is to inject diversity into the P set so that if [different] perspectives exist in the population there will be reasonable opportunity to detect them" (p. 544).

Nevertheless, we were not able to guarantee the same proportion of gender and age groups when we bring into consideration the target population data (see Table 3 and Table 4), as our person sample was acquired through the availability criterion (McKeown & Thomas, 1988): initially, we have asked for indications of potential participants to two key people (one for individual investors and the other for investment professionals). As interviews were happening, we would ask former interviewees for suggestions of potential subjects aiming to increase the diversification participants' characteristics.

²⁶ All subjects must have a fundamental analysis strategy.

Nevertheless, our P set for individual investors has an average age of 40 years ($SD=7.07$, $min=27$, $max=52$). 83.32% have an income level up to R\$ 14,055.00, 88.89% have a postgraduation (being 61.11% a master's or Ph.D.), and 55.55% have a bachelor's degree in businesses courses (Accounting, Business or Economics).

About analysts/professional investors P set, it has an average age of 38.92 years ($SD=9.53$, $min=26$, $max=58$). 90% have an income level up to R\$ 14,055.00, 53.85% have a postgraduation (being 30.77% an incomplete/complete master's degree), and 61.54% have a bachelor's degree in businesses courses (Accounting, Business or Economics). It is important to say that, as we have stated on Term of Consent, participants were free to answer just the questions they would feel comfortable to do so; in this manner, we had some questions for analysts/professional investors that have disbalanced answers quantity. For those, we have specified N for each category (Table 4).

Looking at investment profile and previous experience on capital markets (Table 5), individual investors have 54.11% of their own invested amount in fixed income investments ($SD=28.63\%$, $min=2\%$, $max=97\%$), followed by spot market investments (mean=26.72%, $SD=20.82\%$, $min=3\%$, $max=70\%$) and then investment in real estate (mean=11.39%, $SD=17.97\%$, $min=0$, $max=50\%$).

Considering personal investment experience, individual investors have an average of 11.64 years of investment in capital markets ($SD=7.10$, $min=2$, $max=28$), and seven individual investors subjects have had professional investment experience (mean=14 years, $SD=5.80$, $min=5$, $max=20$).

For analysts/professional investors, the investment amount for fixed income investments is very similar to the one reported by individual investors (mean=53.75%, $SD=33.31\%$, $min=0\%$, $max=100\%$) and spot market investments (mean=22.75%, $SD=24.21\%$, $min=0\%$, $max=80\%$). The reason is because professional investors have constraints on investment in the spot market, such as retaining stocks in their portfolio for a pre-determined amount of time before selling it or even limitations for buying stocks from certain companies (depending on their work).

The main difference in investment profile between individual investor and analysts/professional investors is how much money they allocate in "other assets". For analysts/professional investors ($N=4$), their portfolio has an average allocated resources value of 17.73% ($SD=34.74\%$, $min=0\%$, $max=100\%$). The asset invested was 'multimarket funds', which all the four professional subjects have signaled on the interviews as an alternative to the spot market investment.

Looking at the average personal investment experience of analysts/professional investors, they have 15.31 years of personal investment in capital markets (SD=9.20, min=0, max=35) and professional investment experience of 17.09 years (SD=9.08, min=4, max=30).

We present the tabulated results on the next pages (Tables 3, 4 and 5).

Table 3. P set characteristics of individual investors (II).

	<i>Age</i>				<i>Income level</i>			
	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>R\$ 2,811.01 - R\$5,622.00</i>	<i>R\$ 5,622.01 - R\$ 8,433.00</i>	<i>R\$ 11,244.01 - R\$ 14,055.00</i>	<i>Up to R\$ 14,055.00</i>
Men	40.19	7.40	27.00	52.00	1 (6.25%)	1 (6.25%)	1 (6.25%)	13 (81.25%)
Women	38.50	4.95	35.00	42.00	-	-	-	2 (100%)
Total	40.00	7.07	27.00	52.00	1 (5.56%)	1 (5.56%)	1 (5.56%)	15 (83.32%)

(continuance of Table 3)

	<i>Education level</i>					<i>Undergraduation course</i>			
	<i>Bachelor's degree</i>	<i>Postgraduated (latu senso)</i>	<i>Incomplete master's degree</i>	<i>Master's degree</i>	<i>PhD</i>	<i>Accounting</i>	<i>Business</i>	<i>Economics</i>	<i>Other</i>
Men	2 (12.50%)	3 (18.75%)	2 (12.50%)	4 (25.00%)	5 (31.25%)	2 (12.50%)	4 (25.00%)	2 (12.50%)	8 (50.00%)
Women	-	-	-	-	2 (100%)	2 (100%)	-	-	-
Total	2 (11.11%)	3 (16.67%)	2 (11.11%)	4 (22.22%)	7 (38.89%)	4 (22.22%)	4 (22.22%)	2 (11.11%)	8 (44.45%)

Note: N=18.

Table 4. P set characteristics for analysts/professional investors (IP).

	<i>Age (a)</i>				<i>Income level (b)</i>			
	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>R\$ 2,811.01 - R\$5,622.00</i>	<i>R\$ 5,622.01 - R\$ 8,433.00</i>	<i>R\$ 11,244.01 - R\$ 14,055.00</i>	<i>Up to R\$ 14,055.00</i>
IP	38.92	9.53	26.00	58.00	-	1 (10%)	-	9 (90%)

(continuance of Table 4)

	<i>Education level</i>					<i>Undergraduation course</i>			
	<i>Bachelor's degree</i>	<i>Postgraduated (latu senso)</i>	<i>Incomplete master's degree</i>	<i>Master's degree</i>	<i>PhD</i>	<i>Accounting</i>	<i>Business</i>	<i>Economics</i>	<i>Other</i>
IP	6 (46.15%)	3 (23.08%)	3 (23.08%)	1 (7.69%)	-	1 (7.69%)	1 (7.69%)	6 (46.15%)	5 (38.46%)

Note: In IP P set, there is one subject identified with the female gender (thereafter, we have not segregated analysis for this data). N=13, except for (a) N=12 and (b) N=10.

Table 5. Previous investment experience and investment profile (P set).

	<i>Individual investors</i>					<i>Analysts/professional investors</i>				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
Previous personal investment experience (in years)	18	11.64	7.10	2.00	28.00	13	15.31	9.20	0.00	35.00
Previous professional investment experience (in years)	7	14.00	5.80	5.00	20.00	11	17.09	9.08	4.00	30.00
% investment on spot market	18	26.72%	20.82%	3.00%	70.00%	12	22.75%	24.21%	0.00%	80.00%
% investment on derivatives	18	2.22%	5.75%	0.00%	20.00%	12	1.42%	3.09%	0.00%	10.00%
% investment on fixed income market	18	54.11%	28.63%	2.00%	97.00%	12	53.75%	33.31%	0.00%	100.00%
% investment on savings	18	0.56%	2.36%	0.00%	10.00%	12	0.00%	0.00%	0.00%	0.00%
% investment on real state	18	11.39%	17.97%	0.00%	50.00%	12	4.58%	9.88%	0.00%	30.00%
% investment on other assets	18	6.94%	21.63%	0.00%	90.00%	12	17.73%	34.74%	0.00%	100.00%

Note: 'Investment experience' is related only to investment on capital markets. Spot market investments are related to investments in stocks and/or stock funds.

Also, we have aimed for a 50-50 proportion between individual investors and analysts/professional investors, but, as there were some limitations in accessing investment professionals (n=14; valid responses=13; see more on section 4.1), we had more interviews with individual investors (n=21; valid responses=18; see more on sections 3.1.6 and 4.1). On the other hand, previous literature argues that it is not strictly necessary to ensure *full* representativeness of populational characteristics across P-set in Q methodology, but rather breadth and diversity among individual Q-sorts (Brown, 1980, p. 260; McKeown & Thomas, 1988, p. 37).

3.1.5 Data analysis

In order to compare responses from subjects despite the subjectivity inherent from Q sorting process, data analysis for Q methodology has two main parts: (1) correlation/association between participants and Principal Components Analysis (PCA) as a data reduction technique and (2) definition of Q-sorts flagging for each component, Q-samples scores calculation for each component and distinguishable/consensuous Q-samples (Brown, 1980; Brown, 1993; Durning & Brown, 2007; McKeown & Thomas, 1988; Zabala, 2014).

For the first part, correlation coefficients were calculated between participants' Q-sorts. We have organized the database considering each interviewee as a matrix column (i.e., each interviewee is viewed as a variable) and each Q-sample was a row (i.e., the first row is Q-sample no. 1 and, the last one, Q-sample no. 62 – see Appendix F). In this manner, as an example, cell n_{11} represents the rank attributed by participant 1 to Q-sample 1, and so on. To facilitate data analysis, we have transformed the original rank weights of Q-sorts columns as shown in Figure 17 below.

Original weight	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Transformed weight	1	2	3	4	5	6	7	8	9	10	11

Figure 17. Original and transformed weights of Q-sorts columns.

For initial Q-sorting analysis, the association method used was Spearman rank-order correlation through command 'rcorr' from R package 'Hmisc' (Harrell Jr. & Dupont, 2008) (R version: 3.4.2). We have run Spearman's since interviewees have classified Q-samples into a distribution-free rank from (-5) to (+5), a fact in which signals the ordinal characteristic of the study's variables and the Q-sort's non-normal distribution. Also, Spearman's is a non-

parametric monotone association measure, meaning that (a) it has no assumptions about frequency distribution or linearity in the relationships between variables as the Pearson measure does and (b) it investigates how well an arbitrary monotonic function describes a relationship between two variables (Hauke & Kossowski, 2011).

Computing an association measure between the interviewees' Q-sorts is important since it may enable us to identify similar or dissimilar characteristics between participants before doing PCA (Brown, 1980; Exel & Graaf, 2005). In this manner, the 'pre-data analysis' could enable us in (a) trying to 'pre-identify' which individuals would be 'classified together' and (b) analyzing more carefully how the reduction data technique has grouped the individuals.

It is important to say that a polychoric correlation was initially considered, but its assumption (as on Pearson's) also relies on bivariate normality. Considering that is possible to calculate polychoric correlation in its empirical form despite normality assumption, Spearman's is still more suitable since the rank presented on Figure 17 is considered as a discrete joint distribution rather than a continuous one (Ekström, 2011).

Durning and Brown (2009) have stated that “[a]ttention rarely focuses on the . . . correlation matrix . . . , which is merely a temporary state through which data pass on the way to revealing their structure” (p. 544). In this manner, we have analyzed them considering if there were any significant correlations between participants²⁷, as high and significant correlations may indicate pattern behaviors of perceived information relevance for individual investors and analysts/professional investors (within and between groups), which may result in the creation of components by PCA. We have explored this subject in section 4.1.1.

Next, we have run a Q-type exploratory PCA (considering Spearman as correlation method) and VARIMAX rotation to examine levels of agreement/disagreement (represented as 'covariances') between individuals. PCA is a technique that gives us a descriptive model of the data (Revelle, 2017) and it considers the maximum portion of the total variance (i.e., common, specific and error variances) contained in the original set of variables (Hair Jr., Black, Babin, Anderson, & Tatham, 2006). Then, PCA transforms those variables in a minimum number of components (i.e., 'subsets') that considers “. . . for more of the variance in the data . . . than any other linear combination of variables” and it represents the full set of variables adequately (Hair et al., 2006, p. 119). We have done the computation using 'qmethod' R package (R version: 3.4.2) (Zabala, 2014).

²⁷ Statistical significance is found through a t-test with the null hypothesis of no monotonic association between variables.

Tabachnick and Fidell (2001) point out that components are ‘aggregates’ of variables, and these variables composing those ‘agregates’ are correlated with one another - but they are independent of other components. In this sense, extracted components are ‘orthogonal’. Considering orthogonality, the VARIMAX rotation “. . . maximizes the sum of variances of required loadings of the factor matrix” (Hair et al., 2006, p. 126), making Q-sorts/component correlations closer to (-1) or (+1), i.e., to indicate a clear negative or positive association between the Q-sort and the componente, or closer to 0, i.e., to indicate a clear lack of association.

In other words, the VARIMAX rotation simplifies the columns from PCA matrix in order to make interpretations easier, but also maintaining independence between rotated components (Hair et al., 2006); which is in agreement with Q methodology’s aim to reveal the range of viewpoints that are favoured by the group of participants (Watts & Stenner, 2005). It is important to say that our main objective relies on the analysis of the simplified results (as we would use them as input in the experiment development), so we have not reported non-rotated PCA outputs.

Relating to components analysis, we have aimed to answer three main question about our P set when performing PCA (Thompson, 2000, p. 207; Zabala, 2014):

- (1) How many types (i.e., ‘components’) of people are there?
- (2) Are the ‘expected people’ most associated with the ‘expected person’ components?
- (3) Which Q-samples were and were not useful in differentiating the various person types or components?

About the first question, we have initially run correlations between interviewees Q-sorts (i.e., interviewees were variables/columns, and sentences were observations/lines, with each space being filled by the sentence rank attributed by the subject on his/her specific Q-sorting process). We have just reported statistically significant correlations by the Spearman method, and the complete matrix can be found on Appendix I. We have considered correlation coefficients as ‘high’ if they were equal or higher than |0.5|. Intermediate coefficients were correlation values lower than |0.5| and higher or equal than |0.3|. Lower coefficients were below |0.3| (Fávero, Belfiore, Silva, & Chan, 2009; Tabachnick & Fidell, 2001).

It is important to say we were not interested in investigating ‘null’ correlations since we aim to identify which subjects have a similar/opposite Q-sorting behavior considering their

professional nature (i.e. if s/he is an individual or professional investor). In other words, we aim to investigate if the subjects have a monotonic relation between each other.

After running correlations, we have performed the PCA. As Brown (2009) have stated, the number and character of components (also known as ‘Q-factors’) extracted are indeterminate in advance, as each one represents a different state of mind. In this sense, components represent ‘points of view’ and their association with a participant is indicated by his/her loading magnitude on the component (McKeown & Thomas, 1988). In other words, variables in PCA are empirically associated as they ‘produce’ the component, and labels attributed to components derived from the technique are the combination descriptions of variables associated with components (Tabachnick & Fidell, 2001).

In this manner, we have initially determined the number of extracted factors through the comparison of three graphical techniques of identification (Hair et al., 2006): (a) eigenvalues higher than 1 (‘Kaiser criterion’), (b) parallel analysis (‘scree plot criterion’) and (c) optimal coordinates, searching for a consensus between, at least, two criteria. As a complementary stopping criterion, we have also aimed for percentages of explained variance equal or higher than 60% with the number of loaded components as lower as possible (Tabachnick & Fidell, 2001; Hair et al., 2006)²⁸.

The interpretation of components occurs by evaluating which Q-sorts are significantly correlated with a specific component, named by the Q-technique as ‘flagged Q-sorts’ or ‘defining variable’ (Exel & Graaf, 2005; Zabala, 2014). The objective of ‘flagging’ Q-sorts is to obtain more distinguishable perspectives between components, and they are determined by (1) the statistical significance of its component loading ℓ (considering a p-value < 0.05) and (2) if its square loading for a component j is greater than the sum of the square loadings of the specific Q-sort on all other f components (Brown, 1980; Zabala, 2014)²⁹:

$$\ell_j^2 = \sum_{i=1}^f \ell_i^2 - \ell_j^2$$

Equation 1. Q-sort flagging criterion.

²⁸ It was not possible to perform Bartlett’s test as it has multivariate normality as its main assumption (Tabachnick & Fidell, 2001).

²⁹ This means that, when a Q sort is highly correlated with more than one component, this participant may not be ‘loaded’ in none of the extracted components (Durning & Brown, 2007; Zabala, 2014).

Data analysis from PCA allows us to identify common perspectives and characteristics between subjects flagged in the same component and trace profiles of ‘types of information users’ in a potential purchase of a new stock into an investment portfolio (i.e., the condition of instruction presented to the subjects), and also trace comparisons between components - irrespective of the number of people subscribed to each one of them (McKeown & Thomas, 1988). Further, we can identify ‘common pattern behaviors’ of perceived relevance of accounting *versus* non-accounting information.

About the second question, the first expected impression was that individual investors and analysts/professional investors would form components that would present low associations between component and participants from distinct groups (i.e., components would have only participants from individual investors’ or analysts/professional investors’ group) and, within their group, they would differ mainly by their investment time horizon, investment objective criteria and ‘investment impatience’ (the latter represented by Future Discont test). Also, statistically significant correlation coefficients between participants were also useful to trace initial perceptions of components groups and to interpret the composition of Q-sorts in each component.

It is important to say that we have performed three PCAs: one only with analysts/professional investors, another only including individual investors and the last one with all P set. We have chosen to drive analysis in this way to initially identify separately how each group has behaved in Q-sorts’ manner (i.e., how professional individuals/individual investors have their information relevance perceptions ‘grouped’ when compared to themselves). Then, we have inserted all Q-sorts from our P set together to visualize how professional and individual investors subjects would form components, i.e., if there were common relevance perceptions of accounting/non-accounting information among them.

About control variables, we have analyzed results considering (a) age, (b) undergraduation course, (c) previous investment experience (as a professional; in years), (d) previous investment experience (as a individual investor; in years), (e) percentage of investment in stocks, (f) percentage of investment in fixed income assets, (g) risk taking level, (h) objective of investment, (i) risk aversion, (j) impatience, (k) frequency of portfolio revision and (l) time horizon of investment. We have described it in Figure 18 below.

Variable	Description	Profile question no.
<i>Age</i>	Open question measured in complete years.	Question 1
<i>Undergraduation course</i>	Multiple choice question with alternatives for Accounting, Business or Economics courses. If not explicated, we have also included an open question as 'other.'	Question 3a
<i>Previous investment experience (as a professional; in years)</i>	If the interviewee has worked as an investment professional, we have asked s/he to insert for how many years.	Questions 5a and 5b.
<i>Previous investment experience (as an individual investor; in years)</i>	How many years of investment in the capital market the interviewee has.	Questions 6a and 6b.
<i>Percentage of investment in stocks</i>	Considering the participant's investment portfolio, which percentage of it is invested in stocks	Question 9(a)
<i>Percentage of investment in fixed income assets</i>	Considering the participant's investment portfolio, which percentage of it is invested in fixed income assets	Question 9(c)
<i>Risk taking level</i>	Multiple choice question, with five investment alternatives considering average, maximum and minimum returns.	Question 11
<i>Objective of investment</i>	Multiple choice question, with three alternatives stating why the participant has chosen to invest in the capital market.	Question 12
<i>Risk aversion</i>	Measured through the combination of answers from two questions (15a and 15b). If both options selected were (i), the interviewee was classified as 'risk averse'. The person was classified as 'non-risk averse' wth any other answer combination.	Questions 15a and 15b
<i>Impatience</i>	Measured through the point of inflection identified on the 'Future Discount Test', going from 1 to 9. The person is more 'impatient' as s/he gets closer to 9.	Question 16
<i>The frequency of portfolio revision</i>	Multiple choice question, with five alternatives stating possible frequencies of portfolio revision (from 'very long run' to 'very short run').	Question 12
<i>Time horizon of investment</i>	Open question asked during the interview; if the investment horizon is short, medium or long run, and how much time does it represents.	(made orally during the interview).

Figure 18. Control variables considered while performing components analysis interpretation.

Note: See Appendix D for the complete profile questionnaire.

Finally, the third question is addressed through two functions available in the ‘qmethod’ package for R (Zabala, 2014). The first one is ‘zsc’, as it returns the normalized weighted average score for each ranked Q-sample of the flagged Q-sorts for that specific component. In this way, the flagged Q-sorts are merged, emerging to prominence what is common among them – but cancelling out what is unique to each participant (Brown, 1980, p. 280). In other words, Exel and Graaf (2005) say that this ‘simulated Q-sort’ “. . . represents how a hypothetical respondent with a 100% loading on that [component] would have ordered all the statements” (p. 9). The Q-samples that are located on ‘extreme ends’ of the rank (also known as ‘characterizing statements’) give us information to produce a first description of the point of view reflected by the component extracted.

The second one is the function ‘qdc’, which gives us the output from PCA saying which Q-samples were determinants to define components’ extraction. It is defined as the difference between z-scores of each statement for each pair of components; if this difference is statistically significant, it means that “. . . what both factors think about that statement is distinct” (Zabala, 2014, p. 166), but if it is not statistically significant, the statement is considered as a consensus.

Finally, it is important to say that interviews were being recorded to future reference, but we have chosen to stop it to not interfere on the rapport process (for more details, see section 3.1.6, item (c) ‘Rapport’). By this manner, we have not made any interview transcriptions. We understand that it does not denote any loss to the present study analysis since we have not had the main objective of doing a deep ‘content analysis’ of the interviews.

Rather, we have interviewed subjects aiming to (a) understand the informational context that it happens in a capital market investment situation and (b) how those individuals perceive the relevance of accounting information in that decision-making process. The completed Q-sorts, controlling for individual characteristics of the participants, give us the necessary subsidy for data analysis since they represent the reflection of interviewees’ subjectivity about the specific situation.

Despite that, the oral communication of participants is important to enable us to make connections between Q-sorting patterns within groups and individuals. So, to remember subjects’ responses, we have made brief reports after interview sections, naming what has occurred during the interview, how the interviewer (i.e., the researcher) had felt and what the researcher had perceived about how the interviewee had felt during the session.

3.1.6 Challenges (and tips) when interviewing

In Roulston, DeMarrais and Lewis (2003, p. 658) investigation, the authors show that it requires *time* to interviewers to reflect upon the learning process of interviewing, which includes identification of strengths and weaknesses of the interviewer, the need for interview skill development, preferences in interview style and impact of subjectivity when conducting the interview. It is expected that this ‘time’ will be acquired initially through courses during the Ph.D. program, but there is a challenge in it: there is evidence that Ph.D. courses in methodology are much more focused in some approaches than others (Basu, 2012). Being said that, I would like to bring in this sub-section one main critic: accounting researchers lack in preparation to conduct interviews (condition in which I include myself).

As Chapman (2012, p. 830) has already argued, the ‘methodological prevalence’ turns out to be a great barrier when we are aiming for more research diversity (which, according to the author, is an urgent need in accounting academia): the study of methodology needs to become the foundation in Ph.D. training, to make researchers able to develop their own forms of research, evaluate new methodological techniques and reinterpret past research findings. Furthermore, Moser (2012, p. 846) has indicated an accounting research stagnation regarding published topics and chosen methods – about the latter, accounting research has the archival method as the most prevalent one, followed (at a distance) by experimental studies.

Basu (2012) has described that situation: in trying to become a “. . . more scientific discipline” (p. 853), a quantitative focus has risen through the years, as Accounting academia was continuously receiving funding that would incentivize a more statistical/mathematical approach. Also, a correlation was found between the increase in the incentives to use the quantitative approach and the decrease in innovation in accounting research. It is also interesting to notice that, although the focus on academic research should be on the research question choice - which, consequently, will lead to decisions about research design and method (Bryman, 2007, p. 6), if the Ph.D. curriculum is more focused on quantitative methods, the question will be biased towards that direction (i.e., a research question that can be answered using quantitative methods).

Assessing the Ph.D. in Accounting curriculum from the University of São Paulo, we can get a glance about the previously described situation. There are six courses on research methods: two are mandatory (‘Research Methods in Accounting’ - with a broader view

about research methods - and ‘Quantitative Methods in Accounting’) and four electives, but just one on Qualitative Methods in a deeper sense (‘Multivariate Modelling Data’, ‘Time Series Analysis’, ‘Panel Data and Hierarchical Linear Models’ and ‘Qualitative Methods in Accounting Research’) (PPGCC, 2017a; PPGCC, 2017b). It could be interesting to investigate how this quantitative orientation impacts the identification of Ph.D. dissertation research questions and methodological choice.

Next, I address some challenges and tips about the interview process of this research, aiming to help future researchers in similar conditions as I found myself when I was interviewing:

(a) *Invitation*: It was much easier to receive a ‘yes’ from invited participants if previous interviewees were asked to suggest other potential participants (who were copied to the e-mail message that we have sent). Another crucial point is that I was transparent at the invitation message when describing how long the interview would take (i.e., about one hour) and the topic of discussion - but not in a way to state the research goal for the potential participants, as it could influence their views about the theme.

(b) *Setting*: the interviews settings were diverse (such as coffee shops and empty classrooms) since we were relying on the interviewee availability to schedule the session. To encourage interview acceptance, I would always go to the participant’s preferable venue at his/her indicated time, being the most common place the interviewee’s workplace (generally in a separate meeting room).

The only requisitions that I would do to the subject when s/he would indicate a meeting point was to choose a calm place that could guarantee a free space on the table to move the Q-samples cards during the Q-sorting process.

Nevertheless, I do not recommend doing interviews at the exactly same place that the interviewee works (i.e., his/her own office). As Bleger (2003) points out, there is a need for the subject be in a certain discomfort position to make him/her be able to meditate with criticism about his/her decision-making path (which may not occur if the subject is in his/her ‘environmental comfort zone’). In addition to that, when the participant is in him/her office, the interviewer becomes the ‘strange element’ into the setting, what can arise an unconscious ‘competition’ environment (Bleger, 2003), such as the situation described on the next item.

(c) *Rapport*: I considered this process one of the most delicate procedures during the interview. Tickle-Degnen and Rosenthal (1990) define rapport as

“. . . the result of a combination of qualities that emerge from each individual during interaction The interaction itself during the experience of rapport becomes an entity not easily divisible into characteristics that each party brings to the interaction” (p. 286).

Qualitative interviews generally have an asymmetrical characteristic in a rapport process since there is (i) an interviewer who guides the interview topic through questions, and (ii) the interviewee is the *exclusive responsible* for exploring the topics that the interviewer has brought up by the questions asked (Roulston, 2016). Therefore, it is very important to make the interviewee feel comfortable to express opinions and describe their use of information in a prospective investment decision making setting. Fontana and Frey (2000, p. 650) define it as a ‘balanced rapport’: the interviewer must be, at the same time, casual and friendly, but also directive and impersonal.

Also, it is important to give feedback signs to the interviewee that you are listening and paying attention to what it is being said (working as a reward to the subject’s participation), but in a way that his/her responses are not evaluated (i.e., ‘interested listening’ - Converse & Schuman, 1974; Coan Jr., 1984). Here, I have maintained eye contact with the subject (the best I could, since I had to take notes sometimes), nodded my head in certain moments, kept an upright posture while seated and picked a chair right in front of the interviewee, but with the table space in between us (this was also to make it easier for me to follow the Q-sorting process and ask questions about it).

To introduce the interview session with the line “there are no right or wrong answers” was a way that I found effective to tranquilize the subject and make her/him feel comfortable before starting the interview/Q-sorting activity. Also, I would close the interview with the same ‘opening line’, but including an opportunity to the subject to ask us questions about (i) any doubts that s/he had during the interview, (ii) doubts about the interview process itself (which includes the Q methodology), (iii) complement any arguments that s/he had brought into the interview and (iv) any feedback comments that s/he would like to give to the interviewer.

Although a semi-structured interview tries to standardize some aspects of the interview session (such as questions and interview setting), interviewers must be aware of the social interaction context that interviews take place. Such interaction influences the interview itself and, thereby, the interviewee responses, so the interviewer must be attentive to make

some adjusts on the interview script from unanticipated developments (Fontana & Frey, 2000).

As an example, participants sometimes would try to ‘bring me inside’ the interview (i.e., influence the rapport process to include my participation like an ‘interviewee’), as I would notice that the interviewee was trying to seek my opinion on certain topic by making reverse questions to me (such as “and what is your opinion, Bianca?”). At this delicate point, I would ask the same question back to the subject, asking her/him her/his opinion, and not saying mine. My answer could bias the interviewee in a sense to her/him start trying to answer the questions as s/he thought it would be the ‘best’ answers for the researcher (Roulston, 2016).

It also has happened a certain challenge situation by the interviewees in two different situations, but both with very similar characteristics: the interviewees started to question the validity of the Q-samples and the control questions. The common point between these interviews was the setting: both sessions were done in the interviewees’ office (and, as I said before, it can interfere at the rapport process). It is important to say that both interviews were invalidated and not considered in the data analysis.

(d) *Asking questions and ‘following up’*: I would always seek to connect previous arguments said by the interviewee when starting a new question through summarizing or paraphrasing. In this manner, I was trying to make it easier to the participant remembering his/her argument back on the interview. Besides giving to the participant a sense that I was paying attention to her/his speech, it was also the way that I had found to help me to connect interviewee’s arguments and consolidate memories for myself.

A tip in asking questions (mainly those which will be not in the interview script) is to be careful not to induce the interviewee’s answer: although summarizing and paraphrasing were well received by participants, I noticed this could influence their talk (Roulston et al., 2003; Roulston, 2016). To reduce this risk, I would rather make summaries when I was closing a topic of discussion, just to make sure that I had understood the interviewee’s reasoning (s/he was asked to agree or disagree with my attempt to summarize that specific part of the conversation) than to make the summary at the begin of a new phase.

When I started interviewing the participants, I was very worried to have issues on accomplishing the research goal that we have established, something Roulston et al. (2003) have described as being common. I have noted that having a script as a baseline in interview sessions has helped me to maintain focus during the interview and increase my confidence as a researcher in the field.

(e) *Notes during the interview*: I have noticed that the more I took notes during an interview (as an attempt to memorize as much information as I could), the less the interviewee would talk. So, if I noticed that behavior during the interview, I would reduce the number of notes and would write down just some words or sentences that I had perceived at the moment as significant for posterior analysis. I had also stopped recording the sessions for the same reason; so, to remember the content of the interview, I would make a brief report (about one page) after the session including a description of (i) what had happened, (ii) how I thought the interviewee had felt and (iii) how I had felt during the interview³⁰.

(f) *Be careful with 'countertransference'*: as previously said, the rapport process in the interview setting has an asymmetric characteristic due to the relation between interviewer and interviewee. The latter is expected to share his/her perceptions as long as the interviewer asks questions and, through this sharing process, 'transference' can happen. Freud (1912) describes it in psycho-analytic treatment, and it can be defined as an "... unconscious redirection of feeling" (Prasko et al., 2010, p. 189) from patient to psychoanalyst.

A one-hour interview session could not have the same effect of transference as Sigmund Freud has described in his work since there is a need for constant talk and multiple sessions (Racker, 2012, p. 12). However, we can understand 'transference' here as the assumptions that the interviewee has taken about the interviewer due to the intentional opacity and non-disclosure by the interviewer in the rapport process (Reidbord, 2010). Considering the interview setting, we could say the transference specifically made by the participants was the interviewer opinion for each question. This process is universal and can also occur to the 'other side' of the conversation (Reidbord, 2010); in other words, when the interviewer 'transfers' to the interviewee – i.e., 'countertransference'.

The problem I had with countertransference was transferring an opinion about my Q-samples from one subject to subsequent interviews. Here, I describe what has happened: before I started interviewing, I was worried about the number of cards that I had on my Q-sample and if the Q-sorting would be tiresome to the participants. Although it was not a concern on pre-test (as the participant did not feel overwhelmed by reading the Q-samples and by the Q-sorting activity), this preoccupation was still on the back of my mind.

³⁰ Items (ii) and (iii) elicit part of the constructed rapport (Tickle-Degnen & Rosenthal, 1990).

It all went well in the first week of interviews (there were 5 of them), and none has related any trouble with the number of cards. In the following week, the first scheduled participant started the interview saying that there were just too many cards and I should adjust it for the next sessions. My worries were ‘materialized’, and I made a mental note to try to identify if other subjects would feel the same from then on. And so they did: all remaining interviewees from that week reported that there were lots of cards, but not with a tone of criticism: they were only alleging a perceived fact for them. They have not interrupted the interview whatsoever nor have failed to complete the Q-sorting process. I thought it was very curious since I had a previous week without any complaints about the Q-samples quantity. By the end of that week, I had a meeting with Altay (my co-advisor) and reported the problem to him. He explained to me about countertransference and, after the origin and reason of it were identified, I planned to be more ‘present’ in the subsequent interview sections and ‘leave behind’ previous interviews during each session.

I consider countertransference an extremely critical issue to be aware of when interviewing. It can induce the generation of data since you can influence indirectly your interviewee by saying things that you expect him/her to give evidence about, in line with research hypotheses.

Finally, I would like to conclude this section by saying that the interview process was very rich for me. I could not anticipate how much I would enjoy going to the field and talking to each participant. Each interview session was unique, and I have learned a lot from all planning steps necessary to conduct Q methodology until the very last interviewee. I am confident to say that I do share the same feeling as Horton et al. (2008)³¹ have described: interviews have allowed me to explore ‘beneath the numbers’ (p. 344) and to obtain data about points of views that I could not acquire through an experiment. I have the feeling that it was also a rich experience for interviewees, as I have received feedback from them saying that the interview process has helped them to clarify their investment judgment process (as they were put in a situation of reflexive and critical thinking).

³¹ Also, I would like to suggest the reading of that chapter if you are interested in doing interviews in accounting research.

3.2 *The quantitative approach: the experiment*

Due to the complexity that investing in capital markets presents to individuals when they are faced with an investment decision making process, it is recommended to use the experimental approach (Loewenstein et al., 2014). As argued on the introductory section of the present Chapter, an experimental procedure, using the baseline obtained through Q methodology interviews, seems appropriate for investigating our research question. An important feature of an experiment is that it allows us to manipulate conditions and isolate confounding factors in order to identify causal effects (Libby & Luft as cited by Libby, Bloomfield and Nelson, 2002, p. 778; Shadish, Cook, & Campbell, 2002).

Kachelmeier and King (2002) have pointed out that experimental studies are responding to the call for *ex ante* policy-directed research, aiming to investigate differences between decisions under existing practices and plausible alternative accounting policies in a controlled setting. One of the two strategies of experimental studies pointed out by these authors is the ‘behavioral judgment and decision-making research’, which “. . . generally elicits the hypothetical questionnaire-based judgments of experimental participants in a single-person setting using realistic case materials” (p. 221). That is the case for our research.

To investigate the hypotheses enunciated in Chapter 1, the experimental approach will consist of a 2X2 design (two presentation formats varying with two financial performances). As we explain in more detail in section 3.2.1, this design has been chosen aiming to simplify as much as possible the capital market information environment considered in an investment decision-making context. Experiments should be fairly simple, making it possible to visualize how (and if) a variation in an independent variable causes a variation in the dependent variable. If the research design of an experiment is too complex, other factors besides the independent variable may influence the results, which can undermine the identification of causal effects.

The experiment developed in our study presents a basic design (Shadish et al., 2002, p. 257): (1) there is a ‘treatment’ and a ‘control condition, (2) subjects are allocated to conditions by random assignment, and (3) a posttest assessment of units is applied after subjects’ exposure to the experiment conditions to validate obtained responses. It is important to say that each participant has been exposed to only one of the available conditions, characterizing this design as ‘between-subject’.

In the next sections, we explain in more detail the experimental design (including internal and external validity discussion), protocols, participants' sample, data collection, and analysis.

3.2.1 Experimental design, internal and external validities

Based on interview responses from Q methodology for professional investors/analysts (see section 4.1.2.1, Table 16) and previous literature on information overload, accounting information presentation formats and narrative reporting, we have developed an experimental design to test the hypotheses enunciated in Chapter 2.

To do so, we have chosen to follow an experimental factorial design. As Trochim and Donnelly (2008) have defined, factorial designs enable researchers to examine which features (or combination of features) of treatment have an effect, which turns out to be an efficient experiment design to capture the construct of interest. To check for accounting information acquisition through memory retrieval (our proxy for relevance perception), we have manipulated the presentation format for accounting information disclosure in two ways: (a) traditional (i.e., 'tabular') presentation and (b) alternative (i.e., narrative) presentation.

Also, we have included two financial performances for each presentation format (superior performance *versus* financial distress situation – Harris, Hobson, & Jackson, 2016). Each subject has seen just one condition, which characterizes the experiment as a 2X2 between-subject design (Smith, 2011).

In both presentation format conditions, we have followed the information sequence found on IP interviews for the fourth quartile (top 6 ranked statements on Component 1 – see Table 16 on section 4.1.2.1):

- (1) Information about the business model that the company follows (statement 37);
- (2) Information about the company's business sector (statement 21);
- (3) Measures for operational cash flow generation (statements 28 and 38) – Statement of cash flows and EBITDA;
- (4) Information about the company's market value (statement 13) – Balance Sheet and market capitalization;
- (5) Measures for profitability (statement 41) – Income statement and ROE;
- (6) Other relevant KPIs.

It is important to say that items (1) and (2) are presented in the narrative format for both conditions since it is also the usual format that this type of information is released. For items (3) to (5), the presentation format differed between conditions, as in the traditional/tabular format, we have presented summarized financial statements with simplified notes; KPIs were presented after financial statements. We have presented the manipulations on presentation formats varying on financial performance on Appendixes R and S.

On the other hand, considering the narrative format, information contained on items (3) to (6) was connected textually/‘linked’ in a manner that it could be possible to ‘reassemble’ the total amounts of the cash flow statement, the income statement and the balance sheet. ‘Linked’ in this context means that we have used the linkage strategy concept of ‘signposting’ from the strategic report, considering that KPIs are not a legal requirement from the Brazilian Law to be disclosed inside financial statements content, standing on the definition of ‘complementary information’³².

Also, our intention with the narrative presentation format was to increase individual investors’ information processing by connecting accounting information to ‘tell the story’ of the company for the period reported (in an equivalent manner that accounting and finance textbooks do to explain financial statements analysis – Palepu & Healy, 2008; Martins et al., 2012), which may reduce the working memory load and follows the tendency of information interconnectivity within current financial reports initiatives (IIRC, 2013; FRC, 2014).

We argue that the traditional presentation format of ‘tables and financial notes’ for accounting information may increase information overload due to limited attention (represented by an increase in working memory load) to individual investors since they must identify which information cues are relevant and establish connections between cues by themselves, which is a complex and time-consuming task.

Using Elliott et al. (2008) definitions, we have used ‘unfiltered’ information (i.e., information that has its source from the company itself) to build informational pieces for the experiment (apart from ‘news from media’). We have chosen to not include ‘filtered’ information (more specifically, the reports from brokerage firms and sell-side analysts)

³² The Brazilian Guidance Committee for Information Disclosure to the Market (CODIM, acronym in Brazilian Portuguese) has issued an orientation for public companies about minimum content of annual reports which includes the disclosure of KPIs (CODIM, 2012). Nevertheless, this document does not have any law enforcements and serve as a voluntary guidance of information disclosure.

in this design because we have the main objective to see the presentation format impact on investment decision making. In this sense, there is previous evidence in the literature (e.g., Church & Ely, 2006) which indicates that, when considering limited attention, investors may seek only for the specialist/intermediary source of information and neglect the ‘original’ source (i.e., the financial statements). As we were aware of this possible effect, we have excluded this kind of reports to ‘force’ subjects to use unfiltered information and to try to capture the presentation effect on investment propensity (i.e., increasing internal validity).

We understand that this design choice impacts on the external validity of the experiment as investors use a mix of ‘unfiltered’ and ‘filtered’ information in an investment decision making context (Hodge & Pronk, 2006; Elliott et al., 2008; Pennington & Kelton, 2016), but including a ‘filtered’ information source would make the experiment design more complex and, thereafter, it could diminish (or even null) the effects from presentation format effect on our variables of interest.

Our information baseline for accounting information content was taken from Ambev S/A’s 2017 financial statements (fiscal year: 2016) (Ambev, 2017) since it was the first Brazilian company to apply the materiality concept discussed on OCPC 07 to their financial statements. This reduces our judgment impact about the perception of materiality for Ambev, as the first attempt of information reduction has been previously audited by a Big Four auditing company.

We have adjusted all accounting information in a way that participants could not identify Ambev by its financial performance and, thereafter, make our experimental results varying due to subjects’ company recognition. Regarding the financial distress condition, we have adjusted accounting numbers downwards from the good financial performance baseline, in a way to simulate a bad financial performance (such as increasing current liabilities, decreasing current assets and shareholders’ equity). As

Regarding the narrative report, the benchmark we have used was from the English brewery Fuller’s Brewery, since it is a publicly listed company (on London Stock Exchange - LSE) also from the beverage sector (Bloomberg, 2018). Although its business model is slightly different from Ambev’s due to the English culture of pubs³³, we understand it does not have a major impact on our evaluation. We have used the financial review section from Fuller’s Brewery’s strategic report (Fuller’s Brewery, 2017) as a

³³ Besides brewing and commercializing beverages, Fuller’s Brewery also operates pubs and hotels.

starting point to elaborate our treatment condition, adapting all necessary content to fit better into Ambev's business model and materiality perception.

It is important to say that we have verified if Ambev had presented a report that resembles the strategic report on its 2017 Sustainability Report, but, comparing with Fuller's strategic report, we considered the content from Ambev's too broad, lacking linkages between other financial measures. Although the directors' report from Ambev presents a financial performance section similar in some manners to Fuller's financial review (even if the amount of information in Ambev's report was higher), this report in Brazil is not audited³⁴, so we preferred to use Fuller's financial review as the alternative presentation format guidance.

The additional information related to environmental aspects were based on Ambev's annual report, but they were also transformed to reduce the risk of company identification by the subjects. News from media were adapted from a search on Google News for headlines older than 1 year ago; past market data from Ambev's were taken from UOLInvest and ADVFN websites through ticket search 'ABEV3' (ADVFN, 2018; UOL Economia, 2018) and adapted to be consistent with the experiment's financial performance manipulations. Also, a crucial delimitation on our experiment is that we are specifically analyzing financial information linkage - we are not considering integrated reporting capitals nor CSR measures on linkage strategies (such as Bucaro et al., 2017). Although we have released environmental measures in our experimental design, we have done it by segregating it on another screen.

A critical issue addressed when we were adapting Ambev's, and Fuller's Brewery's accounting information was to disclose their specific business sector as a broader one that would present similar capital structures compared to the beverage sector (food industry). As Ambev has a relevant participation on the Brazilian economy (for instance, it composed 6.86% of the Bovespa index (Ibovespa) for the January 19th, 2018 theoretical portfolio; B3, 2018), specifying the hypothetical company was from the beverage sector could increase the likelihood that participants would guess the company name and, thereafter, bias our results towards their perception of the company through mechanisms such as motivated attention (Loewenstein et al., 2014), and potential effects from presentation format on information relevance perception and working memory load would be unidentifiable.

³⁴ In the case of directors' report, Ambev's auditors have checked only for information distortions in financial statements (Ambev, 2017, p. 18).

Here, a limitation of our experiment arises: in our research design, we have not considered complexity differences between business and accounting models (such as between utilities and insurance firms). As a starting point, we have understood that a primary study on a simpler information model was necessary to understand the differences of presentation on traditional versus narrative formats on individual investors' decision-making, and the increment of complexities could be done in a later moment.

All information from financial statements, KPIs and environmental were clearly stated as 'audited' (Hodge, 2001), except for 'news from media' due to its informational nature. Also, it is important to say that news from media was considered as 'neutral' by both accounting experts when validating information cues for the experiment, attesting they should not impact the company's fundamental value projection.

Concerning time periods of analysis, we have chosen not to identify any specific year (e.g., X1 and X0 instead of 2017 and 2016) in the financial statements/narrative reporting as we are currently in a financial crisis cycle in Brazil, which could bias the participants' responses besides the information presentation format and financial distress perception.

Concerning the experimental task, we have asked for participants to play a role as prospective investors (Harris et al., 2016) of a hypothetical company called 'XYZ Inc.'. They had received a heritage (Elliott, Jackson, Peecher, & White, 2014) of R\$ 50,000 (approximately US\$ 15,000) and they started looking for alternatives to invest their 'unexpected' cash in a way to diversify their investment portfolio. As they were searching for investment opportunities, they came across with XYZ's shares information, and they have thought about investing in it. However, first, they needed to look after more information before taking any investment decision.

After checking for accounting information and other informational sources (environmental, news from media and past market data), subjects were asked to answer two questions about their investment propensity on XYZ's shares versus Brazilian Treasury Bonds; both were scalar, but one varied from 0 to 1, and the other asked how much money (from R\$0.00 to R\$ 50,000.00) the subject would allocate on XYZ's shares. To measure information relevance perception, we have asked participants to write down all information they would remember that they considered as important to them to make the investment decision, but this question was made after a distracter task (i.e., Stroop test, see section 3.2.2) to mitigate bias from different working memory capacities between subjects (Kelton & Pennington, 2012).

We aim to identify the investment propensity varying more clearly (i.e., having a statistically significant difference) in the financial distress situation where a narrative report is disclosed, since participants will acquire financial information using a lower working memory load (diminishing information overload) and will not be ‘distracted’ by the plain disclosures of other information sources (see Figure 19). Also, we predict that the amount of accounting information retrieved from memory may increase in the narrative format, which may reflect an increase in the perception of relevance of the accounting information by participants.

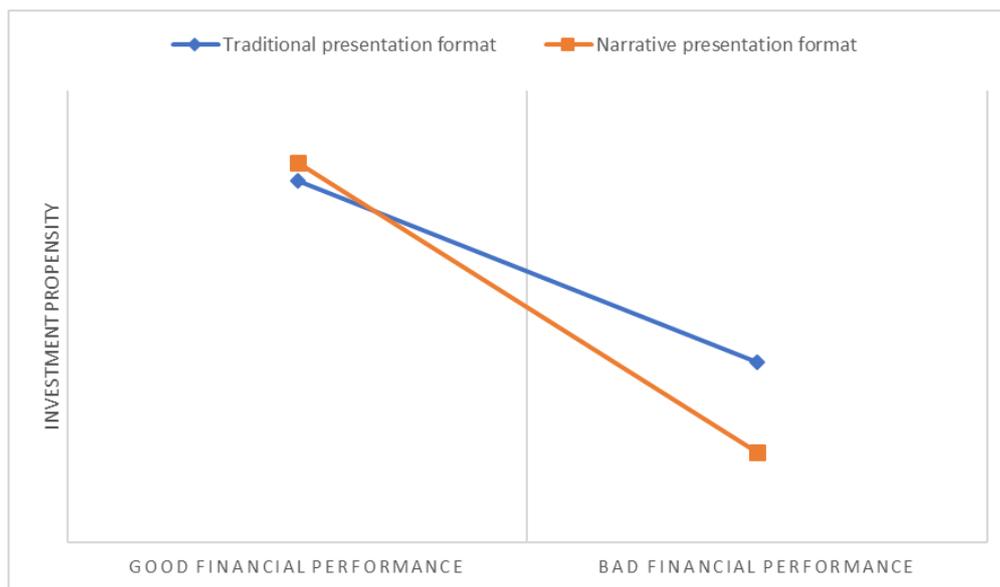


Figure 19. Expected effects of presentation format on investment propensity (varying with financial performance).

We have explored experimental task complexity considering the aspect of ‘component complexity’ described in Wood (1986). We have maintained constant between conditions (a) the amount of information available and (b) the task that participants should perform when evaluating the company’s disclosures, as our objective with the experiments’ phase was to understand how presentation format has played a role on relevance perception of accounting information (and its incorporation into the decision-making process). Therefore, we have considered information overload as a premise, since we are dealing with an information quantity on higher levels than previous studies on information overload have worked with (Chewning & Harrell, 1990; Tuttle & Burtle, 2006). Nevertheless, the varying aspect between individuals was the interest about the information pieces itself, since participants could choose if they would like to see a specific information cue from an informational group or not. In this manner, each

participant had access to other information besides the accounting one, but they could choose if they would like to read it or not (and, therefore, increase/decrease the use of her/his working load memory).

As covariates for participants' idiosyncrasies, we have asked subjects for information about their undergraduate course, age, gender, education level (i.e., if they had completed their bachelor's degree or are on a graduate program), income level, level of perceived mental effort dispended on the task, previous experience with investing in capital markets, risk preference, levels of somnolence, tiredness and task enjoyment. For control variables' measures, please see Figure 20 below.

Variable	Description
<i>Age</i>	Open question measured in complete years.
<i>Undergraduate course</i>	Multiple choice question with alternatives for Accounting, Business or Economics courses. If not explicit, we have also included an open question as 'other'.
<i>Graduate course</i>	Multiple choice question with alternatives for Master's or PhD levels.
<i>Graduate course - field of study</i>	Multiple choice question with alternatives for Accounting, Business or Economics courses. If not explicit, we have also included an open question as 'other'.
<i>Previous investment experience (in years)</i>	How many years of investment in capital market the participant has.
<i>Risk taking level</i>	Multiple choice question, with five investment alternatives considering average, maximum and minimum returns.
<i>Gender</i>	Multiple choice question with alternatives for male, female and other.
<i>Income level</i>	Multiple choice question with six income levels attached to the Brazilian minimum wage (from an income lower than R\$ 937.00 to an income higher than R\$ 14,055.00).
<i>Level of mental effort</i>	Continuous variable with grade going from 0 to 10.
<i>Level of somnolence</i>	Continuous variable with grade going from 0 to 10.
<i>Level of task enjoyment</i>	Continuous variable with grade going from 0 to 10.
<i>Level of tiredness</i>	Continuous variable with grade going from 0 to 10.

Figure 20. Control variables' measures.

We present the predictive validity framework for the experiment's internal validity (Libby, Bloomfield, & Nelson, 2002, p. 795) in Figure 21.

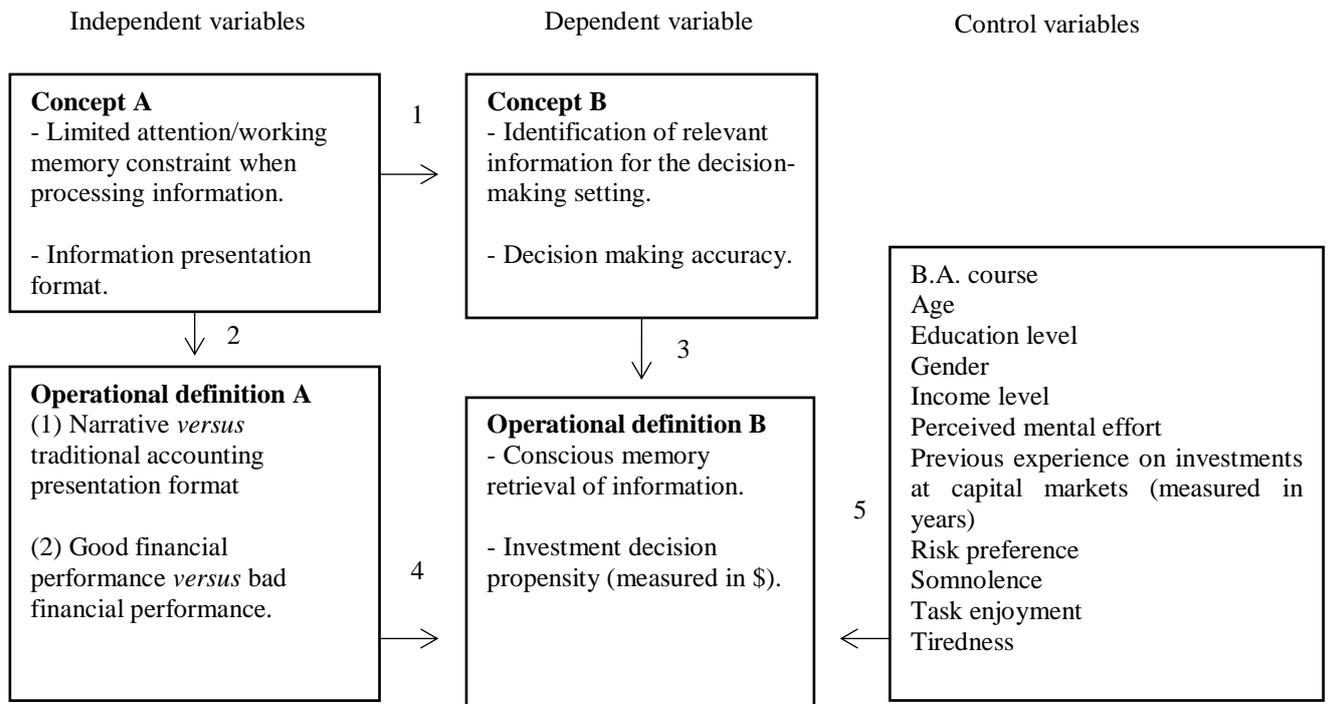


Figure 21. Predictive validity framework (adapted from Libby et al., 2002, p. 795).

Concerning external validity, we have employed the following strategies to improve the realism of the experimental setting: (a) incentive to participants in the form of a gift-card (raffled between all participants), (b) dependent variable questions related to money decision and (c) questionnaire available via website on internet (as individual investors generally use ‘home brokers’ to trade their stocks).

As mentioned above, we have included as an incentive to stimulate potential subjects’ participation the raffle of a R\$ 200,00 gift-card from *Livraria Cultura*. Eligible participants on the raffle were the ones who had completed all experimental phases and had reached the ‘Thank you’ final screen (we have included this eligibility condition at the Term of Consent and Screen 3). Regarding Tuttle et al. (1999) results of monetary incentives on cue usage, we understand that this incentive has not impacted in a significant manner our memory recovery results since it is a non-monetary incentive which evokes altruistic behavior (Heyman & Ariely, 2004), i.e., stimulate subjects to participate on the research, and the incentive is not conditioned to their performance in the task.

3.2.2 Pre-test, protocols and screens’ content

We have pre-tested the experiments' design and content in two main phases, being the first one to check for adequacy of information content. To do so, we have asked for two accounting experts to validate accounting information formats and financial performance variations, in order to identify if both experimental conditions had the same amount of information when comparing different formats of presentation and financial performance, if the financial distress condition was easily identifiable and if the information cues were not redundant within and between screens.

Following the experts' validation, we moved to the pre-test second phase, when we administered the final experiment version to four undergraduate students and two graduate students, to seek for improvements in language (i.e., if it had clear questions), feedback on the level of complexity of the task/information disclosed, identification of financial distress, design of screens and total time needed to complete all experimental screens.

Pre-test participants have completed the experiment within 10 minutes, and all of them have confirmed that the language was clear, and that the task complexity level was adequate. One subject asked to include a mark on moving bars questions to facilitate identification of the scale mid-point, which we have adjusted before running the experiment.

Before starting data collection, we obtained authorization for data collection from the FEA/USP Director (who has read the research proposal and has authorized us to collect the data), as the School did not have a specific Committee on Research Ethics at the time. Concerning the participants, all subjects have filled out a 'Term of Consent', which has explained to respondents the risks involved in their participation and has made clear that they were free to abandon the experiment at any moment if they so wished.

The experiment administration was done via the SurveyMonkey® online platform, meaning that all information has been made available through a computer screen, and individuals were reached by e-mail. We understand that it was not strictly necessary to ask the subjects to be in a controlled environment, as the task was simple and random assignment would mitigate potential bias that could emerge from intervening environmental factors. There are some previous accounting studies which have used online platforms to run experiments, and their results were satisfactory - see Bucaro et al. (2017) as an example.

The experiment's protocol is detailed in Figure 22.

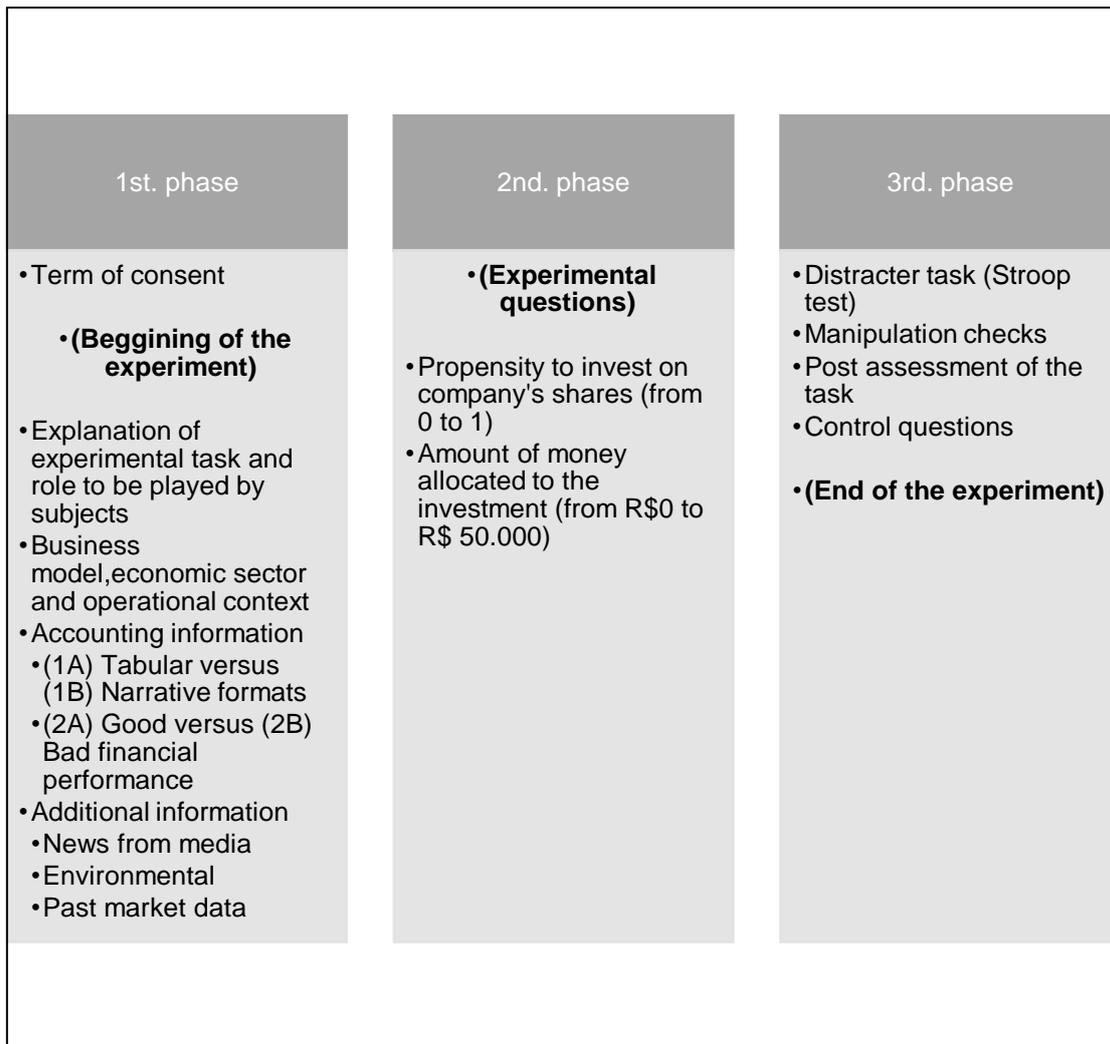


Figure 22. Experimental protocol.

To allocate subjects between conditions to mitigate selection bias, we have chosen to do the strict randomized attribution to force equal amounts of responses for all four experimental conditions (as our sample is lower than 200 participants) (Shadish et al., 2002). The SurveyMonkey® license we have used did not have an advanced randomization attribution, so we have done it by doing a multiple-choice question in which months names were randomly grouped, and subjects were asked to select the option in which their birth month was included. Previous studies have used birth months as exogenous information, such as Acemoglu and Angrist (1999), and Angrist and Krueger (1991).

As we can see in the 1st phase protocol (Figure 22), accounting information was always presented first, as we had to make sure that every participant would have contact with it in order to assess the impact of accounting presentation format on investment propensity.

Then, participants would see past market data information, news from media and environmental information (the last two in a random sequence) until the experimental questions screen was made available. We understand that this design choice does not significantly bias the experiment responses since it will be the first information to be presented to participants in a greater amount (when compared to other available information sources), so memory retrieval of accounting information will only happen if the subject has perceived it as relevant to her/his decision-making process.

We are aware that the first information presented on the experiment screen will be visualized more carefully by participants, and they might anchor on it to make their decision (Tversky & Kahneman, 1974), but we had to make sure that every participant would have contact with the accounting information cues. As we have previously identified through interviews, individual investors do not have a predilection towards the use of accounting information as analysts/professional investors do. Therefore, we have chosen to force participants to read financial statements/narrative report in order to increase our chances to capture effects on investment propensity when comparing the traditional accounting presentation format *versus* the narrative presentation format.

As seen in Figure 23 below, subjects could only go 'forward' when navigating on the experimental setting. Thus, they could view information screens only once and could not change their answers once they had submitted it.

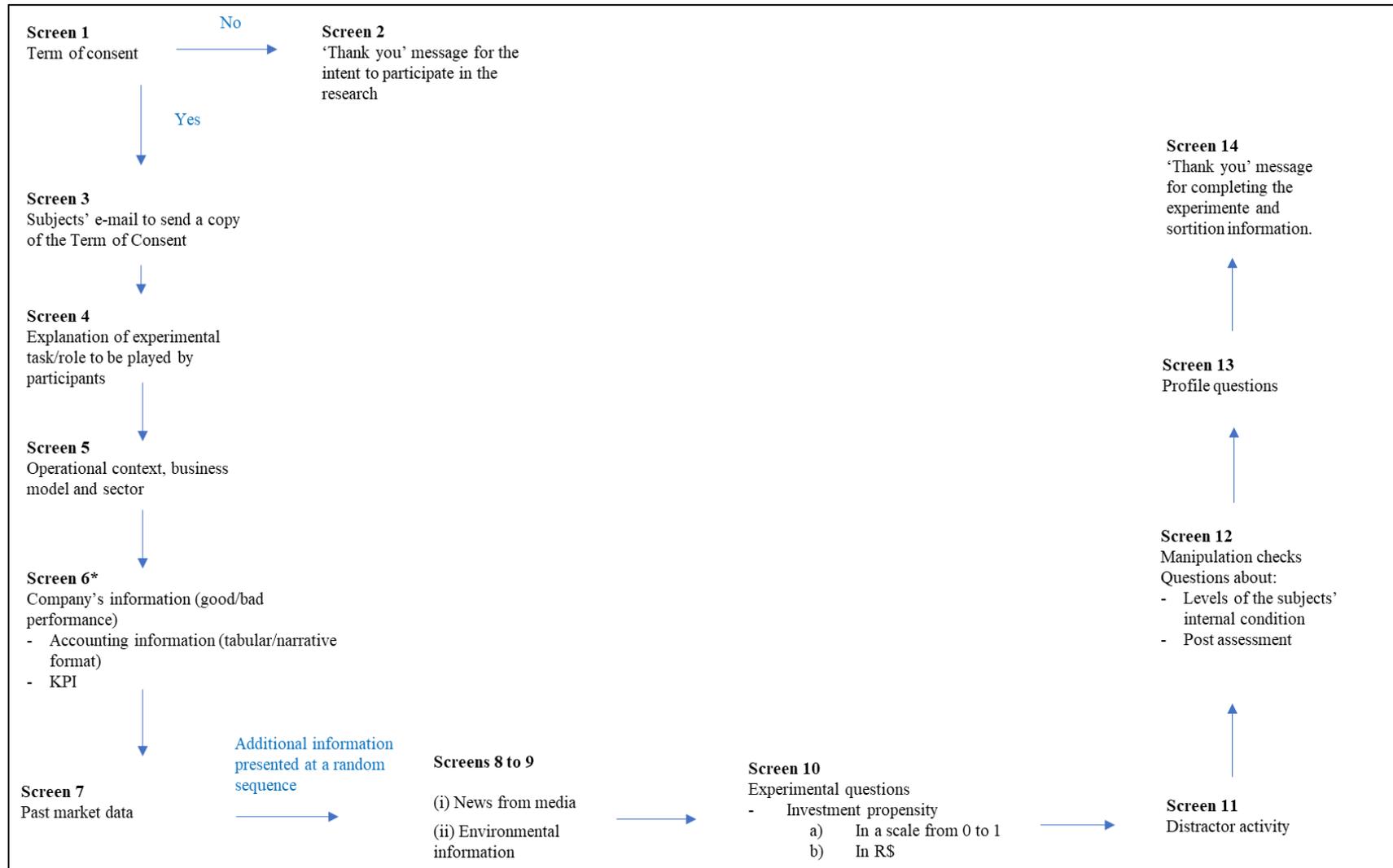


Figure 23. Sequence for experimental screens.

Regarding experimental screens design, they are presented on Appendix P. We have detailed the content for each screen below.

Screen 1 (Term of Consent)

The content of the first screen was as follows:

- (1) Term of Consent, including a brief presentation of the research and researchers' e-mail addresses;
- (2) A 'Yes/No' question to indicate agreement to the 'Term of Consent';
- (3) Valid e-mail identification, stating clearly that (a) it would be used just for internal research control and no personal information would be disclosed in research results, (b) researchers would use the e-mail addresses to send a copy of the Term of Consent and research results, and (c) the e-mail identification was necessary to include the subject's participation in the raffle (also to communicate the winner).

If the subject has agreed to participate, the experiment would go forward to Screen 3. If s/he has answered 'No', Screen 2 was next.

Screen 2 ('Thank you' note)

A 'thank you' note would appear, including the researchers' e-mail addresses for later contact if the potential participant would like to do so.

Screen 3 (contact to receive copies of the Term of Consent and the research)

Here, subjects would insert a valid e-mail address to receive a copy of the Term of Consent (mandatory) and a copy of the research (optional).

Screen 4 (Experiments' instructions and task to be performed)

The fourth screen presented instructions to the experiment, the task description and the role expected by participants (prospective investors):

- (1) 'You have just received a R\$ 50.000,00 heritage (Elliott, Jackson, Peecher, & White, 2014) from a distant relative. As an investor, you are studying the best options to allocate this resource considering your diversified investment portfolio, and shares of XYZ company have called your attention as a prospective investment. You do not own any shares from XYZ in your portfolio and, to decide whether you want to invest on XYZ or not, you search for more information about the company.

On the next screens, you will have access to some quantitative and qualitative information about XYZ company. We gently ask you to read all the information you consider relevant to make this investment decision.

After seeing the available information at your disposal, you will be asked to decide if you would buy XYZ shares and how much money you would allocate on it.

Screen 5 (Introductory information about the company)

On screen 5, we have presented the first information pieces identified as the most relevant by IP in the interviews (see section 3.2.1, items 1 and 2): Business model that the company follows and information about the sector/industry. Although not explicitly stated by analysts/professional investors, we have also included a description of the operational context in year X1 as a brief scenario for the company's fiscal year. Considering that this is a mandatory financial statement note, including this description may increase external validity.

Screen 6 (Financial information about the company; experimental manipulations)

The sixth screen has addressed the experimental manipulations of presentation format and financial distress explained previously on section 3.2.1 (also including a note indicating 'audited' information – Hodge, 2001). All information (regarding each experimental condition) was presented in the sequence detailed below:

- a. Traditional/tabular presentation format ('good' or 'bad' financial performance)
 - i. Financial statements (X1 and X0): Cash flow statement, Balance sheet and Income statement.
 - ii. Simplified notes to financial statements.
 - iii. KPIs
- b. Narrative presentation format ('good' or 'bad' financial performance)
 - i. Content from financial statements, financial notes and KPIs linked through narrative format.

Screen 7 to 9 (Additional information)

On screens 7 to 9, we have included additional information from other sources besides financial statements: past market data, environmental and news from media (with content that should not change the fundamental value expectations for the firm). It is important to say that environmental and news from media information on these screens were the same for all four

experimental conditions and they were presented in random order to minimize anchoring effects (Tversky & Kahneman, 1974). Regarding past market data, this information would vary due to the financial distress situation, and we could not randomize its screen sequence order due to limitations of the SurveyMonkey® platform.

To test if accounting information salience in the narrative form would influence the accounting information relevance perception and reduce working memory load, we have selected the intersected information appearing on the first quartile (lowest perceived relevance) and fourth quartile (highest perceived relevance) of simulated Q-sorts for IP (Professional Investors), and II (Individual Investors) (respectively; see Table 17 and Table 23 on sections 4.1.2.1 and 4.1.2.2) to be some of the additional information disclosed.

As PCA components for II has shown more divergence than consensus among individual investors' information choices, we searched for 'common points' between all five components. In this manner, we have included as additional information (a) historical series of returns (average for the last 12 months), (b) historical prices (average for the last 12 months) and (c) average traded volume (in \$). We have also included information perceived as relevant by IP, P/E and market value (in the figure of market capitalization).

Before the additional information screens, we have included a brief instruction to participants stating that reading the content of the next screens was optional (i.e., participants could do it if they were interested). To check if they have read information or not, we have included a 'Yes/No' multiple choice question to the participant indicating whether s/he read the past market data information, news from media and/or environmental at the end of each additional information screen. It was not a mandatory question to be answered before moving to next screens

When reaching the last screen containing additional information, the subject was lead to the experimental questions.

Screen 10 (Experimental questions)

As previously mentioned, participants could not go back to previous screens, so all company's information was no longer available for subjects when they were faced with experimental questions. At this screen, two questions of mandatory answer would appear (with a brief introduction):

“After seeing the information available for XYZ S/A, we ask you to answer the following questions:”

(1) Considering a scale from 0 to 1, being 0 ‘I would not invest on XYZ’ and 1 ‘I would invest in XYZ’, how inclined to invest in XYZ are you? And (2) How much money would you allocate on XYZ shares, considering treasury bonds as the alternative investment?” (scale from R\$ 0.00 to R\$ 50,000.00)

Both questions were scalar as answers were collected through a ‘moving bar’ (see Figure 24 as an example).

* 1. Numa escala de 0 a 1, quão propenso você está para investir nas ações da XYZ?

0 (nada propenso/não investiria na empresa) 1 (muito propenso/investiria na empresa)

Limpar

OK

Figure 24. ‘Moving bar’ to collect answers from experimental questions.

Note: the black ball could move freely towards any scale’s edges, and it was transformed into a number in a later moment by SurveyMonkey® itself.

After answering the experimental questions, the next screen available was the distracter activity.

Screen 11 (Distracter activity)

Right after answering the experimental questions, we have included a distracter activity. It was composed by the Stroop Test (Campanholo et al., 2014) to clear the contents from working memory to minimize individual differences in working memory capacity (Kelton & Pennington., 2012). Individuals were asked to select which color (blue, brown, green and pink) the color word was written on as fast as they could. An example is shown in Figure 25 below.

GREEN

() Blue

() Brown

() Green

(X) Pink (right answer)

Figure 25. Example of a Stroop Test question.

Individuals have seen 12 questions randomly ordered for this test, with no word matching their respective color (i.e., there was no ‘blue’ word written in blue color). The estimated time to conclude the distracter task was five seconds per word, totaling one minute.

Screen 12 (Manipulation checks, control questions (i) and task post assessment)

After the distracter activity, we have included three manipulation checks to validate individual responses (i.e., if individuals were paying attention to the experimental task): (1) ‘Have you invested on XYZ’s shares?’, (2) ‘The company was presenting a good financial performance or bad financial performance?’ and (3) ‘Have you seen: financial statements with footnotes/narrative text?’

Also, we have included one question to capture relevance perception of disclosed information and work memory load represented by conscious memory retrieval (‘Which information available for XYZ were relevant to you to make your investment decision? Please list all information that you remember, and you perceive as relevant in your decision’) and three questions (answers going from 0 to 1) to check the level of subjects’ internal condition concerning tiredness, sleepiness and mental effort. Finally, the task post assessment question asked about the subjects’ level of task enjoyment (answers going from 0 to 1).

Screen 13 (Control questions (ii))

Profile questions asking about participants’:

- (1) Age (in complete years);
- (2) Previous experience with capital market investment (‘yes/no’, how many years);
- (3) Undergraduate course;
- (4) Graduate course (MBA, Master’s, Ph.D.);
- (5) Starting year;
- (6) Gender;
- (7) Income level;
- (8) Risk preference.

Screen 14 (Final screen)

The last screen had a ‘Thank you’ note to the participants, instructions about the raffle communication and e-mail address from the researcher in case subjects would like to ask questions or give suggestions/feedbacks about the experiment. Also, we have requested a valid e-mail address to stay in touch with participants regarding the result of the raffle.

After screen 13, the experiment was finished, and the subjects would have concluded their participation.

3.2.3 Participants

We have collected data from graduate (Elliott et al., 2002; Elliot, Hodge, Kennedy, & Pronk, 2007; Hodge, 2001) and undergraduate students as proxies for individual investors representing distinct levels of expertise. We have focused on subjects that are enrolled on Accounting, Business and Economics fields and that have completed, at least, one Accounting or Financial Statements' Analysis course (from the second year and beyond). Subjects were reached through the School's mailing list available upon request, and data collection has happened during the period from February 2nd to February 8th, 2018. We have obtained a total of 147 responses, of which 87 were considered valid after checking for consistency based on manipulation questions (see section 4.2).

Participants have an average age of 29.78 years ($SD=9.00$), approximately 39% have previous capital markets' investment experience (mean=5.22 years, $SD=5.00$), and 67% have identified themselves as males. Regarding education levels, 37.93% and 27.59% are enrolled on/have completed courses on Accounting/Economics (respectively) as their first majors, and 52.87% are enrolled in a graduate course (academic/non-academic). 66.67% of the sample has chosen hypothetical portfolios between low and medium risk levels, 27.59% has an income level from R\$ 2,811.01 to R\$5,622.00, and 28.73% have earnings higher than R\$14,055.00.

For the complete descriptive statistics tables, please see section 4.2.1.

3.2.4. Data analysis

For experimental data analysis, we have chosen to run Ordinary Least Squares (OLS) regressions, aiming to capture cause-effect relations between the dependent and independent variables (Hair Jr. et al., 2006; Rosenblum & van der Laan, 2009).

We have run all descriptive statistics, tests for OLS assumptions, graphs and OLS models on R (version: 3.4.2), and we have used the 'stargazer' package (Hlavac, 2015) when generating OLS outputs.

4. DATA ANALYSIS

4.1 *The interviews*

As pointed out in Chapter 3, we have analyzed our collected data from interviews through (1) descriptive statistics of Q-sorts (to have an initial identification of ranking patterns), (2) Spearman correlation (to trace correlation between participants Q-sorts and (3) PCA Q technique (to identify judgment patterns between subjects). We have analyzed data only from validated interviews, totaling 31 of 35 interviews (13 interviews with analysts/professional investors and 18 with individual investors).

Three interviews with individual investors and one with a professional investor were invalidated. The reasons were: (a) rapport problems: two interviews (II_1 and II_6), as described on section 3.1.6; (b) not enough experience on capital market investment: one interview (II_10), and (c) the interviewee had a technical analysis evaluation approach rather than fundamental analysis approach: one interview (IP_14).

The analyses are presented below.

4.1.1 *Descriptive statistics for Q-sorts*

We have analyzed Q-sorts patterns for analysts/professional investors (IP) versus individual investors (II) to our two Q-samples' dimensions, more specifically, how participants have allocated Q-samples on extremes ranks (i.e., -5/+5 scale points).

When we performed a 'within-group' analysis (i.e., the total amount of available statements for the Q-sample group multiplied by the quantity of IP/II participants) for 'information itself' dimension (Table 6), the statements groups with more classifications on (+5) rank for IP Q-sorts were from Group D (28.2% of Q-samples), Group C (21.15%) and Group E (17.81%) as perceived as the three 'most relevant' information groups in an investment judgement.

On the other hand, II have ranked on the (+5) rank 25% of Q-samples from Group C, followed by Group D (15.74% of statements) and then Group F (14.58%). Although we are initially exploring our data in this section, it is interesting to see the preference of II for 'transformed accounting information (i.e., ratios)' compared to the Q-sort behavior of IP, who have ranked 'pure accounting information' on the third place of most relevant statements.

Table 6. Descriptive statistics of Q-sorts for 'information itself' Q-samples dimension (IP and II).

Q-samples dimension		-5	-4 to -1	0	+1 to +4	+5	N (ranked Q-samples)
A (6 Q-samples)	IP (N)	6 (3.33%)	17 (9.44%)	6 (3.33%)	40 (22.22%)	9 (5.00%)	78
	IP (mean)	0.4615	1.3077	0.4615	3.0769	0.6923	
	IP (SD)	0.6602	1.1094	0.6602	1.8467	1.3775	
	II (N)	8 (7.40%)	21 (19.44%)	17 (15.74%)	57 (52.78%)	5 (4.63%)	108
	II (mean)	0.4444	1.1667	0.9444	3.1667	0.2778	
	II (SD)	0.5113	1.2485	1.2113	1.8550	0.4609	
C (8 Q-samples)	IP (N)	5 (4.81%)	16 (15.39%)	11 (10.58%)	50 (48.07%)	22 (21.15%)	104
	IP (mean)	0.3846	1.2308	0.8462	3.8462	1.6923	
	IP (SD)	0.7679	1.5892	1.2810	2.5115	1.7022	
	II (N)	4 (2.78%)	26 (18.05%)	18 (12.50%)	60 (41.67%)	36 (25.00%)	144
	II (mean)	0.2222	1.4444	1.0000	3.3333	2.0000	
	II (SD)	0.6468	1.3815	1.0290	1.6803	1.6803	
D (6 Q-samples)	IP (N)	6 (7.69%)	9 (11.54%)	5 (6.41%)	36 (46.15%)	22 (28.2%)	78
	IP (mean)	0.4615	0.6923	0.3846	2.7692	1.6923	
	IP (SD)	0.6602	1.0316	1.1209	2.1274	1.6525	
	II (N)	3 (2.78%)	21 (19.44%)	21 (19.44%)	46 (42.59%)	17 (15.74%)	108
	II (mean)	0.1667	1.1667	1.1667	2.5556	0.9444	
	II (SD)	0.3835	1.4246	1.3827	1.6529	1.1618	
E (19 Q-samples)	IP (N)	11 (4.45%)	47 (19.03%)	24 (9.72%)	121 (48.99%)	44 (17.81%)	247
	IP (mean)	0.8462	3.6154	1.8462	9.3077	3.3846	
	IP (SD)	1.2142	3.0967	2.1543	4.0903	3.8846	
	II (N)	18 (5.26%)	76 (22.22%)	45 (13.16%)	176 (51.46%)	27 (7.89%)	342
	II (mean)	1.0000	4.2222	2.5000	9.7778	1.5000	
	II (SD)	1.0847	3.5072	2.2557	4.6848	1.2005	
F (8 Q-samples)	IP (N)	4 (3.85%)	12 (11.54%)	14 (13.46%)	60 (57.69%)	14 (13.46%)	104
	IP (mean)	0.3077	0.9231	1.0769	4.6154	1.0769	
	IP (SD)	0.4804	1.3821	1.0377	1.9381	1.3821	
	II (N)	10 (6.94%)	23 (15.97%)	23 (15.97%)	67 (46.53%)	21 (14.58%)	144
	II (mean)	0.5556	1.2778	1.2778	3.7222	1.1667	
	II (SD)	0.9218	1.7758	1.6380	2.2177	0.9235	

Note: 'N (ranked Q-samples)' is the Q-samples quantity of a group multiplied by the number of valid Q-sorts (IP=13 and II=18).

This might reflect what individual investors have brought as arguments in their interviews; when we were questioning them about the relevance perception of accounting information, they usually would tell about 'time issues' for their analysis process. An example would be a speech from one of the participants that reflects this perception of 'lack of time': "I take the reports available for free from my brokerage firm about my portfolio since it already contains all ratios that I need to go through financial analysis of my purchased stocks". Nevertheless, analysts/professional investors have said they prefer 'pure accounting information' since they have their spreadsheets with ratios calculations organized in a manner that is functional to them to go through the analysis process. Because of that, collecting original accounting data from databases was preferred by them (as they could personalize data in their own manner).

In addition to that, we have observed that it was much easier for participants to say which information they would consider as ‘least relevant’ than to select the ‘top 6’, whether they were individual investors or analysts/professional investors. Moreover, looking at Table 6, we can notice the difference in the proportion of ‘information itself’ statements classified on positive (+1→+4) *versus* negative ranks (-4→-1): for positive ranks, the quantity of Q-samples was higher.

If we have forced a distribution for all subjects to follow - such as Brown (1980) - this would not happen because the number of Q-samples would be balanced between ranks. But we understand that not forcing a distribution on the Q-sorting process of our study is a positive argument, as we could observe a kind of ‘decisional paralysis/information overload’ happening to participants at that moment (they would argue that there were too many important statements and selecting just six was difficult to them). The ‘come and goes’ from Q sorting process was important to mitigate this ‘paralysis effect’, since participants could rank sentences ‘freely’ in the first moment and then revisit them to see if they match to their ‘final’ relevance perception. About the ‘sources of information’ dimension (Table 7), Group G has presented the higher number of Q-samples classified as ‘most relevant’ by both IP (10.26%) and II (18.52%) participants.

Table 7. Descriptive statistics of Q-sorts for ‘sources of information’ Q-samples dimension (IP and II).

Q-samples dimension		-5	-4 to -1	0	+1 to +4	+5	N (ranked Q-samples)
B (2 Q-samples)	IP (N)	2 (7.69%)	5 (19.23%)	0 (0.00%)	17 (65.38%)	2 (7.69%)	26
	IP (mean)	0.1538	0.3846	0.0000	1.3077	0.1538	
	IP (SD)	0.3755	0.5064	0.0000	0.7511	0.5547	
	II (N)	3 (8.33%)	8 (22.22%)	9 (25.00%)	15 (41.67%)	1 (2.78%)	36
	II (mean)	0.1667	0.4444	0.5000	0.8333	0.0556	
	II (SD)	0.3835	0.6157	0.7859	0.7859	0.2357	
G (3 Q-samples)	IP (N)	11 (28.2%)	9 (23.08%)	5 (12.82%)	10 (25.64%)	4 (10.26%)	39
	IP (mean)	0.8462	0.6923	0.3846	0.7692	0.3077	
	IP (SD)	0.8006	0.8549	0.5064	0.7250	0.6304	
	II (N)	13 (24.07%)	7 (12.96%)	6 (11.11%)	18 (33.34%)	10 (18.52%)	54
	II (mean)	0.7222	0.3889	0.3333	1.0000	0.5556	
	II (SD)	0.8264	0.7775	0.7670	0.8402	0.5113	
H (10 Q-samples)	IP (N)	24 (18.46%)	30 (23.08%)	5 (3.85%)	63 (48.46%)	8 (6.15%)	130
	IP (mean)	1.8462	2.3077	0.3846	4.8462	0.6154	
	IP (SD)	1.2810	1.6013	0.6504	2.9111	1.1209	
	II (N)	48 (26.67%)	42 (23.33%)	24 (13.33%)	56 (31.11%)	10 (5.56%)	180
	II (mean)	2.6667	2.3333	1.3333	3.1111	0.5556	
	II (SD)	1.6803	1.4951	1.6450	1.6764	0.9835	

Note: ‘N (ranked Q-samples)’ is the Q-samples quantity of a group multiplied by the number of valid Q-sorts (IP=13 and II=18).

On the next section, we have shown the assumptions to be attended when performing PCA, correlations between Q-sorts and particularities of Q-technique analysis on PCA.

4.1.2 Correlation and Principal Components Analysis (PCA)

Before performing PCA analysis, we have checked for collected data suitability. As PCA has a multivariate normality assumption, we have run three multivariate normality tests (Mardia's, Henze-Zirkler's and Royston's), as they are sensitive and none of them is valid for all conditions (Tabachnick & Fidell, 2001; Korkmaz, Goksuluk, & Zararsiz, 2014), and we have also checked for univariate normality (Shapiro-Wilk's). We have performed tests for the full set of data and the two subgroups of analysis (analysts/professional investors and individual investors) using 'MVN' package (Korkmaz et al., 2014) for R (version 3.4.2). Tests results are reported in Table 8 and Table 9 below.

Table 8. Multivariate normality tests.

Multivariate tests		Analysts/professional investors	Individual investors	Full set
Mardia's	Multivariate skewness estimation ^(a)	66.9825	121.1980	552.3314
	<i>p-value</i>	0.0000	0.0002	0.0087
	Multivariate kurtosis estimation	210.4087	357.2918	1013.8210
	<i>p-value</i>	0.0021	0.6911	0.4243
Henze-Zirkler's	Henze-Zirkler's test statistic	1.0575	1.0001	1.0000
	<i>p-value</i>	0.0000	0.0235	0.1006
Royston's	Royston's test statistic	295.3449	261.5744	571.6950
	<i>p-value</i>	0.0000	0.0000	0.0000
N		13	18	31

Note: (a) When necessary, Mardia's multivariate normality test was performed considering adjustment of the skewness test for small samples ($N < 20$) (Korkmaz et al., 2014).

All three tests of multivariate normality for analysts/professional investors and individual investors have rejected the null hypothesis of multivariate normality under a significance level of 5%. Nevertheless, the Henze-Zirkler's test is the only test which is not statistically significant for the full P set ($p\text{-value} = 0.1006$), meaning that the null hypothesis of multivariate normality was not rejected in this case. On the other hand, as multivariate normality tests were not in

consensus in the case of full P set, it is necessary to look at the results from univariate normality tests (Tabachnick & Fidell, 2001). They are presented in Table 9.

Table 9. Descriptive statistics and univariate normality tests for P set.

Q-sorts	Descriptive statistics							Shapiro-Wilk's univariate normality test	
	Median	Min	Max	1Q	4Q	Skewness	Kurtosis	Test statistic	p-value
IP_1	8	1	11	4.25	9.00	-0.45	-1.19	0.8942	0.0001
IP_2	6	1	11	3.00	9.00	-0.05	-1.24	0.9353	0.0028
IP_3	9	1	11	8.00	10.00	-1.83	4.94	0.8096	0.0000
IP_4	7	1	11	5.00	9.00	-0.27	-0.93	0.9446	0.0074
IP_5	10	1	11	9.00	10.00	-2.53	6.12	0.6257	0.0000
IP_6	10	1	11	10.00	10.00	-1.93	3.12	0.6136	0.0000
IP_7	7	1	11	5.00	9.00	-0.28	-1.08	0.9257	0.0011
IP_8	6	1	11	3.00	9.00	-0.03	-1.26	0.9243	0.0009
IP_9	7	1	11	6.00	9.00	-0.41	-0.85	0.9242	0.0009
IP_10	11	1	11	10.00	11.00	-2.39	5.75	0.5578	0.0000
IP_11	9	1	11	4.00	10.00	-0.55	-1.36	0.8303	0.0000
IP_12	8	1	11	7.00	9.00	-1.09	0.42	0.8593	0.0000
IP_13	7	1	11	5.00	8.75	-0.19	-0.84	0.9332	0.0022
II_2	7	1	11	3.25	9.75	-0.27	-1.33	0.9058	0.0002
II_3	7	1	11	3.25	9.75	-0.19	-1.35	0.9155	0.0004
II_4	7	1	11	4.25	9.00	-0.26	-0.91	0.9475	0.0101
II_5	6	1	11	3.00	9.00	-0.02	-1.26	0.9315	0.0019
II_7	9	1	11	8.00	10.00	-1.45	1.63	0.8173	0.0000
II_8	6	1	11	2.25	10.00	-0.06	-1.47	0.8975	0.0001
II_9	6	1	11	5.00	8.00	-0.20	-0.75	0.9563	0.0270
II_11	8	1	11	6.00	10.00	-0.86	0.01	0.8794	0.0000
II_12	7	1	11	5.00	9.00	-0.50	-0.89	0.9190	0.0006
II_13	8	1	11	5.00	10.00	-0.59	-0.73	0.8950	0.0001
II_14	6	1	11	5.00	8.75	-0.22	-0.73	0.9482	0.0109
II_15	8	1	11	6.00	9.00	-0.79	-0.63	0.8620	0.0000
II_16	8	1	11	6.00	10.00	-0.67	-0.82	0.8821	0.0000
II_17	8	1	11	4.00	10.00	-0.42	-1.33	0.8762	0.0000
II_18	8	1	11	6.00	9.00	-0.69	-0.43	0.9080	0.0002
II_19	6	1	11	2.00	6.00	0.32	-0.91	0.8745	0.0000
II_20	7	1	11	3.25	9.00	-0.18	-1.36	0.9154	0.0004
II_21	7	1	11	6.00	9.00	-0.73	0.20	0.9114	0.0003

Note: IP code means that the participant was an 'analyst/professional investor' and II code is for 'individual investor'. N=62 for all variables.

About univariate normality, all the variables have rejected the null hypothesis considering a 5% significance level. In our case, as PCA is used descriptively, i.e., to summarize relationships between interviewees to generate 'perspectives' (which are represented in the technique by

components), not attending normality assumption is not impeditive to perform it (Tabachnick & Fidell, 2001).

Also, we have done the Measure of Sampling Adequacy (MSA), also known as Kaiser-Meyer-Olkin index (KMO), to check if data was adherent to be analyzed through PCA ('psych' package for R – Revelle (2017), R version: 3.4.2). Hair et al. (2014) point out that (a) this measure goes from zero to one, being one when "... each variable is perfectly predicted without error by the other variables" (p. 114) and (b) it is desirable to have individual (i.e., for each variable) and global MSA indexes above 0.50 to proceed with PCA.

Being said so, we have firstly performed analysis of individual MSA indexes to identify if any of variables would not attend MSA criterion (Table 10, Table 11 and Table 12) even though global MSA criterion would be attended (see Table 13).

For analysts/professional investors group, none of the variables have presented MSA values lower than 0.50 (see Table 10), but when considering individual investors group, variable II_7 presented an MSA of 0.33. After removing that variable, all MSA values from other variables have got higher (see Table 11), which indicates an increment on quality of explained variance of variables.

Table 10. MSA indexes for analysts/professional investors (IP).

MSA indexes for "analysts/professional investors" (IP)				
IP_1	IP_2	IP_3	IP_4	IP_5
0.78	0.78	0.69	0.62	0.61
IP_6	IP_7	IP_8	IP_9	IP_10
0.7	0.77	0.82	0.75	0.81
IP_11	IP_12	IP_13		
0.72	0.72	0.68		

Note: N=13.

Table 11. MSA indexes for individual investors (before and after excluding variable II_7).

MSA indexes for "individual investors" (II)					MSA indexes for "individual investors" (II) (excluding II_7)				
II_2	II_3	II_4	II_5	II_7	II_2	II_3	II_4	II_5	II_8
0.68	0.72	0.56	0.59	0.33	0.80	0.74	0.69	0.66	0.74
II_8	II_9	II_11	II_12	II_13	II_9	II_11	II_12	II_13	II_14
0.77	0.59	0.73	0.77	0.62	0.66	0.76	0.82	0.61	0.59
II_14	II_15	II_16	II_17	II_18	II_15	II_16	II_17	II_18	II_19
0.56	0.80	0.50	0.79	0.78	0.79	0.56	0.78	0.75	0.71
II_19	II_20	II_21			II_20	II_21			
0.62	0.68	0.79			0.69	0.78			

Note: N=18.

Note: N=17.

The same situation has happened when we have performed MSA indexes for the full P set (i.e., considering analysts/professional investors and individual investors in the same database – see Table 12), and variables II_13, II_16 and II_17 have been excluded when performing PCA.

Table 12. MSA indexes for the complete P set (before and after excluding variables II_13, II_16 and II_17).

MSA indexes for complete P set					MSA indexes for complete P set (excluding II_13, II_16 and II_17)				
IP_1	IP_2	IP_3	IP_4	IP_5	IP_1	IP_2	IP_3	IP_4	IP_5
0.70	0.67	0.73	0.74	0.70	0.81	0.74	0.74	0.72	0.74
IP_6	IP_7	IP_8	IP_9	IP_10	IP_6	IP_7	IP_8	IP_9	IP_10
0.6	0.67	0.77	0.76	0.77	0.53	0.69	0.77	0.72	0.74
IP_11	IP_12	IP_13	II_2	II_3	IP_11	IP_12	IP_13	II_2	II_3
0.68	0.65	0.67	0.65	0.62	0.67	0.8	0.75	0.68	0.70
II_4	II_5	II_7	II_8	II_9	II_4	II_5	II_7	II_8	II_9
0.61	0.67	0.62	0.78	0.65	0.68	0.7	0.6	0.76	0.64
II_11	II_12	II_13	II_14	II_15	II_11	II_12	II_14	II_15	II_18
0.60	0.69	0.45	0.51	0.75	0.66	0.74	0.54	0.83	0.72
II_16	II_17	II_18	II_19	II_20	II_19	II_20	II_21		
0.45	0.49	0.70	0.51	0.54	0.57	0.74	0.86		
II_21									
0.72									

Note: N=28.

Note: N=31.

Then, we have checked for global MSA indexes for the three groups of data (before and after excluding variables with lower individual values of MSA - Table 13). To check for robustness, we have also run an exploratory PCA with all variables, but data reduction was not so well performed as when we have excluded variables with low MSA indexes for each analysis group.

Table 13. Global MSA indexes (before and after variables' exclusions).

	Analysts/professional investors	Individual investors	Full set
Global MSA index before variables' exclusion	0.72	0.67	0.66
N (before exclusion)	13	18	31
Variables excluded	(none)	II_7	II_13, II_16 and II_17
Global MSA index after variables' exclusion	0.72	0.73	0.72
N (after exclusion)	13	17	28

As seen in Table 13, all groups of analysis have achieved MSA indexes higher than the value required to perform the PCA – and those values have increased after excluding the variables mentioned previously (0.72 for analysts/professional investors, 0.73 for individual investors and 0.72 for the full set *versus* 0.67 and 0.66 for individual investors and the full set, respectively), showing the increase of adequacy of data to perform the data reduction technique.

Being said so, we could proceed with correlation and components analyses, which are presented on sections 4.1.2.1, 4.1.2.2 and 4.1.2.3. As said previously on section 3.1.5, we have chosen to run PCA three times: one including just analysts/professional investors, another just with individual investors and the last one with the whole P set (considering validated interviews and the compliance of PCA assumptions).

4.1.2.1 Analysts/professional investors only

Using the criteria that we have previously described in section 3.1.5 to identify the number of components to be extracted, we have decided to extract *three* components for analysts/professional investors (as parallel analysis and optimal coordinates have presented a consensus - see Figure 26).

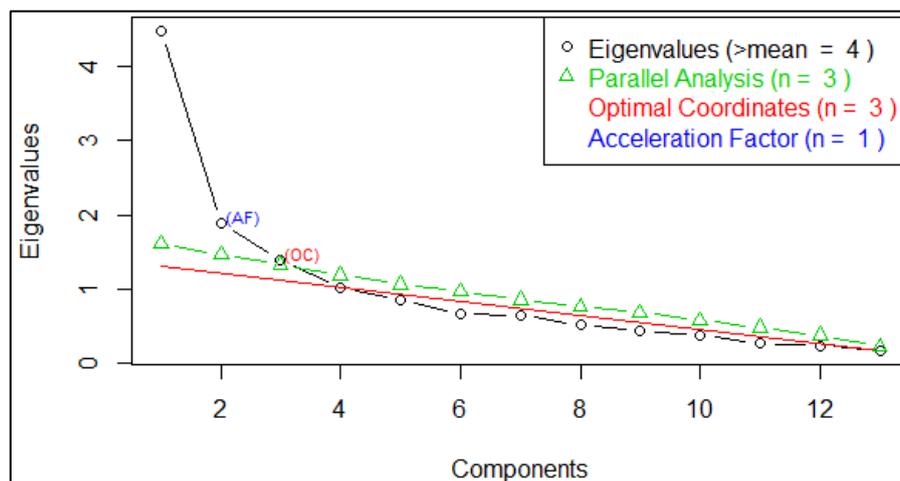


Figure 26. Graphical criteria of components extraction (analysts/professional investors).

Looking at Table 14, we have the outputs of three components extracted for analysts/professional investors (IP) data, with a cumulative explained variance of 60.98% (approximately). All three components have presented a composite reliability index higher than 0.90, and all thirteen Q-sorts were flagged. The PCA for IP was the only which has loaded all Q-sorts into components, which has given to us preliminary signs: (a) IPs have clearly defined strategies for the use of information and (b) they are uniform within the own strategy.

About components itself, *Component 1* (C1) is defined by participants IP_3, IP_5, IP_9 and IP_13 (21.45% of explained variance), being the highest correlation index for this component the one between IP_5 and IP_13 (0.50, sig < 0.01). Also, the three highest correlations for IP_13 are on this component (IP_5: 0.50; IP_9: 0.48; and IP_10: 0.41, all sig < 0.01), in which reflects

on IP_13 presenting the highest component loading from all participants of Component 1 (0.7770). By this manner, we can understand that IP_13 has a relevant Q sorting pattern for this component, since it reflects the ranking behavior for component 1 when we have considered its correlations between other participants.

Component 2 (C2) is defined by participants IP_1, IP_4, IP_8 and IP_12 (19.80% of explained variance), being the highest correlation index for this component the one between IP_1 and IP_12 (0.63, sig < 0.01). Also, the three highest correlations for IP_1 are on this component (IP_4: 0.55; IP_8: 0.41; and IP_12: 0.63, all sig < 0.01), in which reflects on IP_1 presenting the highest component loading from all participants of Component 2 (0.8489). By this manner, we can understand that IP_1 has a relevant Q sorting pattern for this component since it seems to reflect the ranking behavior for component 2 when we have considered its correlations between other participants.

Component 3 (C3) is defined by participants IP_2, IP_6 and IP_7 and IP_11 (19.11% of explained variance), being the highest correlation index for this component the one between IP_6 and IP_7 (0.56, sig < 0.01). Also, the correlation between IP_7 and IP_6 is the highest for the latter, and correlations of IP_7 and IP_2 is of 0.51 (and IP_2 has the highest correlation of IP_11, 0.44). Due to these indirect correlations between all other participants from component 3, IP_6 presents the highest component loading from all participants of component 3 (0.8465). By this manner, we can understand that IP_6 has a relevant Q sorting pattern for this component since it reflects (in a certain manner) the ranking behavior for component 2 when we have considered its correlations between other participants.

We have also tested a PCA with four components using the 'Kaiser criterion', but we have concluded that the additional explained variance resulting from the inclusion of another factor was too low to justify its inclusion. Another reason for not including a fourth component is also because the cumulative variance from three factors has achieved 60.38%, approximately (see Table 14), which is considered a satisfactory value (Hair et al., 2006). So, we have kept analysis for analysts/professional investors with three components.

Table 14. Correlation coefficients and components loadings (analysts/professional investors).

Q-sorts	Correlations													Components loadings		
	IP_1	IP_2	IP_3	IP_4	IP_5	IP_6	IP_7	IP_8	IP_9	IP_10	IP_11	IP_12	IP_13	C1	C2	C3
IP_1		0.32*		<u>0.55**</u>		0.29*		0.41**	0.29*			<u>0.63**</u>		-0.0809	0.8489**	0.2191
IP_2	0.32*		<u>0.58**</u>			<u>0.50**</u>	<u>0.51**</u>	0.28*	0.43**	<u>0.53**</u>	0.44**	0.36**	0.39**	0.4797	0.2477	0.5955*
IP_3		<u>0.58**</u>				0.28*	<u>0.54**</u>		0.37**	0.46**	0.26*		0.36**	0.6540**	-0.0098	0.3418
IP_4	<u>0.55**</u>							0.43**	0.45**	0.28*		0.35**	0.35**	0.3875	0.7596**	-0.1708
IP_5							0.30*			0.38**	0.33**		<u>0.50**</u>	0.5966**	-0.2891	0.2557
IP_6							<u>0.56**</u>	0.26*		0.28*	0.33**	0.44**		0.0593	0.1261	0.8465**
IP_7		<u>0.51**</u>	<u>0.54**</u>		0.30*	<u>0.56**</u>		0.27*	0.30*	0.35**	0.29*	0.35**	0.38**	0.3923	0.0782	0.6858**
IP_8	0.41**	0.28*		0.43**		0.26*	0.27*				0.34**	0.39**		0.1148	0.5657*	0.2990
IP_9	0.29*	0.43**	0.37**	0.45**			0.30*					0.27*	0.48**	0.5897**	0.4993	-0.0669
IP_10		<u>0.53**</u>	0.46**	0.28*	0.38**	0.28*	0.35**		0.32*				0.41**	0.6495**	0.1358	0.2633
IP_11		0.44**	0.26*		0.33**	0.33**	0.29*	0.34**				0.27*	0.29*	0.2559	0.1439	0.5258*
IP_12	<u>0.63**</u>	0.36**		0.35**		0.44**	0.35**	0.39**	0.27*		0.27*			-0.0950	0.6889**	0.4844
IP_13		0.39**	0.36**	0.35**	<u>0.50**</u>		0.38**	0.48**	0.41**	0.29*				0.7770**	0.1644	0.1004
Average reliability coefficient													0.80	0.80	0.80	
Eigenvalues													2.7890	2.5748	2.4854	
Explained variance (%)													21.4540	19.8059	19.1183	
Composite reliability													0.95	0.94	0.94	
SE													0.2182	0.2425	0.2425	
N													5	4	4	

Note: Numbers underlined are correlations considered high and numbers in bold represent flagged Q-sorts for that specific component. SE is the standard error of components and N represents the quantity of Q-sorts loaded on each component. * and ** is when a correlation/component is statistically significant at 0.05 and 0.01 levels (respectively).

About components' similarity, we have reported the correlation indexes between z-scores of the simulated Q-sorts for each component on Table 15. The correlation index between C1 and C3 may be considered high (0.5024); nevertheless, it can be explained by the patterns of ranking between the participants of those components (Tables 16 and 17). Both components have great similarities on the first sentences ranked as 'most/least relevant' and both present a similar quantity of Q-samples from groups E and F at the fourth quartile.

Table 15. Indication of similarity between z-scores of each pair of components (analysts/professional investors).

	C1 (z-score)	C2 (z-score)	C3 (z-score)
C1 (z-score)	1.0000		
C2 (z-score)	0.3492	1.0000	
C3 (z-score)	0.5024	0.3022	1.0000

Note: Correlation coefficients are calculated between the z-scores of simulated Q-sorts for each component.

About characterizing statements, we have analyzed the fourth and first quartiles (Tables 16 and 17, respectively) as they represent 'extremes' in the perceptions of relevance for components' flagged Q-sorts. Quartiles were calculated by ranking the statements Z-scores of the simulated Q-sort for each component, and it resulted in 16 Q-samples (approximately). We have considered as the 'characterising statements' (Exel & Graaf, 2005) the top or bottom six Q-samples on each simulated Q-sort, as we have given an instruction of Q-sorting to individuals to selected around six Q-samples to allocate in extreme ranks - i.e., (-5) and (+5) (Pennington & Kelton, 2016).

The complete simulated Q-sorts for analysts/professional investors are available on Appendix J.

Looking at the fourth quartile (i.e., highest z-scores; Tables 16), the C1, or '*knowing the company through the information itself has released*', represents the most frequent practice within all IP Q-sorts on dealing with the information scenario: first, IPs search for understanding the business model that the company follows (#37), they look after information about its sector (#21), and just then they start searching for liquidity (#28 and #38) and performance measures (#13 and #41).

The C2, or '*the company and the market: company's performance, how the market perceives it and generates information about it*', the IPs start to look after information from sources other than the ones the company has generated about itself. Here, they search for macroeconomic data, such as exchange and SELIC rates, and GPD's expectations (#20, #18 and #16), past

market data about the company's stocks (volatility, traded volume, historical series of returns - #9, #12 and 10), news from media (#59 and #52) and other specialists' opinion (#51).

Regarding the last component (C3), it reflects the individual variation between IPs' Q-sorts when ranking Q-samples: it is a certain 'mix' of Q-samples from the previous two components. The first two components reflect the behavior of the 'average analyst/professional investor' regarding financial analysis for a company in a prospective investment scenario. Here, two important points emerge: the first one is how IPs build their judgment towards a prospective shares' investment based on their perception about the company, i.e., they first seek for their own opinion about the company, then look to other specialists' reports.

It is interesting to note that the information sequence followed by IP is very similar to the sequence of sections of the strategic report suggested on FRC's strategic report guidance: it begins with the business model, then goes to environmental aspects of the business and then concludes with the financial performance for the firm. That is the same practice that we have observed in financial analysis textbooks (Palepu & Healy, 2008; Assaf Neto, 2012; Martins et al., 2012); in this manner, we have understood that IP ranking process reflects the external rules of 'common practice' in company's performance analysis.

In the first quartile of Q-samples ranking (i.e., lower z-scores; Table 17), C1 has reflected the IPs' lower perceived relevance for 'third party information', such as 'tips' from family, friends and social media (e.g., Whatsapp®, Facebook®) about investment decisions (#49 and #57), and 'sell-side' analysts' reports (#50). Initially, it has called our attention the lower score on the news from newspapers as BBC, El País and The Guardian (#54), but IPs have referred to them from databases that compile different news sources into a single screen, saving search time and making it easier for them to select the most relevant headlines/excluding redundancies.

C2 has translated the lower use of 'total amounts' information from financial statements (see #30, #34, #22, #32 and #31) as, in their speech, total amounts do not translate into significant information without reference points (like proportions or ratios). Here, they have also included other ratios that they do not commonly use (#46 and #44).

As in the fourth quartile, C3 has reflected the individual variation between IPs' Q-sorts when ranking Q-samples: it is a certain 'mix' of Q-samples from the previous two components.

Table 16. **Fourth** quartile for simulated Q-sorting for each component (analysts/professional investors).

Statement 'rank' on components	Component 1			Component 2			Component 3		
	Label	Statement	Z-scores	Label	Statement	Z-scores	Label	Statement	Z-scores
62		(37) I seek to understand the business model that the company follows.	1.6451		(48) I use P/E ratio.	1.5265		(37) I seek to understand the business model that the company follows.	1.5342
61		(21) I search for information about the company's sector.	1.5433		<u>(50) I search for "sell-side" analysts' reports.</u>	1.4790		(21) I search for information about the company's sector.	1.4323
60		(28) I use the EBITDA.	1.4821		(37) I seek to understand the business model that the company follows.	1.4790		(38) I search for cash flows-operational activities.	1.2991
59		(38) I search for cash flows-operational activities.	1.3880		(20) I follow exchange rates.	1.3177		(48) I use P/E ratio.	1.2578
58		(13) I search for the company's market value.	1.2765		(28) I use the EBITDA.	1.2784		(41) I use ROE ratio.	1.2173
57		(41) I use ROE ratio.	1.2057		(18) I follow the expectations behind SELIC rate.	1.2705		(15) I calculate stock price projections.	1.2019
56		(35) I read financial statements footnotes from subjects that I understand as important.	1.1407		(21) I search for information about the company's sector.	1.2544		<u>(58) I follow the company's financial results release.</u>	1.1692
55		(40) I search for cash flows-financing activities.	1.1328		(9) I use a volatility measure.	1.2507		(1) I follow news related to operational activities.	1.0549
54		<u>(58) I follow the company's financial results release.</u>	1.1195		(12) I look to the stock traded volume.	1.2072		(35) I read financial statements footnotes from subjects that I understand as important.	0.9947
53		(30) I search for the total amount of liabilities.	1.0523		<u>(59) I follow Bloomberg and/or Reuters databases.</u>	1.1678		(16) I follow the current country's GDP and its growth/retraction expectations.	0.8574
52		(48) I use P/E ratio.	1.0234		(4) I follow news related to the company's performance at capital markets.	1.1087		<u>(8) I search for significant event notice at CVM website.</u>	0.8494
51		(39) I search for cash flows-investing activities.	0.9718		<u>(58) I follow the company's financial results release.</u>	0.9945		<u>(7) I search for significant event notice at Investor Relations website.</u>	0.8494
50		(7) I search for significant event notice at Investor Relations website.	0.9389		(16) I follow the current country's GDP and its growth/retraction expectations.	0.9930		(18) I follow the expectations behind SELIC rate.	0.8356
49		(62) I use the market cap measure.	0.8643		(10) I search for historical series of returns.	0.9790		(39) I search for cash flows-investing activities.	0.8343
48		(45) I use Total Liabilities/Book Equity ratio.	0.8107		(51) I search for specialists' opinion from my brokerage firm.	0.9654		(36) I read the accounting policy footnote.	0.7922
47		(2) I follow news related to investments on long-term assets.	0.7895		<u>(52) I enter with regularity in websites such InfoMoney, Valor Econômico, IstoÉ Dinheiro, Exame, Época Negócios.</u>	0.9513		(27) I search for operational expenses/total revenue ratio.	0.7909

Note: Statements in bold are from Q-sample dimension 'Information itself - accounting information' (groups E and F). Statements underlined are from Q-sample dimension 'Sources of information' (groups B, G and H); see more on section 3.1.2. Colors label is presented on Figure 27.

Table 17. **First** quartile for simulated Q-sorting for each component (analysts/professional investors).

Statement 'rank' on components	Component 1			Component 2			Component 3		
	Label	Statement	Z-scores	Label	Statement	Z-scores	Label	Statement	Z-scores
1		<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-2.6485		<u>(61) I follow the CVM website.</u>	-1.9166		<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-3.0324
2		<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-2.5999		<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-1.8311		(11) I search for historical series of stock prices.	-2.3063
3		<u>(54) I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.</u>	-1.9770		<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-1.7010		(10) I search for historical series of returns.	-1.8360
4		(51) I search for specialists' opinion from my brokerage firm.	-1.8767		(30) I search for the total amount of liabilities.	-1.6726		(17) I follow foreign debt situation.	-1.7562
5		(6) I follow news related to socio-environmental activities.	-1.7774		(34) I search for the total amount of non-current assets.	-1.6018		(6) I follow news related to socio-environmental activities.	-1.7408
6		(50) I search for "sell-side" analysts' reports.	-1.4773		(22) I use total assets measure.	-1.5777		(22) I use total assets measure.	-1.5511
7		(17) I follow foreign debt situation.	-1.1584		(36) I read the accounting policy footnote.	-1.4842		(44) I use Current Ratio.	-1.3713
8		(15) I calculate stock price projections.	-1.1196		(32) I search for the total amount of current assets.	-1.3649		(12) I look to the stock traded volume.	-1.3486
9		(32) I search for the total amount of current assets.	-1.0959		<u>(8) I search for significant event notice at CVM website.</u>	-1.2782		(30) I search for the total amount of liabilities.	-1.2174
10		<u>(61) I follow the CVM website.</u>	-1.0506		(17) I follow foreign debt situation.	-1.2717		(32) I search for the total amount of current assets.	-1.1228
11		<u>(8) I search for significant event notice at CVM website.</u>	-0.9392		(46) I use Non-Current assets/Book Equity ratio.	-1.2430		<u>(51) I search for specialists' opinion from my brokerage firm.</u>	-1.0209
12		(34) I search for the total amount of non-current assets.	-0.9349		(44) I use Current Ratio.	-1.2230		(62) I use the market cap measure.	-1.0163
13		<u>(53) I enter with regularity in websites such as Estadão, Folha, G1, UOL.</u>	-0.8207		(40) I search for cash flows-financing activities.	-1.0783		(34) I search for the total amount of non-current assets.	-0.8743
14		(19) I follow the country-risk evaluation.	-0.7513		(5) I follow news about financing sources.	-1.0502		<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-0.8144
15		(44) I use Current Ratio.	-0.7331		(31) I search for the total amount of current liabilities.	-0.8138		(13) I search for the company's market value.	-0.6857
16		(43) I use ROA ratio.	-0.6347		(35) I read financial statements footnotes from subjects that I understand as important.	-0.7311		(9) I use a volatility measure.	-0.6721

Note: Statements in bold are from Q-sample dimension 'Information itself - accounting information' (groups E and F). Statements underlined are from Q-sample dimension 'Sources of information' (groups B, G and H); see more on section 3.1.2. Colors' label is presented on Figure 27.

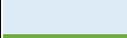
Label	
	<i>Group A: News from media</i>
	<i>Group B: Significant events released at IR and/or CVM website</i>
	<i>Group C: Past market data from the company itself and its stock</i>
	<i>Group D: Macroeconomic information</i>
	<i>Group E: 'Pure' accounting information</i>
	<i>Group F: 'Transformed' accounting information (i.e. ratios)</i>
	<i>Group G: Information about information sources (I): friends, family, specialists</i>
	<i>Group H: Information about information sources (II)</i>

Figure 27. Colors label for Q-samples dimensions.

On Table 18, we have reported the outputs for the distinguishes and consensus Q-samples; it shows us which sentences had different ranking patterns between interviews, lowering/increasing their z-scores and determining how Q-sorts would be grouped in a PCA component. As previously mentioned, the analysts/professional group has a high ‘homogeneity’ in their perception regarding relevance and use of information into their investment decision making process. So, this has been reflected on a low amount of ‘distinguishes all’ Q-samples ranking (i.e., it means that all three factors have presented a different relevance perception towards the specific Q-sample).

We have analyzed this content by using the criterion of Q-samples categories that we have explored in section 3.1.2. Considering our main groups of interest (groups E and F – ‘pure’ and ‘transformed’ accounting information), as we have seen on the fourth and first quartiles ranking behavior, these were the distinguishing group for C2 as it has presented the lowest z-scores (see ‘distinguishes f2 only’ statements). Then, Q-samples #27 (operational expenses/total revenue ratio), #28 (EBITDA) e #31 (total amount of current liabilities) were distinguishing for C3, showing idiosyncrasies between IPs preferences of accounting information (as C3 z-scores were inverse from C1 and C2 z-scores for the same sentences).

About sources of information, statements #50 (‘sell-side’ analysts' reports), #51 (specialists' opinion from a brokerage firm), #57 (business news from WhatsApp and/or Facebook) and #61 (CVM website) have distinguished all PCA components.

Table 18. Distinguishing/consensus Q-samples between components (IP).

Q-samples		Z-score on C1	Z-score on C2	Z-score on C3	Distinguishing/consensus	Q-samples on 1Q and 4Q		
						C1	C2	C3
1	A	0.4382	-0.3736	1.0549	Distinguishes f2 only			55
2	A	0.7895	-0.5934	0.3041	Distinguishes f2 only	47		
3	A	0.7816	0.0519	0.3919	-			
4	A	0.2347	1.1087	-0.1530	Distinguishes f2 only		52	
5	A	-0.0281	-1.0502	-0.2629	Distinguishes f2 only		14	
6	A	-1.7774	-0.3381	-1.7408	Distinguishes f2 only	5		5
7	B	0.9389	0.6152	0.8494	Consensus	50		51
8	B	-0.9392	-1.2782	0.8494	Distinguishes f3 only	11	9	52
9	C	0.0425	1.2507	-0.6721	Distinguishes all		55	16
10	C	0.0677	0.9790	-1.8360	Distinguishes all		49	3
11	C	0.2327	0.8567	-2.3063	Distinguishes f3 only			2
12	C	0.3115	1.2072	-1.3486	Distinguishes all		54	8
13	C	1.2765	0.8639	-0.6857	Distinguishes f3 only	58		15
14	C	-0.0720	0.6361	0.0622	-			
15	C	-1.1196	0.6638	1.2019	Distinguishes f1 only	8		57
16	D	-0.0528	0.9930	0.8574	Distinguishes f1 only		50	53
17	D	-1.1584	-1.2717	-1.7562	Consensus	7	10	4
18	D	0.0734	1.2705	0.8356	Distinguishes f1 only		57	50
19	D	-0.7513	0.6702	0.6903	Distinguishes f1 only	14		
20	D	-0.0528	1.3177	0.3781	Distinguishes f2 only		59	
21	D	1.5433	1.2544	1.4323	Consensus	61	56	61

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(continuance)

Q-samples		Z-score on C1	Z-score on C2	Z-score on C3	Distinguishing/consensus	Q-samples on IQ and 4Q		
						C1	C2	C3
22	E	0.2520	-1.5777	-1.5511	Distinguishes f1 only		6	6
23	E	0.4782	0.3125	0.3275	Consensus			
24	E	0.3597	-0.4395	0.4419	Distinguishes f2 only			
25	E	-0.5364	-0.1843	-0.1836	Consensus			
26	E	0.1181	0.0328	0.3551	Consensus			
27	E	-0.0429	-0.1404	0.7909	Distinguishes f3 only			47
28	E	1.4821	1.2784	0.5730	Distinguishes f3 only	60	58	
29	E	0.2733	-0.2663	0.3334	Consensus			
30	E	1.0523	-1.6726	-1.2174	Distinguishes f1 only	53	4	9
31	E	-0.5933	-0.8138	0.7614	Distinguishes f3 only		15	
32	E	-1.0959	-1.3649	-1.1228	Consensus	9	8	10
33	E	0.1502	-0.2077	0.2676	Consensus			
34	E	-0.9349	-1.6018	-0.8743	Distinguishes f2 only	12	5	13
35	E	1.1407	-0.7311	0.9947	Distinguishes f2 only	56	16	54
36	E	0.5814	-1.4842	0.7922	Distinguishes f2 only		7	48
37	E	1.6451	1.4790	1.5342	Consensus	62	60	62
38	E	1.3880	0.3755	1.2991	Distinguishes f2 only	59		60
39	E	0.9718	-0.4992	0.8343	Distinguishes f2 only	51		49
40	E	1.1328	-1.0783	0.5579	Distinguishes f2 only	55	13	
41	F	1.2057	-0.0182	1.2173	Distinguishes f2 only	57		58
42	F	0.6818	-0.1401	0.5355	Distinguishes f2 only			
43	F	-0.6347	0.1119	-0.1889	-	16		
44	F	-0.7331	-1.2230	-1.3713	Consensus	15	12	7
45	F	0.8107	0.4113	0.5437	Consensus	48		
46	F	-0.5110	-1.2430	0.0369	Distinguishes f2 only		11	
47	F	0.2367	-0.0890	-0.1918	Consensus			
48	F	1.0234	1.5265	1.2578	Consensus	52	62	59
49	G	-2.6485	-1.7010	-3.0324	Distinguishes f2 only	1	3	1
50	G	-1.4773	1.4790	0.5158	Distinguishes all	6	61	
51	G	-1.8767	0.9654	-1.0209	Distinguishes all	4	48	11
52	H	-0.0476	0.9513	-0.0801	Distinguishes f2 only		47	
53	H	-0.8207	0.1145	-0.6287	Distinguishes f2 only	13		
54	H	-1.9770	-0.0027	-0.2102	Distinguishes f1 only	3		
55	H	-0.0622	-0.3536	-0.0511	Consensus			
56	H	-0.3164	-0.2953	-0.5561	Consensus			
57	H	-2.5999	-1.8311	-0.8144	Distinguishes all	2	2	14
58	H	1.1195	0.9945	1.1692	Consensus	54	51	56
59	H	0.2152	1.1678	0.5158	-		53	
60	H	-0.0029	-0.0030	0.2299	Consensus			
61	H	-1.0506	-1.9166	0.0803	Distinguishes all	10	1	
62	C	0.8643	0.8441	-1.0163	Distinguishes f3 only	49		12

Note: Differences calculated between Z-scores, standard error of differences (SED) and statistical significance levels can be seen in Appendix M.

Table 19 and Table 20 have shown us that time horizon of investment may be one of the main criteria of common behavior for IP, despite their common background analysts/professional investors.

Table 19. Descriptive statistics for IP components considering investment experience and percentage of investment (stocks versus fixed income assets).

Age	Undergraduation course	Previous investment experience (as a professional; in years)	Previous investment experience (as a individual investor; in years)	Percentage of investment in stocks	Percentage of investment in fixed income assets
C1	58 Economics	20	20	-	-
	38 Economics	15	8 a	0.00%	100.00%
	- Engineer	35	35	0.00%	0.00%
	37 Engineer	16	14	80.00%	10.00%
	35 Engineer	14	23	40.00%	55.00%
C2	43 Economics	-	20	20.00%	80.00%
	26 Accounting	7	2	5.00%	80.00%
	47 Engineer	17	17	3.00%	25.00%
	26 Economics	4	0 a	0.00%	100.00%
C3	30 Business	8	-	30.00%	65.00%
	42 Economics	19	19	30.00%	40.00%
	36 Economics	11	11	45.00%	30.00%
	49 Mathematics	30	30	20.00%	60.00%

Note: '-' means that the subject has not answered the question. a = subject has investment restrictions as an individual investor.

Table 20. Descriptive statistics for IP components considering risk taking profile, portfolio characteristics and time horizon.

Risk taking level	Objective of investment	Risk aversion	Impaciency	Frequency of portfolio revision	Time horizon of investment	
C1	Medium risk taker	To increase capital	No	3	Medium run (less or equal to 6 months)	Long run (between 5, 10 to 15 years)
	Medium risk taker	To generate income	No	4	Very long run (> 5 years)	Long run (between 2 to 3 years)
	Medium risk taker	To maintain capital	No	4	Very long run (> 5 years)	Long run (5 years)
	Very high risk taker	To increase capital	No	1	Very long run (> 5 years)	Long run (the longest possible); Subject retests her/his premisses in 3 months, 5 years and 10 years.
	High risk taker	To increase capital	No	5	Medium run (less or equal to 6 months)	Long run (between 1 to 2 years)
C2	-	-	-	-	-	Short and medium run (subject has not defined time reference)
	Medium risk taker	To increase capital	Yes	4	Short run (monthly)	Long run (1 year due to recent economy)
	High risk taker	To generate income	No	4	Very long run (> 5 years)	Long run (between 3 to 5 years)
	Medium risk taker	To generate income	No	3	Medium run (less or equal to 6 months)	Short run (between 1 to 2 months)
C3	-	-	No	3	-	Subject has not defined time horizon
	High risk taker	To increase capital	No	3	Very long run (> 5 years)	Short run (up to 1 year)
	Very high risk takers	To increase capital	No	1	Very long run (> 5 years)	Short run (between 6 to 8 months) or long run (5 years) (it depends on asset performance and retest triggers).
	Low risk taker	To generate income	No	6	Long run (> 2 years)	Medium run (between 3 to 5 years)

Note: '-' means that the subject has not answered the question.

4.1.2.2 Individual investors only

Using the criteria that we have previously described on section 3.1.5 to identify the number of components to be extracted, we have defined to extract *five* components for individual investors by the eigenvalue criterion (Figure 28), having a cumulative explained variance of 62.64% approximately.

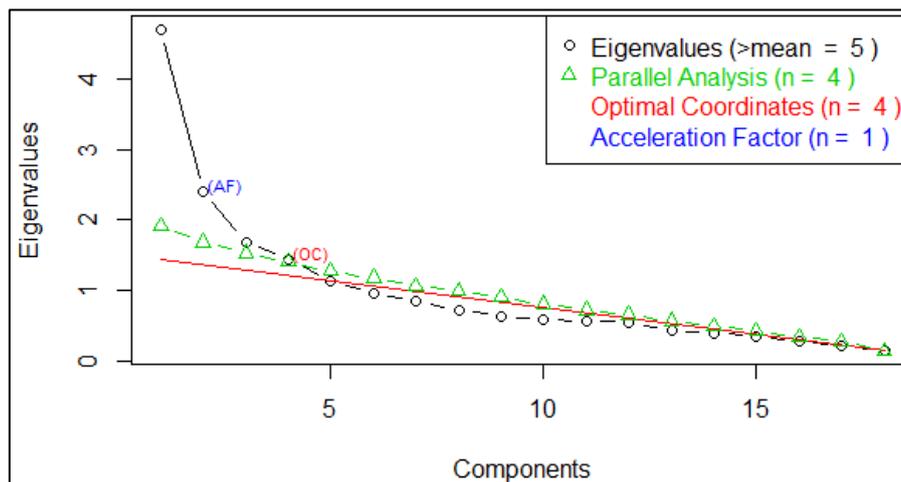


Figure 28. Graphical criteria of components extraction (individual investors).

Looking at Table 21, we have the outputs of all five components extracted for individual investors (II) data. Nevertheless, we have chosen to analyze results for just the first four components, as the composite reliability for the fifth component has a composite reliability lower than 0.90³⁵. Besides, we have checked for characteristics of flagged Q-sorts in Component 5, and it has grouped the two less experienced investors from all IIs. Thus, we have understood that excluding this component reduces the variability in the analysis when in comparison to the other components formed. Lastly, cumulative variance up to the fourth component is 53% (approximately).

The PCA grouping behavior for II has been different from the IP group: firstly, considering all four components, just 13 Q-sorts were flagged. It means that the remaining four Q-sorts that were not flagged into any of the components have expressed points of view that share something in common with more than one of the four components (Durning & Brown, 2007), but any of

³⁵ For any concerns, results for the C5 were also reported.

this ‘shared variance’ was strong enough to include these Q-sorts into a component. So, this is an initial indication of a greater individual variability between Q-sorts ranking behavior.

Another indication of greater variability has come from the low amount of high correlations between IIs (there are only II_2 *versus* II_4 - 0.50 - and II_3 *versus* II_14 - 0.51).

Component 1 (C1) is defined by participants II_2, II_12, II_15 and II_19 (15.38% of explained variance), being the highest correlation index for this component the one between II_2 and II_12 (0.41, sig < 0.01). II_2 has presented the highest component loading from all participants of Component 1 (0.7227). By this manner, we can understand that II_2 has a relevant Q sorting pattern for this component since it reflects the ranking behavior for component 1 when we have considered its correlations between other participants.

Component 2 (C2) is defined by participants II_8, II_13, and II_14 (14.61% of explained variance), being the highest correlation index for this component the one between II_13 and II_14 (0.38, sig < 0.01). II_14 has presented the highest component loading from all participants of Component 2 (0.8217). By this manner, we can understand that II_14 has a relevant Q sorting pattern for this component since it reflects the ranking behavior for component 2 when we have considered its correlations between other participants.

Component 3 (C3) is defined by participants II_4, II_9, and II_21 (12.76% of explained variance), being the highest correlation index for this component the one between II_4 and II_21 (0.44, sig < 0.01). II_21 has presented the highest component loading from all participants of Component 3 (0.6775). By this manner, we can understand that II_21 has a relevant Q sorting pattern for this component since it reflects the ranking behavior for component 3 when we have considered its correlations between other participants.

Component 4 (C4) is defined by participants II_5, II_11, and II_20 (10.24% of explained variance), being the highest correlation index for this component the one between II_5 and II_20 (0.29, sig < 0.05) and II_9 and II_20 (0.29, sig < 0.05). II_5 has presented the highest component loading from all participants of Component 4 (0.7062). By this manner, we can understand that II_5 has a relevant Q sorting pattern for this component since it reflects the ranking behavior for component 4 when we have considered its correlations between other participants.

Table 21. Correlation coefficients and components loadings (individual investors).

	II_2	II_3	II_4	II_5	II_8	II_9	II_11	II_12	II_13	II_14	II_15	II_16	II_17	II_18	II_19	II_20	II_21	C1	C2	C3	C4	C5	
II_2		0.31*	<i>0.50**</i>				0.45**	0.41**			0.33*			0.38**		0.28*		0.7227**	-0.1119	0.2651	0.1522	-0.2412	
II_3	0.31*		0.38**		0.39**	0.26*		0.38**		<i>0.51**</i>	0.43**		0.37**	0.27*		0.26*	0.31*	0.3313	0.6203*	0.5381	-0.0723	-0.0703	
II_4	<i>0.50**</i>	0.38**		0.29*		0.28*	0.26*	0.37**			0.32*		0.28*				0.44**	0.4556	-0.1695	0.6125*	0.0659	-0.0211	
II_5			0.29*		0.29*											0.29*		-0.0682	0.0637	0.2231	0.7062*	0.1913	
II_8		0.39**							0.27*	0.36**	0.37**			0.38**	0.27*	0.28*		0.2412	0.6638*	-0.1006	0.2951	-0.1174	
II_9		0.26*	0.28*	0.29*									0.37**		0.33**	0.43**		-0.1205	0.0670	0.6685*	0.2857	0.3026	
II_11	0.45**		0.26*													0.29*		0.3278	-0.3248	0.1799	0.6052*	-0.2276	
II_12	0.41**	0.38**	0.37**								0.38**					0.39**		0.6431**	0.0373	0.3399	0.0182	0.1077	
II_13					0.27*					0.39**	0.28*			0.33**				-0.0898	0.5668*	-0.0945	0.1596	0.3032	
II_14		<i>0.51**</i>			0.36**				0.39**					0.29*				-0.0163	0.8217**	0.0915	-0.1215	0.0984	
II_15	0.33*	0.43**	0.32*		0.37**			0.38**	0.28*				0.25*	0.43**	0.43**	0.39**	0.30*	0.5916*	0.4236	0.0903	0.1981	0.1037	
II_16													0.33*	0.28*				0.0244	0.0014	0.1449	-0.0184	0.7866*	
II_17		0.37**	0.28*			0.37**					0.25*	0.33*		0.34**	0.41**	0.30*		0.2241	0.1622	0.4400	0.0999	0.5440	
II_18		0.27*			0.38**				0.33**	0.29*	0.43**	0.28*	0.34**		0.41**			0.4051	0.3870	-0.2460	0.2960	0.5118	
II_19	0.38**				0.27*	0.33**		0.36**			0.43**		0.41**	0.41**				0.7201**	0.1686	-0.0555	-0.0352	0.2756	
II_20		0.26*		0.29*	0.28*	0.43**	0.29*				0.39**		0.30*				0.27*	0.1333	0.3496	0.1300	0.6553*	0.0235	
II_21	0.28*	0.31*	0.44**					0.39**			0.30*							0.2606	-0.0013	0.6775*	0.2573	0.0546	
																		Average reliability coefficient	0.80	0.80	0.80	0.80	0.80
																		Eigenvalues	2.6155	2.4850	2.1691	1.7411	1.6375
																		Explained variance (%)	15.3851	14.6175	12.7596	10.2416	9.6321
																		Composite reliability	0.94	0.92	0.92	0.92	0.89
																		SE (factor scores)	0.2425	0.2774	0.2774	0.2774	0.3333
																		N	4	3	3	3	2

Components loadings for analysts/professional investors. Numbers in italic are correlations considered high and bold numbers represent flagged Q-sorts for that specific component. SE is the standard error and N represents the quantity of Q-sorts loaded on each component. * and ** is when a correlation/component is statistically significant at 0.05 and 0.01 (respectively).

About components' similarity, we have reported the correlation indexes between z-scores of the simulated Q-sorts for each component on Table 22. The correlation index between C1 and C3 may be considered high (0.5387), nevertheless it can be explained by the patterns of ranking among the participants of those components (Table 23 and Table 24), as both components have great similarities on the first sentences ranked as 'most relevant' on the fourth quartile.

Table 22. Indication of similarity between z-scores of each pair of components (individual investors).

	C1 (z-score)	C2 (z-score)	C3 (z-score)	C4 (z-score)	C5 (z-score)
C1 (z-score)	1.0000				
C2 (z-score)	0.1604	1.0000			
C3 (z-score)	0.5387	0.0297	1.0000		
C4 (z-score)	0.3648	0.1584	0.4531	1.0000	
C5 (z-score)	0.1687	0.1436	0.3170	0.2125	1.0000

About characterizing statements, we have analyzed the fourth and first quartile (Table 23 and Table 24, respectively) as they represent 'extremes' perceptions of relevance for components' flagged Q-sorts. In the same manner, as IP, quartiles were calculated by ranking the statements Z-scores of the simulated Q-sort for each component, and it resulted on 16 Q-samples (approximately). We have considered as the 'characterising statements' (Exel & Graaf, 2005) the top or bottom six Q-samples on each simulated Q-sort, as we have given an instruction of Q-sorting to individuals to selected around six Q-samples to allocate in extreme ranks - i.e., (-5) and (+5) (Pennington & Kelton, 2016). The complete simulated Q-sorts for individual investors are available on Appendix K.

Since IIs have presented a greater variability, their Q-sort quartile analysis was slightly different from IP analysis: looking at Table 25, we have observed that components have just two Q-samples that they were in ranking consensus and even for the distinguishable statements, 8 sentences were distinguishing two components at the same time, but the 'distinguishing pair' would vary (see as an example Q-samples #14 and #15). In this manner, whereas IPs follows 'external' rules of information usage as previous financial practice states, IIs' seems to follow much more 'internal' rules. Thus, we have focused initially on analyzing each component individually rather than the 'continuous flow' as we were able to do with IP Q-sorts.

Being said so, for the higher z-scores (i.e., fourth quartile), the characterizing statements for C1 has a proeminence of past market data, even before knowing the business model that the company follows (#37): historical series of returns (#10), volatility measures (#9), historical series of stock prices (#11), stock price projections (#15) and stock returns forecasts (#14). If

we compare to components from IP, past market data would only appear on C2, and not in the same concentration as C1 for II has done.

Next, for C2, although the first two highly ranked sentences were to previously know the business model from the company (#37) and search for industry information (#21), the next Q-samples were related to historical series of stock prices (#11) and news from media about the company's performance on capital markets and all available information about the company (#4 and #3). In this sense, it is possible to observe how II considers external sources (situational effect) even before acquiring more knowledge about the company.

Nevertheless, it was in C3 that accounting information Q-samples started to appear more prominently, in a similar sequence that we have observed on C1 for IP: information about the business model (#37), performance (#41 and #47) and liquidity (#28 and #38) measures. When comparing to the full P set, we expected these subjects would present significant correlations between IP Q-sorts.

Finally, C4 has also looked after the business model (#37) as the highly ranked Q-samples, but it has incorporated some macroeconomic information at sequence (industry information, GPD, and SELIC rate - #21, #16 and #18).

Regarding the lower z-scores (i.e., first quartile; Table 24), we have found some consensus between characterizing statements: except for C2 (which has lowered ranking accounting information mostly), more than 50% of the Q-samples between components were from group H. They have included news from newspaper sources (#52, #53, #54 and #56) and social media (#57).

Also, it is interesting to observe the amount of accounting information classified on the first quartile for C2: in comparison with IPs ranking patterns, if on one hand professionals have not classified these accounting information pieces as 'most relevant', on the other these sentences have not appeared as 'least relevant' either (i.e., they have received the 'neutral/indifferent' status).

Also, IPs have stated during their interviews that information containing 'total amounts' (such as Q-samples #22, #32 and #34 – see C2) are of less importance when analyzing a company's performance since total amount by themselves need a 'reference point' to make comparisons with other information. In this sense, ratios have more informational relevance, as the fourth quartile of IP has shown us.

Table 23. Fourth quartile for simulated Q-sorting for each component (individual investors).

Statement 'rank' on components	Component 1		Component 2		Component 3	
	Statement	Z-scores	Statement	Z-scores	Statement	Z-scores
62	(10) I search for historical series of returns.	1.9705	(37) I seek to understand the business model that the company follows.	1.8795	(37) I seek to understand the business model that the company follows.	2.0101
61	(9) I use a volatility measure.	1.9705	(21) I search for information about the company's sector.	1.8031	(41) I use ROE ratio.	1.8477
60	(11) I search for historical series of stock prices.	1.8028	(11) I search for historical series of stock prices.	1.6180	(28) I use the EBITDA.	1.8418
59	(15) I calculate stock price projections.	1.6763	(4) I follow news related to the company's performance at capital markets.	1.4629	(47) I use EPS.	1.5053
58	(37) I seek to understand the business model that the company follows.	1.4923	(3) I follow news about any information related to the company.	1.3864	(38) I search for cash flows-operational activities.	1.4218
57	(14) I calculate stock returns forecasts.	1.4738	(13) I search for the company's market value.	1.3220	(43) I use ROA ratio.	1.2111
56	(12) I look to the stock traded volume.	1.2190	(16) I follow the current country's GDP and its growth/retraction expectations.	1.3077	(21) I search for information about the company's sector.	1.1831
55	(21) I search for information about the company's sector.	1.1890	(12) I look to the stock traded volume.	1.2134	(45) I use Total Liabilities/Book Equity ratio.	1.0180
54	(29) I use the EBIT.	0.9597	(47) I use EPS.	1.1548	(42) I use ROI ratio.	0.9842
53	(45) I use Total Liabilities/Book Equity ratio.	0.8268	(48) I use P/E ratio.	1.1083	(44) I use Current Ratio.	0.9228
52	(47) I use EPS.	0.6711	(62) I use the market cap measure.	1.0950	(40) I search for cash flows-financing activities.	0.9169
51	<u>(50) I search for "sell-side" analysts' reports.</u>	0.6158	(18) I follow the expectations behind SELIC rate.	1.0761	(39) I search for cash flows-investing activities.	0.9169
50	<u>(7) I search for significant event notice at Investor Relations website.</u>	0.6087	<u>(59) I follow Bloomberg and/or Reuters databases.</u>	0.7968	(23) I use net income measure.	0.8980
49	(30) I search for the total amount of liabilities.	0.5986	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	0.7933	(30) I search for the total amount of liabilities.	0.8921
48	(28) I use the EBITDA.	0.5804	(35) I read financial statements footnotes from subjects that I understand as important.	0.7261	(1) I follow news related to operational activities.	0.8642
47	<u>(60) I use Economica, CapitalIQ and/or another financial database.</u>	0.5694	(28) I use the EBITDA.	0.7168	<u>(58) I follow the company's financial results release.</u>	0.8583

Note: Statements in bold are from Q-sample dimension 'Information itself - accounting information' (groups E and F). Statements underlined are from Q-sample dimension 'Sources of information' (groups B, G and H); see more on section 3.1.2. Colors label is presented on Figure 27.

(Table 23 – continuance)

Statement 'rank' on components	Component 4		Component 5	
	Statement	Z-scores	Statement	Z-scores
62	(37) I seek to understand the business model that the company follows.	1.9324	<u>(52) I enter with regularity in websites such InfoMoney, Valor Econômico, IstoÉ Dinheiro, Exame, Época Negócios.</u>	1.3502
61	(38) I search for cash flows-operational activities.	1.7608	(10) I search for historical series of returns.	1.3502
60	(21) I search for information about the company's sector.	1.5363	(9) I use a volatility measure.	1.3502
59	(16) I follow the current country's GDP and its growth/retraction expectations.	1.5045	(21) I search for information about the company's sector.	1.2541
58	(45) I use Total Liabilities/Book Equity ratio.	1.4728	(11) I search for historical series of stock prices.	1.2541
57	(18) I follow the expectations behind SELIC rate.	1.3271	<u>(53) I enter with regularity in websites such as Estadão, Folha, G1, UOL.</u>	1.1581
56	<u>(58) I follow the company's financial results release.</u>	1.2718	(44) I use Current Ratio.	1.1581
55	(20) I follow exchange rates.	1.2564	(30) I search for the total amount of liabilities.	0.9975
54	(35) I read financial statements footnotes from subjects that I understand as important.	1.1613	(26) I search for financial expenses/total revenue ratio.	0.9975
53	(39) I search for cash flows-investing activities.	1.1061	(23) I use net income measure.	0.9975
52	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	1.0708	(47) I use EPS.	0.9015
51	(44) I use Current Ratio.	0.9214	(2) I follow news related to investments on long-term assets.	0.9015
50	(19) I follow the country-risk evaluation.	0.9073	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	0.8698
49	(48) I use P/E ratio.	0.8992	(28) I use the EBITDA.	0.8370
48	(23) I use net income measure.	0.8838	(4) I follow news related to the company's performance at capital markets.	0.8370
47	(40) I search for cash flows-financing activities.	0.7945	(18) I follow the expectations behind SELIC rate.	0.7409

Note: Statements in bold are from Q-sample dimension 'Information itself - accounting information' (groups E and F). Statements underlined are from Q-sample dimension 'Sources of information' (groups B, G and H); see more on section 3.1.2. Colors label is presented on Figure 27.

Table 24. First quartile for simulated Q-sorting for each component (individual investors).

Statement 'rank' on components	Component 1		Component 2		Component 3	
	Statement	Z-scores	Statement	Z-scores	Statement	Z-scores
1	<u>(56) I follow the news from printed newspaper.</u>	-2.2210	(31) I search for the total amount of current liabilities.	-2.0578	<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-2.6143
2	<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-2.2210	(44) I use Current Ratio.	-1.9612	<u>(56) I follow the news from printed newspaper.</u>	-1.9647
3	<u>(53) I enter with regularity in websites such as Estadão, Folha, G1, UOL.</u>	-2.1293	(46) I use Non-Current assets/Book Equity ratio.	-1.9049	<u>(54) I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.</u>	-1.6705
4	<u>(52) I enter with regularity in websites such as InfoMoney, Valor Econômico, IstoÉ Dinheiro, Exame, Época Negócios.</u>	-2.0533	(40) I search for cash flows-financing activities.	-1.8727	(19) I follow the country-risk evaluation.	-1.4846
5	<u>(54) I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.</u>	-2.0185	(45) I use Total Liabilities/Book Equity ratio.	-1.7641	<u>(52) I enter with regularity in websites such as InfoMoney, Valor Econômico, IstoÉ Dinheiro, Exame, Época Negócios.</u>	-1.4774
6	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-1.5960	(27) I search for operational expenses/total revenue ratio.	-1.3354	<u>(53) I enter with regularity in websites such as Estadão, Folha, G1, UOL.</u>	-1.4774
7	(17) I follow foreign debt situation.	-1.4352	(33) I search for the total amount of the book equity.	-1.1480	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-1.4070
8	<u>(59) I follow Bloomberg and/or Reuters databases.</u>	-1.4100	(22) I use total assets measure.	-1.1434	<u>(7) I search for significant event notice at Investor Relations website.</u>	-1.2459
9	(5) I follow news about financing sources.	-1.0727	(24) I search for operational income/total revenue ratio.	-1.1038	(5) I follow news about financing sources.	-1.1056
10	(6) I follow news related to socio-environmental activities.	-0.8628	(34) I search for the total amount of non-current assets.	-1.0227	(10) I search for historical series of returns.	-0.9459
11	(46) I use Non-Current assets/Book Equity ratio.	-0.7339	(26) I search for financial expenses/total revenue ratio.	-0.9928	(16) I follow the current country's GDP and its growth/retraction expectations.	-0.9211
12	(24) I search for operational income/total revenue ratio.	-0.6948	(32) I search for the total amount of current assets.	-0.9463	(17) I follow foreign debt situation.	-0.8200
13	(34) I search for the total amount of non-current assets.	-0.6600	(30) I search for the total amount of liabilities.	-0.9451	(14) I calculate stock returns forecasts.	-0.8141
14	(27) I search for operational expenses/total revenue ratio.	-0.6188	(29) I use the EBIT.	-0.8233	<u>(55) I enter with regularity in Investor Relation website.</u>	-0.7339
15	(3) I follow news about any information related to the company.	-0.5394	(5) I follow news about financing sources.	-0.7889	(46) I use Non-Current assets/Book Equity ratio.	-0.6824
16	(36) I read the accounting policy footnote.	-0.5389	(42) I use ROI ratio.	-0.7492	(15) I calculate stock price projections.	-0.6635

Note: Statements in bold are from Q-sample dimension 'Information itself - accounting information' (groups E and F). Statements underlined are from Q-sample dimension 'Sources of information' (groups B, G and H); see more on section 3.1.2. Colors label is presented on Figure 27.

(Table 24 – continuance)

Statement 'rank' on components	Component 4		Component 5	
	Statement	Z-scores	Statement	Z-scores
1	<u>(54) I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.</u>	-2.2066	(36) I read the accounting policy footnote.	-2.1767
2	<u>(56) I follow the news from printed newspaper.</u>	-2.0585	<u>(59) I follow Bloomberg and/or Reuters databases.</u>	-2.1767
3	<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-2.0349	<u>(8) I search for significant event notice at CVM website.</u>	-1.9845
4	<u>(61) I follow the CVM website.</u>	-1.7411	<u>(7) I search for significant event notice at Investor Relations website.</u>	-1.9200
5	(17) I follow foreign debt situation.	-1.5930	<u>(55) I enter with regularity in Investor Relation website.</u>	-1.8240
6	(29) I use the EBIT.	-1.5070	(14) I calculate stock returns forecasts.	-1.7279
7	(3) I follow news about any information related to the company.	-1.4848	(15) I calculate stock price projections.	-1.7279
8	(32) I search for the total amount of current assets.	-1.1593	<u>(56) I follow the news from printed newspaper.</u>	-1.6634
9	<u>(8) I search for significant event notice at CVM website.</u>	-0.9700	(31) I search for the total amount of current liabilities.	-1.6318
10	<u>(51) I search for specialists' opinion from my brokerage firm.</u>	-0.9252	<u>(54) I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.</u>	-1.4397
11	(15) I calculate stock price projections.	-0.8559	<u>(61) I follow the CVM website.</u>	-1.3119
12	(6) I follow news related to socio-environmental activities.	-0.8536	(19) I follow the country-risk evaluation.	-0.8948
13	(14) I calculate stock returns forecasts.	-0.6843	(17) I follow foreign debt situation.	-0.8936
14	(46) I use Non-Current assets/Book Equity ratio.	-0.6267	(16) I follow the current country's GDP and its growth/retraction expectations.	-0.8304
15	(30) I search for the total amount of liabilities.	-0.6127	(46) I use Non-Current assets/Book Equity ratio.	-0.7975
16	<u>(60) I use Economatica, CapitalIQ and/or another financial database.</u>	-0.6055	(37) I seek to understand the business model that the company follows.	-0.7027

Note: Statements in bold are from Q-sample dimension 'Information itself - accounting information' (groups E and F). Statements underlined are from Q-sample dimension 'Sources of information' (groups B, G and H); see more on section 3.1.2. Colors label is presented in Figure 27.

Table 25. Distinguishing/consensus Q-samples between components (II).

Q-samples		Z-score on C1	Z-score on C2	Z-score on C3	Z-score on C4	Z-score on C5	Distinguishing/consensus	Q-samples position on 1Q and 4Q				
								C1	C2	C3	C4	C5
1	A	0.1322	0.5174	0.8642	0.2584	0.1644	-			48		
2	A	0.3827	0.4100	-0.3725	0.2267	0.9015	-					51
3	A	-0.5394	1.3864	-0.4866	-1.4848	0.5171	Distinguishes f2 Distinguishes f4 Distinguishes f5	15	58		7	
4	A	0.4402	1.4629	0.2830	0.5242	0.8370	-		59			48
5	A	-1.0727	-0.7889	-1.1056	-0.1165	0.2277	-	9	15	9		
6	A	-0.8628	-0.2837	-0.6387	-0.8536	0.0355	-	10			12	
7	B	0.6087	-0.1251	-1.2459	0.2186	-1.9200	-	50		8		4
8	B	-0.0364	0.1043	-0.3328	-0.9700	-1.9845	Distinguishes f5				9	3
9	C	1.9705	-0.6670	0.2249	-0.3469	1.3502	-	61				60
10	C	1.9705	0.4146	-0.9459	0.0787	1.3502	Distinguishes f3	62		10		61
11	C	1.8028	1.6180	-0.3576	-0.0930	1.2541	-	60	60			58
12	C	1.2190	1.2134	0.4734	-0.2070	0.6777	-	56	55			
13	C	0.5499	1.3220	0.6932	-0.4127	0.4843	Distinguishes f4		57			
14	C	1.4738	-0.7480	-0.8141	-0.6843	-1.7279	Distinguishes f1 Distinguishes f5 Distinguishes f1 Distinguishes f2 Distinguishes f5	57		13	13	6
15	C	1.6763	0.6451	-0.6635	-0.8559	-1.7279		59		16	11	7
16	D	-0.4475	1.3077	-0.9211	1.5045	-0.8304	-		56	11	59	14
17	D	-1.4352	-0.1515	-0.8200	-1.5930	-0.8936	-	7		12	5	13
18	D	0.2550	1.0761	-0.4893	1.3271	0.7409	Distinguishes f3		51		57	47
19	D	0.2550	0.6451	-1.4846	0.9073	-0.8948	-			4	50	12
20	D	-0.0681	0.6129	-0.2962	1.2564	0.6132	-				55	
21	D	1.1890	1.8031	1.1831	1.5363	1.2541	Consensus	55	61	56	60	59

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(continuance)

Q-samples		Z-score on C1	Z-score on C2	Z-score on C3	Z-score on C4	Z-score on C5	Distinguishing/consensus	Q-samples position on 1Q and 4Q					
								C1	C2	C3	C4	C5	
22	E	0.2193	-1.1434	-0.0327	-0.3917	0.1961	-		8				
23	E	-0.2486	0.4623	0.8980	0.8838	0.9975	-				50	48	53
24	E	-0.6948	-1.1038	0.7545	0.3771	-0.0922	-	12	9				
25	E	0.1341	0.5054	0.2732	0.2055	0.5488	Consensus						
26	E	0.1385	-0.9928	0.1297	-0.3094	0.9975	Distinguishes f5		11				54
27	E	-0.6188	-1.3354	0.2921	0.3771	0.0355	-	14	6				
28	E	0.5804	0.7168	1.8418	-0.3057	0.8370	Distinguishes f3 Distinguishes f4	48	47	60			49
29	E	0.9597	-0.8233	0.6228	-1.5070	0.1644	-	54	14			6	
30	E	0.5986	-0.9451	0.8921	-0.6127	0.9975	-	49	13	49		15	55
31	E	0.0929	-2.0578	0.0286	0.7945	-1.6318	-		1				9
32	E	-0.4071	-0.9463	-0.1338	-1.1593	0.1644	-		12			8	
33	E	-0.1123	-1.1480	0.5614	-0.1436	0.4843	Distinguishes f2 only		7				
34	E	-0.6600	-1.0227	-0.4397	-0.4728	0.1644	-	13	10				
35	E	0.1680	0.7261	-0.1397	1.1613	-0.0922	-		48			54	
36	E	-0.5389	-0.7147	-0.5963	-0.3306	-2.1767	Distinguishes f5 only	16					1
37	E	1.4923	1.8795	2.0101	1.9324	-0.7027	Distinguishes f5 only	58	62	62	62	62	16
38	E	0.1812	-0.2647	1.4218	1.7608	0.4843	-			58		61	
39	E	0.3076	-0.0486	0.9169	1.1061	-0.3488	-			51		53	
40	E	0.4786	-1.8727	0.9169	0.7945	0.2922	Distinguishes f2 only		4	52		47	
41	F	0.5171	0.2284	1.8477	0.7570	-0.1250	Distinguishes f3				61		
42	F	0.0113	-0.7492	0.9842	0.3879	-0.0289	-		16	54			
43	F	0.0113	-0.3147	1.2111	-0.5022	0.0672	Distinguishes f3 only			57			
44	F	-0.0513	-1.9612	0.9228	0.9214	1.1581	Distinguishes f1 Distinguishes f2		2	53	51	56	
45	F	0.8268	-1.7641	1.0180	1.4728	0.3238	Distinguishes f2	53	5	55	58		
46	F	-0.7339	-1.9049	-0.6824	-0.6267	-0.7975	Distinguishes f2 only	11	3	15	14	15	
47	F	0.6711	1.1548	1.5053	-0.5081	0.9015	Distinguishes f4	52	54	59		52	
48	F	-0.0804	1.1083	0.7018	0.8992	0.1961	-		53			49	

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(continuance)

Q-samples		Z-score on C1	Z-score on C2	Z-score on C3	Z-score on C4	Z-score on C5	Distinguishing/consensus	Q-samples position on 1Q and 4Q				
								C1	C2	C3	C4	C5
49	G	-1.5960	0.7933	-1.4070	1.0708	0.8698	-	6	49	7	52	50
50	G	0.6158	-0.4917	0.4690	0.6641	0.2289	-	51				
51	G	-0.4115	0.2893	0.4938	-0.9252	0.5804	-				10	
52	H	-2.0533	0.3336	-1.4774	-0.5407	1.3502	Distinguishes f2 Distinguishes f4	4		5		62
53	H	-2.1293	0.1020	-1.4774	-0.2292	1.1581	Distinguishes f5	3		6		57
54	H	-2.0185	0.1020	-1.6705	-2.2066	-1.4397	Distinguishes f2 only	5		3	1	10
55	H	0.1817	-0.3687	-0.7339	0.7253	-1.8240	Distinguishes f5			14		5
56	H	-2.2210	0.1663	-1.9647	-2.0585	-1.6634	Distinguishes f2 only	1		2	2	8
57	H	-2.2210	-0.5940	-2.6143	-2.0349	0.3894	Distinguishes f2 Distinguishes f5	2		1	3	
58	H	0.2224	0.6939	0.8583	1.2718	-0.0605	-			47	56	
59	H	-1.4100	0.7968	-0.6635	-0.5503	-2.1767	Distinguishes f2	8	50			2
60	H	0.5694	0.0077	-0.0548	-0.6055	0.2277	-	47			16	
61	H	-0.4167	-0.3687	-0.5597	-1.7411	-1.3119	-				4	11
62	C	0.1818	1.0950	0.3286	-0.0223	0.2277	-		52			

Note: Differences calculated between Z-scores, standard error of differences (SED) and statistical significance levels can be seen on Appendix N.

Considering descriptive statistics for II (Table 26 and Table 27), as we have already mentioned, variability within II group is higher than the one observed on IP's. In this sense, it was difficult to trace an intersection of individuals' qualitative characteristics even within participants from the same component. As an example, we have checked for the investment time horizon: although the participants would define it as 'long run' or 'short run', their time specifications varied.

Table 26. Descriptive statistics for II components considering investment experience and percentage of investment (stocks versus fixed income assets).

	Age	Undergraduation course	Previous investment experience (as a professional; in years)	Previous investment experience (as a individual investor; in years)	Percentage of investment in stocks	Percentage of investment in fixed income assets
C1	42	Business	0	8	10.00%	90.00%
	44	Engineering	20	20	40.00%	60.00%
	37	Economics	0	10	40.00%	60.00%
	27	Communication	5	5	70.00%	15.00%
C2	51	Sociology	18	28	40.00%	20.00%
	50	Business	0	18	20.00%	80.00%
	33	Accounting	10	11	8.00%	2.00%
C3	40	Business	0	10	30.00%	50.00%
	52	Business	0	8	10.00%	50.00%
	41	Engineering	20	20	20.00%	80.00%
C4	42	Accounting	0	7	10.00%	40.00%
	37	Accounting	15	15	3.00%	97.00%
	44	Economics	0	15	25.00%	60.00%
C5	27	Information systems	0	2.5	70.00%	20.00%
	35	Accounting	0	2	10.00%	90.00%

Table 27. Descriptive statistics for II components considering risk taking profile, portfolio characteristics and time horizon.

	Risk taking level	Objective of investment	Risk aversic Impaciency	Frequency of portfolio revision	Time horizon of investment	
C1	-	-	No	3	-	Short run (to consume/travel) Long run (indefinite; to retirement) and short run (options; daily).
	Very high risk taker	To increase capital	No	3	Long run (> 2 years)	Medium run (between 3 to 6 months)
	High risk taker	To increase capital	No	3	Medium run (less or equal to 6 months)	Short run (less than a week) and lonf run (indefinite).
	Very high risk taker	To increase capital	No	7	Very short run (daily)	
C2	High risk taker	To increase capital	No	4	Very long run (> 5 years)	Long run (between 4 to 5 years)
	Low risk taker	To generate income	No	4	Long run (> 2 years)	Long run (between 2 to 4 years) Medium run (between 6 months to 1 year)
	Very high risk taker	To increase capital	No	4	Long run (> 2 years)	
C3	-	-	No	4	-	Medium/long run (more than 1 year)
	High risk taker	To increase capital	No	4	Short run (monthly)	Long run (at least 5 years)
	Low risk taker	To increase capital	No	3	Long run (> 2 years)	Long run (at least 3 years)
C4	Medium risk taker	To generate income	No	4	Long run (> 2 years)	Long run (between 1 to 2 years)
	Very low risk taker	To increase capital	No	5	Very long run (> 5 years)	Long run (indefinite)
	Low risk taker	To generate income	No	2	Very long run (> 5 years)	Long run (20 years)
C5	Very low risk taker	To generate income	No	4	Very long run (> 5 years)	Long run (10 years)
	Low risk taker	To generate income	Yes	4	Very long run (> 5 years)	Long run (indefinite)

4.1.2.3 Complete P set

Using the criteria that we have previously described on section 3.1.5 to identify the number of components to be extracted, we have defined to extract *eight* components for the complete P set by the eigenvalue (Figure 29).

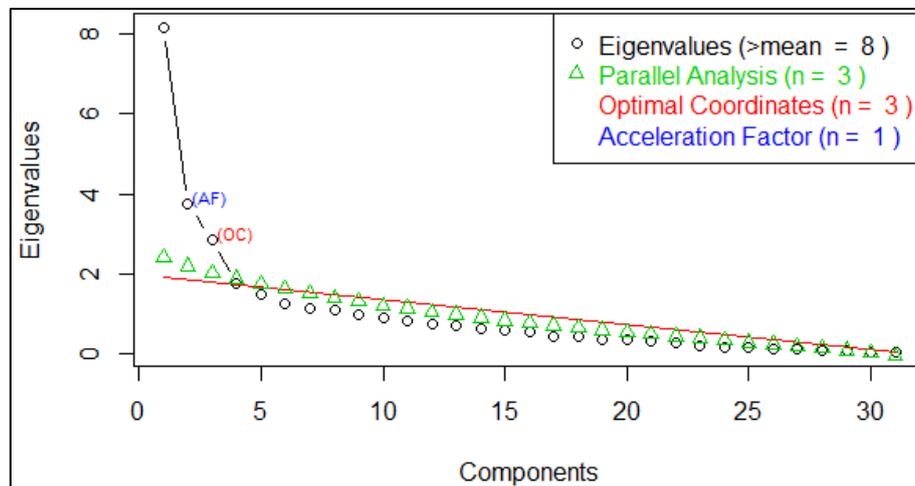


Figure 29. Graphical criteria of components extraction (complete P set).

Nevertheless, we had to re-run our PCA with a lower number of components to guarantee the composite reliability stability: it is necessary to ensure at least two Q-sorts in one component (Brown, 1980; Watts & Stenner, 2005); only with four components this assumption could be held. This difficulty on grouping individual and analysts/professional investors' Q-sorts into the same components is due to the disparities on ranking behavior from both groups that we have mentioned on the previous section. Nevertheless, the cumulative explained variance was 54.39%.

Regarding the correlation between II and IP (Table 28), intuitively, we were expecting that analysts/professional investors would have a greater proportion of higher correlations between other analysts/professional investors (and lower proportions of high correlations between individual investors). When a higher correlation coefficient with analysts/professional investors and individual investors was found, we have understood that as it was a sign of 'mimetic behavior' of individual investors on professional investors. So, we were expecting that professional investors had few high correlations with individual investors. The exception would be IP_4, as this participant has 14 significant correlations with individual investors (being two of them high and all the remaining considered as intermediate).

Nevertheless, we were not able to identify many high correlation coefficients between analysts/professional investors. It was more common to see significant correlations with individual investors. For instance, all of the correlations between II_7 and professional investors were higher than 0.30, being the one with IP_6 presenting a coefficient of 0.40 (sig < 0.01). II_8 has the great amount of higher correlations with IP (IP_12: 0.54; IP_4: 0.47; IP_10: 0.42, all sig < 0.01). II_9 has its higher correlation with IP_13 (0.44, sig < 0.01), the second is with II_21 (0.43, sig < 0.01). II_12 has three correlations above 0.40 (sig < 0.01) with IP (IP_2, IP_10 and IP_13).

Table 28. Correlation coefficients (P set).

	II_2	II_3	II_4	II_5	II_7	II_8	II_9	II_11	II_12	II_14	II_15	II_18	II_19	II_20	II_21
IP_1		0.32*				0.46**			0.25*	0.39**	0.65**	0.41**		0.41**	
IP_2		0.34**		0.31*	0.31*	0.29*		0.38**	0.42**		0.33**			0.42**	0.37**
IP_3	0.37**		0.36**	0.33**											0.35**
IP_4		0.54**	0.27*	0.35**		0.47**	0.33**		0.32*	0.35**	0.66**	0.45**	0.39**	0.49**	0.29*
IP_5	0.46**	0.31*	0.32*				0.36**	0.28*	0.26*						0.31*
IP_6				0.28*	0.4**	0.29*								0.25*	
IP_7	0.31*			0.27*	0.32*	0.26*		0.36**			0.29*			0.33**	0.37**
IP_8	0.35**	0.45**	0.31*						0.3*		0.57**	0.27*	0.33*	0.27*	0.25*
IP_9		0.38**	0.34**			0.26*					0.42**			0.31*	0.49**
IP_10	0.45**	0.47**	0.33**			0.42**			0.41**		0.38**		0.25*	0.28*	0.40**
IP_11	0.31*	0.28*		0.29*	0.33**			0.37**						0.34**	0.30*
IP_12		0.31*				0.54**				0.33**	0.42**	0.31*		0.38**	0.28*
IP_13	0.38**	0.54**	0.35**	0.28*			0.44**	0.32*	0.41**					0.43**	0.41**

Looking at Table 29, it is possible to notice that only 23 Q-sorts were flagged (12 from II and 11 from IP) after exclusion from MSA criterion. *Component 1* (C1) is defined by participants IP_1, IP_4, IP_8, IP_12, II_8, II_15, II_18 and II_19 (17.20% of explained variance). II_15 has presented the highest component loading from all participants of Component 1 (0.8087). By this manner, we can understand that II_15 has a relevant Q sorting pattern for this component since it reflects the ranking behavior for component 1 when we have considered its correlations between other participants.

Component 2 (C2) is defined by participants IP_2, IP_6, IP_7, IP_11, II_5 and II_7 (13.48% of explained variance). IP_6 has presented the highest component loading from all participants of Component 2 (0.7685). By this manner, we can understand that IP_6 has a relevant Q sorting pattern for this component since it reflects the ranking behavior for component 2 when we have considered its correlations between other participants.

Component 3 (C3) is defined by participants IP_3, II_2, II_4, II_11 and II_12 (12.72% of explained variance). II_4 has presented the highest component loading from all participants of Component 3 (0.7201). By this manner, we can understand that II_4 has a relevant Q sorting pattern for this component since it reflects the ranking behavior for component 3 when we have considered its correlations between other participants.

Component 4 (C4) is defined by participants IP_5, IP_13, IP_7, II_3 and II_9 (10.98% of explained variance). IP_13 has presented the highest component loading from all participants of Component 4 (0.7656). By this manner, we can understand that IP_13 has a relevant Q sorting pattern for this component since it reflects the ranking behavior for component 4 when we have considered its correlations between other participants.

It is interesting to note that professional investors have grouped in their original components; see the example for IP_1, IP_4, IP_8, and IP_12. When analyzing just the IP Q-sorts, those Q-sorts have originally formed C2; when we consider the entire P set, they have grouped into C1. The same has happened to IP_2, IP_6, IP_7, and IP_11 (C3; now, they are in C2). For IP_5 and IP_13, both were classified in C1, but they have formed C4 (and without IP_3, which has formed C3). In this round, IP_9 has not loaded into any component. However, the same classifying behavior could not be identified for II Q-sorts.

It is interesting to note that professional investors have grouped in their original components; see the example for IP_1, IP_4, IP_8, and IP_12. When analyzing just the IP Q-sorts, those Q-sorts have originally formed C2; when we consider the entire P set, they have grouped into C1. The same has happened to IP_2, IP_6, IP_7, and IP_11 (C3; now, they are in C2). For IP_5 and

IP_13, both were classified in C1, but they have formed C4 (and without IP_3, which has formed C3). In this round, IP_9 has not loaded into any component.

Table 29. Components loadings (P set).

	C1	C2	C3	C4
IP_1	0.7810**	0.2765	-0.2007	-0.0113
IP_2	0.2864	0.6729**	0.3098	0.1297
IP_3	-0.0074	0.5124	0.5615*	0.0717
IP_4	0.7191**	-0.0099	0.1304	0.3821
IP_5	-0.2615	0.2105	0.3708	0.5668*
IP_6	0.1168	0.7685**	-0.0347	0.0129
IP_7	0.0763	0.7152**	0.2171	0.1864
IP_8	0.5431**	0.1798	0.2841	0.0869
IP_9	0.3867	0.1667	0.1795	0.4278
IP_10	0.3037	0.2951	0.3994	0.3215
IP_11	0.1374	0.4976*	0.3387	0.0897
IP_12	0.5972**	0.4593	-0.2585	0.1158
IP_13	0.0664	0.2625	0.2573	0.7656**
II_2	0.1035	0.1111	0.7163**	0.1906
II_3	0.4741	0.0379	0.1076	0.6513*
II_4	0.0892	-0.1385	0.7201**	0.3232
II_5	0.1508	0.3461	0.1935	0.1867
II_7	-0.1924	0.6806**	-0.1954	0.1551
II_8	0.5821**	0.3273	-0.1436	0.1537
II_9	0.0130	0.1093	0.0901	0.6398**
II_11	-0.1481	0.3517	0.6129**	0.0416
II_12	0.3334	-0.0180	0.5288*	0.2817
II_14	0.4670	-0.0372	-0.4062	0.4560
II_15	0.8087**	0.0834	0.3113	0.0185
II_18	0.7081**	-0.0713	0.0767	-0.0447
II_19	0.5209**	-0.2029	0.3870	0.0346
II_20	0.4031	0.4245	0.0519	0.2928
II_21	0.1450	0.2616	0.4053	0.4610
Average reliability coefficient	0.80	0.80	0.80	0.80
Eigenvalues	4.8175	3.7754	3.5620	3.0734
Explained variance (%)	17.2055	13.4836	12.7215	10.9765
Composite reliability	0.97	0.96	0.95	0.94
SE (factor scores)	0.1741	0.2000	0.2182	0.2425
N	8	6	5	4

Table 30. Indication of similarity between z-scores of each pair of components (P set).

	C1 (z-score)	C2 (z-score)	C3 (z-score)	C4 (z-score)
C1 (z-score)	1.0000			
C2 (z-score)	0.3088	1.0000		
C3 (z-score)	0.3157	0.3659	1.0000	
C4 (z-score)	0.3737	0.4577	0.5306	1.0000

About characterizing statements, we have analyzed the fourth and first quartiles (Table 31 and Table 32, respectively) as they represent ‘extremes’ in the perceptions of relevance for components’ flagged Q-sorts. In the same manner, as IP and II, quartiles were calculated by ranking the statements Z-scores of the simulated Q-sort for each component and it resulted on 16 Q-samples (approximately). We have considered as the ‘characterising statements’ (Exel & Graaf, 2005) the top or bottom six Q-samples on each simulated Q-sort, as we have given an instruction of Q-sorting to individuals to select around six Q-samples to allocate in extreme ranks - i.e., (-5) and (+5) (Pennington & Kelton, 2016). The complete simulated Q-sorts for the complete P set are available in Appendix L.

For the higher z-scores (i.e., fourth quartile; Table 31), on C1, we have observed the prevailing preference from II for situational information, and it is interesting to see that IPs’ Q-sorts from the IP C2 have also been loaded into C1 for the complete P set, as they have also presented a preference for past market data as well. Looking at the ‘evolution’ on characterizing statements through PCA components, the relevance perception for accounting information increases (for instance, C4 for the complete P set has loaded IPs’ Q-sorts from the C1 for analysts/professional investors only). Regarding the lower z-scores (i.e., first quartile; Table 32), ranking patterns were more uniform between the four components.

Looking at distinguishing and consensus statements on Table 33, we have observed an analogous situation as we have seen for II. Components have presented just three Q-samples that all components were in ranking consensus and even for the distinguishable statements, sixteen sentences were distinguishing two components at the same time.

Considering descriptive statistics for the complete P set (Table 34 and Table 35), in the same case as II, variability within components’ qualitative characteristics was high, making it difficult to trace an intersection of individuals’ qualitative characteristics even within participants from the same component.

Table 31. Fourth quartile for simulated Q-sorting for each component (P set).

Statement 'rank' on components	Component 1		Component 2		Component 3		Component 4	
	Label	Z-scores	Label	Z-scores	Label	Z-scores	Label	Z-scores
62	<u>(50) I search for "sell-side" analysts' reports.</u>	<u>1.5088</u>	(37) I seek to understand the business model that the company follows.	1.7758	(37) I seek to understand the business model that the company follows.	1.7587	(37) I seek to understand the business model that the company follows.	1.895
61	(48) I use P/E ratio.	1.4776	(21) I search for information about the company's sector.	1.6709	(45) I use Total Liabilities/Book Equity ratio.	1.4437	(21) I search for information about the company's sector.	1.791
60	(21) I search for information about the company's sector.	1.4014	(38) I search for cash flows - operational activities.	1.5224	(30) I search for the total amount of liabilities.	1.3234	(28) I use the EBITDA.	1.609
59	(18) I follow the expectations behind SELIC rate.	1.3597	<u>(58) I follow the company's financial results release.</u>	<u>1.4777</u>	(39) I search for cash flows - investing activities.	1.2818	<u>(58) I follow the company's financial results release.</u>	<u>1.590</u>
58	(9) I use a volatility measure.	1.3531	(1) I follow news related to operational activities.	1.1796	(38) I search for cash flows - operational activities.	1.1635	(35) I read financial statements footnotes from subjects that I understand as important.	1.390
57	(10) I search for historical series of returns.	1.3432	(48) I use P/E ratio.	1.1775	(13) I search for the company's market value.	1.0944	(41) I use ROE ratio.	1.338
56	(11) I search for historical series of stock prices.	1.3215	(35) I read financial statements footnotes from subjects that I understand as important.	1.1377	(40) I search for cash flows - financing activities.	1.0452	(62) I use the market cap measure.	1.324
55	(4) I follow news related to the company's performance at capital markets.	1.3042	(41) I use ROE ratio.	1.0725	(41) I use ROE ratio.	0.9835	(12) I look to the stock traded volume.	1.278
54	(37) I seek to understand the business model that the company follows.	1.2580	(18) I follow the expectations behind SELIC rate.	0.9792	(11) I search for historical series of stock prices.	0.9831	(13) I search for the company's market value.	1.240
53	(15) I calculate stock price projections.	1.1677	(39) I search for cash flows - investing activities.	0.9712	(9) I use a volatility measure.	0.9800	(47) I use EPS.	1.134
52	(20) I follow exchange rates.	1.1567	<u>(8) I search for significant event notice at CVM website.</u>	<u>0.9398</u>	(44) I use Current Ratio.	0.9730	(48) I use P/E ratio.	1.037
51	<u>(51) I search for specialists' opinion from my brokerage firm.</u>	<u>1.1531</u>	(16) I follow the current country's GDP and its growth/retraction expectations.	0.9368	(10) I search for historical series of returns.	0.8675	(38) I search for cash flows - operational activities.	1.028
50	(12) I look to the stock traded volume.	1.1055	(36) I read the accounting policy footnote.	0.9142	(26) I search for financial expenses/total revenue ratio.	0.7604	(4) I follow news related to the company's performance at capital markets.	0.952
49	(19) I follow the country-risk evaluation.	1.0211	<u>(7) I search for significant event notice at Investor Relations website.</u>	<u>0.8490</u>	(14) I calculate stock returns forecasts.	0.7581	(45) I use Total Liabilities/Book Equity ratio.	0.757
48	(13) I search for the company's market value.	0.9881	(19) I follow the country-risk evaluation.	0.8031	(15) I calculate stock price projections.	0.7445	<u>(52) I enter with regularity in websites such InfoMoney, Valor Econômico, IstoÉ Dinheiro, Exame, Época Negócios.</u>	<u>0.756</u>
47	(16) I follow the current country's GDP and its growth/retraction expectations.	0.9279	(27) I search for operational expenses/total revenue ratio.	0.6838	(35) I read financial statements footnotes from subjects that I understand as important.	0.6580	(39) I search for cash flows - investing activities.	0.753

Note: Statements in bold are from Q-sample dimension 'Information itself - accounting information' (groups E and F). Statements underlined are from Q-sample dimension 'Sources of information' (groups B, G and H); see more on section 3.1.2. Colors label is presented on Figure 27.

Table 32. First quartile for simulated Q-sorting for each component (P set).

Statement rank on components	Component 1		Component 2		Component 3		Component 4	
	Label	Z-scores	Label	Z-scores	Label	Z-scores	Label	Z-scores
1	<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-2.2888	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-2.7742	<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-2.6661	<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-2.2933
2	(36) I read the accounting policy footnote.	-1.9664	(6) I follow news related to socio-environmental activities.	-2.1398	<u>(53) I enter with regularity in websites such as Estadão, Folha, G1, UOL.</u> <u>(52) I enter with regularity in websites such as InfoMoney, Valor Econômico, IstoÉ Dinheiro, Exame, Época Negócios.</u>	-2.2773	(19) I follow the country-risk evaluation.	-1.7898
3	<u>(61) I follow the CVM website.</u>	-1.5629	(11) I search for historical series of stock prices.	-1.6525	<u>(56) I follow the news from printed newspaper.</u>	-2.2114	<u>(50) I search for "sell-side" analysts' reports.</u>	-1.7631
4	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-1.5151	<u>(51) I search for specialists' opinion from my brokerage firm.</u>	-1.6023	<u>(54) I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.</u>	-2.1915	(6) I follow news related to socio-environmental activities.	-1.6711
5	(17) I follow foreign debt situation.	-1.4395	<u>(57) I follow business news from Whatsapp and/or Facebook.</u>	-1.5314	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-1.9659	(17) I follow foreign debt situation.	-1.5763
6	(32) I search for the total amount of current assets.	-1.4204	(17) I follow foreign debt situation.	-1.5104	<u>(51) I search for specialists' opinion from my brokerage firm.</u>	-1.9106	<u>(49) I look for my friends and/or my family members about investment decisions.</u>	-1.4503
7	(6) I follow news related to socio-environmental activities.	-1.3085	(22) I use total assets measure.	-1.3899	(5) I follow news about financing sources.	-1.8214	<u>(54) I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.</u>	-1.4121
8	(34) I search for the total amount of non-current assets.	-1.2668	(12) I look to the stock traded volume.	-1.2509	(3) I follow news about any information related to the company.	-1.0286	<u>(51) I search for specialists' opinion from my brokerage firm.</u>	-1.3155
9	<u>(54) I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.</u>	-1.0451	(10) I search for historical series of returns.	-1.1771	(4) I follow news related to the company's performance at capital markets.	-1.0193	(46) I use Non-Current assets/Book Equity ratio.	-1.1515
10	(22) I use total assets measure.	-1.0068	(62) I use the market cap measure.	-1.1581	<u>(59) I follow Bloomberg and/or Reuters databases.</u>	-0.9785	(14) I calculate stock returns forecasts.	-1.0195
11	(30) I search for the total amount of liabilities.	-0.9235	(30) I search for the total amount of liabilities.	-1.0667	<u>(50) I search for "sell-side" analysts' reports.</u>	-0.9698	<u>(61) I follow the CVM website.</u>	-0.9394
12	(5) I follow news about financing sources.	-0.9221	(13) I search for the company's market value.	-0.9201	(17) I follow foreign debt situation.	-0.8538	<u>(56) I follow the news from printed newspaper.</u>	-0.9326
13	(46) I use Non-Current assets/Book Equity ratio.	-0.9164	(44) I use Current Ratio.	-0.9036	(19) I follow the country-risk evaluation.	-0.7406	(20) I follow exchange rates.	-0.9052
14	(44) I use Current Ratio.	-0.8995	(32) I search for the total amount of current assets.	-0.8899	(6) I follow news related to socio-environmental activities.	-0.5262	(18) I follow the expectations behind SELIC rate.	-0.8583
15	(24) I search for operational income/total revenue ratio.	-0.8721	(9) I use a volatility measure.	-0.8394	(61) I follow the CVM website.	-0.5254	(22) I use total assets measure.	-0.7507
16	<u>(56) I follow the news from printed newspaper.</u>	-0.8605	(46) I use Non-Current assets/Book Equity ratio.	-0.7782		-0.5226	(15) I calculate stock price projections.	-0.7366

Note: Statements in bold are from Q-sample dimension 'Information itself - accounting information' (groups E and F). Statements underlined are from Q-sample dimension 'Sources of information' (groups B, G and H); see more on section 3.1.2. Colors label is presented on Figure 27.

Table 33. Distinguishing/consensus Q-samples between components (P set).

Q-samples		Z-score on C1	Z-score on C2	Z-score on C3	Z-score on C4	Distinguishing/consensus	Q-samples position on 1Q and 4Q			
							C1	C2	C3	C4
1	A	-0.5547	1.1796	0.6577	0.6514	Distinguishes f1 only		58		
2	A	-0.2294	0.3572	-0.2353	0.4433	-				
3	A	0.0758	0.3856	-1.0193	0.2463	Distinguishes f3 only			9	
4	A	1.3042	-0.2572	-0.9785	0.9520	Distinguishes f2 Distinguishes f3	55		10	50
5	A	-0.9221	-0.2583	-1.0286	-0.3680	-	12		8	
6	A	-1.3085	-2.1398	-0.5254	-1.6711	Distinguishes f3	7	2	15	4
7	B	0.4303	0.8490	0.3997	-0.0381	-		49		
8	B	-0.6627	0.9398	-0.0168	-0.7136	Distinguishes f2 Distinguishes f3		52		
9	C	1.3531	-0.8394	0.9800	0.4677	Distinguishes f2	58	15	53	
10	C	1.3432	-1.1771	0.8675	-0.2874	Distinguishes f2 Distinguishes f4	57	9	51	
11	C	1.3215	-1.6525	0.9831	0.1779	Distinguishes f2 Distinguishes f4	56	3	54	
12	C	1.1055	-1.2509	0.5008	1.2775	Distinguishes f2 Distinguishes f3	50	8		55
13	C	0.9881	-0.9201	1.0944	1.2399	Distinguishes f2 only	48	12	57	54
14	C	0.8609	-0.1970	0.7581	-1.0195	Distinguishes f2 Distinguishes f4			49	10
15	C	1.1677	0.6812	0.7445	-0.7366	Distinguishes f4 only	53		48	16
16	D	0.9279	0.9368	-0.0468	-0.6872	Distinguishes f3 Distinguishes f4	47	51		
17	D	-1.4395	-1.5104	-0.7406	-1.5763	Distinguishes f3 only	5	6	13	5
18	D	1.3597	0.9792	0.0093	-0.8583	Distinguishes f3 Distinguishes f4	59	54		14
19	D	1.0211	0.8031	-0.5262	-1.7898	Distinguishes f3 Distinguishes f4	49	48	14	2
20	D	1.1567	0.6004	0.4283	-0.9052	Distinguishes f1 Distinguishes f4	52			13
21	D	1.4014	1.6709	0.6575	1.7907	Distinguishes f3 only	60	61		61

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Q-samples		Z-score on C1	Z-score on C2	Z-score on C3	Z-score on C4	Distinguishing/consensus	Q-samples on 1Q and 4Q			
							C1	C2	C3	C4
22	E	-1.0068	-1.3899	0.3463	-0.7507	Distinguishes f3	10	7		15
23	E	0.3418	0.3504	0.3760	0.5283	Consensus				
24	E	-0.8721	0.3888	0.2892	0.6241	Distinguishes f1 only	15			
25	E	-0.0180	-0.3228	0.3279	-0.1188	-				
26	E	-0.1284	0.1336	0.7604	0.1099	Distinguishes f3 only			50	
27	E	-0.1603	0.6838	0.1689	0.3147	-		47		
28	E	0.7842	0.5731	0.3782	1.6089	Distinguishes f4 only				60
29	E	-0.0729	0.2613	0.3722	-0.1364	Consensus				
30	E	-0.9235	-1.0667	1.3234	0.1339	Distinguishes f3 Distinguishes f4	11	11	60	
31	E	-0.6226	0.5949	0.2501	-0.4458	-				
32	E	-1.4204	-0.8899	0.1712	-0.5460	Distinguishes f1 Distinguishes f3	6	14		
33	E	-0.0855	0.2463	-0.0118	-0.1276	Consensus				
34	E	-1.2668	-0.6917	-0.1857	-0.4458	Distinguishes f1 only	8			
35	E	-0.6516	1.1377	0.6580	1.3900	Distinguishes f1		56	47	58
36	E	-1.9664	0.9142	-0.0933	0.4457	Distinguishes f1	2	50		
37	E	1.2580	1.7758	1.7587	1.8953	-	54	62	62	62
38	E	-0.0255	1.5224	1.1635	1.0283	Distinguishes f1 only		60	58	51
39	E	-0.0934	0.9712	1.2818	0.7526	Distinguishes f1 only		53	59	47
40	E	-0.6759	0.6453	1.0452	0.4389	Distinguishes f1 only			56	
41	F	0.2850	1.0725	0.9835	1.3377	Distinguishes f1 only		55	55	57
42	F	-0.1024	0.3437	0.2660	0.5107	-				
43	F	0.1861	-0.2530	0.3241	-0.0309	Consensus				
44	F	-0.8995	-0.9036	0.9730	-0.2410	Distinguishes f3 Distinguishes f4	14	13	52	
45	F	0.3845	0.4937	1.4437	0.7570	Distinguishes f3 only			61	49
46	F	-0.9164	-0.7782	-0.2516	-1.1515	-	13	16		9
47	F	0.7121	-0.3384	0.2009	1.1338	-				53
48	F	1.4776	1.1775	-0.3739	1.0371	Distinguishes f3 only	61	57		52

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Q-samples		Z-score on C1	Z-score on C2	Z-score on C3	Z-score on C4	Distinguishing/consensus	Q-samples on 1Q and 4Q			
							C1	C2	C3	C4
49	G	-1.5151	-2.7742	-1.9106	-1.4503	Distinguishes f2 only	4	1	6	6
50	G	1.5088	0.6792	-0.8538	-1.7631	Distinguishes all	62		12	3
51	G	1.1531	-1.6023	-1.8214	-1.3155	Distinguishes f1 only	51	4	7	8
52	H	0.0155	-0.0562	-2.2114	0.7560	Distinguishes f3 Distinguishes f4			3	48
53	H	-0.6244	-0.6773	-2.2773	-0.6320	Distinguishes f3 only			2	
54	H	-1.0451	-0.3827	-1.9659	-1.4121	Distinguishes f2	9		5	7
55	H	-0.4741	0.0010	-0.0425	0.2918	-				
56	H	-0.8605	-0.6111	-2.1915	-0.9326	Distinguishes f3 only	16		4	12
57	H	-2.2888	-1.5314	-2.6661	-2.2933	Distinguishes f2 only	1	5	1	1
58	H	0.8793	1.4777	0.3747	1.5904	-		59		59
59	H	0.6449	0.5039	-0.9698	0.2507	Distinguishes f3 only			11	
60	H	-0.8437	0.2390	0.3441	-0.1222	Distinguishes f1 only				
61	H	-1.5629	0.0603	-0.5226	-0.9394	Distinguishes f1 Distinguishes f2	3		16	11
62	C	0.7920	-1.1581	-0.1953	1.3235	Distinguishes f2 Distinguishes f3		10		56

Note: Differences calculated between Z-scores, standard error of differences (SED) and statistical significance levels can be seen on Appendix O.

Table 34. Descriptive statistics for P set components considering investment experience and percentage of investment (stocks versus fixed income assets).

	Age	Undergraduation course	Previous investment experience (as a professional; in years)	Previous investment experience (as a individual investor; in years)	Percentage of investment in stocks	Percentage of investment in fixed income assets
C1	43	Economics	-	20	20.00%	80.00%
	26	Accounting	7	2	5.00%	80.00%
	47	Engineer	17	17	3.00%	25.00%
	26	Economics	4	0 a	0.00%	100.00%
	51	Sociology	18	28	40.00%	20.00%
	37	Economics	0	10	40.00%	60.00%
	39	Mathematics	10	12	10.00%	30.00%
	27	Comunication	5	5	70.00%	15.00%
C2	30	Business	8	-	30.00%	65.00%
	42	Economics	19	19	30.00%	40.00%
	36	Economics	11	11	45.00%	30.00%
	49	Mathematics	30	30	20.00%	60.00%
	42	Accounting	0	7	10.00%	40.00%
	42	Enginerring	0	16	50.00%	50.00%
C3	58	Economics	20	20	-	-
	42	Business	0	8	10.00%	90.00%
	40	Business	0	10	30.00%	50.00%
	37	Accounting	15	15	3.00%	97.00%
	44	Enginerring	20	20	40.00%	60.00%
C4	38	Economics	15	8 a	0.00%	100.00%
	35	Engineer	14	23	40.00%	55.00%
	37	Law	0	2	15.00%	80.00%
	52	Business	0	8	10.00%	50.00%

Note: '-' means that the subject has not answered the question. a = subject has investment restrictions as an individual investor.

Table 35. Descriptive statistics for P set components considering risk taking profile, portfolio characteristics and time horizon.

	Risk taking level	Objective of investment	Risk aversion	Impaciency	Frequency of portfolio revision	Time horizon of investment
C1	-	-	-	-	-	Short and medium run (subject has not defined time reference)
	Medium risk taker	To increase capital	Yes	4	Short run (monthly)	Long run (1 year due to recent economy)
	High risk taker	To generate income	No	4	Very long run (> 5 years)	Long run (between 3 to 5 years)
	Medium risk taker	To generate income	No	3	Medium run (less or equal to 6 months)	Short run (between 1 to 2 months)
	High risk taker	To increase capital	No	4	Very long run (> 5 years)	Long run (between 4 to 5 years)
	High risk taker	To increase capital	No	3	Medium run (less or equal to 6 months)	Medium run (between 3 to 6 months)
	Medium risk taker	To generate income	No	4	Long run (> 2 years)	Long run (between 5 to 15 years)
	Very high risk taker	To increase capital	No	7	Very short run (daily)	Short run (less than a week) and lonf run (indefinite).
C2	-	-	No	3	-	Subject has not defined time horizon
	High risk taker	To increase capital	No	3	Very long run (> 5 years)	Short run (up to 1 year)
	Very high risk takers	To increase capital	No	1	Very long run (> 5 years)	Short run (between 6 to 8 months) or long run (5 years).
	Low risk taker	To generate income	No	6	Long run (> 2 years)	Medium run (between 3 to 5 years)
	Medium risk taker	To generate income	No	4	Long run (> 2 years)	Long run (between 1 to 2 years)
	Medium risk taker	To generate income	No	-	Very long run (> 5 years)	Long run (between 10 to 15 years)
C3	Medium risk taker	To increase capital	No	3	Medium run (less or equal to 6 months)	Long run (between 5, 10 to 15 years)
	-	-	No	3	-	Short run (to consume/travel)
	-	-	No	4	-	Medium/long run (more than 1 year)
	Very low risk taker	To increase capital	No	5	Very long run (> 5 years)	Long run (indefinite)
	Very high risk taker	To increase capital	No	3	Long run (> 2 years)	Long run (indefinite; to retirement) and short run (options; daily).
C4	Medium risk taker	To generate income	No	4	Very long run (> 5 years)	Long run (between 2 to 3 years)
	High risk taker	To increase capital	No	5	Medium run (less or equal to 6 months)	Long run (between 1 to 2 years)
	-	-	No	2	-	Long run (indefinite)
	High risk taker	To increase capital	No	4	Short run (monthly)	Long run (at least 5 years)

Note: '-' means that the subject has not answered the question. a = subject has investment restrictions as an individual investor.

4.2 The experiment

As said previously in section 3.2.3, we have a total 147 responses. To check if they were valid, we have crossed the randomly attributed experimental conditions versus the answers that participants have given on their perception about presentation format and financial performance of the firm at the manipulation checks questions (see Appendix Q). As an example, if a participant was allocated to Condition 1 (Traditional presentation format versus Good financial performance), but s/he has answered that s/he received the narrative format and/or the bad financial performance, we would understand this mismatch as a lack of attention during his/her participation and, then, exclude it from our database.

Therefore, 60 participants were excluded, which has totalized 87 valid experiment responses. On Table 36, we have included how many participants were on each experimental condition after excluding non-valid responses.

Table 36. Valid responses for each experimental condition.

Experimental condition	N (valid responses)
Traditional format x good financial performance (Condition 1)	28
Traditional format x bad financial performance (Condition 2)	26
Narrative format x good financial performance (Condition 3)	21
Narrative format x bad financial performance (Condition 4)	12
Total	87

On the remaining of this chapter, we have explored more on the characteristics of the final sample, tested for OLS assumptions (section 4.2.1) and disclosed the full models (section 4.2.2).

4.2.1 Descriptive statistics and OLS assumptions

Firstly, we have briefly described our variables in the full sample context (Table 37). When we have asked the subjects to evaluate their investment propensity into a 0 to 1 scale (we have transformed it into a 0 to 100 to facilitate analysis), the average value was 55.16 with a standard deviation of 29.06 (max=100, min=0). When compared to the 'Investment propensity (in R\$)', its mean value is R\$ 14,626.44 (SD=R\$ 10,588.01, max=R\$ 40,500.00, min=R\$ 0.00). Comparing to the total available amount for the participant to invest in the XYZ's shares, the average value represents about 29.25%.

About sample characteristics, the average age is 29.78 years old ($SD=9.00$, $max=62$, $min=19$), 28 participants have identified themselves as 'females' and 57 as 'males'. 25 participants have an income level higher than R\$14,055.00, and 24 participants have an income level from R\$2,8011.01 to R\$5,662.00 (both added represents 56.32% of the total sample). 37 subjects (42.53%) have chosen a low risk-taking level portfolio (followed by medium risk – 21 subjects – and very low risk level – 19 subjects).

39% of the sample have previous investment experience in capital markets with an average of 5.22 years ($SD=5.00$), 41 participants are undergraduate students (47.13%), and 46 are graduate students (52.87%); considering undergraduate courses, 33 are from Accounting (38.37%), 24 from Economics (27.91%) and 20 from Business (23.25%).

The post assessment questions about their internal state (i.e., tiredness, somnolence and mental effort) were all below 50% (including maximum values), which indicates that the subjects have accomplished the task with no further difficulties. Also, participants have indicated that, in general, they have enjoyed the experimental task ($mean=61.67$, $SD=23.23$).

Further on investment experience, all mean values for the variables of interest have not presented significant differences between subjects who have previously investment experience versus the ones who do not have it. (see Table 38). Nevertheless, it is interesting to see how the previous experience has played some role in the reported internal state of individuals: for those who have not invested in capital markets before, tiredness, somnolence and mental effort had higher scores (almost 11, 7 and 5 points higher than subjects who had previous investment experience, respectively).

Table 37. Descriptive statistics for the full sample.

Variable	Mean	St. Dev.	Median	Max	Min	N
Propensity01	55.16	29.06	59.00	100	0	87
Propensitymoney	14,626.44	10,588.01	12,000.00	40,500.00	0	87
Age	29.78	9.00	28.00	62	19	86
Investment.Experience a	0.39	0.49	0.00	1	0	87
InvestmentYears	5.22	5.00	4.00	20	0	36
RiskTakingLevel b	-	-	2.00	5	1	87
UnderGraduatecourse c	-	-	2.00	4	1	86
UnderGraduateConclusion d	0.63	0.49	1.00	1	0	87
Graduate e	0.53	0.50	1.00	1	0	87
GraduateCourse f	-	-	2.00	4	1	48
Gender g	0.33	0.47	0.00	1	0	85
IncomeLevel h	-	-	4.00	7	2	87
Tiredness	39.05	26.64	42.00	100	0	87
Somnolence	29.64	26.12	22.00	100	0	87
MentalEffort	39.69	22.01	35.00	98	5	87
TaskingEnjoyment	61.67	23.23	58.00	100	1	87

Note: Variables indicated with a letter are categorical and labels attributed to categories are as follows: (a) 'Investment experience': '1' if the participant had previous investment experience in capital markets, '0' otherwise. (b) 'Risk taking level': 1 - Very low risk taker; 2- Low risk taker; 3-Medium risk taker; 4-High risk taker; 5-Very high risk taker. (c) 'Undergraduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (d) 'Undergraduate conclusion': '1' if the participant had concluded his/her undergraduation, '0' otherwise. (e) 'Graduate' (level of study): '1' if the participant is enrolled in a graduate program (including MBA), '0' otherwise. (f) 'Graduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (g) Gender: '1' - Woman, '0' Man. (h) Income level: 1- From R\$ 937.00 to R\$ 2,811.00; 2- From R\$ 2,811.01 to R\$ 5,622.00; 3- From R\$ 8,433.01 to R\$ 11,244.00; 4- From R\$5,622.01 to R\$ 8,433.00; 5- From R\$11,244.01 to R\$ 14,055.00; 6- Higher than R\$ 14,055.00.

Table 38. Descriptive statistics for the full sample (by investment experience)

Variable	With investment experience						Without investment experience					
	Mean	SD	Median	Max	Min	N	Mean	SD	Median	Max	Min	N
Propensity01	55.65	28.48	57.00	100	0	34	54.85	29.69	59.00	100	0	53
Propensitymoney	14,014.71	10,446.46	11,500.00	40,000.00	0	34	15,018.87	10,758.70	13,000.00	40,500.00	0	53
Age	33.21	8.72	32.50	55	19	34	27.54	8.54	26.00	62	19	52
InvestmentYears	5.50	5.01	4.50	20	1	34	-	-	-	-	-	-
RiskTakingLevel	—	—	2.50	4	1	34	—	—	2.00	5	1	53
UnderGraduatecourse	—	—	2.00	4	1	34	—	—	2.00	4	1	52
UnderGraduateConclusion	0.77	0.43	1.00	1	0	34	0.55	0.50	1.00	1	0	53
Graduate	0.71	0.46	1.00	1	0	34	0.42	0.50	0.00	1	0	53
GraduateCourse	—	—	2.00	3	1	24	—	—	2.00	4	1	24
Gender	0.27	0.45	0.00	1	0	33	0.37	0.49	0.00	1	0	52
IncomeLevel	—	—	5.50	7	2	34	—	—	4.00	7	2	53
Tiredness	32.44	22.75	28.50	80	0	34	43.28	28.26	49.00	100	0	53
Somnolence	25.47	22.91	22.00	71	0	34	32.32	27.86	22.00	100	0	53
MentalEffort	36.97	20.77	33.00	98	5	34	41.43	22.80	38.00	86	8	53
TaskingEnjoyment	60.00	27.49	51.00	100	1	34	62.74	20.24	58.00	100	21	53

Note: Variables indicated with a letter are categorical and labels attributed to categories are as follows: (a) 'Investment experience': '1' if the participant had previous investment experience in capital markets, '0' otherwise. (b) 'Risk taking level': 1 - Very low risk taker; 2- Low risk taker; 3-Medium risk taker; 4-High risk taker; 5-Very high risk taker. (c) 'Undergraduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (d) 'Undergraduate conclusion': '1' if the participant had concluded his/her undergraduation, '0' otherwise. (e) 'Graduate' (level of study): '1' if the participant is enrolled in a graduate program (including MBA), '0' otherwise. (f) 'Graduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (g) Gender: '1' - Woman, '0' Man. (h) Income level: 1- From R\$ 937.00 to R\$ 2,811.00; 2- From R\$ 2,811.01 to R\$ 5,622.00; 3- From R\$ 8,433.01 to R\$ 11,244.00; 4- From R\$5,622.01 to R\$ 8,433.00; 5- From R\$11,244.01 to R\$ 14,055.00; 6- Higher than R\$ 14,055.00.

Now, we have split descriptive analysis between the experimental conditions. Looking at Condition 1 *versus* Condition 2 (Traditional presentation format versus good and bad performances – Table 39), ‘Investment propensity (0 to 100)’, as expected, have fallen from an average value of 74.29 (SD=19.51, max=100, min=18) to 29.50 (SD=22.57, max=72, min=0). For ‘Investment propensity (in R\$)’, the mean value has remained around R\$ 18,660.71 (SD=R\$ 10,228.91, max=R\$ 36,000.00, min=R\$ 500.00) against R\$ 9,788.46 (SD=R\$ 9,775.66, max=R\$ 40,500.00; min=R\$ 0.00).

The same behavior has been seen when the alternative presentation format is considered (Conditions 3 and 4 – Table 40): for the good financial performance situation, the mean value has remained 70.10 (SD=22.24, max=100, min=1)/R\$ 17,976.19 (SD=R\$ 11,178.64, max= R\$ 40,000.00, min=R\$ 1.00) *versus* the bad financial performance’s investment propensity average of 40.00 (SD=19.51, max=100, min=18)/R\$ 9,833.33 (SD=5,658.19, max=R\$ 19,500.00, min=R\$ 0.00).

For the variable ‘Investment propensity (0 to 100) on Condition 4, we have noticed that the investment propensity has a value almost 11 points higher when compared to its equivalent on traditional presentation format condition (Condition 2), although for ‘Investment propensity (in R\$)’, the average values were quite similar between both conditions. Thus, for both presentation formats, participants have been able to distinguish between financial performance conditions. Regarding control variables, we have not found any discrepancies between conditions, so we have understood that random assignment has played its role. About personal internal state questions, ‘Tiredness’ average scores were lower on bad financial performance conditions (Conditions 2 and 4) and ‘Mental effort’ had its higher average value on Condition 4 and its lower average value on Condition 2; ‘Task enjoyment’ has its higher average values on traditional presentation format conditions.

Finally, we have filtered data by presentation format and financial performance to check on differences between investment propensities (Table 41 and Table 42). For the DV scale from 0 to 100, financial presentation formats have similar values of investment propensity (traditional format: mean=52.72, SD=30.73; alternative format: mean=59.15, SD=26.06), but for the financial performance contexts, the distance between values was almost a 50% drop (good financial performance: mean=72.49, SD=20.60; bad financial performance: mean=32.82, SD=22.40). A similar pattern has happened to ‘Investment propensity (in R\$)’ variable.

Table 39. Descriptive statistics for experimental conditions 1 and 2 (Traditional presentation format versus good and bad financial performances).

Variable	Experimental condition 1						Experimental condition 2					
	Mean	SD	Median	Max	Min	N	Mean	SD	Median	Max	Min	N
Propensity01	74.29	19.51	77.00	100	18	28	29.50	22.57	26.00	72	0	26
Propensitymoney	18,660.71	10,228.91	20,000.00	36,000.00	500.00	28	9,788.46	9,775.66	9,250.00	40,500.00	0	26
Age	28.11	5.81	27.00	41	20	28	31.04	11.09	28.00	62	19	26
Investment.Experience a	0.43	0.50	0.00	1	0	28	0.31	0.47	0.00	1	0	26
InvestmentYears	4.83	5.59	2.00	18	1	12	4.50	3.47	5.00	12	0	10
RiskTakingLevel b	—	—	2.00	4	1	28	—	—	2.00	5	1	26
UnderGraduatecourse c	—	—	2.00	4	1	28	—	—	2.00	4	1	25
UnderGraduateConclusion d	0.68	0.48	1.00	1	0	28	0.73	0.45	1.00	1	0	26
Graduate e	0.64	0.49	1.00	1	0	28	0.58	0.50	1.00	1	0	26
GraduateCourse f	—	—	2.00	4	1	18	—	—	1.00	4	1	15
Gender g	0.43	0.50	0.00	1	0	28	0.20	0.41	0.00	1	0	25
IncomeLevel h	—	—	4.00	7	2	28	—	—	4.00	7	2	26
Tiredness	42.46	24.85	42.50	92	0	28	37.96	28.66	38.50	84	0	26
Somnolence	27.61	24.75	21.50	76	0	28	33.42	27.81	30.50	90	0	26
MentalEffort	40.11	20.99	31.00	86	5	28	33.81	23.39	26.00	98	6	26
TaskingEnjoyment	63.89	21.95	65.50	100	7	28	63.65	26.80	54.00	100	1	26

Note: Variables indicated with a letter are categorical and labels attributed to categories are as follows: (a) 'Investment experience': '1' if the participant had previous investment experience in capital markets, '0' otherwise. (b) 'Risk taking level': 1 - Very low risk taker; 2- Low risk taker; 3-Medium risk taker; 4-High risk taker; 5-Very high risk taker. (c) 'Undergraduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (d) 'Undergraduate conclusion': '1' if the participant had concluded his/her undergraduation, '0' otherwise. (e) 'Graduate' (level of study): '1' if the participant is enrolled in a graduate program (including MBA), '0' otherwise. (f) 'Graduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (g) Gender: '1' - Woman, '0' Man. (h) Income level: 1- From R\$ 937.00 to R\$ 2,811.00; 2- From R\$ 2,811.01 to R\$ 5,622.00; 3- From R\$ 8,433.01 to R\$ 11,244.00; 4- From R\$5,622.01 to R\$ 8,433.00; 5- From R\$11,244.01 to R\$ 14,055.00; 6- Higher than R\$ 14,055.00.

Table 40. Descriptive statistics for experimental conditions 3 and 4 (Narrative presentation format versus good and bad financial performances).

Variable	Experimental condition 3						Experimental condition 4					
	Mean	SD	Median	Max	Min	N	Mean	SD	Median	Max	Min	N
Propensity01	70.10	22.24	76.00	100	1	21	40.00	21.16	47.00	68	1	12
Propensitymoney	17,976.19	11,178.64	18,000.00	40,000.00	0	21	9,833.33	5,658.19	11,250.00	19,500.00	0	12
Age	31.05	10.20	29.00	55	19	21	28.64	8.05	27.00	48	19	11
Investment.Experience a	0.43	0.51	0.00	1	0	21	0.42	0.52	0.00	1	0	12
InvestmentYears	7.22	6.55	5.00	20	1	9	4.00	2.65	3.00	8	1	5
RiskTakingLevel b	—	—	2.00	4	1	21	—	—	2.00	4	1	12
UnderGraduatecourse c	—	—	3.00	4	1	21	—	—	2.00	3	1	12
UnderGraduateConclusion d	0.48	0.51	0.00	1	0	21	0.58	0.52	1.00	1	0	12
Graduate e	0.43	0.51	0.00	1	0	21	0.33	0.49	0.00	1	0	12
GraduateCourse f	—	—	2.00	4	1	10	—	—	2.00	4	2	5
Gender g	0.30	0.47	0.00	1	0	20	0.42	0.52	0.00	1	0	12
IncomeLevel h	—	—	6.00	7	2	21	—	—	4.00	7	3	12
Tiredness	42.52	28.43	46.00	100	0	21	27.33	22.18	23.00	53	0	12
Somnolence	33.24	29.88	22.00	100	0	21	19.92	16.61	18.50	50	0	12
MentalEffort	43.19	21.65	38.00	82	8	21	45.33	21.71	51.50	67	13	12
TaskingEnjoyment	59.81	21.98	51.00	100	21	21	55.42	21.28	50.00	97	27	12

Note: Variables indicated with a letter are categorical and labels attributed to categories are as follows: (a) 'Investment experience': '1' if the participant had previous investment experience in capital markets, '0' otherwise. (b) 'Risk taking level': 1 - Very low risk taker; 2- Low risk taker; 3-Medium risk taker; 4-High risk taker; 5-Very high risk taker. (c) 'Undergraduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (d) 'Undergraduate conclusion': '1' if the participant had concluded his/her undergraduation, '0' otherwise. (e) 'Graduate' (level of study): '1' if the participant is enrolled in a graduate program (including MBA), '0' otherwise. (f) 'Graduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (g) Gender: '1' - Woman, '0' Man. (h) Income level: 1- From R\$ 937.00 to R\$ 2,811.00; 2- From R\$ 2,811.01 to R\$ 5,622.00; 3- From R\$ 5,622.01 to R\$ 8,433.00; 4- From R\$ 8,433.01 to R\$ 11,244.00; 5- From R\$ 11,244.01 to R\$ 14,055.00; 6- Higher than R\$ 14,055.00.

Table 41. Descriptive statistics for presentation formats' experimental conditions.

Variable	Financial statements and notes' format						'Narrative' format					
	Mean	SD	Median	Max	Min	N	Mean	SD	Median	Max	Min	N
Propensity01	52.72	30.73	54.00	100	0	54	59.15	26.06	62.00	100	1	33
Propensitymoney	14,388.89	10,881.29	12,000.00	40,500.00	0	54	15,015.15	10,243.51	12,000.00	40,000.00	0	33
Age	29.52	8.80	27.50	62	19	54	30.22	9.45	28.00	55	19	32
Investment.Experience a	0.37	0.49	0.00	1	0	54	0.42	0.50	0.00	1	0	33
InvestmentYears	4.68	4.64	4.00	18	0	22	6.07	5.58	4.50	20	1	14
RiskTakingLevel b	—	—	2.00	5	1	54	—	—	2.00	4	1	33
UnderGraduatecourse c	—	—	2.00	4	1	53	—	—	2.00	4	1	33
UnderGraduateConclusion d	0.70	0.46	1.00	1	0	54	0.52	0.51	1.00	1	0	33
Graduate e	0.61	0.49	1.00	1	0	54	0.39	0.50	0.00	1	0	33
GraduateCourse f	—	—	2.00	4	1	33	—	—	2.00	4	1	15
Gender g	0.32	0.47	0.00	1	0	53	0.34	0.48	0.00	1	0	32
IncomeLevel h	—	—	4.00	7	2	54	—	—	5.00	7	2	33
Tiredness	40.30	26.59	42.50	92	0	54	37.00	27.01	40.00	100	0	33
Somnolence	30.41	26.18	23.00	90	0	54	28.39	26.37	22.00	100	0	33
MentalEffort	37.07	22.20	28.50	98	5	54	43.97	21.35	49.00	82	8	33
TaskingEnjoyment	63.78	24.17	61.50	100	1	54	58.21	21.50	51.00	100	21	33

Note: Variables indicated with a letter are categorical and labels attributed to categories are as follows: (a) 'Investment experience': '1' if the participant had previous investment experience in capital markets, '0' otherwise. (b) 'Risk taking level': 1 - Very low risk taker; 2- Low risk taker; 3-Medium risk taker; 4-High risk taker; 5-Very high risk taker. (c) 'Undergraduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (d) 'Undergraduate conclusion': '1' if the participant had concluded his/her undergraduation, '0' otherwise. (e) 'Graduate' (level of study): '1' if the participant is enrolled in a graduate program (including MBA), '0' otherwise. (f) 'Graduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (g) Gender: '1' - Woman, '0' Man. (h) Income level: 1- From R\$ 937.00 to R\$ 2,811.00; 2- From R\$ 2,811.01 to R\$ 5,622.00; 3- From R\$ 8,433.01 to R\$ 11,244.00; 4- From R\$5,622.01 to R\$ 8,433.00; 5- From R\$11,244.01 to R\$ 14,055.00; 6- Higher than R\$ 14,055.00.

Table 42. Descriptive statistics for financial performances' experimental conditions.

Variable	Good financial performance						Bad financial performance					
	Mean	SD	Median	Max	Min	N	Mean	SD	Median	Max	Min	N
Propensity01	72.49	20.60	76.00	100	1	49	32.82	22.40	31.50	72	0	38
Propensitymoney	18,367.35	10,537.52	20,000.00	40,000.00	0	49	9,802.63	8,607.46	10,000.00	40,500.00	0	38
Age	29.37	8.03	28.00	55	19	49	30.32	10.23	28.00	62	19	37
Investment.Experience a	0.43	0.50	0.00	1	0	49	0.34	0.48	0.00	1	0	38
InvestmentYears	5.86	5.99	4.00	20	1	21	4.33	3.13	5.00	12	0	15
RiskTakingLevel b	—	—	2.00	4	1	49	—	—	2.00	5	1	38
UnderGraduatecourse c	—	—	2.00	4	1	49	—	—	2.00	4	1	37
UnderGraduateConclusion d	0.59	0.50	1.00	1	0	49	0.68	0.47	1.00	1	0	38
Graduate e	0.55	0.50	1.00	1	0	49	0.50	0.51	0.50	1	0	38
GraduateCourse f	—	—	2.00	4	1	28	—	—	2.00	4	1	20
Gender g	0.38	0.49	0.00	1	0	48	0.27	0.45	0.00	1	0	37
IncomeLevel h	—	—	5.00	7	2	49	—	—	4.00	7	2	38
Tiredness	42.49	26.16	43.00	100	0	49	34.61	26.95	32.00	84	0	38
Somnolence	30.02	26.92	22.00	100	0	49	29.16	25.40	22.50	90	0	38
MentalEffort	41.43	21.11	38.00	86	5	49	37.45	23.22	30.00	98	6	38
TaskingEnjoyment	62.14	21.83	62.00	100	7	49	61.05	25.20	54.00	100	1	38

Note: Variables indicated with a letter are categorical and labels attributed to categories are as follows: (a) 'Investment experience': '1' if the participant had previous investment experience in capital markets, '0' otherwise. (b) 'Risk taking level': 1 - Very low risk taker; 2- Low risk taker; 3-Medium risk taker; 4-High risk taker; 5-Very high risk taker. (c) 'Undergraduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (d) 'Undergraduate conclusion': '1' if the participant had concluded his/her undergraduation, '0' otherwise. (e) 'Graduate' (level of study): '1' if the participant is enrolled in a graduate program (including MBA), '0' otherwise. (f) 'Graduate course': 1- Business; 2- Accounting; 3- Economics; 4- Other. (g) Gender: '1' - Woman, '0' Man. (h) Income level: 1- From R\$ 937.00 to R\$ 2,811.00; 2- From R\$ 2,811.01 to R\$ 5,622.00; 3- From R\$ 8,433.01 to R\$ 11,244.00; 4- From R\$5,622.01 to R\$ 8,433.00; 5- From R\$11,244.01 to R\$ 14,055.00; 6- Higher than R\$ 14,055.00.

To better visualize the behavior between DVs versus the variables of interest, we have plotted the mean values for ‘Investment propensity (0 to 100)’ against financial performance and presentation format. In the graph (Figure 30), we were able to see a possible interaction effect between the alternative (narrative) presentation format and the bad financial performance, but not with the same sign as predicted by Hypothesis 1. The narrative presentation format has presented a greater mean value for ‘Investment propensity (0 to 100)’ (40.00) when compared to mean values for the traditional presentation format (29.50).

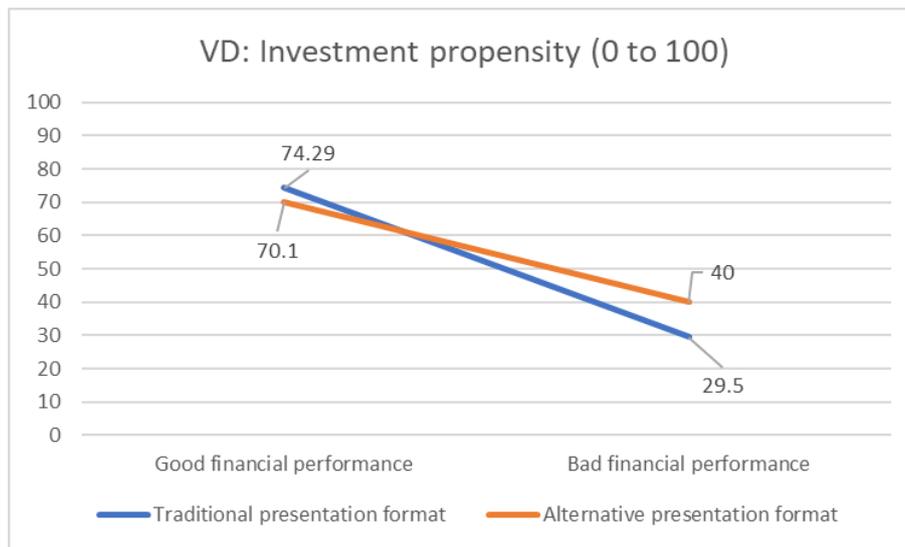


Figure 30. ‘Investment propensity (0 to 100)’ versus presentation format and financial performance.

Nevertheless, the same behavior was not seen in the ‘Investment propensity (in R\$)’. Here, we have identified a possible main effect just for financial performance – i.e., not considering a presentation format interaction – since mean values for both presentation formats decrease as financial performance worsens, also in similar amounts (see Figure 31).

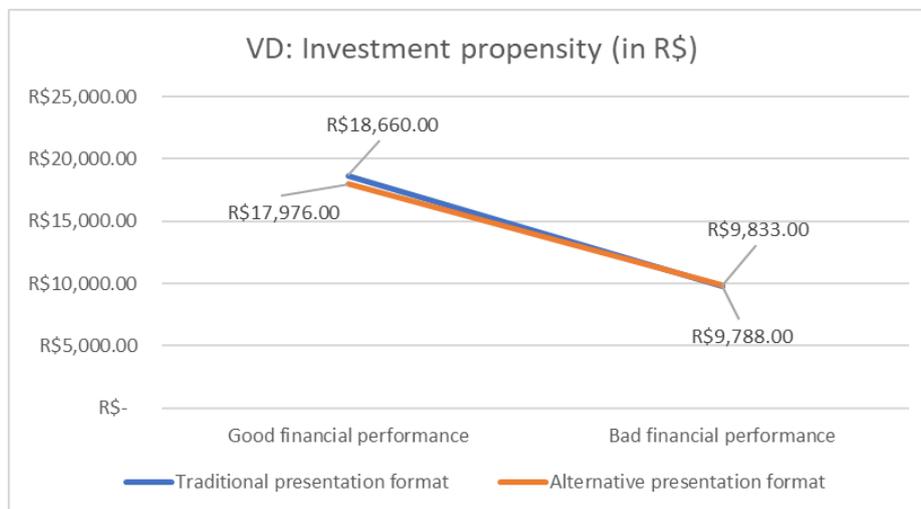


Figure 31. ‘Investment propensity (in R\$)’ versus presentation format and financial performance.

Another point that has called our attention was the difference attributed by participants to investment propensities when the scale was from 0 to 1 versus when it was measured in Brazilian Reais. Our first intuition about this subject was that both scales would show similar results. Nevertheless, we have noted that the average investment propensity regarding money allocation was between 37% and 19% of the R\$50,000.00 total amount (for investment propensity measure going from 0 to 1, these numbers would vary from 74% to about 29.5%). As an example, consider the good financial performance scenario: the average amount invested was R\$18,660 in the Condition 1 and R\$ 17,976 in the Condition 3. However, the propensity on a '0 to 1' scale would be approximately 74% for Condition 1 and 70% for Condition 3 (so we were expecting to see investment propensities in monetary values turning around R\$ 35,000.00 to R\$ 37,000.00).

On the experimental question presenting a scale from 0 to 1, we have expected that it would homogenize response patterns between participants, as it seemed to be a more objective scale than the R\$ one. Nevertheless, when we have created thresholds going from '0' to '1' to reflect investment propensities values, the scale has turned out to be subjective rather than objective, since we have moved the 'neutral point' (which the number zero represented 'generically' to all individuals) to an internal reference point for each subject (which would be greater than zero but lower than 1) (Rachlin, 1989; Rangel & Clithero, 2012).³⁶

These idiosyncrasies are mainly based on interpersonal variables that come from subjects' previous experiences, which creates for each person an 'internal reference point' of neutrality (Seymour & McClure, 2008; Grabenhorst & Rolls, 2009; Vlaev, Chater, Stewart, & Brown, 2011) for the hypothetical stock investment situation. On the other hand, when we have asked participants to indicate their investment propensity in monetary terms, their value references were more based on variations that are external to the individuals and then their neutrality points of reference were more uniform.

Finally, there were no high correlations (i.e., correlation coefficients equal or above 0.50) between the DVs and the IVs (see Appendix T). We have found intermediate coefficients between 'Investment propensity (0 to 100)' and 'Amount of retrieved information: non-accounting' (0.3480, $p < 0.01$), 'Investment propensity (in R\$)' and: (1) 'Performance' (-0.4003, $p < 0.01$), (2) Somnolence (-0.329, $p < 0.01$) and (3) 'Amount of retrieved information: non-accounting' (0.2617, $p < 0.01$).

³⁶ We understand as 'neutrality' in an investment propensity setting the 'inflection' value a person would attribute to indicate their 'break point' between 'not investing at all' and 'investing' in the hypothetical company's shares. As Hypothesis 1 states, this 'neutrality point' would vary with financial performance and presentation format.

Regarding correlations between IVs, the highest correlation coefficients observed were between ‘Somnolence’ and ‘Tiredness’ (0.6486, $p < 0.01$), ‘Age’ and ‘Education level (graduate)’ (0.3096, $p < 0.01$), ‘Age’ and ‘Income level’ (0.3133, $p < 0.01$), ‘Task enjoyment’ and ‘Somnolence’ (-0.378, $p < 0.01$). That initially indicates that our sample might not present a serious problem of multicollinearity, which is one of the assumptions of OLS models. However, a further investigation was needed to check if interaction effects would play a significant role in the models’ collinearity. We have explored this subject further in the next paragraphs.

Next, we have tested for OLS assumptions of Normal distribution for the DVs, homoscedasticity of residuals and non-multicollinearity of independent variables (Wooldridge, 2010; Fávero, 2015).

For the normality assumption, we have made Q-Q plots for both DVs to check visually if the variables would follow a Normal distribution. For ‘Investment propensity (0 to 100)’ and ‘Investment propensity (in R\$)’, a certain adjustment of data to the line can be observed (Figure 32 and Figure 33). Nevertheless, when we performed the Shapiro-Wilk test, both variables rejected the null hypothesis of Normal distribution (Table 43).

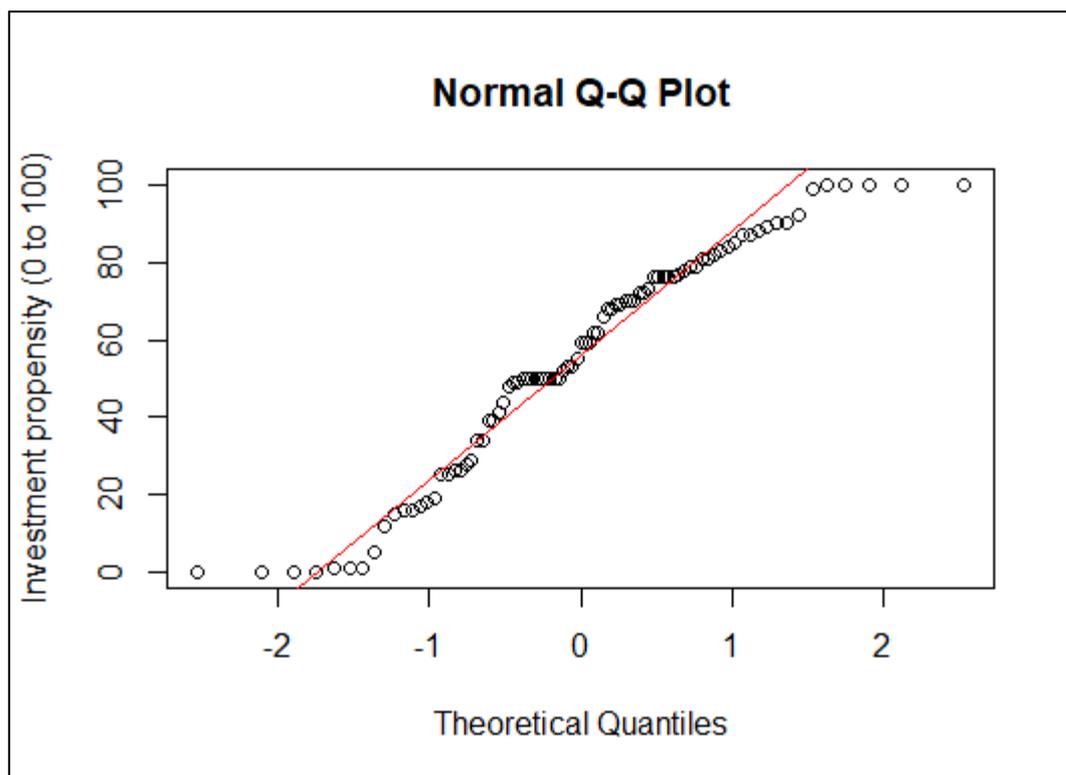


Figure 32. Normal Q-Q plot for ‘Investment propensity (0 to 100)’.

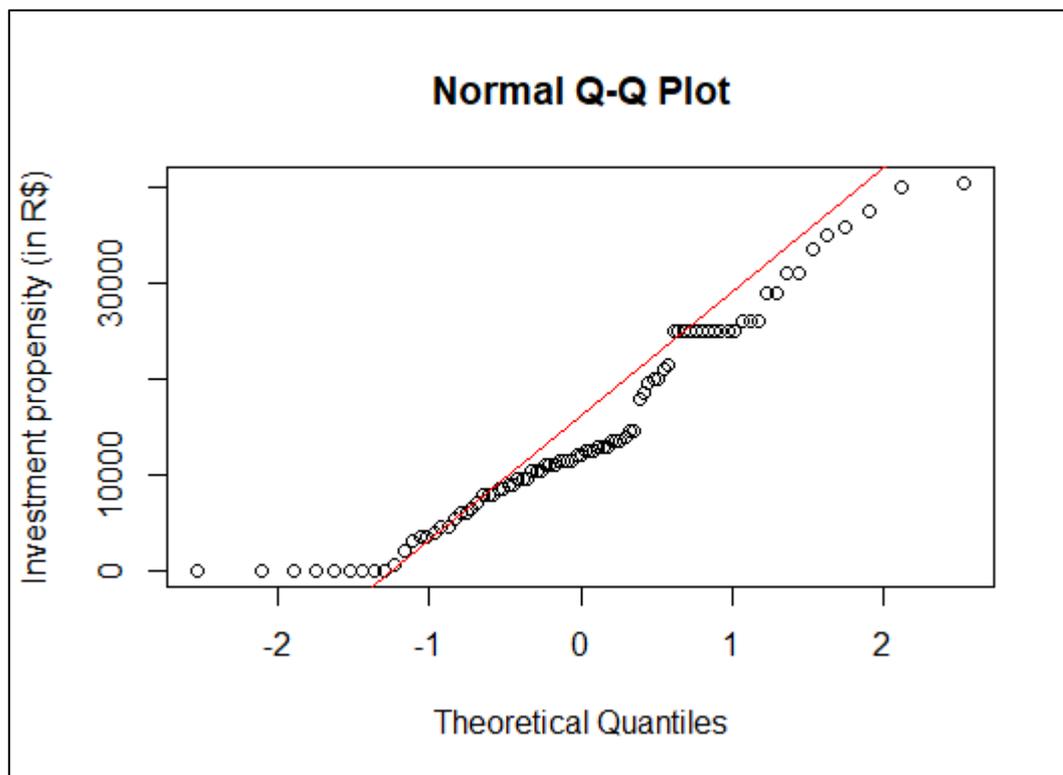


Figure 33. Normal Q-Q plot for 'Investment propensity (in R\$)'.

Table 43. Shapiro-Wilk test performed on dependent variables and their respective ln transformations.

	Shapiro- Wilk statistic	p-value
'Investment propensity (0 to 100)'	0.9388	0.0014
'ln - Investment propensity (0 to 100)'	0.7262	0.0000
'Investment propensity (in R\$)'	0.5747	0.0005
'ln - Investment propensity (in R\$)'	0.9472	0.0000

Even though we have performed a natural logarithm transformation of both variables, the Q-Q plot and Shapiro-Wilk statistic have not shown an improvement in the fitness of observations to the Normal distribution (see Figure 34, Figure 35 and Table 43).

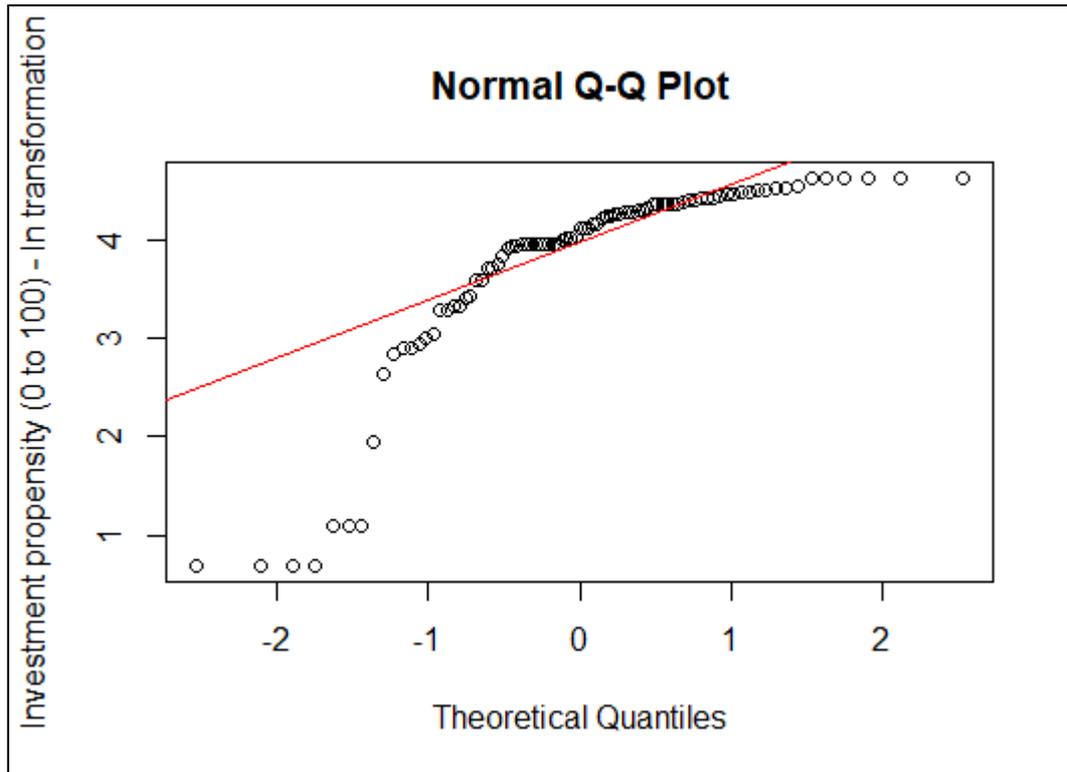


Figure 34. Normal Q-Q plot for 'Investment propensity (0 to 100) - ln transformation'.

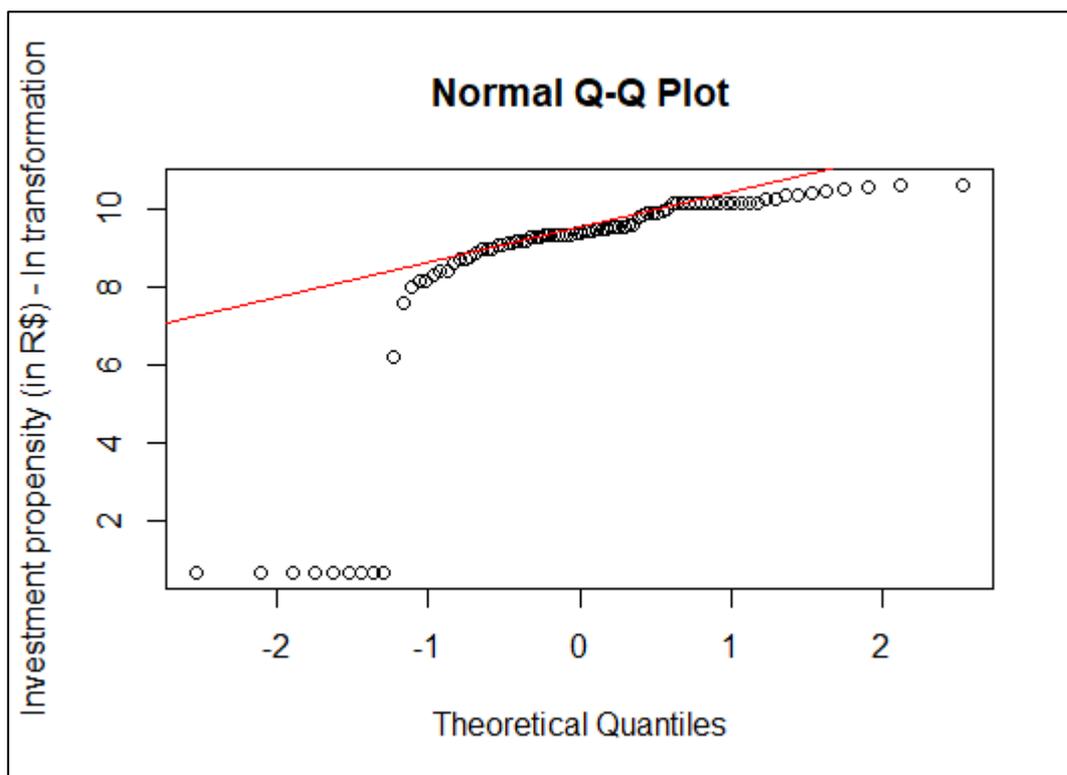


Figure 35. Normal Q-Q plot for 'Investment propensity (in R\$) - ln transformation'.

As Tabachnick and Fidell (2001), and Fávero (2015) indicate, the OLS residuals can also be tested for normality to attend to the DV distribution assumption. As Table 44 shows, the null hypothesis of normally distributed errors cannot be rejected at the conventional significance levels just for Models 2 and 4. Nevertheless, which satisfices the first OLS assumption.

Table 44. Shapiro-Wilk test for normality of OLS residuals.

	Shapiro-Wilk statistic	p-value
Model 1	0.96894	0.03994
Model 2	0.98137	0.2649
Model 3	0.97206	0.06441
Model 4	0.98149	0.2697
Model 5	0.92254	0.01688
Model 6	0.97366	0.08581
Model 9	0.96344	0.01558

Regarding homoscedasticity, we have performed the Breusch-Pagan test for all residuals from OLS models, and its null hypothesis of homocescdasticity was not rejected at the usual significance levels (not reported). Even so, we have run all models with errors made asymptotically robust to heteroscedasticity.

About the last assumption (absence of multicollinearity), firstly we have calculated the bivariate correlation between independent variables (IVs) to check if there were any values equal or higher than $|0.5|$ (Fávero, 2015). As we have mentioned before, the highest correlation indexes were those between 'Age' and 'Graduate', 'Tiredness' and 'Somnolence', and 'Task enjoyment' and 'Somnolence'. All remaining values were below $|0.35|$, which was an initial sign that multicollinearity would not be a concern into our OLS model (see Appendix T for the complete correlation matrix).

To check further for multivariate relationships between IVs at the OLS regressions (Models 1 to 6 and Model 9), we have performed the Generalized Variance-Inflation Factors (GVIF), since it considers the degrees of freedom for each unweighted linear model (Fox & Weisberg, 2011). Results (Table 45) have indicated that multicollinearity indeed is not one concern at our models.

Table 45. Investigation of multicollinearity problems through Generalized Variance-Inflation Factors (GVIF) for models 1-4.

	Models 1 and 2	Models 3 and 4	Model 5	Model 6	Model 9	Model 12	Model 15
Narr	1.0176	1.7487	4.9639	4.4844	1.7231	5.2031	4.5542
Bad	1.0612	1.6991	9.1362	5.6919	1.6472	8.1051	5.2283
LowRiskLevel	2.3574	2.3802	2.3270	2.4949			
MedRiskLevel	2.3729	2.3731	1.9883	2.5790			
Age	1.0247	1.0610	1.9797	1.0874	1.0498	2.2659	1.0840
Gender	1.0735	1.1105	1.7555	1.1156			
I(Narr *Bad)		2.2675	9.8018	5.8042	2.1830	9.8942	
I(Narr * Bad * LittleInvestExp)			10.4533			10.3797	5.5595
LittleInvestExp			3.6805			3.8577	
I(LittleInvestExp * Narr)			6.0486			6.4759	
I(LittleInvestExp * Bad)			9.5635			8.8836	
MentalEffort							
Tiredness					1.8416	2.0100	1.8645
Somnolence					1.9811	1.6328	2.0263
TaskingEnjoy					1.2081	1.6510	1.2582
NotAcct				2.8728			2.9050
I(NotAcct * Narr)				5.4512			5.4254
I(NotAcct * Bad)				6.8149			6.3798
I(Narr * Bad * NotAcct)				4.6720			4.5252

4.2.2 Linear models

Regarding expected effects of **H1**, we have predicted that the ‘Investment propensity’ dependent variables would have a statistical difference and an incremental lower magnitude when the information was presented on a narrative format and the company was in a financial distress situation (interaction effect). Also, the ‘Presentation format’ variable (1 if it was the narrative report) was expected to present a non-significant and low coefficient, since the format itself is not expected to increase or decrease investment propensity without a financial performance attached to it. H1 predicts that, in an information overload situation, it could be more difficult for an individual investor to identify bad financial performance in a traditional presentation format because s/he would have a higher use of her/his extraneous load to link by her/himself all relevant information from financial statements, their notes, and KPIs to identify financial distress. Nevertheless, the ‘Financial performance’ variable should be statistically significant and with a negative coefficient, meaning that participants should be able to identify financial distress in both presentation formats.

In this manner, firstly we have run basic models between ‘Investment propensity’ (measured from 0 to 100-scale and in R\$ - percentage³⁷) including the variables of interest ‘Presentation format’ and ‘Financial performance’ (Models 1 and 2: Equations 2 and 3) and interacting both in a latter moment (Models 3 and 4: Equations 4 and 5). Covariates for ‘Investment propensity’ considered in these models were ‘Risk taking level’ (segregated into two dummy variables: ‘Low risk-taking level’ and ‘Medium risk-taking level’, which included subjects that have chosen portfolio options that reflected very low and low/medium risk options respectively - see Appendix Q), ‘Age’ (in years) and ‘Gender’ (1 if female, 0 if male).

We have not included ‘Income level’ nor ‘Education level’ in the models as we understand that ‘Age’ may capture those effects in a better way than the dummy variables (besides controlling for characteristics not directly specified by other variables, such as ‘previous knowledge’).

Propensity01

$$= \beta_0 + \beta_1 * Narr + \beta_2 * Bad + \beta_3 * LowRiskLevel + \beta_4 * MedRiskLevel + \beta_5 * Age + \beta_6 * Gender + \varepsilon.$$

Equation 2. Model 1 for 'Propensity01' as VD (without interaction effects between presentation format and financial performance).

InvestmentR\$(%)

$$= \beta_0 + \beta_1 * Narr + \beta_2 * Bad + \beta_3 * LowRiskLevel + \beta_4 * MedRiskLevel + \beta_5 * Age + \beta_6 * Gender + \varepsilon.$$

Equation 3. Model 2 for 'InvestmentR\$(%)' as VD (without interaction effects between presentation format and financial performance).

Propensity01

$$= \beta_0 + \beta_1 * Narr + \beta_2 * Bad + \beta_3 * Narr * Bad + \beta_4 * LowRiskLevel + \beta_5 * MedRiskLevel + \beta_6 * Age + \beta_7 * Gender + \varepsilon.$$

Equation 4. Model 3 for 'Propensity01' as VD (including interaction effects between presentation format and financial performance).

InvestmentR\$(%)

$$= \beta_0 + \beta_1 * Narr + \beta_2 * Bad + \beta_3 * Narr * Bad + \beta_4 * LowRiskLevel + \beta_5 * MedRiskLevel + \beta_6 * Age + \beta_7 * Gender + \varepsilon.$$

Equation 5. Model 4 for 'PropensityR\$(%)' as VD (including interaction effects between presentation format and financial performance)

³⁷ We have chosen to report values for ‘Investment propensity (in R\$)’ regressions in percentages to make it easier to compare to the ‘Investment propensity (0-100)’ DV.

We have presented regression results for the basic model in Table 46 below. As we can see, the variable for ‘Narrative format’ (*Narr*) was not significant in any of the four models and ‘Financial Performance’ (*Bad*) has presented higher and negative coefficients across all four models, decreasing the ‘Investment propensity’. Nevertheless, the interaction effect between *Narr* and *Bad* has not presented statistically significant results; besides, coefficients for Models 3 and 4 were in the opposite direction as we have predicted in our first hypothesis. In this manner, we do not have enough evidence to support H1.

Table 46. Models 1-4 considering presentation format, financial performance and their interaction effect (H1).

	Propensity01 without interaction coefficient (1)	InvestmentR\$ (%) without interaction coefficient (2)	Propensity01 including interaction coefficient (3)	InvestmentR\$ (%) including interaction coefficient (4)
Constant	80.300*** (12.196)	32.236** (12.854)	81.789*** (12.238)	32.855** (13.114)
Narr	2.600 <i>(5.017)</i>	-1.313 <i>(4.532)</i>	-2.986 <i>(6.527)</i>	-3.633 <i>(6.939)</i>
Bad	-38.261*** <i>(4.908)</i>	-16.485*** <i>(4.084)</i>	-43.348*** <i>(5.924)</i>	-18.599*** <i>(5.648)</i>
<u>I(Narr * Bad)</u>			<u>14.070</u> <i>(10.139)</i>	<u>5.846</u> <i>(9.318)</i>
LowRiskLevel	0.724 <i>(6.685)</i>	-3.636 <i>(5.962)</i>	-0.270 <i>(6.454)</i>	-4.049 <i>(5.950)</i>
MedRiskLevel	-4.030 <i>(6.716)</i>	1.645 <i>(7.403)</i>	-4.114 <i>(6.625)</i>	1.610 <i>(7.372)</i>
Age	-0.312 <i>(0.302)</i>	0.188 <i>(0.338)</i>	-0.245 <i>(0.305)</i>	0.216 <i>(0.343)</i>
Gender	2.676 <i>(5.499)</i>	2.250 <i>(4.742)</i>	1.391 <i>(5.320)</i>	1.716 <i>(4.929)</i>
Observations	84	84	84	84
R ²	0.462	0.172	0.475	0.176
Adjusted R ²	0.421	0.108	0.426	0.100
Residual SE	21.926	20.067	21.820	20.151
F Statistic	11.040***	2.674**	9.806***	2.324**

Note: OLS models, heteroscedasticity-robust standard errors in parenthesis ‘Narr’ is related to the financial information presentation format (1= Narrative presentation format; 0= Traditional presentation format). ‘Bad’ is about the ‘Financial performance’, being 1 if the company was in financial distress, 0 otherwise. ‘LowRiskLevel’

and 'MedRiskLevel' refer to low and medium risk taking levels, and 'Gender' is equal '1' if Female and '0' if Male.*p<0.1; **p<0.05; ***p<0.01. Three observations were deleted due to missing data.

It is important to say that we have started comparing 'Propensity (0-100)' and 'Propensity (in R\$)' regression results concomitantly, but the R-squared for the last is much lower when we compare it to the first DV (e.g., about 47% versus 17% for Models 3 and 4 – Table 46). As we have previously explained, we have captured differences in scale perceptions when individuals consider a '0-1' *versus* monetary scale values, being the last mostly modulated by external/situational factors, which we were sufficiently identified in our model to include them as our control variables (so they were omitted at the models' error). In this sense, we understand that the DV measurement on a '0 to 1'-scale was more appropriate to analyze our experimental results since our controls are focused on dispositional/internal aspects of individuals and, thereafter, it would lead to better adjusted regression coefficients. In this manner, all our analyzed results henceforward report only for 'Investment propensity (0-100)' DV³⁸.

To test **H1a** (Model 5, Equation 6), our data analysis was conditioned to participants that had previous investment experience on capital markets, which were 35 subjects. However, their experience would vary from 1 to 20 years, and 71.43% of them had up to 5 years of experience (N=25 subjects – see Figure 36). In this sense, we have chosen to create a dummy variable splitting them into two levels: those who had up to 5 years of previous investment experience would be attributed the value of '1' and '0' otherwise. We have called the new variable 'Little investment experience'.

Propensity01

$$\begin{aligned}
 &= \beta_0 + \beta_1 * Narr + \beta_2 * Bad + \beta_3 * Narr * Bad + \beta_4 * LittleInvestExp \\
 &+ \beta_5 * LittleInvestExp * Narr + \beta_6 * LittleInvestExp * Bad + \beta_7 \\
 &* LittleInvestExp * Narr * Bad + \beta_8 * LowRiskLevel + \beta_9 \\
 &* MedRiskLevel + \beta_{10} * Age + \beta_{11} * Gender + \varepsilon.
 \end{aligned}$$

Equation 6. Model 5 including 'Little Investment Experience' and its interactions between presentation format and financial performance.

³⁸ Results for 'Investment R\$ (%)' are reported on Appendix U.

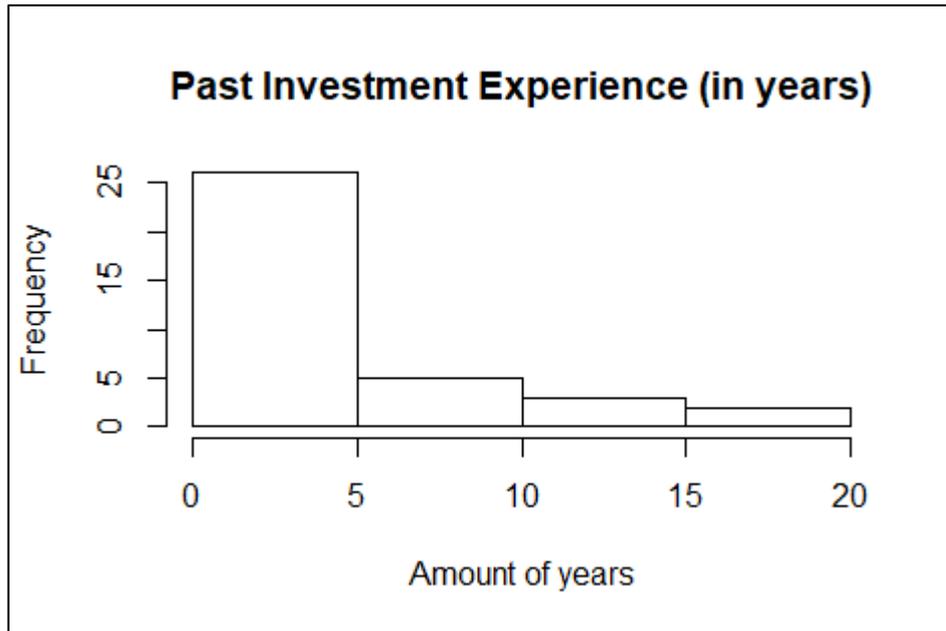


Figure 36. Histogram for 'Previous investment experience' (in years).

Our regression results (Model 5) are presented in Table 47 below; covariate variables remain 'Risk taking level' (low and medium), 'Age' and 'Gender'. In the same sense as the estimated models for H1 have shown, Regression 5 has also presented a low non-statistically significant coefficient for *Narr*, a significantly high- negative coefficient for *Bad* and no statistical significance for the interaction effect between them.

An interesting result has emerged from including 'Little investment experience' at our regression model: although the variable itself and its interaction between *Narr* has not presented statistical significance, the interaction between *LittleInvestExper* x *Narr* has turned to be positive and significant, whereas *LittleInvestExper* x *Narr* x *Bad* has presented a negative and significant coefficient.

In other words, on average, participants with previous investment experience have a propensity of 88.11 to invest in the company's shares. When financial performance is bad, the propensity is lowered to 18.39 (88.11 minus 69.71). Nevertheless, when subjects had a little investment experience, and the financial performance of the company was bad, the investment propensity would increase to 59.15, which is an evidence of the difficulty of the less experienced investor to incorporate accounting information into their decision process.

However, if the accounting information was presented in a narrative format, the propensity was adjusted in (-37.94), giving a total propensity of 21.21, which was a very close magnitude to the investment propensity before taking into consideration the little investment experience of

investors. We have interpreted this result as evidence for the adjustment of the presentation format on less experienced investors: they were able to acquire and process the accounting information with a lower burden on extraneous load (since the narrative presents linkages within information content). Thus, a lower load is required from the working memory, leading the less experienced investors to equalize their task performance to more experienced investors. In this sense, we have evidence to support H1a.

Table 47. Model 5 considering 'Little investment experience' and its interaction with presentation format and financial performance (H1a).

	Propensity01 (5)
Constant	88.106*** (19.978)
Narr	4.546 (10.800)
Bad	-69.711*** (16.011)
I(Narr * Bad)	19.335 (16.567)
<u>LittleInvestExp</u>	<u>-17.103</u> (11.769)
<u>I(LittleInvestExp * Narr)</u>	<u>15.338</u> (14.039)
I(LittleInvestExp * Bad)	40.756** (18.280)
I(Narr * Bad * LittleInvestExp)	-37.940* (21.216)
LowRiskLevel	-0.961 (7.562)
MedRiskLevel	-16.430** (6.821)
Age	-0.114 (0.500)
Gender	3.157 (12.254)
Observations	35
R ²	0.698
Adjusted R ²	0.554
Residual Std. Error	18.714
F Statistic	4.832***

Note: OLS models, heteroscedasticity-robust standard errors in parenthesis. 'LittleInvesExp' equals '1' if the participant has less than five years on investment experience in capital markets. *p<0.1; **p<0.05; ***p<0.01.

About testing accounting literacy on **H1b** (Model 6: Equation 7, Table 48), the variable of interest 'Non-accounting undergraduate' has not presented statistical significance between interactions with *Narr* and *Bad*. However, a result has emerged from the interaction between *Narr* and *Bad*: a positive coefficient significant at a 10% level. In the financial distress condition (*Bad*=1), the narrative format is associated with a 28.86 higher expected investment propensity

relative to the traditional format. Analyzing jointly with H1a results, we have interpreted this result as evidence that the narrative format is not adequate for all information group of users in general. For people with more experience in capital markets, or even more acquainting to the traditional format of financial statements, the narrative format may have the opposite effect on the extraneous load: instead of lowering it, the alternative format may increase it, negatively impacting the working memory. In this sense, we do not have sufficient evidence to support H1b.

Propensity01

$$\begin{aligned}
 &= \beta_0 + \beta_1 * Narr + \beta_2 * Bad + \beta_3 * Narr * Bad + \beta_4 * NotAcct + \beta_5 \\
 &* NotAcct * Narr + \beta_6 * NotAcct * Bad + \beta_7 * NotAcct * Narr * Bad \\
 &+ \beta_8 * LowRiskLevel + \beta_9 * MedRiskLevel + \beta_{10} * Age + \beta_{11} * Gender \\
 &+ \varepsilon.
 \end{aligned}$$

Equation 7. Model 6 including 'Non-Accounting undergraduate' and its interactions between presentation format and financial performance.

Table 48. Model 6 considering 'Non-accounting undergraduate' and its interaction effects with presentation format and financial performance (H1b).

	Propensity01 (6)
Constant	75.608*** (13.762)
<u>Narr</u>	<u>-5.191</u> <u>(13.503)</u>
Bad	-43.982*** (9.416)
I(Narr * Bad)	28.858* (16.078)
NotAcct	7.621 (7.691)
I(NotAcct * Narr)	2.074 (15.617)
I(NotAcct * Bad)	-1.387 (12.260)
I(Narr * Bad * NotAcct)	-25.471 (21.456)
LowRiskLevel	1.859 (6.899)
MedRiskLevel	-1.848 (7.418)
Age	-0.240 (0.320)
Gender	1.259 (5.592)
Observations	83
R ²	0.496
Adjusted R ²	0.418
Residual Std. Error	22.023
F Statistic	6.362***

Note: OLS models, heteroscedasticity-robust standard errors in parenthesis. 'NotAcct' equals '1' if the participant has a major in other B.A. rather than Accounting. *p<0.1; **p<0.05; ***p<0.01.

Lastly, to test **H2**, we have changed the DV from 'Investment propensity' to 'Amount of accounting information' and 'Amount of non-accounting information'. They are count variables since we have manually counted how many information cues experimental subjects have reported in their open-question answers (see section 4.2.1 and Appendix Q for more details, and Figure 37 and Figure 38 for frequencies).

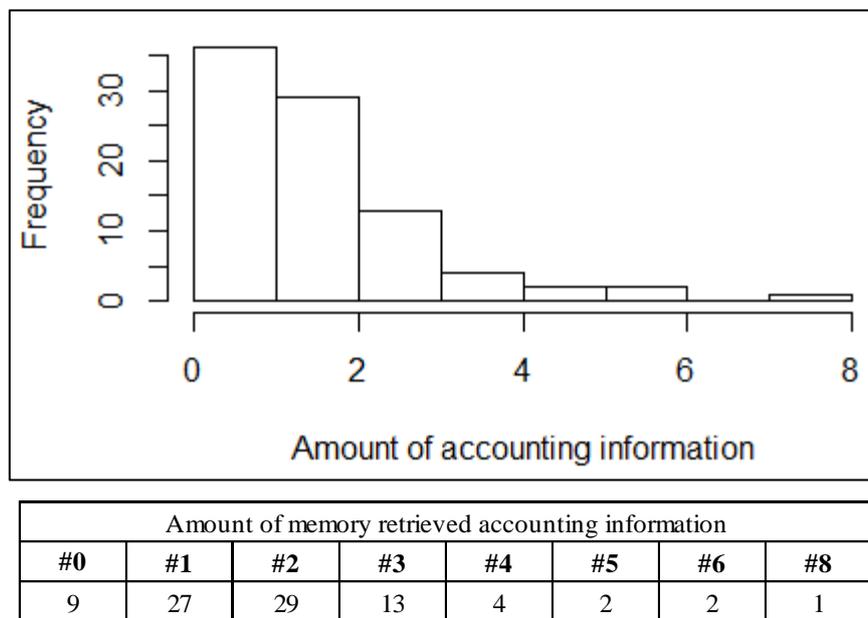


Figure 37. Histogram and frequency table for 'Amount of accounting information' (retrieved from memory).

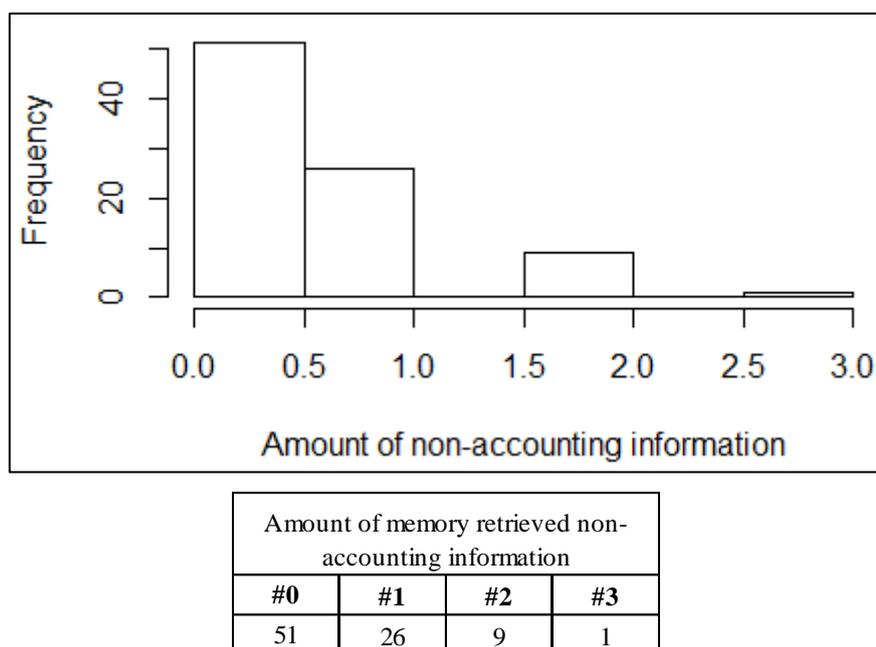


Figure 38. Histogram and frequency table for 'Amount of non-accounting information' (retrieved from memory)

It is convenient to run a GLM model assuming a Poisson or a Negative Binomial distribution, depending if the mentioned variables have superdispersion - i.e. if the mean and variance from variables are significantly different (Fávero & Belfiore, 2017). On Table 49, we have reported Lambda tests; as the t-tests have shown, the null hypothesis is not rejected (i.e., the mean and variance from 'amount' variables are not statistically different), so we can use the Poisson distribution into our GLM models.

Table 49. Lambda tests to the identification of super dispersion for count variables.

	Lambda					
	Mean	Variance	coef.	SE	t-value	p-value
Accounting information	1.9540	2.0676	-0.0042	0.1017	-0.041	0.9680
Non-accounting information	0.5402	0.5303	-0.1777	0.1968	-0.903	0.3690

Amount of retrieved information regressions are reported in Table 50 we have included as control variables ‘Tiredness’, ‘Somnolence’, ‘Mental effort’ and ‘Age’. For both count variables (Models 7 and 8, Equations 8 and 9), we have not observed the effect for *Narr*, *Bad* or even their interaction. However, the cognitive load theory predicts that a lower load on germane load would impact positively the working memory, so we have complementary tested if the ‘Mental effort’ reported by participants would receive a positive influence (translated in a negative coefficient) when the information was presented in a narrative format and the company was in a financial distress situation. (Model 9, Equation 10). Still, the interaction effect (nor individual effects for the variables of interest) could not be observed. Thus, we do not have sufficient evidence to support H2.

$$\log(\text{Amount_acctinfo})$$

$$= \beta_0 + \beta_1 \text{Narr} + \beta_2 \text{Bad} + \beta_3 \text{Narr} * \text{Bad} + \beta_4 \text{MentalEffort} + \beta_5 \text{Age} \\ + \beta_6 \text{Tiredness} + \beta_7 \text{Somnolence} + \beta_8 \text{TaskEnjoyment} + \varepsilon.$$

Equation 8. Model 7 for 'Amount_acctinfo' as VD (including interaction effects between presentation format and financial performance).

$$\log(\text{Amount_nonacctinfo})$$

$$= \beta_0 + \beta_1 \text{Narr} + \beta_2 \text{Bad} + \beta_3 \text{Narr} * \text{Bad} + \beta_4 \text{MentalEffort} + \beta_5 \text{Age} \\ + \beta_6 \text{Tiredness} + \beta_7 \text{Somnolence} + \beta_8 \text{TaskEnjoyment} + \varepsilon.$$

Equation 9. Model 8 for 'Amount_nonacctinfo' as VD (including interaction effects between presentation format and financial performance).

$$\text{MentalEffort}$$

$$= \beta_0 + \beta_1 \text{Narr} + \beta_2 \text{Bad} + \beta_3 \text{Narr} * \text{Bad} + \beta_5 \text{Age} + \beta_6 \text{Tiredness} \\ + \beta_7 \text{Somnolence} + \beta_8 \text{TaskEnjoyment} + \varepsilon.$$

Equation 10. Model 9 for 'Mental Effort' as VD (including interaction effects between presentation format and financial performance).

Table 50. Models 7-9 considering 'Amount of accounting information', 'Amount of non-accounting information' and 'Mental Effort' as DVs.

	Amount_acctinfo Poisson (7)	Amount_nonacctinfo Poisson (8)	MentalEffort OLS (9)
Constant	1.089** (0.432)	0.253 (0.925)	40.336*** (13.590)
Narr	0.013 (0.218)	-0.130 (0.333)	4.597 (6.267)
Bad	0.049 (0.194)	-0.467 (0.429)	-4.458 (5.975)
I(Narr * Bad)	-0.113 (0.419)	0.088 (0.658)	5.925 (10.443)
MentalEffort	-0.006 (0.004)	0.005 (0.007)	
Age	-0.011 (0.008)	-0.034* (0.020)	-0.341 (0.258)
Tiredness	-0.0004 (0.003)	-0.009 (0.008)	0.134 (0.133)
Somnolence	-0.002 (0.003)	0.003 (0.007)	-0.038 (0.126)
TaskEnjoyment	0.003 (0.004)	0.006 (0.006)	0.074 (0.154)
Observations	86	86	86
R ²			0.076
Adjusted R ²			-0.007
Log Likelihood	-141.353	-141.353	
Akaike Inf. Crit.	300.706	300.706	
Residual Std. Error			22.033
F Statistic			0.915

Note: For Models 7 and 8, the Goodness-of-fit presented a statistic of 85.35 (77 df), p-value = 0.2409. *p<0.1; **p<0.05; ***p<0.01

To test **H2a**, we have included the variable ‘LittleInvestExp’ and its interactions with ‘Narr’ and ‘Bad’ to previous H2 models (Models 9 to 11, Equations 10 to 12); results are reported on Table 51. At Model 10 (VD=‘Amount_acctinfo’), we observe an effect emerging from ‘LittleInvestExp’ and ‘LittleInvestExp*Bad’, which increases the amount of memory retrieved accounting information in 0.9960 additional piece [$\exp(-0.0890)*\exp(0.886)$]. The interaction between ‘LittleInvestExp*Bad’ itself increases the accounting information retrieval from memory in 2.4254, which signals the expected asymmetric effect from potential losses versus gains at the Prospect Theory prediction (Kahneman & Tversky, 1979; Kahneman & Tversky, 1984). Nevertheless, we have not observed effects on memory retrieval emerging from the presentation format nor its interaction with financial performance.

On Model 11 (VD=‘Amount_nonacctinfo’), the ‘Bad’ coefficient is significant at 1% level, but its economic impact is very low [$\exp(-18.177)=0.000$]. When accounting for the effects arising from ‘LittleInvestExp*Bad’ and ‘LittleInvestExp*Bad*Narr’ [$\exp(-18.177)*\exp(-18.307)*\exp(18.029) = 0.0000$], the overall effect on memory retrieval of non-accounting information is null. On another hand, Model 12 presents an interesting (but marginal) result: using ‘MentalEffort’ as the DV, the coefficient for ‘Narr*Bad’ is high in magnitude, negative and significant at the 10% level (-51.804). It may indicate a decrease on cognitive effort emerging from the narrative presentation format altogether with the bad financial performance for participants that have previous investment experience in capital markets. Thus, we do not have sufficient evidence to support H2a.

$$\begin{aligned} \log(\text{Amount_acctinfo}) &= \beta_0 + \beta_1 \text{Narr} + \beta_2 \text{Bad} + \beta_3 \text{Narr} * \text{Bad} + \beta_4 \text{LittleInvestExp} \\ &+ \beta_5 \text{LittleInvestExp} * \text{Narr} + \beta_6 \text{LittleInvestExp} * \text{Bad} \\ &+ \beta_7 \text{LittleInvestExp} * \text{Narr} * \text{Bad} + \beta_8 \text{MentalEffort} + \beta_9 \text{Age} \\ &+ \beta_{10} \text{Tiredness} + \beta_{11} \text{Somnolence} + \beta_{12} \text{TaskEnjoyment} + \varepsilon. \end{aligned}$$

Equation 11. Model 10 for ‘Amount_acctinfo’ as VD and including ‘LittleInvestExp’ interactions.

$$\begin{aligned} \log(\text{Amount_nonacctinfo}) &= \beta_0 + \beta_1 \text{Narr} + \beta_2 \text{Bad} + \beta_3 \text{Narr} * \text{Bad} + \beta_4 \text{LittleInvestExp} \\ &+ \beta_5 \text{LittleInvestExp} * \text{Narr} + \beta_6 \text{LittleInvestExp} * \text{Bad} \\ &+ \beta_7 \text{LittleInvestExp} * \text{Narr} * \text{Bad} + \beta_8 \text{MentalEffort} + \beta_9 \text{Age} \\ &+ \beta_{10} \text{Tiredness} + \beta_{11} \text{Somnolence} + \beta_{12} \text{TaskEnjoyment} + \varepsilon. \end{aligned}$$

Equation 12. Model 11 for ‘Amount_nonacctinfo’ as VD and including ‘LittleInvestExp’ interactions.

MentalEffort

$$\begin{aligned}
 &= \beta_0 + \beta_1 Narr + \beta_2 Bad + \beta_3 Narr * Bad + \beta_4 LittleInvestExp \\
 &+ \beta_5 LittleInvestExp * Narr + \beta_6 LittleInvestExp * Bad \\
 &+ \beta_7 LittleInvestExp * Narr * Bad + \beta_8 MentalEffort + \beta_9 Age \\
 &+ \beta_{10} Tiredness + \beta_{11} Somnolence + \beta_{12} TaskEnjoyment + \varepsilon.
 \end{aligned}$$

Equation 13. Model 12 for 'MentalEffort' as VD and including 'LittleInvestExp' interactions.

Table 51. Models 10-12 considering 'Amount of accounting information', 'Amount of non-accounting information' and 'Mental Effort' as DVs and 'LittleInvestExp' interactions.

	Amount_acctinfo	Amount_nonacctinfo	MentalEffort
	<i>Poisson</i> (10)	<i>Poisson</i> (11)	<i>OLS</i> (12)
Constant	1.918 (1.525)	-0.906 (3.146)	57.240 (37.251)
Narr	-0.028 (0.360)	0.029 (1.079)	16.051 (22.149)
Bad	-0.387 (0.446)	-18.177*** (1.425)	18.254 (25.251)
I(Narr * Bad)	-0.548 (0.635)	0.439 (2.447)	-51.804* (28.855)
LittleInvestExp	-0.890** (0.436)	-0.090 (1.047)	1.406 (20.166)
I(LittleInvestExp * Narr)	0.502 (0.518)	-0.617 (1.710)	-7.907 (24.913)
I(LittleInvestExp * Bad)	0.886* (0.461)	18.029*** (1.672)	-13.251 (27.775)
I(LittleInvestExp * Bad * Narr)	-0.159 (0.634)	-18.307*** (3.070)	51.792 (30.531)
MentalEffort	-0.0005 (0.005)	-0.007 (0.015)	
Age	-0.018 (0.027)	-0.028 (0.054)	-0.398 (0.674)
Tiredness	0.004 (0.008)	0.013 (0.021)	-0.218 (0.221)
Somnolence	-0.004 (0.004)	-0.001 (0.016)	0.140 (0.184)
TaskEnjoyment	-0.004 (0.006)	0.019 (0.013)	-0.184 (0.215)
Observations	36	36	36
R ²			0.166
Adjusted R ²			-0.216
Log Likelihood	-52.862	-26.705	
Akaike Inf. Crit.	131.724	79.409	
Residual Std. Error			22.411
F Statistic			0.436

To test **H2b**, we have included the variable 'NotAcct' and its interactions with 'Narr' and 'Bad' to previous H2 models (Models 13 to 15, Equations 11 to 13); results are reported on Table 52. We have not observed statistically significant effects for any of the variables of interest. Thus, we do not have sufficient evidence to support H2b.

$\log(\text{Amount_acctinfo})$

$$\begin{aligned}
 &= \alpha_0 + \beta_1 \text{Narr} + \beta_2 \text{Bad} + \beta_3 \text{Narr} * \text{Bad} + \beta_4 \text{NotAcct} + \beta_5 \text{NotAcct} \\
 &* \text{Narr} + \beta_6 \text{NotAcct} * \text{Bad} + \beta_7 \text{NotAcct} * \text{Narr} * \text{Bad} \\
 &+ \beta_8 \text{MentalEffort} + \beta_9 \text{Age} + \beta_{10} \text{Tiredness} + \beta_{11} \text{Somnolence} \\
 &+ \beta_{12} \text{TaskEnjoyment} + \varepsilon.
 \end{aligned}$$

Equation 14. Model 13 for 'Amount_acctinfo' as VD and including 'NotAcct' interactions.

$\log(\text{Amount_nonacctinfo})$

$$\begin{aligned}
 &= \beta_0 + \beta_1 \text{Narr} + \beta_2 \text{Bad} + \beta_3 \text{Narr} * \text{Bad} + \beta_4 \text{NotAcct} + \beta_5 \text{NotAcct} \\
 &* \text{Narr} + \beta_6 \text{NotAcct} * \text{Bad} + \beta_7 \text{NotAcct} * \text{Narr} * \text{Bad} \\
 &+ \beta_8 \text{MentalEffort} + \beta_9 \text{Age} + \beta_{10} \text{Tiredness} + \beta_{11} \text{Somnolence} \\
 &+ \beta_{12} \text{TaskEnjoyment} + \varepsilon.
 \end{aligned}$$

Equation 15. Model 14 for 'Amount_nonacctinfo' as VD and including 'NotAcct' interactions.

MentalEffort

$$\begin{aligned}
 &= \beta_0 + \beta_1 \text{Narr} + \beta_2 \text{Bad} + \beta_3 \text{Narr} * \text{Bad} + \beta_4 \text{NotAcct} + \beta_5 \text{NotAcct} \\
 &* \text{Narr} + \beta_6 \text{NotAcct} * \text{Bad} + \beta_7 \text{NotAcct} * \text{Narr} * \text{Bad} \\
 &+ \beta_8 \text{MentalEffort} + \beta_9 \text{Age} + \beta_{10} \text{Tiredness} + \beta_{11} \text{Somnolence} \\
 &+ \beta_{12} \text{TaskEnjoyment} + \varepsilon.
 \end{aligned}$$

Equation 16. Model 15 for 'MentalEffort' as VD and including 'NotAcct' interactions.

Table 52. Models 13-15 considering 'Amount of accounting information', 'Amount of non-accounting information' and 'Mental Effort' as DVs and 'NotAcct' interactions.

	Amount_acctinfo	Amount_nonacctinfo	MentalEffort
	<i>Poisson</i> (13)	<i>Poisson</i> (14)	<i>OLS</i> (15)
Constant	1.132** (0.449)	0.126 (0.953)	38.840*** (14.615)
Narr	-0.309 (0.571)	0.435 (0.408)	8.341 (11.540)
Bad	0.032 (0.355)	-0.628 (1.184)	-13.068 (8.114)
I(Narr * Bad)	0.164 (0.766)	-0.532 (1.279)	2.786 (15.864)
NotAcct	-0.171 (0.298)	0.337 (0.473)	-1.210 (7.876)
I(NotAcct * Narr)	0.496 (0.601)	-0.926 (0.635)	-5.331 (13.956)
I(NotAcct * Bad)	0.067 (0.398)	-0.048 (1.234)	10.316 (11.379)
I(NotAcct * Bad * Narr)	-0.460 (0.907)	1.429 (1.425)	12.714 (20.241)
MentalEffort	-0.006 (0.004)	0.003 (0.008)	
Age	-0.009 (0.008)	-0.039* (0.021)	-0.363 (0.263)
Tiredness	-0.0002 (0.003)	-0.012 (0.008)	0.106 (0.136)
Somnolence	-0.003 (0.003)	0.006 (0.008)	0.001 (0.128)
TaskEnjoyment	0.003 (0.004)	0.009 (0.006)	0.119 (0.163)
Observations	85	85	85
R ²			0.106
Adjusted R ²			-0.028
Log Likelihood	-139.372	-77.127	
Akaike Inf. Crit.	304.743	180.254	
Residual Std. Error			22.289
F Statistic			0.790

5. FINAL REMARKS

Financial statements are an essential information source to understand the financial situation of a company, but they require previous knowledge of its receptor to understand their 'language'. The objective of the present research is to investigate how an alternative disclosure format could help individual investors in incorporating accounting information into their prospective decision-making setting through alleviating the extraneous load and the working memory load. This reduction in cognitive load might particularly help those who are still acquiring investment expertise until they learn how to use information from financial statements in a beneficial way to their investment decisions.

To achieve our research goal, we used a mixed method research strategy with an Exploratory Sequential Design: the qualitative method acts as a preparation for the quantitative one. As the qualitative approach, we interviewed - using the Q methodology - 31 subjects, being 13 analysts/professional investors and 18 individual investors. Our objective in this phase was to identify patterns in the usage of accounting/non-accounting information by analysts/professional investors, in contrast to individual investors' information choices. We then used the results of the interviews to base our experimental information choices regarding (a) which accounting information pieces were preferable to professional investors and (b) the information presentation sequence to be followed in the experimental setting.

Next, we developed a 2 X 2 between-subject experimental design in which we manipulate the presentation format of a hypothetical company between the traditional 'tabular and financial notes' design versus the narrative content-only design. We also vary the financial performance ('good' versus 'bad') to check the if variables of interest would impact (a) the investment propensity on the company's shares *per se* and (b) the amount of information retrieved from memory.

As our main results, we have found that the narrative format does not impact either the investment propensity or the amount of retrieved information from memory. On the other hand, we identified that the alternative presentation format has benefited participants with less than five years of investment experience to identify the company's financial distress situation, adjusting their investment propensity to the same level of more experienced investors.

Next, we highlight the main research insights. First, the narrative format may not be effective in mitigating the potential negative effects arising from the information overload setting faced during an investment decision making process. Some of the reasons might include the investors' suspicion towards narratives in general, since many of the reports using that format are not

audited and may be biased. Second, investors may have their expectations frustrated about how accounting information is going to be presented. Their expectations may be based on their previous experience with financial statements, as they might have their own information search strategies, and changing the presentation format may harm their performance rather than improve it, although there is evidence from other fields that the narrative format may benefit readers (Munglioli, 2002; Mar, 2004; Barthes, 2011).

This research contributes to the accounting literature by introducing a new methodological approach when inquiring of individual and professional investors regarding their accounting information usage in a simulated stock investment environment. Also, it explores in an experimental setting the role of accounting information presentation format concurrently to other information sources, and if the presentation format could increase the relevance perception of accounting information. Previous research usually considered an incomplete information setting when studying investment decision making or presentation format outcomes. Nevertheless, important limitations to be considered for this study include the level of complexity and disclosure of accounting information due to the experimental environment, the lack of time pressure and the absence of an expert concurrent informational source (such as sell-side analyst reports). Also, all subjects who participated in the experimental phase had previous knowledge about accounting fundamentals and financial statements analysis, which might have biased their perception of the presentation format since they are used to find accounting information presented in the tabular and financial notes format.

Further research can investigate the impact of accounting information presentation format under time pressure or exploring other business models (such as financial institutions or utilities) or even include more complex/timely concurrent information to interact with the accounting information. Complementarily, it could be interesting to study the effect of the narrative presentation format versus the traditional presentation format on the construction of long-run memory, and how investment strategies can play a role in it.

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³⁹ Using the APA (American Psychology Association) guidelines.

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APPENDIX A: Q-sample design used on interviews and condition of instruction (written in Brazilian Portuguese)

97	Acompanho notícias sobre a atividade operacional.	62	Acompanho notícias sobre os investimentos em ativos de longo prazo.	41	Acompanho notícias sobre qualquer informação relacionada à empresa.	75	Acompanho notícias relacionadas ao desempenho da empresa no mercado acionário.
97	I follow news related to operational activities.	62	I follow news related to investments on long-term assets.	41	I follow news about any information related to the company.	75	I follow news related to the company's performance at capital markets.
89	Acompanho notícias sobre fontes de financiamento.	49	Acompanho notícias relacionadas à atividades socio-ambientais.	55	Busco a emissão de fatos relevantes no site de RI.	118	Busco a emissão de fatos relevantes no site da CVM.
89	I follow news about financing sources.	49	I follow news related to socio-environmental activities.	55	I search for significant event notice at Investor Relations website.	118	I search for event notice at CVM website.

(Figure continues the next page)

(Continuation)

106	Utilizo a volatilidade.	46	Busco a série histórica de retornos.	22	Busco a série histórica de preços da ação.	12	Observo o volume negociado
106	I use a volatility measure.	46	I search for historical series of returns.	22	I search for historical series of stock prices.	12	I look to the stock traded volume.
91	Busco o valor de mercado da empresa.	74	Faço projeções do retorno da ação.	83	Faço projeções do preço da ação.	32	Acompanho o PIB do país e as projeções de crescimento/retração.
91	I search for the company's market value.	74	I calculate stock returns forecasts.	83	I calculate stock price projections.	32	I follow the current country's GDP and its growth/retraction expectations.

(Figure continues on the next page)

(Continuation)

95	Acompanho a situação da dívida externa.	64	Acompanho as expectativas em torno de alterações na taxa SELIC.	9	Acompanho a situação do risco-país.	26	Acompanho o câmbio.
95	I follow foreign debt situation.	64	I follow the expectations behind SELIC rate.	9	I follow the country-risk evaluation.	26	I follow exchange rates.
50	Busco informações sobre o setor da empresa.	114	Utilizo o ativo total.	43	Utilizo o lucro líquido.	39	Busco saber a relação receita operacional/receita total.
50	I search for information about the company's sector.	114	I use total assets measure.	43	I use net income measure.	39	I search for operational income/total revenue ratio.

(Table continues on the next page)

(Continuation)

15	Busco saber a relação receita financeira/receita total.	130	Busco saber a relação despesa financeira/receita total.	68	Busco saber a relação despesa operacional/receita total.	19	Utilizo o EBITDA.
15	I search for financial income/total revenue ratio.	130	I search for financial expenses/total revenue ratio.	68	I search for operational expenses/total revenue ratio.	19	I use the EBITDA.
93	Utilizo o EBIT	57	Busco saber o passivo total	102	Busco saber o tamanho dos financiamentos de com vencimento em até 1 ano.	36	Busco saber o tamanho dos recursos de realização em até 1 ano.
93	I use the EBIT.	57	I search for the total amount of liabilities.	102	I search for the total amount of current liabilities.	36	I search for the total amount of current assets.

(Table continues on the next page)

(Continuance)

80	Busco saber o tamanho do capital próprio (PL ou "book equity").	121	Busco saber o tamanho dos recursos de realização acima de 1 ano (ativo não-circulante).	5	Leio notas explicativas de assuntos que considero importantes.	147	Leio a nota explicativa de política contábil.
80	I search for the total amount of the book equity.	121	I search for the total amount of non-current assets.	5	I read financial statements footnotes from subjects that I understand as important.	147	I read the accounting policy footnote.
120	Busco entender o modelo de negócio que a empresa segue.	77	Busco saber o fluxo de caixa operacional.	18	Busco saber o fluxo de caixa de investimento.	123	Busco saber o fluxo de caixa de financiamento.
120	I seek to understand the business model that the company follows.	77	I search for cash flows-operational activities.	18	I search for cash flows-investing activities.	123	I search for cash flows-financing activities.

(Table continues on the next page)

(Continuance)

49	Utilizo o ROE.	59	Utilizo o ROI.	135	Utilizo o ROA.	162	Utilizo a Liquidez Corrente.
49	I use ROE ratio.	59	I use ROI ratio.	135	I use ROA ratio.	162	I use Current Ratio.
112	Utilizo o Endividamento sobre o PL.	170	Utilizo a Imobilização sobre o PL.	138	Utilizo o Lucro por Ação.	143	Utilizo o P/E (Price/Earnings).
112	I use Total Liabilities/Book Equity ratio.	170	I use Non-Current assets/Book Equity ratio.	138	I use EPS.	143	I use P/E ratio.

(Table continues on the next page)

(Continuance)

147	Consulto amigos e/ou familiares sobre decisões de investimento.	133	Busco relatórios de analistas "sell-side".	140	Busco a opinião de especialistas da minha corretora.	165	Entro com regularidade em sites como InfoMoney, Valor Econômico, IstoÉ Dinheiro, Exame, Época Negócios.
147	I look for my friends and/or my family members about investment decisions.	133	I search for "sell-side" analysts' reports.	140	I search for specialists' opinion from my brokerage firm.	165	I enter with regularity in websites such InfoMoney, Valor Econômico, IstoÉ Dinheiro, Exame, Época Negócios.
110	Entro com regularidade em sites como Estadão, Folha, G1, UOL	157	Entro com regularidade em sites como BBC, El País, New York Times, The Guardian.	49	Entro com regularidade em sites de RI.	151	Acompanho notícias em jornal impresso.
110	I enter with regularity in websites such as Estadão, Folha, G1, UOL.	157	I enter with regularity in websites such as BBC, El País, New York Times, The Guardian.	49	I enter with regularity in Investor Relation website.	151	I follow the news from printed newspaper.

(Table continues on the next page)

(Continuance)

15	Acompanho notícias de negócios pelo Whatsapp e/ou Facebook.	81	Acompanho o release de resultados da empresa.	132	Acompanho a Bloomberg e/ou a Reuters.	140	Utilizo Economatica, CapitalIQ e/ou outra base de dados.
15	I follow business news from Whatsapp and/or Facebook.	81	I follow the company's financial results release.	132	I follow Bloomberg and/or Reuters databases.	140	I use Economatica, CapitalIQ and/or another financial database.
125	Acompanho o site da CVM.	137	Verifico o market cap.				
125	I follow the CVM website.	137	I use the market cap measure.				

Condition of instruction (in Brazilian Portuguese)

DESCRIÇÃO DA TAREFA

Você é um investidor ativo no mercado de capitais. Seu portfólio é montado cuidadosamente em busca de diversificação do risco e, dentro desse critério, maximização do retorno.

A empresa Z atua no ramo industrial/comercial e tem suas atividades já bem consolidadas no mercado. As ações dela parecem atrativas para você a fim de incorporar no seu portfólio, mas você ainda não tem uma opinião final sobre ela. Antes de tomar a decisão, você vai em busca de mais informações sobre a companhia com o objetivo de que elas sirvam de apoio a você para tomar essa decisão.

As frases abaixo dizem respeito à empresa Z, fatores macroeconômicos e respectivas fontes das informações que podem participar desse processo de julgamento. Pede-se para que você as leia com atenção.

APPENDIX B: Standard e-mail sent to potential interviewees (in Brazilian Portuguese)

Bianca Quirantes Checon <bianca.checon@usp.br>

[Entrevista] Tese de doutorado da FEA/USP

Bianca Quirantes Checon <bianca.checon@usp.br>

[Data e hora do envio do e-mail]

Para: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Cc: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Caro XXXXXXXX, bom dia.

Meu nome é Bianca Checon e sou doutoranda em Controladoria e Contabilidade pela FEA/USP. Seu contato me foi indicado pelo XXXXXXXX (o qual nos lê em cópia) em razão da coleta de dados da pesquisa que estou desenvolvendo.

Minha tese de doutorado (sob orientação do prof. Dr. Lucas Barros e coorientação do prof. Dr. Altay de Souza) tem o objetivo de investigar a disponibilidade de informações (contábeis/não-contábeis) e seus impactos no ambiente de decisão em mercado acionário.

Como parte da investigação científica a que o trabalho se propõe, serão feitas entrevistas que dizem respeito à percepção de profissionais de investimento e investidores individuais em relação à quantidade informacional numa potencial decisão de compra de ações. Estima-se que a sessão dure por volta de 1h.

Dito isso, gostaria de convidá-lo para participar dessa etapa metodológica da pesquisa e, em caso de aceite, peço gentilmente que indique um dia, horário e local conforme a sua disponibilidade.

Agradeço desde já pela atenção e fico à disposição para sanar quaisquer dúvidas.

Atenciosamente,

Bianca Quirantes Checon

Doutoranda em Controladoria e Contabilidade pelo PPGCC/FEA/USP

Telefone: 11 X XXXX XXXX

Currículo Lattes: <http://lattes.cnpq.br/4298885566735501>

APPENDIX C: Term of Consent used for the interview process (in Brazilian Portuguese)

PESQUISA DE DOUTORADO: QUANTIDADE INFORMACIONAL EM DECISÕES DE
INVESTIMENTO EM AÇÃO
TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO (TCLE)

Esta pesquisa é parte de projeto específico de doutorado em Controladoria e Contabilidade da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo (FEA/USP), desenvolvido pela aluna Bianca Quirantes Checon, com orientação do prof. Dr. Lucas Barros e coorientação do prof. Dr. Altay de Souza. A pesquisa envolve aspectos pessoais e profissionais, de acordo com modelos e teorias apropriados, envolvendo profissionais de investimento e investidores individuais.

Cada entrevista terá a duração de, aproximadamente, uma hora. A sessão envolve aplicação de teste conhecido como “Desconto do Futuro”, dinâmica sobre a decisão de investimento numa ação e formulário de questões de cunho sociodemográfico e perfil de risco. Essas informações irão apoiar o processo de compreensão sobre o julgamento e tomada de decisão em mercado acionário, mais especificamente no que tange aos possíveis impactos da quantidade de informações (contábeis/não-contábeis), com potencial para explicação científica mais robusta.

A participação nesta pesquisa se dá com base em indicações/recomendações de sujeitos-alvo (profissionais de investimento e investidores individuais) por terceiros da pesquisadora. Os resultados serão utilizados apenas de forma consolidada, respeitando o sigilo e anonimato dos participantes, para fins de pesquisa acadêmica desenvolvida junto à FEA/USP. O processo não prevê respostas certas ou erradas, apenas as mais adequadas a você. Qualquer informação em que você se sinta desconfortável em revelar, não a revele. Durante a participação, não prevemos riscos para você maiores do que aqueles relativos a uma vida normal cotidiana.

Caso você tenha questões ou dúvidas sobre a pesquisa, pode entrar em contato com a aluna Bianca Quirantes Checon pelo e-mail bianca.checon@usp.br e/ou telefone (XX) X XXXX XXXX.

Você receberá uma cópia deste formulário de consentimento.

Data: ____/____/____

(assinatura)

(nome por extenso)

(assinatura da pesquisadora)

APPENDIX D: Profile questions (socio-economic and risk suitability) administered after the interviews (in Brazilian Portuguese)

(para preenchimento da pesquisadora)
Data da entrevista: _____.
Código: _____.

QUESTÕES DE PERFIL DO ENTREVISTADO

(1) Idade: _____ anos

(2) Gênero: (____) F (____) M

(3a) Graduado em:

(____) Administração

(____) Contabilidade

(____) Economia

(____) Outro: _____.

(3b) Ano de conclusão: _____.

(4a) Indique qual o grau de instrução que mais se aproxima do seu momento de estudos atual e a área de conhecimento a esse grau:

(____) Superior incompleto

(____) Superior completo

(____) Pós-graduação *latu senso* incompleta.

(____) Pós-graduação *latu senso* completa.

(____) Mestrado incompleto.

(____) Mestrado completo.

(____) Doutorado incompleto.

(____) Doutorado completo.

(4b) Área de conhecimento: _____.

(5a) Indique a sua área de atuação profissional atualmente:
_____.

(5b) Há quanto tempo você a exerce? _____ anos.

(6a) Possui alguma experiência profissional no mercado de capitais? (___) Sim (___) Não

(6b) Em caso afirmativo, indique o tempo de atuação: _____ anos.

(7) A faixa de renda a que você melhor se adequa é:

(___) De R\$ 937,00 até R\$ 2.811,00.

(___) De R\$ 2.811,01 até R\$ 5.622,00.

(___) De R\$5.622,01 até R\$ 8.433,00.

(___) De R\$ 8.433,01 até R\$ 11.244,00.

(___) De R\$11.244,01 até R\$ 14.055,00.

(___) Maior que R\$ 14.055,00.

(8) Há quanto tempo investe em mercado acionário? _____ anos.

(9) Indique a sua porcentagem de investimento em cada uma dessas categorias de investimento:

(a) (_____) Invisto em ações e/ou fundos de ações.

(b) (_____) Invisto em derivativos.

(c) (_____) Invisto em mercado de renda fixa (CDB, títulos de dívida do governo etc.).

(d) (_____) Invisto em poupança.

(e) (_____) Invisto em imóveis.

(f) Outro: _____.

(10) Atualmente, como você avalia o mercado de capitais no que se refere a investir em renda variável (ações)?

Com extremo otimismo (“esse é um excelente momento para investir”).

Com otimismo (“esse é um bom momento para investir”).

Neutro

Com pessimismo (“esse é um bom momento para vender ou ficar de fora”)

Com extremo pessimismo (“excelente momento para vender ou ficar de fora”)

(11) Dentre os fundos de investimento abaixo, e seus respectivos possíveis rendimentos, qual representaria sua opção de investimento preferida?

Fundo de Investimento A: médio 7,00%, máximo 7,70%, mínimo 6,10%;

Fundo de Investimento B: médio 10,10%, máximo 11,80%, mínimo 2,10%;

Fundo de Investimento C: médio 12,40%, máximo 19,00%, mínimo (-) 4,00%;

Fundo de Investimento D: médio 18,00%, máximo 30,00%, mínimo (-) 20,00%;

Fundo de Investimento E: médio 20,00%, máximo 80,00%, mínimo (-) 40,00%.

(12) Selecione a opção que melhor define seu objetivo de investimento:

Preservação de capital: o objetivo é obter um retorno suficiente para compensar a inflação, mantendo constante o valor real do capital, sem se expor a um nível de risco elevado.

Geração de renda: o objetivo é obter um retorno constante como fonte de renda, gerando um rendimento regular e aceitando um nível de risco moderado.

Aumento de capital: o objetivo é obter um retorno acima da inflação, gerando um aumento do capital investido e aceitando incorrer em alto nível de risco.

(13) Assinale a alternativa que seja sua principal estratégia no que se refere à frequência em que você avalia o desempenho da sua carteira de investimentos:

O objetivo é rentabilizar o patrimônio no longo prazo, não tenho pretensão de modificar os investimentos antes de 5 anos.

O objetivo é rentabilizar o patrimônio no longo prazo, não tenho pretensão de modificar os investimentos antes de 2 anos.

Posso alterar ou resgatar investimentos em até 6 meses.

Procuo as melhores oportunidades no mercado e com a possibilidade de modificar a carteira de investimentos mensalmente.

Altero os investimentos de acordo com as flutuações diárias do mercado financeiro.

(14) Com relação aos riscos existentes no tipo de investimento escolhido, como reagiria ao verificar que, após o período de seis meses, ele apresenta retorno negativo?

Resgataria imediatamente.

Limitaria um valor máximo de perda antes de resgatar.

Investiria recursos adicionais.

Não faria nada, aguardaria mais tempo.

(15a) Assumindo um ambiente sem inflação, qual das seguintes situações você preferiria?

(i) Situação 1: receber R\$ 10.000,00 agora.

(ii) Situação 2: receber R\$ 13.000,00 daqui a um ano.

(15b) Se lhe fosse proposto receber certa quantia de dinheiro agora, mas essa dependesse da escolha de uma das seguintes situações, qual você escolheria?

(i) Situação A: a certeza de ganhar R\$ 2.000,00.

(ii) Situação B: 80% de chance de ganhar R\$ 3.500,00.

(16) Qual opção você prefere? Escolha uma opção em cada linha:

- | | | | |
|--|----|----------------------------|--------------------------|
| 1) <input type="checkbox"/> R\$ 34,00 amanhã | ou | R\$ 35,00 daqui a 186 dias | <input type="checkbox"/> |
| 2) <input type="checkbox"/> R\$ 47,00 amanhã | ou | R\$ 50,00 daqui a 160 dias | <input type="checkbox"/> |
| 3) <input type="checkbox"/> R\$ 22,00 amanhã | ou | R\$ 25,00 daqui a 136 dias | <input type="checkbox"/> |
| 4) <input type="checkbox"/> R\$ 49,00 amanhã | ou | R\$ 60,00 daqui a 89 dias | <input type="checkbox"/> |
| 5) <input type="checkbox"/> R\$ 19,00 amanhã | ou | R\$ 25,00 daqui a 53 dias | <input type="checkbox"/> |
| 6) <input type="checkbox"/> R\$ 34,00 amanhã | ou | R\$ 50,00 daqui a 30 dias | <input type="checkbox"/> |
| 7) <input type="checkbox"/> R\$ 14,00 amanhã | ou | R\$ 25,00 daqui a 19 dias | <input type="checkbox"/> |
| 8) <input type="checkbox"/> R\$ 25,00 amanhã | ou | R\$ 60,00 daqui a 14 dias | <input type="checkbox"/> |
| 9) <input type="checkbox"/> R\$ 11,00 amanhã | ou | R\$ 30,00 daqui a 7 dias | <input type="checkbox"/> |

APPENDIX E: R scripts (Q methodology and linear regressions)**(A) For Q methodology analysis**

```
#####datasets#####
```

```
data_byperson=read.csv("Correl_by person.csv", header=T, sep=";") #Q-sort by person (full P
set)
```

```
#data_byperson2=read.csv("Correl_by person2.csv", header=T, sep=";") #Q-sort by person
(excluding II_14 by forming a 'lonely' PCA component)
```

```
data_byperson3=read.csv("Correl_by person3.csv", header=T, sep=";") #Q-sort by person
(excluding II_13, II_16 and II_17; MSA < 0.5)
```

```
data_IP=read.csv("Correl_by IP.csv", header=T, sep=";") #Q-sort by person (just
analysts/professional investors)
```

```
data_II=read.csv("Correl_by II.csv", header=T, sep=";") #Q-sort by person (just individual
investors, full sample)
```

```
data_II2=read.csv("Correl_by II2.csv", header=T, sep=";") #Q-sort by person (just individual
investors, excluding II_7 because of a MSA=0.33)
```

```
#####testing for multivariate normality assumption#####
```

```
#install.packages("MVN")
```

```
library(MVN)
```

```
#multivariate normality test for data_byperson
```

```
test.norm1=mardiaTest(data_byperson)
```

```
test.norm1
```

```
test.norm2=hZTest(data_byperson)
```

```
test.norm2
```

```
test.norm3=roystonTest(data_byperson)
```

```
test.norm3
```

```
#multivariate normality test for data_IP
```

```
test.norm4=mardiaTest(data_IP)
```

```
test.norm4
```

```
test.norm5=hZTest(data_IP)
```

```

test.norm5
test.norm6=roystonTest(data_IP)
test.norm6

#multivariate normality test for data_II
test.norm7=mardiaTest(data_II)
test.norm7
test.norm8=hztTest(data_II)
test.norm8
test.norm9=roystonTest(data_II)
test.norm9

####testing for univariate normality (all set)####
uniNorm=uniNorm(data_byperson, type="SW", desc=TRUE) #for Shapiro-Wilk normality
test and descriptive statistic for the data
write.csv(uniNorm, "univariate test of normality.csv")

####PCA####
library(qmethod)

##KMO (minimum value is 0.60 to be ok to run PCA/factor analysis)
library(psych)
KMO(data_IP)
KMO(data_II) #overall MSA=0.67
KMO(data_II2)#excluding II_7, overall MSA goes to 0.73
KMO(data_byperson)
#KMO(data_byperson2)
KMO(data_byperson3)#excluding II_13, II_16 and II_17

####II PCA (excluding II_7)####
#final PCA for II data
II2=qmethod(data_II2, nfactors=5, rotation="varimax", forced=FALSE, distribution=c(1, 2, 3,
4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30,

```

```
31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55,
56, 57, 58, 59, 60, 61, 62), cor="spearman")
```

```
summary(II2)
```

```
II2
```

```
II2_loa=II2$loa #factor loadings for Q-sorts
```

```
II2_fchar=II2$f_char #factor characteristics
```

```
II2_flagged=II2$flagged #logical dataframe of flagged Q-sorts
```

```
II2_zsc=II2$zsc
```

```
II2_zscn=II2$zsc_n
```

```
II2_qdc=II2$qdc #distinguishing and consensus statements - see more on ?qdc
```

```
#PCA for II+IP (final)
```

```
#excluding II_13, II_16 and II_17 from database due to MSA (when performing "KMO", these
three subjects presented a MSA lower than 0.5)
```

```
#excluding II_13, II_16 and II_17 makes overall MSA go to 0.72
```

```
#because of composite reliability (and SE calculations that it impacts), it is necessary to have,
at least, two Q sorts in each component (because of that, we have run a PCA with 4 factors)
```

```
total3=qmethod(data_byperson3, nfactors=4, rotation="varimax", forced=FALSE,
distribution=c(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24,
25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49,
50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62), cor="spearman")
```

```
summary(total3)
```

```
total3_loa=total3$loa #factor loadings for Q-sorts
```

```
total3_fchar=total3$f_char #factor characteristics
```

```
total3_flagged=total3$flagged #logical dataframe of flagged Q-sorts
```

```
total3_zsc=total3$zsc
```

```
total3_zscn=total3$zsc_n
```

```
total3_qdc=total3$qdc #distinguishing and consensus statements - see more on ?qdc
```

(B) For hypotheses testing regressions

```
library(Hmisc)
```

```
library(stargazer)
```

```

library(lmtest)
library(car)
library(sandwich)
# library(pscl)
# library(MASS)

# Data #####
Bianca <- read.csv("dados_3.csv", header = TRUE, sep = ";")
head(Bianca)
Bianca$PropensaoReais = 500*(Bianca$PropensaoReais.)
colnames(Bianca) = c("Subject", "ExptCond", "PresFormat", "Perf", "Propensity01",
                    "PropensityMoneyPerc", "Tiredness", "Somnolence", "MentalEffort",
                    "TaskingEnjoy",
                    "Age", "InvestExp", "InvestYears", "RiskTakingLevel",
                    "label_RiskTakingLevel", "UndergradCourse", "label_UndergradCourse",
                    "UnderGraduateConclusion", "Graduate", "GraduateCourse",
                    "label_GraduateCourse",
                    "Gender", "IncLevel", "label_IncLevel", "Amount_acctinfo",
                    "Amount_nonacctinfo", "PropensityMoney")
head(Bianca)
Bianca$LittleInvestExp <- ifelse(Bianca$InvestYears<=5, 1, 0)
Bianca$LowRiskLevel <- ifelse(Bianca$RiskTakingLevel<=2, 1, 0)
Bianca$MedRiskLevel <- ifelse(Bianca$RiskTakingLevel==3, 1, 0)
Bianca$NarrGood <- ifelse(Bianca$PresFormat==2 & Bianca$Perf==1, 1, 0)
Bianca$NarrBad <- ifelse(Bianca$PresFormat==2 & Bianca$Perf==2, 1, 0)
Bianca$TradBad <- ifelse(Bianca$PresFormat==1 & Bianca$Perf==2, 1, 0)
Bianca$Narr <- ifelse(Bianca$PresFormat==2, 1, 0)
Bianca$Bad <- ifelse(Bianca$Perf==2, 1, 0)
Bianca$UndGrad <- ifelse(Bianca$Graduate==0, 1, 0)
Bianca$NoInvestExper <- ifelse(Bianca$InvestExp==0, 1, 0)

# H1 Results #####

```

```
stargazer(mod1bas_01, mod1bas_RS, mod1_01, mod1_RS, intercept.bottom = FALSE, type =
"html", out="basic models (propensity 0-100 and BRL) without robust errors.htm", df =
FALSE)
```

```
stargazer(mod1bas_01.cl, mod1bas_RS.cl, mod1_01.cl, mod1_RS.cl, intercept.bottom =
FALSE, type = "html", out="basic models (propensity 0-100 and BRL) with robust errors.htm",
df = FALSE)
```

```
# Testing H1a #####
```

```
# Little Investment Experience #####
```

```
mod2a <- lm(Propensity01 ~ Narr + Bad + I(Narr*Bad) + LittleInvestExp +
I(LittleInvestExp*Narr) + I(LittleInvestExp*Bad) +
I(Narr*Bad*LittleInvestExp) +
LowRiskLevel + MedRiskLevel + Age + Gender,
data = Bianca) #n=35
```

```
vif(mod2a)
```

```
mod2a.cl <- coeftest(mod2a, vcovHC(mod2a, type="HC1", cluster="group"))
```

```
# Testing H1b #####
```

```
# Non-Major in Accounting #####
```

```
Bianca$NotAcct <- ifelse(Bianca$UndergradCourse!=2, 1, 0)
```

```
mod2b <- lm(Propensity01 ~ Narr + Bad + I(Narr*Bad) + NotAcct + I(NotAcct*Narr) +
I(NotAcct*Bad) + I(Narr*Bad*NotAcct) +
LowRiskLevel + MedRiskLevel + Age + Gender,
data = Bianca)
```

```
vif(mod2b)
```

```
mod2b.cl <- coeftest(mod2b, vcovHC(mod2b, type="HC1", cluster="group"))
```

```
# H1a and H1b Results #####
```

```
stargazer(mod2a, mod2a.cl, intercept.bottom = FALSE, type = "html", out="H2a (propensity
01) with robust errors.htm", df = FALSE)
```

```
stargazer(mod2b, mod2b.cl, intercept.bottom = FALSE, type = "html", out="H2b (propensity
01) with robust errors.htm", df = FALSE)
```

```
# Testing H2 #####
```

```

head(Bianca)
levels(factor(Bianca$Amount_acctinfo))
levels(factor(Bianca$Amount_nonacctinfo))
table(Bianca$Amount_acctinfo)
hist(Bianca$Amount_acctinfo, xlab="Amount of accounting information")
table(Bianca$Amount_nonacctinfo)
hist(Bianca$Amount_nonacctinfo, breaks=4, xlab="Amount of non-accounting information")

# Amount of Acc Info #####

# Poisson (if there is not superdispersion)
# Negative Binomial (if there is superdispersion)

# Testing for superdispersion
mean(Bianca$Amount_acctinfo)
var(Bianca$Amount_acctinfo)

test1 <- glm(Amount_acctinfo ~ Narr + Bad + I(Narr*Bad) +
             MentalEffort + Age + Tiredness + Somnolence + TaskingEnjoy,
             data = Bianca, family = "poisson", na.action = "na.exclude")
lambda1 <- fitted(test1)
yast1 <- ((Bianca$Amount_acctinfo-lambda1)^2-Bianca$Amount_acctinfo)/lambda1
summary(lm(yast1 ~ lambda1 - 1))
# If the coefficient is statistically different from zero, there is superdispersion.
# So, we use Poisson

# Amount of Non Acc Info #####

# Testing for superdispersion
mean(Bianca$Amount_nonacctinfo)
var(Bianca$Amount_nonacctinfo)
test2 <- glm(Amount_nonacctinfo ~ Narr + Bad + I(Narr*Bad) +
             MentalEffort + Age + Tiredness + Somnolence + TaskingEnjoy,
             data = Bianca, family = "poisson", na.action = "na.exclude")

```

```

lambda2 <- fitted(test2)
yast2 <- ((Bianca$Amount_nonacctinfo-lambda2)^2-Bianca$Amount_nonacctinfo)/lambda2
summary(lm(yast2 ~ lambda2 - 1))
# Not significant, we estimate a poisson

#amount of acct info
mod3a <- glm(Amount_acctinfo ~ Narr + Bad + I(Narr*Bad) +
             MentalEffort + Age + Tiredness + Somnolence + TaskingEnjoy,
             data = Bianca, family = "poisson")
summary(mod3a)
# Goodness of fit
with(mod3a, cbind(res.deviance = deviance, df = df.residual,
                 p = pchisq(deviance, df.residual, lower.tail=FALSE)))
mod3a.ci <- coeftest(mod3a, vcovHC(mod3a, type = "HC1", cluster="group"))

#amount of non-acct info
mod3b <- glm(Amount_nonacctinfo ~ Narr + Bad + I(Narr*Bad) +
             MentalEffort + Age + Tiredness + Somnolence + TaskingEnjoy,
             data = Bianca, family = "poisson")
summary(mod3b)
# Goodness of fit
with(mod3b, cbind(res.deviance = deviance, df = df.residual,
                 p = pchisq(deviance, df.residual, lower.tail=FALSE)))
mod3b.ci <- coeftest(mod3b, vcovHC(mod3b, type = "HC1", cluster="group"))

#mental effort <--
mod3c <- lm(MentalEffort ~ Narr + Bad + I(Narr*Bad) +
            Age + Tiredness + Somnolence + TaskingEnjoy,
            data = Bianca)
vif(mod3c)
mod3c.ci <- coeftest(mod3c, vcovHC(mod3c, type="HC1", cluster="group"))
mod3c.ci

```

```

# Testing H2a #####
#Little Investment Experience

#amount of acct info
mod3a_2<- glm(Amount_acctinfo ~ Narr + Bad + I(Narr*Bad) + LittleInvestExp +
              I(LittleInvestExp*Narr) + I(LittleInvestExp*Bad) +I(LittleInvestExp*Bad*Narr) +
              MentalEffort + Age + Tiredness + Somnolence + TaskingEnjoy,
              data = Bianca, family = "poisson")
summary(mod3a_2)
# Goodness of fit
with(mod3a_2, cbind(res.deviance = deviance, df = df.residual,
                   p = pchisq(deviance, df.residual, lower.tail=FALSE)))
mod3a_2.ci <- coeftest(mod3a_2, vcovHC(mod3a_2, type = "HC1", cluster="group"))

#amount of non-acct info
mod3b_2<- glm(Amount_nonacctinfo ~ Narr + Bad + I(Narr*Bad) + LittleInvestExp +
              I(LittleInvestExp*Narr) + I(LittleInvestExp*Bad) +I(LittleInvestExp*Bad*Narr) +
              MentalEffort + Age + Tiredness + Somnolence + TaskingEnjoy,
              data = Bianca, family = "poisson")
summary(mod3b_2)
# Goodness of fit
with(mod3b_2, cbind(res.deviance = deviance, df = df.residual,
                   p = pchisq(deviance, df.residual, lower.tail=FALSE)))
mod3b_2.ci <- coeftest(mod3b_2, vcovHC(mod3b_2, type = "HC1", cluster="group"))

#mental effort
mod3ca<- lm(MentalEffort ~ Narr + Bad + I(Narr*Bad) + LittleInvestExp +
            I(LittleInvestExp*Narr) + I(LittleInvestExp*Bad) +
            I(Narr*Bad*LittleInvestExp) +
            Age + Tiredness + Somnolence + TaskingEnjoy,
            data = Bianca)
vif(mod3ca)
mod3ca.ci <- coeftest(mod3ca, vcovHC(mod3ca, type="HC1", cluster="group"))
mod3ca.ci

```

```

# Testing H2b #####
#Accounting Literacy

#amount of acct info
mod3a_3<- glm(Amount_acctinfo ~ Narr + Bad + I(Narr*Bad) + NotAcct +
              I(NotAcct*Narr) + I(NotAcct*Bad) +I(NotAcct*Bad*Narr) +
              MentalEffort + Age + Tiredness + Somnolence + TaskingEnjoy,
              data = Bianca, family = "poisson")
summary(mod3a_3)
# Goodness of fit
with(mod3a_3, cbind(res.deviance = deviance, df = df.residual,
                   p = pchisq(deviance, df.residual, lower.tail=FALSE)))
mod3a_3.cl <- coeftest(mod3a_3, vcovHC(mod3a_3, type = "HC1", cluster="group"))

###amount of non-acct info
mod3b_3<- glm(Amount_nonacctinfo ~ Narr + Bad + I(Narr*Bad) + NotAcct +
              I(NotAcct*Narr) + I(NotAcct*Bad) +I(NotAcct*Bad*Narr) +
              MentalEffort + Age + Tiredness + Somnolence + TaskingEnjoy,
              data = Bianca, family = "poisson")
summary(mod3b_3)
# Goodness of fit
with(mod3b_3, cbind(res.deviance = deviance, df = df.residual,
                   p = pchisq(deviance, df.residual, lower.tail=FALSE)))
mod3b_3.cl <- coeftest(mod3b_3, vcovHC(mod3b_3, type = "HC1", cluster="group"))

#mental effort
mod3cb<- lm(MentalEffort ~ Narr + Bad + I(Narr*Bad) + NotAcct + I(NotAcct*Narr) +
            I(NotAcct*Bad) + I(Narr*Bad*NotAcct) +
            Age + Tiredness + Somnolence + TaskingEnjoy,
            data = Bianca)
vif(mod3cb)
mod3cb.cl <- coeftest(mod3cb, vcovHC(mod3cb, type="HC1", cluster="group"))

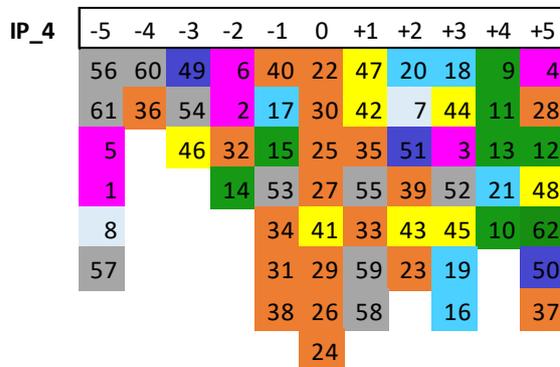
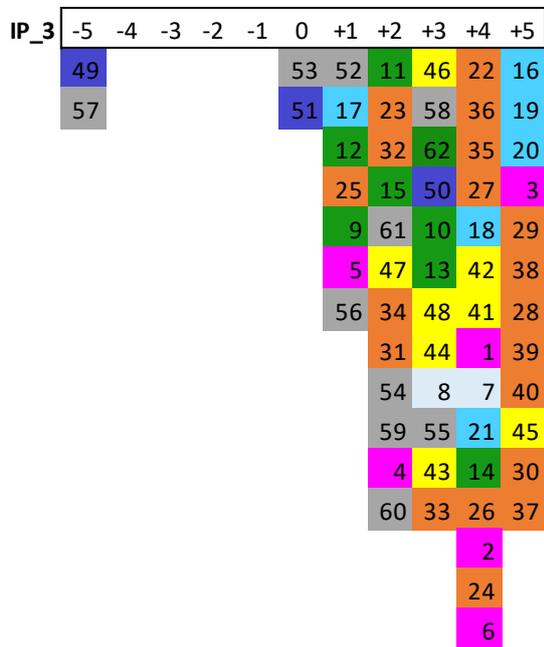
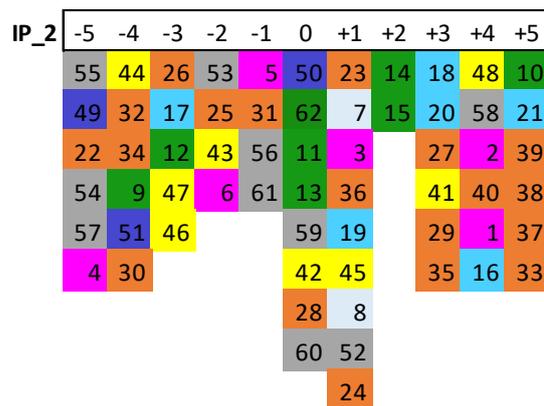
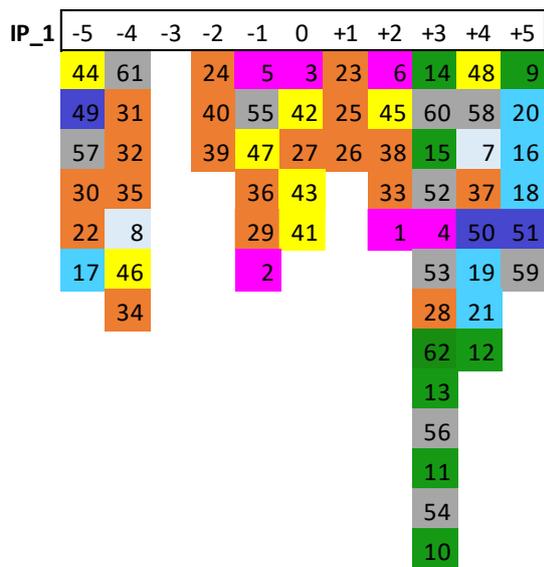
```

APPENDIX F: Q-sort database

#	IP_1	IP_2	IP_3	IP_4	IP_5	IP_6	IP_7	IP_8	IP_9	IP_10	IP_11	IP_12	IP_13	IP_2	IP_3	IP_4	IP_5	IP_7	IP_8	IP_9	IP_11	IP_12	IP_13	IP_14	IP_15	IP_16	IP_17	IP_18	IP_19	IP_20	IP_21
1	8	10	10	1	9	10	11	3	8	11	8	9	7	9	10	6	6	10	2	8	10	9	9	10	9	9	4	4	1	6	11
2	5	10	10	4	10	10	7	6	7	11	2	7	9	5	4	3	5	9	6	8	10	8	11	7	7	10	9	7	9	7	6
3	6	7	11	9	9	10	10	2	11	11	2	9	7	2	9	2	1	10	10	5	6	7	9	10	6	10	5	7	6	3	9
4	9	1	8	11	9	10	5	9	8	11	9	9	7	3	10	3	7	9	10	11	6	7	10	10	9	9	11	10	11	10	7
5	5	5	7	1	9	10	5	6	6	11	2	5	7	2	6	1	3	10	2	2	10	8	1	7	6	7	10	8	1	7	9
6	8	4	10	4	7	6	1	2	3	5	1	6	1	1	1	6	4	1	1	6	7	9	6	8	1	7	8	2	6	3	4
7	10	7	10	8	11	10	10	3	10	11	10	8	8	10	7	5	4	10	6	1	9	6	4	7	9	2	1	6	6	9	6
8	2	7	9	1	9	10	10	9	3	11	10	7	2	9	8	7	4	11	6	5	6	2	7	7	7	1	3	7	6	3	6
9	11	2	7	10	7	10	2	10	8	10	4	7	8	11	10	10	6	8	6	6	6	11	6	4	11	11	11	9	11	5	6
10	9	11	9	10	9	1	1	10	9	11	11	8	5	11	11	6	4	7	6	1	9	11	5	9	11	11	11	11	11	8	7
11	9	6	8	10	8	1	5	9	9	11	2	7	7	11	11	8	3	7	10	3	9	10	9	11	10	11	10	11	11	8	7
12	10	3	7	11	11	6	5	9	6	11	2	8	8	10	10	7	6	6	7	11	6	11	11	10	11	11	4	7	6	6	5
13	9	6	9	10	9	6	6	6	11	11	8	9	11	9	11	11	1	4	8	6	8	10	11	10	10	8	10	11	3	9	8
14	9	8	10	4	9	10	1	11	6	11	11	11	5	9	4	7	2	8	6	1	9	10	11	2	9	2	3	10	11	5	7
15	9	8	8	5	10	11	11	11	1	11	9	10	2	10	8	7	1	6	11	4	9	10	10	6	10	2	3	10	11	5	5
16	11	10	11	9	8	11	9	2	6	11	4	10	5	5	6	5	10	9	10	3	10	6	11	9	10	4	7	9	2	10	6
17	1	3	7	5	8	6	1	1	6	11	2	9	1	2	5	7	2	9	10	2	6	6	1	6	2	6	1	2	2	1	6
18	11	9	10	9	8	10	9	11	11	11	9	8	4	6	6	7	11	9	10	3	7	6	11	8	11	9	10	9	6	10	7
19	10	7	11	9	8	10	9	2	6	11	9	8	1	6	2	2	11	9	11	3	7	6	10	6	11	3	9	9	6	7	5
20	11	9	11	8	8	10	9	11	6	11	1	10	5	8	2	6	11	9	10	5	10	6	11	6	10	10	6	9	2	7	7
21	10	11	10	10	11	11	10	9	11	11	11	10	11	8	10	6	11	11	11	11	10	11	10	11	9	11	10	11	9	9	10
22	1	1	10	6	10	6	5	5	9	11	1	1	5	8	2	8	9	6	3	5	6	7	1	5	6	8	7	7	6	1	7
23	7	7	8	8	10	10	6	6	10	11	8	9	7	5	10	10	11	8	10	6	8	9	6	7	9	10	10	6	2	6	10
24	4	7	10	6	10	10	6	7	6	11	10	8	7	4	9	9	9	8	2	8	9	8	9	3	6	8	4	2	2	4	8
25	7	4	7	6	10	10	2	3	3	11	10	7	5	6	9	9	8	8	4	4	9	8	6	10	7	9	8	10	6	4	9
26	7	3	10	6	10	10	8	6	3	11	10	8	7	9	6	8	5	8	3	6	9	8	6	4	7	10	10	8	3	4	7
27	6	9	10	6	10	10	8	6	1	11	10	8	7	4	7	8	9	7	2	7	9	8	9	2	7	7	8	10	2	4	7
28	9	6	11	11	10	10	8	11	10	11	10	10	11	7	9	11	8	9	1	11	1	9	10	11	10	9	11	6	6	7	10
29	5	9	11	6	10	10	8	7	8	11	2	8	5	10	5	8	1	9	1	8	1	9	5	6	10	9	4	6	6	7	8
30	1	2	11	6	10	6	7	3	9	11	2	1	9	11	2	10	5	7	7	7	10	7	7	2	6	10	10	7	6	1	9
31	2	5	8	5	10	10	10	7	6	7	11	9	5	7	3	6	6	8	1	7	11	7	4	1	6	2	4	8	6	9	7

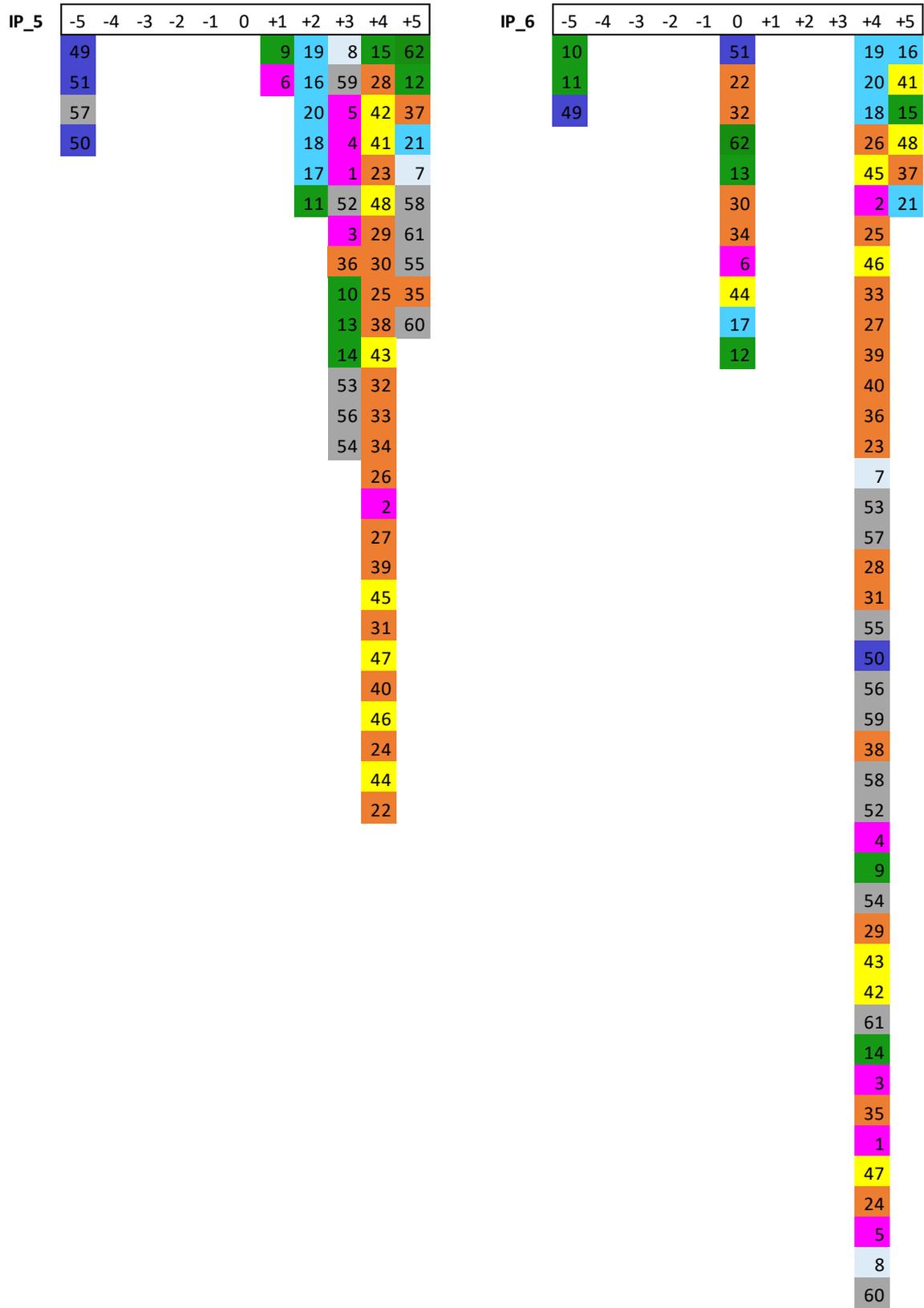
#	IP_1	IP_2	IP_3	IP_4	IP_5	IP_6	IP_7	IP_8	IP_9	IP_10	IP_11	IP_12	IP_13	II_2	II_3	II_4	II_5	II_7	II_8	II_9	II_11	II_12	II_13	II_14	II_15	II_16	II_17	II_18	II_19	II_20	II_21	
32	2	2	8	4	10	6	4	7	1	6	9	3	5	7	3	6	1	10	2	6	10	7	5	5	6	9	4	1	2	2	7	
33	8	11	9	7	10	10	2	3	9	11	9	3	5	2	7	10	8	8	3	6	6	10	7	3	8	8	10	8	6	4	8	
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36	5	7	10	2	9	10	10	1	7	8	9	1	10	6	6	5	8	10	2	5	8	7	5	6	1	1	1	1	5	1	6	
37	10	11	11	11	11	11	11	10	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	8	3	11	8	9	11	11
38	8	11	11	5	10	10	11	7	11	11	11	11	10	9	7	9	10	10	9	9	11	9	7	4	8	8	10	2	2	11	11	
39	4	11	11	8	10	10	7	3	8	11	10	7	9	10	6	9	7	10	6	9	11	9	5	7	8	7	4	10	2	10	8	
40	4	10	11	5	10	10	5	2	10	11	10	4	9	8	3	9	6	10	2	9	11	9	5	1	7	8	8	8	6	9	8	
41	6	9	10	6	10	11	11	7	10	11	8	9	10	10	9	11	7	8	10	10	8	5	9	5	9	6	9	6	6	10	11	
42	6	6	10	7	10	10	11	7	10	11	4	6	7	6	6	7	2	8	1	10	11	5	9	5	9	6	10	6	6	11	9	
43	6	4	9	8	10	10	7	7	7	10	1	8	2	6	9	10	7	8	5	10	8	5	9	5	9	6	11	6	6	1	8	
44	1	2	9	9	10	6	1	6	3	7	10	1	5	11	4	9	10	10	4	8	11	4	1	1	6	11	9	6	3	5	9	
45	8	7	11	9	10	10	7	7	6	11	10	6	9	11	7	11	9	8	3	8	10	7	5	1	9	7	11	8	6	11	8	
46	2	3	9	3	10	10	6	7	7	6	8	6	5	5	2	8	6	1	1	1	6	4	6	1	7	6	2	7	3	3	7	
47	5	3	8	7	10	10	6	7	7	11	4	9	7	7	11	11	9	7	10	11	5	4	9	9	9	10	9	11	11	1	8	
48	10	10	9	11	10	11	9	11	9	11	11	11	10	6	9	6	10	8	11	7	6	4	10	8	9	8	7	11	6	9	11	
49	1	1	1	3	1	1	2	1	6	1	1	6	5	1	1	4	11	1	1	6	6	1	11	11	1	11	6	10	6	9	1	
50	10	6	9	11	1	10	8	10	7	9	9	11	2	2	1	3	7	11	9	8	6	10	1	5	11	10	2	8	10	11	11	
51	11	2	6	8	1	6	5	2	8	9	9	11	1	1	5	2	1	1	7	10	6	1	8	7	10	8	11	11	10	7	10	
52	9	7	7	9	9	10	2	10	7	10	8	9	7	1	11	1	5	10	6	8	1	2	10	7	2	11	11	9	1	9	1	
53	9	4	6	5	9	10	1	1	3	10	4	9	5	1	1	1	6	9	6	8	1	2	10	6	1	11	9	9	1	10	1	
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55	5	1	9	7	11	10	6	3	1	11	9	8	7	10	7	4	6	11	8	6	8	3	1	6	7	2	2	1	6	11	5	
56	9	5	7	1	9	10	1	1	8	10	4	9	5	1	1	1	2	10	8	5	2	1	8	6	1	3	1	8	1	1	1	
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58	10	10	9	7	11	10	11	10	7	11	10	10	11	8	10	6	10	11	10	9	8	10	6	8	9	7	7	9	2	10	10	
59	11	6	8	7	9	10	8	10	9	10	9	10	7	2	10	7	4	10	6	4	6	1	10	9	10	1	1	5	1	6	5	
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61	2	5	8	1	11	10	5	5	3	11	8	1	1	9	6	4	1	11	8	5	5	2	1	6	2	1	10	5	6	2	7	
62	9	6	9	11	11	6	5	5	6	11	4	8	10	3	11	7	3	4	8	7	6	11	5	11	9	7	10	8	6	11	8	

APPENDIX G: Q-sorts (labeled) for analysts/professional investors



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(Continuance)



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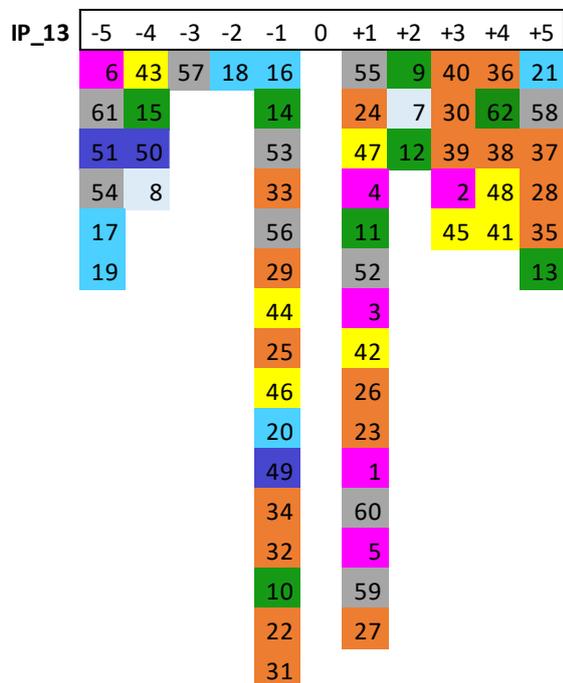
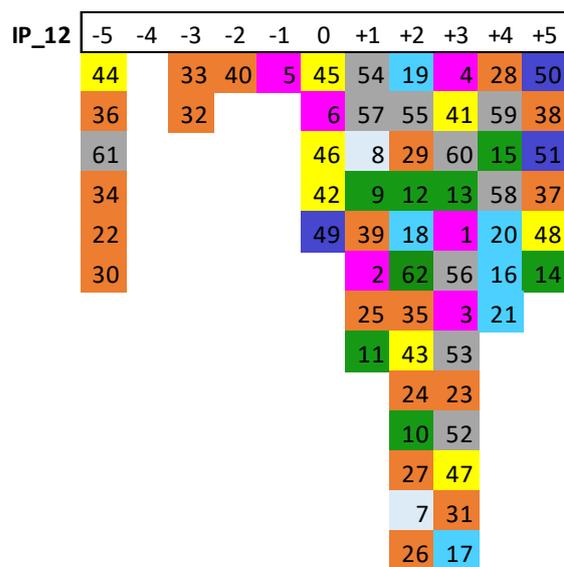
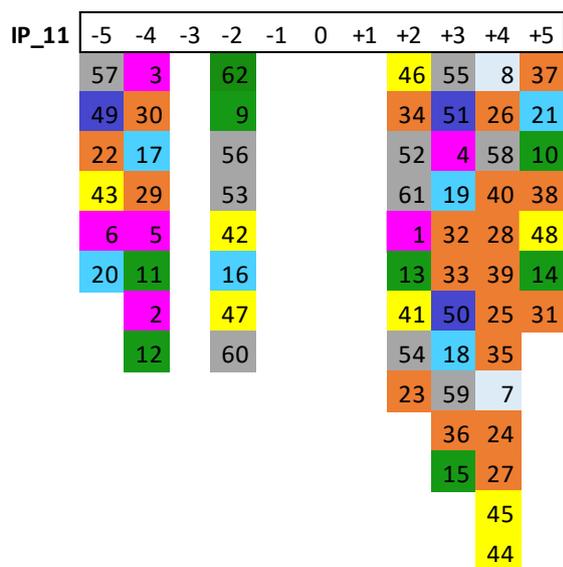
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55		53				14	46	1	11	42	3
57		60				20	36	29	59	23	21
15		34				17	52	4	33	28	13
27		44				31	50	51	30	7	38
32		8				19	2	56	10	41	18
		26				35	43	39	48		
		25				5	58				
		61				12					
						45					
						62					
						16					
						24					

IP_10	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
49					6	46	31	36	57	43	24
					54	34	44		51	52	27
						32			50	9	55
										53	7
										59	2
										56	39
											5
											28
											16
											20
											45
											30
											33
											42
											23
											35
											37
											17
											18
											10
											13
											19
											26
											15
											38
											41
											8
											47
											62
											29
											48
											58
											14
											12
											1
											25
											21
											4
											40
											60
											11
											61
											3
											22

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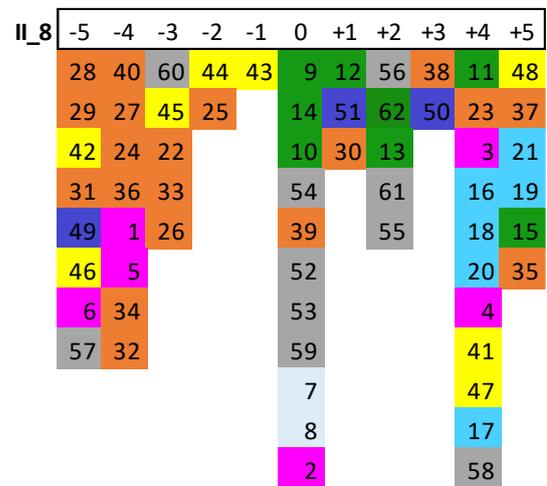
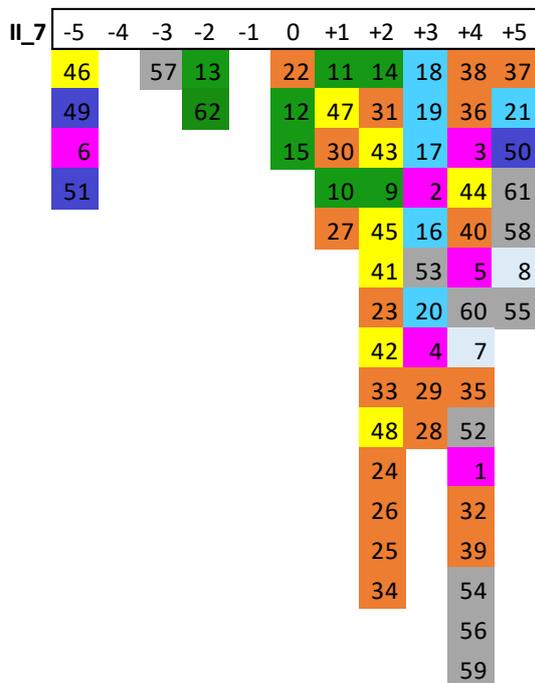
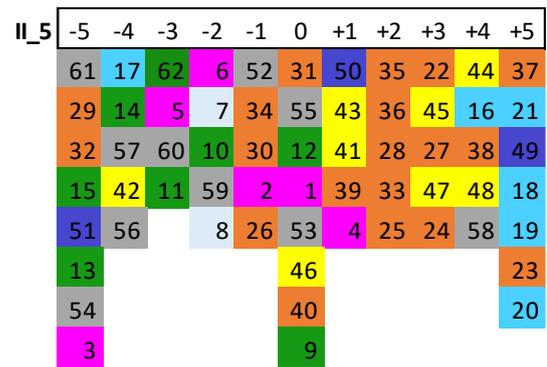
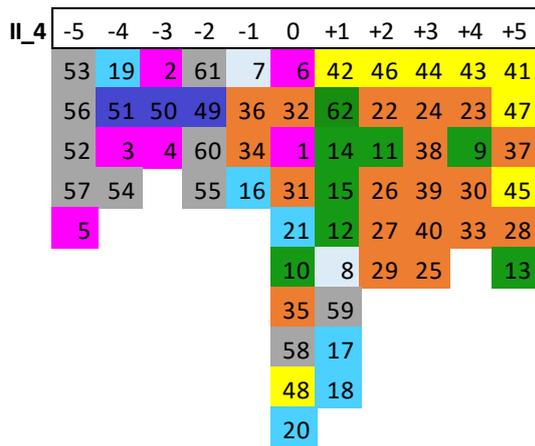
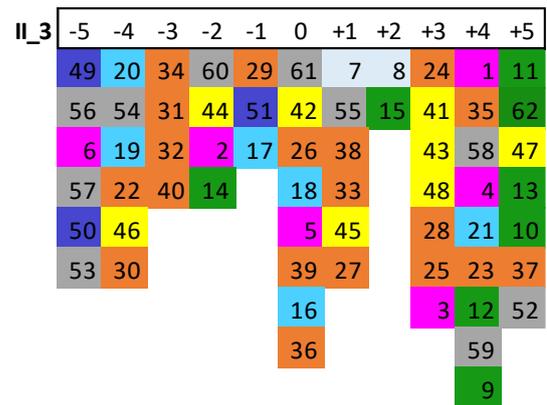
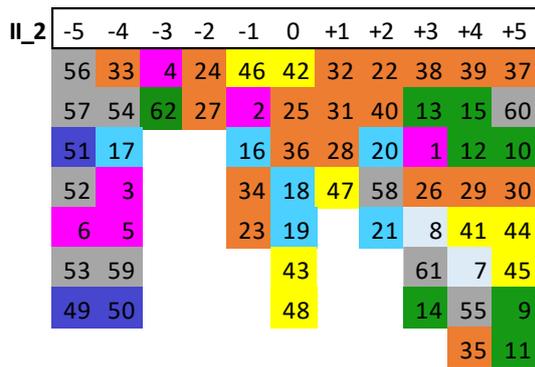
(Continuance)



Label

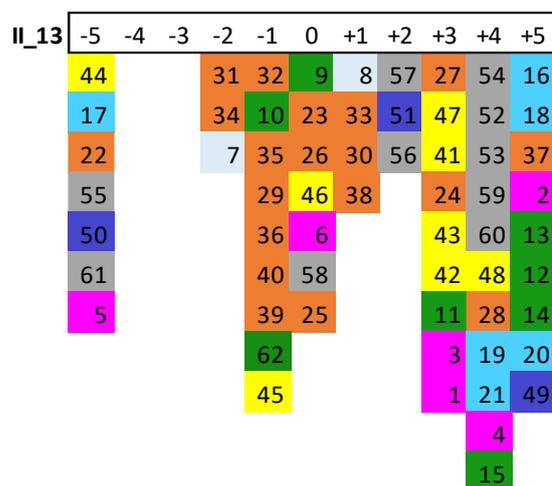
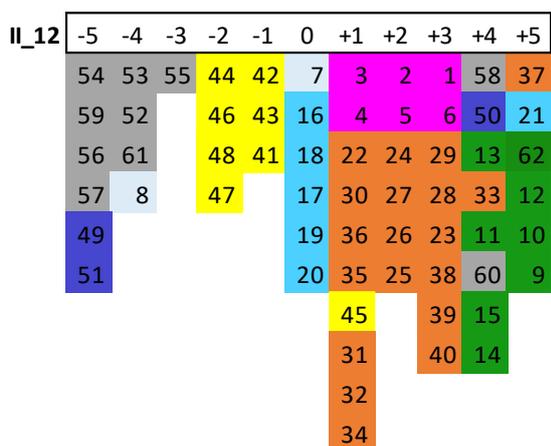
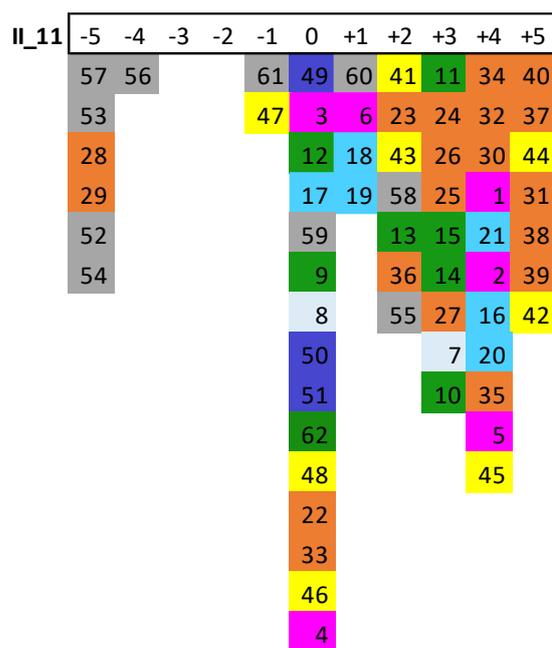
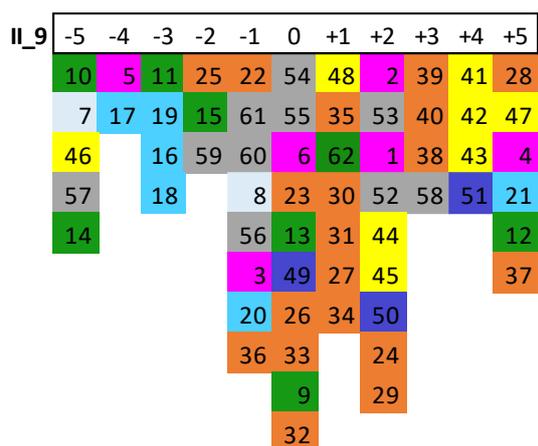
- Group A: News from media
- Group B: Significant events released at IR and/or CVM website
- Group C: Past market data from the company itself and its stock
- Group D: Macroeconomic information
- Group E: 'Pure' accounting information
- Group F: 'Transformed' accounting information (i.e. ratios)
- Group G: Information about information sources (I): friends, family, specialists
- Group H: Information about information sources (II)

APPENDIX H: Q-sorts (labeled) for individual investors



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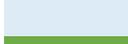
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54	6		1	61	41	8	5	19	49	51	
32	17				28	3	37	58	39	48	
36	24				43	30	50	16	27	11	
55					42	12	33	9	25	47	
					23	35	26	18	4	21	
					7	2	56	52	15	13	
					44	46	40	20			
					34		62				
							45				

II_19	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
56	16	13		36	6				37	50	11
52	20	44			31				21	51	10
57	17	46			18				2		47
54	32	26			22						9
59	58				61						15
53	34				3						14
1	23				45						4
5	24				30						
	38				62						
	39				48						
	27				33						
					12						
					55						
					25						
					19						
					43						
					41						
					29						
					28						
					42						
					7						
					49						
					35						
					40						
					60						
					8						

II_20	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
43	32	8	33	44	12	29	11	7	4	45	
47	34	3	26	14	60	28	10	49	53	38	
56	54	46	27	15	59	19		13	58	42	
22	61	6	24	9	23	5		52	16	62	
30	57		25		1	20		40	35	50	
17						51		48	41	55	
36						2		31	39	37	
								21	18		

II_21	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
54			6	59	17	46	29	25	28	41	
52				55	9	4	47	44	51	37	
49				19	7	31	43	3	60	48	
57				15	36	27	39	5	58	1	
56				12	2	10	45	30	21	38	
53				34	8	18	24	42	23	50	
					16	22	40				
					35	14	13				
						26	62				
						11	33				
						20					
						32					
						61					

Label

	<i>Group A: News from media</i>
	<i>Group B: Significant events released at IR and/or CVM website</i>
	<i>Group C: Past market data from the company itself and its stock</i>
	<i>Group D: Macroeconomic information</i>
	<i>Group E: 'Pure' accounting information</i>
	<i>Group F: 'Transformed' accounting information (i.e. ratios)</i>
	<i>Group G: Information about information sources (I): friends, family, specialists</i>
	<i>Group H: Information about information sources (II)</i>

APPENDIX I: Spearman's correlation matrix (Q-sorts) between professional and individual investors

#	IP_1	IP_2	IP_3	IP_4	IP_5	IP_6	IP_7	IP_8	IP_9	IP_10	IP_11	IP_12	IP_13	II_2	II_3	II_4	II_5	II_7	II_8	II_9	II_11	II_12	II_13	II_14	II_15	II_16	II_17	II_18	II_19	II_20	II_21
IP_1	1.00	0.32	0.04	0.55	-0.18	0.29	0.18	0.41	0.29	0.15	0.17	0.63	0.12	0.00	0.32	-0.12	0.13	0.09	0.46	0.03	-0.13	0.25	0.51	0.39	0.65	0.01	0.26	0.41	0.18	0.41	0.08
IP_2	0.32	1.00	0.58	0.19	0.19	0.50	0.51	0.28	0.43	0.53	0.44	0.36	0.39	0.24	0.34	0.19	0.31	0.31	0.29	0.11	0.38	0.42	0.22	0.14	0.33	-0.11	0.08	0.24	0.06	0.42	0.37
IP_3	0.04	0.58	1.00	0.21	0.22	0.28	0.54	0.10	0.37	0.46	0.26	0.05	0.36	0.37	0.01	0.36	0.33	0.20	0.07	0.18	0.45	0.27	0.06	-0.13	0.23	-0.16	0.07	-0.08	0.10	0.25	0.35
IP_4	0.55	0.19	0.21	1.00	0.07	0.02	0.10	0.43	0.45	0.28	0.21	0.35	0.35	0.20	0.54	0.27	0.35	-0.06	0.47	0.33	0.01	0.32	0.20	0.35	0.66	0.32	0.45	0.45	0.39	0.49	0.29
IP_5	-0.18	0.19	0.22	0.07	1.00	0.21	0.30	0.13	0.02	0.38	0.33	-0.07	0.50	0.46	0.31	0.32	0.13	0.20	0.05	0.36	0.28	0.26	-0.21	-0.06	-0.07	-0.18	0.07	-0.18	0.10	0.13	0.31
IP_6	0.29	0.50	0.28	0.02	0.21	1.00	0.56	0.26	0.12	0.28	0.33	0.44	0.21	0.05	0.16	0.01	0.28	0.40	0.29	0.13	0.07	-0.03	0.28	-0.03	0.13	-0.33	-0.05	0.06	0.00	0.25	0.21
IP_7	0.18	0.51	0.54	0.10	0.30	0.56	1.00	0.27	0.30	0.35	0.29	0.35	0.38	0.31	0.23	0.11	0.27	0.32	0.26	0.22	0.36	0.10	0.16	0.09	0.29	-0.31	-0.09	-0.08	0.05	0.33	0.37
IP_8	0.41	0.28	0.10	0.43	0.13	0.26	0.27	1.00	0.22	0.20	0.34	0.39	0.20	0.35	0.45	0.31	0.16	0.06	0.24	0.19	0.06	0.30	0.29	0.07	0.57	0.08	0.23	0.27	0.33	0.27	0.25
IP_9	0.29	0.43	0.37	0.45	0.02	0.12	0.30	0.22	1.00	0.32	0.12	0.27	0.48	0.14	0.38	0.34	0.20	0.06	0.26	0.25	0.08	0.24	0.18	0.25	0.42	0.14	0.33	0.21	0.24	0.31	0.49
IP_10	0.15	0.53	0.46	0.28	0.38	0.28	0.35	0.20	0.32	1.00	0.19	0.22	0.41	0.45	0.47	0.33	0.16	0.11	0.42	0.05	0.23	0.41	0.13	0.23	0.38	-0.05	0.23	0.24	0.25	0.28	0.40
IP_11	0.17	0.44	0.26	0.21	0.33	0.33	0.29	0.34	0.12	0.19	1.00	0.27	0.29	0.31	0.28	0.21	0.29	0.33	0.12	0.16	0.37	0.21	-0.10	-0.11	0.17	-0.22	0.04	0.21	0.14	0.34	0.30
IP_12	0.63	0.36	0.05	0.35	-0.07	0.44	0.35	0.39	0.27	0.22	0.27	1.00	0.15	-0.06	0.31	-0.07	0.13	0.16	0.54	0.20	-0.10	0.13	0.46	0.33	0.42	-0.04	0.02	0.31	0.09	0.38	0.28
IP_13	0.12	0.39	0.36	0.35	0.50	0.21	0.38	0.20	0.48	0.41	0.29	0.15	1.00	0.38	0.54	0.35	0.28	0.16	0.16	0.44	0.32	0.41	0.11	0.24	0.12	0.13	0.23	0.10	0.05	0.43	0.41
II_2	0.00	0.24	0.37	0.20	0.46	0.05	0.31	0.35	0.14	0.45	0.31	-0.06	0.38	1.00	0.31	0.50	0.08	0.13	0.17	0.09	0.45	0.41	-0.13	-0.08	0.33	-0.01	0.16	0.04	0.38	0.18	0.28
II_3	0.32	0.34	0.01	0.54	0.31	0.16	0.23	0.45	0.38	0.47	0.28	0.31	0.54	0.31	1.00	0.38	0.12	0.05	0.39	0.26	0.04	0.38	0.17	0.51	0.43	0.09	0.37	0.27	0.23	0.26	0.31
II_4	-0.12	0.19	0.36	0.27	0.32	0.01	0.11	0.31	0.34	0.33	0.21	-0.07	0.35	0.50	0.38	1.00	0.29	-0.27	-0.03	0.28	0.26	0.37	-0.03	-0.18	0.32	0.02	0.28	0.06	0.20	-0.02	0.44
II_5	0.13	0.31	0.33	0.35	0.13	0.28	0.27	0.16	0.20	0.16	0.29	0.13	0.28	0.08	0.12	0.29	1.00	0.08	0.22	0.29	0.25	0.07	0.16	0.04	0.17	0.18	0.18	0.22	0.01	0.30	0.25
II_7	0.09	0.31	0.20	-0.06	0.20	0.40	0.32	0.06	0.06	0.11	0.33	0.16	0.16	0.13	0.05	-0.27	0.08	1.00	0.23	0.11	0.14	-0.05	-0.15	0.06	-0.14	-0.24	-0.15	-0.27	-0.21	0.21	0.13
II_8	0.46	0.29	0.07	0.47	0.05	0.29	0.26	0.24	0.26	0.42	0.12	0.54	0.16	0.17	0.39	-0.03	0.22	0.23	1.00	0.03	-0.01	0.08	0.27	0.36	0.37	-0.02	0.12	0.38	0.27	0.28	0.12
II_9	0.03	0.11	0.18	0.33	0.36	0.13	0.22	0.19	0.25	0.05	0.16	0.20	0.44	0.09	0.26	0.28	0.29	0.11	0.03	1.00	0.12	0.15	0.12	0.04	0.12	0.24	0.37	0.05	0.14	0.33	0.43
II_11	-0.13	0.38	0.45	0.01	0.28	0.07	0.36	0.06	0.08	0.23	0.37	-0.10	0.32	0.45	0.04	0.26	0.25	0.14	-0.01	0.12	1.00	0.33	-0.12	-0.21	0.06	-0.07	0.07	0.04	0.02	0.29	0.32
II_12	0.25	0.42	0.27	0.32	0.26	-0.03	0.10	0.30	0.24	0.41	0.21	0.13	0.41	0.41	0.38	0.37	0.07	-0.05	0.08	0.15	0.33	1.00	-0.01	0.16	0.38	0.21	0.25	0.21	0.36	0.22	0.39
II_13	0.51	0.22	0.06	0.20	-0.21	0.28	0.16	0.29	0.18	0.13	-0.10	0.46	0.11	-0.13	0.17	-0.03	0.16	-0.15	0.27	0.12	-0.12	-0.01	1.00	0.39	0.28	0.13	0.20	0.33	0.08	0.14	-0.08
II_14	0.39	0.14	-0.13	0.35	-0.06	-0.03	0.09	0.07	0.25	0.23	-0.11	0.33	0.24	-0.08	0.51	-0.18	0.04	0.06	0.36	0.04	-0.21	0.16	0.39	1.00	0.22	0.19	0.15	0.29	0.16	0.25	0.04
II_15	0.65	0.33	0.23	0.66	-0.07	0.13	0.29	0.57	0.42	0.38	0.17	0.42	0.12	0.33	0.43	0.32	0.17	-0.14	0.37	0.12	0.06	0.38	0.28	0.22	1.00	0.09	0.25	0.43	0.43	0.39	0.30
II_16	0.01	-0.11	-0.16	0.32	-0.18	-0.33	-0.31	0.08	0.14	-0.05	-0.22	-0.04	0.13	-0.01	0.09	0.02	0.18	-0.24	-0.02	0.24	-0.07	0.21	0.13	0.19	0.09	1.00	0.33	0.28	0.09	0.04	0.10
II_17	0.26	0.08	0.07	0.45	0.07	-0.05	-0.09	0.23	0.33	0.23	0.04	0.02	0.23	0.16	0.37	0.28	0.18	-0.15	0.12	0.37	0.07	0.25	0.20	0.15	0.25	0.33	1.00	0.34	0.31	0.27	0.39
II_18	0.41	0.24	-0.08	0.45	-0.18	0.06	-0.08	0.27	0.21	0.24	0.21	0.31	0.10	0.04	0.27	0.06	0.22	-0.27	0.38	0.05	0.04	0.21	0.33	0.29	0.43	0.28	0.34	1.00	0.41	0.30	0.09
II_19	0.18	0.06	0.10	0.39	0.10	0.00	0.05	0.33	0.24	0.25	0.14	0.09	0.05	0.38	0.23	0.20	0.01	-0.21	0.27	0.14	0.02	0.36	0.08	0.16	0.43	0.09	0.31	0.41	1.00	0.17	0.19
II_20	0.41	0.42	0.25	0.49	0.13	0.25	0.33	0.27	0.31	0.28	0.34	0.38	0.43	0.18	0.26	-0.02	0.30	0.21	0.28	0.33	0.29	0.22	0.14	0.25	0.39	0.04	0.27	0.30	0.17	1.00	0.27
II_21	0.08	0.37	0.35	0.29	0.31	0.21	0.37	0.25	0.49	0.40	0.30	0.28	0.41	0.28	0.31	0.44	0.25	0.13	0.12	0.43	0.32	0.39	-0.08	0.04	0.30	0.10	0.39	0.09	0.19	0.27	1.00

P-values

#	IP_1	IP_2	IP_3	IP_4	IP_5	IP_6	IP_7	IP_8	IP_9	IP_10	IP_11	IP_12	IP_13	II_2	II_3	II_4	II_5	II_7	II_8	II_9	II_11	II_12	II_13	II_14	II_15	II_16	II_17	II_18	II_19	II_20	II_21
IP_1		0.011	0.781	0.000	0.169	0.022	0.164	0.001	0.022	0.257	0.198	0.000	0.356	0.974	0.012	0.367	0.308	0.470	0.000	0.806	0.303	0.049	0.000	0.002	0.000	0.955	0.039	0.001	0.169	0.001	0.543
IP_2	0.011		0.000	0.141	0.131	0.000	0.000	0.028	0.000	0.000	0.000	0.004	0.002	0.059	0.006	0.149	0.016	0.015	0.020	0.413	0.003	0.001	0.083	0.277	0.008	0.375	0.534	0.062	0.652	0.001	0.003
IP_3	0.781	0.000		0.100	0.089	0.027	0.000	0.458	0.003	0.000	0.040	0.726	0.004	0.003	0.954	0.005	0.009	0.121	0.608	0.172	0.000	0.034	0.662	0.328	0.068	0.207	0.592	0.552	0.426	0.053	0.005
IP_4	0.000	0.141	0.100		0.583	0.897	0.417	0.001	0.000	0.029	0.109	0.005	0.006	0.115	0.000	0.031	0.006	0.627	0.000	0.009	0.938	0.010	0.128	0.005	0.000	0.011	0.000	0.000	0.002	0.000	0.022
IP_5	0.169	0.131	0.089	0.583		0.097	0.016	0.306	0.864	0.002	0.008	0.579	0.000	0.000	0.016	0.011	0.324	0.110	0.702	0.004	0.028	0.038	0.098	0.664	0.566	0.154	0.589	0.159	0.457	0.300	0.013
IP_6	0.022	0.000	0.027	0.897	0.097		0.000	0.039	0.350	0.029	0.008	0.000	0.097	0.728	0.229	0.936	0.026	0.001	0.021	0.309	0.576	0.789	0.026	0.792	0.310	0.009	0.727	0.655	0.994	0.049	0.109
IP_7	0.164	0.000	0.000	0.417	0.016	0.000		0.033	0.020	0.006	0.025	0.006	0.003	0.016	0.076	0.385	0.037	0.012	0.041	0.090	0.004	0.426	0.201	0.494	0.022	0.014	0.495	0.537	0.719	0.009	0.003
IP_8	0.001	0.028	0.458	0.001	0.306	0.039	0.033		0.089	0.115	0.007	0.002	0.114	0.006	0.000	0.014	0.208	0.616	0.057	0.139	0.671	0.019	0.024	0.594	0.000	0.521	0.072	0.035	0.010	0.036	0.048
IP_9	0.022	0.000	0.003	0.000	0.864	0.350	0.020	0.089		0.011	0.372	0.036	0.000	0.290	0.002	0.007	0.121	0.659	0.042	0.053	0.522	0.058	0.173	0.051	0.001	0.278	0.010	0.108	0.065	0.016	0.000
IP_10	0.257	0.000	0.000	0.029	0.002	0.029	0.006	0.115	0.011		0.143	0.086	0.001	0.000	0.000	0.009	0.219	0.404	0.001	0.701	0.073	0.001	0.305	0.071	0.002	0.715	0.069	0.066	0.049	0.026	0.001
IP_11	0.198	0.000	0.040	0.109	0.008	0.008	0.025	0.007	0.372	0.143		0.032	0.021	0.016	0.028	0.097	0.024	0.009	0.334	0.206	0.003	0.096	0.442	0.409	0.186	0.080	0.770	0.109	0.286	0.007	0.016
IP_12	0.000	0.004	0.726	0.005	0.579	0.000	0.006	0.002	0.036	0.086	0.032		0.231	0.629	0.013	0.615	0.303	0.228	0.000	0.128	0.424	0.309	0.000	0.008	0.001	0.733	0.880	0.016	0.510	0.002	0.029
IP_13	0.356	0.002	0.004	0.006	0.000	0.097	0.003	0.114	0.000	0.001	0.021	0.231		0.002	0.000	0.005	0.026	0.212	0.220	0.000	0.011	0.001	0.407	0.059	0.338	0.323	0.072	0.447	0.726	0.000	0.001
II_2	0.974	0.059	0.003	0.115	0.000	0.728	0.016	0.006	0.290	0.000	0.016	0.629	0.002		0.013	0.000	0.531	0.317	0.186	0.502	0.000	0.001	0.330	0.541	0.010	0.914	0.227	0.755	0.002	0.161	0.025
II_3	0.012	0.006	0.954	0.000	0.016	0.229	0.076	0.000	0.002	0.000	0.028	0.013	0.000	0.013		0.002	0.345	0.724	0.002	0.042	0.733	0.002	0.191	0.000	0.000	0.471	0.003	0.037	0.068	0.038	0.015
II_4	0.367	0.149	0.005	0.031	0.011	0.936	0.385	0.014	0.007	0.009	0.097	0.615	0.005	0.000	0.002		0.020	0.031	0.800	0.026	0.040	0.003	0.819	0.172	0.010	0.860	0.027	0.661	0.116	0.900	0.000
II_5	0.308	0.016	0.009	0.006	0.324	0.026	0.037	0.208	0.121	0.219	0.024	0.303	0.026	0.531	0.345	0.020		0.525	0.086	0.023	0.052	0.582	0.201	0.757	0.196	0.150	0.151	0.089	0.944	0.019	0.052
II_7	0.470	0.015	0.121	0.627	0.110	0.001	0.012	0.616	0.659	0.404	0.009	0.228	0.212	0.317	0.724	0.031	0.525		0.068	0.405	0.271	0.688	0.230	0.637	0.283	0.062	0.241	0.031	0.098	0.105	0.302
II_8	0.000	0.020	0.608	0.000	0.702	0.021	0.041	0.057	0.042	0.001	0.334	0.000	0.220	0.186	0.002	0.800	0.086	0.068		0.802	0.948	0.551	0.032	0.004	0.003	0.904	0.360	0.003	0.037	0.026	0.335
II_9	0.806	0.413	0.172	0.009	0.004	0.309	0.090	0.139	0.053	0.701	0.206	0.128	0.000	0.502	0.042	0.026	0.023	0.405	0.802		0.361	0.248	0.340	0.733	0.370	0.061	0.003	0.706	0.280	0.008	0.000
II_11	0.303	0.003	0.000	0.938	0.028	0.576	0.004	0.671	0.522	0.073	0.003	0.424	0.011	0.000	0.733	0.040	0.052	0.271	0.948	0.361		0.009	0.335	0.108	0.647	0.593	0.577	0.783	0.887	0.024	0.013
II_12	0.049	0.001	0.034	0.010	0.038	0.789	0.426	0.019	0.058	0.001	0.096	0.309	0.001	0.001	0.002	0.003	0.582	0.688	0.551	0.248	0.009		0.937	0.209	0.002	0.106	0.051	0.099	0.004	0.091	0.002
II_13	0.000	0.083	0.662	0.128	0.098	0.026	0.201	0.024	0.173	0.305	0.442	0.000	0.407	0.330	0.191	0.819	0.201	0.230	0.032	0.340	0.335	0.937		0.001	0.030	0.322	0.127	0.008	0.557	0.275	0.531
II_14	0.002	0.277	0.328	0.005	0.664	0.792	0.494	0.594	0.051	0.071	0.409	0.008	0.059	0.541	0.000	0.172	0.757	0.637	0.004	0.733	0.108	0.209	0.001		0.080	0.141	0.253	0.024	0.224	0.054	0.760
II_15	0.000	0.008	0.068	0.000	0.566	0.310	0.022	0.000	0.001	0.002	0.186	0.001	0.338	0.010	0.000	0.010	0.196	0.283	0.003	0.370	0.647	0.002	0.030	0.080		0.464	0.046	0.001	0.001	0.002	0.018
II_16	0.955	0.375	0.207	0.011	0.154	0.009	0.014	0.521	0.278	0.715	0.080	0.733	0.323	0.914	0.471	0.860	0.150	0.062	0.904	0.061	0.593	0.106	0.322	0.141	0.464		0.010	0.030	0.505	0.746	0.428
II_17	0.039	0.534	0.592	0.000	0.589	0.727	0.495	0.072	0.010	0.069	0.770	0.880	0.072	0.227	0.003	0.027	0.151	0.241	0.360	0.003	0.577	0.051	0.127	0.253	0.046	0.010		0.007	0.014	0.035	0.002
II_18	0.001	0.062	0.552	0.000	0.159	0.655	0.537	0.035	0.108	0.066	0.109	0.016	0.447	0.755	0.037	0.661	0.089	0.031	0.003	0.706	0.783	0.099	0.008	0.024	0.001	0.030	0.007		0.001	0.016	0.472
II_19	0.169	0.652	0.426	0.002	0.457	0.994	0.719	0.010	0.065	0.049	0.286	0.510	0.726	0.002	0.068	0.116	0.944	0.098	0.037	0.280	0.887	0.004	0.557	0.224	0.001	0.505	0.014	0.001		0.195	0.137
II_20	0.001	0.001	0.053	0.000	0.300	0.049	0.009	0.036	0.016	0.026	0.007	0.002	0.000	0.161	0.038	0.900	0.019	0.105	0.026	0.008	0.024	0.091	0.275	0.054	0.002	0.746	0.035	0.016	0.195		0.036
II_21	0.543	0.003	0.005	0.022	0.013	0.109	0.003	0.048	0.000	0.001	0.016	0.029	0.001	0.025	0.015	0.000	0.052	0.302	0.335	0.000	0.013	0.002	0.531	0.760	0.018	0.428	0.002	0.472	0.137	0.036	

APPENDIX J: Simulated Q sorting for analysts/professional investors' components

Statement 'rank' on components	Component 1		Component 2		Component 3	
	Statement no.	Z-scores	Statement no.	Z-scores	Statement no.	Z-scores
1	49	-2.6485	61	-1.9166	49	-3.0324
2	57	-2.5999	57	-1.8311	11	-2.3063
3	54	-1.9770	49	-1.7010	10	-1.8360
4	51	-1.8767	30	-1.6726	17	-1.7562
5	6	-1.7774	34	-1.6018	6	-1.7408
6	50	-1.4773	22	-1.5777	22	-1.5511
7	17	-1.1584	36	-1.4842	44	-1.3713
8	15	-1.1196	32	-1.3649	12	-1.3486
9	32	-1.0959	8	-1.2782	30	-1.2174
10	61	-1.0506	17	-1.2717	32	-1.1228
11	8	-0.9392	46	-1.2430	51	-1.0209
12	34	-0.9349	44	-1.2230	62	-1.0163
13	53	-0.8207	40	-1.0783	34	-0.8743
14	19	-0.7513	5	-1.0502	57	-0.8144
15	44	-0.7331	31	-0.8138	13	-0.6857
16	43	-0.6347	35	-0.7311	9	-0.6721
17	31	-0.5933	2	-0.5934	53	-0.6287
18	25	-0.5364	39	-0.4992	56	-0.5561
19	46	-0.5110	24	-0.4395	5	-0.2629
20	56	-0.3164	1	-0.3736	54	-0.2102
21	14	-0.0720	55	-0.3536	47	-0.1918
22	55	-0.0622	6	-0.3381	43	-0.1889
23	16	-0.0528	56	-0.2953	25	-0.1836
23	20	-0.0528	29	-0.2663	4	-0.1530
25	52	-0.0476	33	-0.2077	52	-0.0801
26	27	-0.0429	25	-0.1843	55	-0.0511
27	5	-0.0281	27	-0.1404	46	0.0369
28	60	-0.0029	42	-0.1401	14	0.0622
29	9	0.0425	47	-0.0890	61	0.0803
30	10	0.0677	41	-0.0182	60	0.2299
31	18	0.0734	60	-0.0030	33	0.2676
32	26	0.1181	54	-0.0027	2	0.3041
33	33	0.1502	26	0.0328	23	0.3275
34	59	0.2152	3	0.0519	29	0.3334
35	11	0.2327	43	0.1119	26	0.3551
36	4	0.2347	53	0.1145	20	0.3781
37	47	0.2367	23	0.3125	3	0.3919
38	22	0.2520	38	0.3755	24	0.4419
39	29	0.2733	45	0.4113	50	0.5158
40	12	0.3115	7	0.6152	59	0.5158
41	24	0.3597	14	0.6361	42	0.5355
42	1	0.4382	15	0.6638	45	0.5437
43	23	0.4782	19	0.6702	40	0.5579
44	36	0.5814	62	0.8441	28	0.5730
45	42	0.6818	11	0.8567	19	0.6903
46	3	0.7816	13	0.8639	31	0.7614
47	2	0.7895	52	0.9513	27	0.7909
48	45	0.8107	51	0.9654	36	0.7922
49	62	0.8643	10	0.9790	39	0.8343
50	7	0.9389	16	0.9930	18	0.8356
51	39	0.9718	58	0.9945	7	0.8494
52	48	1.0234	4	1.1087	8	0.8494
53	30	1.0523	59	1.1678	16	0.8574
54	58	1.1195	12	1.2072	35	0.9947
55	40	1.1328	9	1.2507	1	1.0549
56	35	1.1407	21	1.2544	58	1.1692
57	41	1.2057	18	1.2705	15	1.2019
58	13	1.2765	28	1.2784	41	1.2173
59	38	1.3880	20	1.3177	48	1.2578
60	28	1.4821	37	1.4790	38	1.2991
61	21	1.5433	50	1.4790	21	1.4323
62	37	1.6451	48	1.5265	37	1.5342

APPENDIX K: Simulated Q sorting for individual investors' components

Statement 'rank' on components	Component 1		Component 2		Component 3		Component 4		Component 5	
	Statement no.	Z-scores	Statement no.	Z-scores	Statement no.	Z-scores	Statement no.	Z-scores	Statement no.	Z-scores
1	56	-2.2210	31	-2.0577563	57	-2.6143	54	-2.2066	36	-2.1767
2	57	-2.2210	44	-1.9611902	56	-1.9647	56	-2.0585	59	-2.1767
3	53	-2.1293	46	-1.9048834	54	-1.6705	57	-2.0349	8	-1.9845
4	52	-2.0533	40	-1.8726947	19	-1.4846	61	-1.7411	7	-1.9200
5	54	-2.0185	45	-1.7640695	52	-1.4774	17	-1.5930	55	-1.8240
6	49	-1.5960	27	-1.3353524	53	-1.4774	29	-1.5070	14	-1.7279
7	17	-1.4352	33	-1.1480038	49	-1.4070	3	-1.4848	15	-1.7279
8	59	-1.4100	22	-1.1434299	7	-1.2459	32	-1.1593	56	-1.6634
9	5	-1.0727	24	-1.103756	5	-1.1056	8	-0.9700	31	-1.6318
10	6	-0.8628	34	-1.0227457	10	-0.9459	51	-0.9252	54	-1.4397
11	46	-0.7339	26	-0.9928439	16	-0.9211	15	-0.8559	61	-1.3119
12	24	-0.6948	32	-0.9463092	17	-0.8200	6	-0.8536	19	-0.8948
13	34	-0.6600	30	-0.9450995	14	-0.8141	14	-0.6843	17	-0.8936
14	27	-0.6188	29	-0.823338	55	-0.7339	46	-0.6267	16	-0.8304
15	3	-0.5394	5	-0.7888624	46	-0.6824	30	-0.6127	46	-0.7975
16	36	-0.5389	42	-0.7491885	15	-0.6635	60	-0.6055	37	-0.7027
17	16	-0.4475	14	-0.7479788	59	-0.6635	59	-0.5503	39	-0.3488
18	61	-0.4167	36	-0.7147128	6	-0.6387	52	-0.5407	41	-0.1250
19	51	-0.4115	9	-0.6669684	36	-0.5963	47	-0.5081	24	-0.0922
20	32	-0.4071	57	-0.5940286	61	-0.5597	43	-0.5022	35	-0.0922
21	23	-0.2486	50	-0.4916789	18	-0.4893	34	-0.4728	58	-0.0605
22	33	-0.1123	55	-0.3687077	3	-0.4866	13	-0.4127	42	-0.0289
23	48	-0.0804	61	-0.3687077	34	-0.4397	22	-0.3917	6	0.0355
24	20	-0.0681	43	-0.3146878	2	-0.3725	9	-0.3469	27	0.0355
25	44	-0.0513	6	-0.2837088	11	-0.3576	36	-0.3306	43	0.0672
26	8	-0.0364	38	-0.2646564	8	-0.3328	26	-0.3094	1	0.1644
27	42	0.0113	17	-0.1514574	20	-0.2962	28	-0.3057	29	0.1644
28	43	0.0113	7	-0.1250523	35	-0.1397	53	-0.2292	32	0.1644
29	31	0.0929	39	-0.0486158	32	-0.1338	12	-0.2070	34	0.1644
30	1	0.1322	60	0.0076911	60	-0.0548	33	-0.1436	22	0.1961
31	25	0.1341	53	0.1019702	22	-0.0327	5	-0.1165	48	0.1961
32	26	0.1385	54	0.1019702	31	0.0286	11	-0.0930	5	0.2277
33	35	0.1680	8	0.1042572	26	0.1297	62	-0.0223	60	0.2277
34	38	0.1812	56	0.1663476	9	0.2249	10	0.0787	62	0.2277
35	55	0.1817	41	0.2284381	25	0.2732	25	0.2055	50	0.2289
36	62	0.1818	51	0.2893188	4	0.2830	7	0.2186	40	0.2922
37	22	0.2193	52	0.3335666	27	0.2921	2	0.2267	45	0.3238
38	58	0.2224	2	0.4100031	62	0.3286	1	0.2584	57	0.3894
39	18	0.2550	10	0.4145769	50	0.4690	24	0.3771	13	0.4843
40	19	0.2550	23	0.4623214	12	0.4734	27	0.3771	33	0.4843
41	39	0.3076	25	0.5053594	51	0.4938	42	0.3879	38	0.4843
42	2	0.3827	1	0.5174185	33	0.5614	4	0.5242	3	0.5171
43	4	0.4402	20	0.6129074	29	0.6228	50	0.6641	25	0.5488
44	40	0.4786	15	0.6450961	13	0.6932	55	0.7253	51	0.5804
45	41	0.5171	19	0.6450961	48	0.7018	41	0.7570	20	0.6132
46	13	0.5499	58	0.6939177	24	0.7545	31	0.7945	12	0.6777
47	60	0.5694	28	0.7168262	58	0.8583	40	0.7945	18	0.7409
48	28	0.5804	35	0.7261064	1	0.8642	23	0.8838	4	0.8370
49	30	0.5986	49	0.7932627	30	0.8921	48	0.8992	28	0.8370
50	7	0.6087	59	0.7967593	23	0.8980	19	0.9073	49	0.8698
51	50	0.6158	18	1.0761001	39	0.9169	44	0.9214	2	0.9015
52	47	0.6711	62	1.09502	40	0.9169	49	1.0708	47	0.9015
53	45	0.8268	48	1.1082888	44	0.9228	39	1.1061	23	0.9975
54	29	0.9597	47	1.1548235	42	0.9842	35	1.1613	26	0.9975
55	21	1.1890	12	1.2134173	45	1.0180	20	1.2564	30	0.9975
56	12	1.2190	16	1.3076965	21	1.1831	58	1.2718	44	1.1581
57	14	1.4738	13	1.3220425	43	1.2111	18	1.3271	53	1.1581
58	37	1.4923	3	1.3864199	38	1.4218	45	1.4728	11	1.2541
59	15	1.6763	4	1.4628564	47	1.5053	16	1.5045	21	1.2541
60	11	1.8028	11	1.6180163	28	1.8418	21	1.5363	9	1.3502
61	9	1.9705	21	1.8030779	41	1.8477	38	1.7608	10	1.3502
62	10	1.9705	37	1.8795144	37	2.0101	37	1.9324	52	1.3502

APPENDIX L: Simulated Q sorting for the complete P set

Statement 'rank' on components	Component 1		Component 2		Component 3		Component 4	
	Statement no.	Z-scores						
1	57	-2.2888	49	-2.7742	57	-2.6661	57	-2.2933
2	36	-1.9664	6	-2.1398	53	-2.2773	19	-1.7898
3	61	-1.5629	11	-1.6525	52	-2.2114	50	-1.7631
4	49	-1.5151	51	-1.6023	56	-2.1915	6	-1.6711
5	17	-1.4395	57	-1.5314	54	-1.9659	17	-1.5763
6	32	-1.4204	17	-1.5104	49	-1.9106	49	-1.4503
7	6	-1.3085	22	-1.3899	51	-1.8214	54	-1.4121
8	34	-1.2668	12	-1.2509	5	-1.0286	51	-1.3155
9	54	-1.0451	10	-1.1771	3	-1.0193	46	-1.1515
10	22	-1.0068	62	-1.1581	4	-0.9785	14	-1.0195
11	30	-0.9235	30	-1.0667	59	-0.9698	61	-0.9394
12	5	-0.9221	13	-0.9201	50	-0.8538	56	-0.9326
13	46	-0.9164	44	-0.9036	17	-0.7406	20	-0.9052
14	44	-0.8995	32	-0.8899	19	-0.5262	18	-0.8583
15	24	-0.8721	9	-0.8394	6	-0.5254	22	-0.7507
16	56	-0.8605	46	-0.7782	61	-0.5226	15	-0.7366
17	60	-0.8437	34	-0.6917	48	-0.3739	8	-0.7136
18	40	-0.6759	53	-0.6773	46	-0.2516	16	-0.6872
19	8	-0.6627	56	-0.6111	2	-0.2353	53	-0.6320
20	35	-0.6516	54	-0.3827	62	-0.1953	32	-0.5460
21	53	-0.6244	47	-0.3384	34	-0.1857	31	-0.4458
22	31	-0.6226	25	-0.3228	36	-0.0933	34	-0.4458
23	1	-0.5547	5	-0.2583	16	-0.0468	5	-0.3680
24	55	-0.4741	4	-0.2572	55	-0.0425	10	-0.2874
25	2	-0.2294	43	-0.2530	8	-0.0168	44	-0.2410
26	27	-0.1603	14	-0.1970	33	-0.0118	29	-0.1364
27	26	-0.1284	52	-0.0562	18	0.0093	33	-0.1276
28	42	-0.1024	55	0.0010	27	0.1689	60	-0.1222
29	39	-0.0934	61	0.0603	32	0.1712	25	-0.1188
30	33	-0.0855	26	0.1336	47	0.2009	7	-0.0381
31	29	-0.0729	60	0.2390	31	0.2501	43	-0.0309
32	38	-0.0255	33	0.2463	42	0.2660	26	0.1099
33	25	-0.0180	29	0.2613	24	0.2892	30	0.1339
34	52	0.0155	42	0.3437	43	0.3241	11	0.1779
35	3	0.0758	23	0.3504	25	0.3279	3	0.2463
36	43	0.1861	2	0.3572	60	0.3441	59	0.2507
37	41	0.2850	3	0.3856	22	0.3463	55	0.2918
38	23	0.3418	24	0.3888	29	0.3722	27	0.3147
39	45	0.3845	45	0.4937	58	0.3747	40	0.4389
40	7	0.4303	59	0.5039	23	0.3760	2	0.4433
41	59	0.6449	28	0.5731	28	0.3782	36	0.4457
42	47	0.7121	31	0.5949	7	0.3997	9	0.4677
43	28	0.7842	20	0.6004	20	0.4283	42	0.5107
44	62	0.7920	40	0.6453	12	0.5008	23	0.5283
45	14	0.8609	50	0.6792	21	0.6575	24	0.6241
46	58	0.8793	15	0.6812	1	0.6577	1	0.6514
47	16	0.9279	27	0.6838	35	0.6580	39	0.7526
48	13	0.9881	19	0.8031	15	0.7445	52	0.7560
49	19	1.0211	7	0.8490	14	0.7581	45	0.7570
50	12	1.1055	36	0.9142	26	0.7604	4	0.9520
51	51	1.1531	16	0.9368	10	0.8675	38	1.0283
52	20	1.1567	8	0.9398	44	0.9730	48	1.0371
53	15	1.1677	39	0.9712	9	0.9800	47	1.1338
54	37	1.2580	18	0.9792	11	0.9831	13	1.2399
55	4	1.3042	41	1.0725	41	0.9835	12	1.2775
56	11	1.3215	35	1.1377	40	1.0452	62	1.3235
57	10	1.3432	48	1.1775	13	1.0944	41	1.3377
58	9	1.3531	1	1.1796	38	1.1635	35	1.3900
59	18	1.3597	58	1.4777	39	1.2818	58	1.5904
60	21	1.4014	38	1.5224	30	1.3234	28	1.6089
61	48	1.4776	21	1.6709	45	1.4437	21	1.7907
62	50	1.5088	37	1.7758	37	1.7587	37	1.8953

APPENDIX M: Distinguishing/consensus Q-samples when determining IP components

Q-samples	Distinguishing/consensus	C1 vs C2	sig. C1 vs C2	C1 vs C3	sig. C1 vs C3	C2 vs C3	sig. C2 vs C3
1	Distinguishes f2 only	0.8118804	*	-0.6166064		-1.4284868	***
2	Distinguishes f2 only	1.3828405	***	0.4853612		-0.8974793	**
3		0.7297264	*	0.38968		-0.3400464	
4	Distinguishes f2 only	-0.8740237	**	0.3877506		1.2617743	***
5	Distinguishes f2 only	1.0221271	**	0.2347446		-0.7873825	*
6	Distinguishes f2 only	-1.4392931	***	-0.0366463		1.4026468	***
7	Consensus	0.3237003		0.0894732		-0.2342271	
8	Distinguishes f3 only	0.3389173		-1.7886858	****	-2.1276031	****
9	Distinguishes all	-1.2082363	***	0.7145717	*	1.922808	****
10	Distinguishes all	-0.9112151	**	1.9037495	****	2.8149647	****
11	Distinguishes f3 only	-0.6240073		2.5390413	****	3.1630486	****
12	Distinguishes all	-0.8957156	**	1.6601235	****	2.5558391	****
13	Distinguishes f3 only	0.4125974		1.9621911	****	1.5495936	***
14		-0.7081682	*	-0.1342338		0.5739345	
15	Distinguishes f1 only	-1.7833466	****	-2.3214607	****	-0.5381141	
16	Distinguishes f1 only	-1.0458041	**	-0.9101829	**	0.1356212	
17	Consensus	0.1133945		0.5978442		0.4844497	
18	Distinguishes f1 only	-1.1971001	***	-0.7621805	*	0.4349197	
19	Distinguishes f1 only	-1.4214634	***	-1.4416152	***	-0.0201518	
20	Distinguishes f2 only	-1.3704269	***	-0.4308501		0.9395768	**
21	Consensus	0.2889546		0.1110145		-0.1779401	
22	Distinguishes f1 only	1.8297546	****	1.8030892	****	-0.0266654	
23	Consensus	0.1657424		0.1507786		-0.0149638	
24	Distinguishes f2 only	0.799247	*	-0.0821443		-0.8813914	*
25	Consensus	-0.3521357		-0.3527781		-0.0006424	
26	Consensus	0.0852957		-0.2369617		-0.3222574	
27	Distinguishes f3 only	0.097535		-0.8338098	*	-0.9313448	**
28	Distinguishes f3 only	0.2036474		0.9090472	**	0.7053997	*
29	Consensus	0.5395308		-0.0601063		-0.5996371	
30	Distinguishes f1 only	2.7249258	****	2.2697376	****	-0.4551882	
31	Distinguishes f3 only	0.2204726		-1.3546489	***	-1.5751214	***
32	Consensus	0.2689297		0.0268553		-0.2420745	
33	Consensus	0.3579281		-0.1173612		-0.4752893	
34	Distinguishes f2 only	0.6668955	*	-0.0606025		-0.7274979	*
35	Distinguishes f2 only	1.8718176	****	0.1459951		-1.7258226	****
36	Distinguishes f2 only	2.0656176	****	-0.2107969		-2.2764145	****
37	Consensus	0.166059		0.1108892		-0.0551697	
38	Distinguishes f2 only	1.0124739	**	0.0888878		-0.9235861	**
39	Distinguishes f2 only	1.4710169	***	0.1374819		-1.333535	***
40	Distinguishes f2 only	2.2111575	****	0.5749514		-1.6362061	****
41	Distinguishes f2 only	1.2238626	***	-0.0116809		-1.2355434	***
42	Distinguishes f2 only	0.8218886	*	0.1462401		-0.6756485	*
43		-0.7466114	*	-0.4458318		0.3007796	
44	Consensus	0.489895		0.6382171		0.1483221	
45	Consensus	0.3993915		0.266979		-0.1324125	
46	Distinguishes f2 only	0.7319254	*	-0.5479739		-1.2798993	***
47	Consensus	0.3257277		0.4285236		0.1027959	
48	Consensus	-0.5030998		-0.23439		0.2687098	
49	Distinguishes f2 only	-0.9475243	**	0.3838879		1.3314122	***
50	Distinguishes all	-2.9562758	****	-1.993076	****	0.9631998	**
51	Distinguishes all	-2.8420538	****	-0.8557783	**	1.9862755	****
52	Distinguishes f2 only	-0.9989427	**	0.0324838		1.0314265	**
53	Distinguishes f2 only	-0.9352353	**	-0.1920495		0.7431858	*
54	Distinguishes f1 only	-1.9743057	****	-1.7667493	****	0.2075565	
55	Consensus	0.2914587		-0.0110203		-0.302479	
56	Consensus	-0.0211117		0.2396901		0.2608018	
57	Distinguishes all	-0.7688761	*	-1.7855538	****	-1.0166777	**
58	Consensus	0.1249619		-0.0497876		-0.1747495	
59		-0.9525947	**	-0.3006428		0.6519519	
60	Consensus	0.0001126		-0.2327569		-0.2328695	
61	Distinguishes all	0.8659966	**	-1.1309458	***	-1.9969424	****
62	Distinguishes f3 only	0.0201611		1.8806276	****	1.8604665	****

Note: *, **, *** and **** are differences statistically significant considering p-values lower than 0.05, 0.01, 0.001 and 0.0001 (respectively).

	Standard error of differences		
	C1	C2	C3
C1	0.3086		
C2	0.3263	0.3430	
C3	0.3263	0.3430	0.3430

Note: Standard error of differences (SED) and it is based on the components' standard errors.

APPENDIX N: Distinguishing/consensus Q-samples when determining II components

Q-samples	Distinguishing/consensus	C1 vs C2	sig.	C1 vs C3	sig.	C1 vs C4	sig.	C1 vs C5	sig.	C2 vs C3	sig.	C2 vs C4	sig.	C2 vs C5	sig.	C3 vs C4	sig.	C3 vs C5	sig.	C4 vs C5	sig.
1		-0.3852		-0.7320 *		-0.1262		-0.0322		-0.3468		0.2590		0.3530		0.6057		0.6997		0.0940	
2		-0.0274		0.7552 *		0.1559		-0.5188		0.7825 *		0.1833		-0.4914		-0.5992		-1.2739 **		-0.6747	
3	Distinguishes f2 Distinguishes f4 Distinguishes f5	-1.9258 ****		-0.0528		0.9454 *		-1.0565 *		1.8730 ****		2.8712 ****		0.8693 *		0.9982 *		-1.0037 *		-2.0020 ***	
4		-1.0226 **		0.1572		-0.0840		-0.3968		1.1798 **		0.9386 *		0.6259		-0.2412		-0.5540		-0.3128	
5		-0.2839		0.0329		-0.9562 **		-1.3004 **		0.3167		-0.6724		-1.0166 *		-0.9891 *		-1.3333 **		-0.3442	
6		-0.5791		-0.2241		-0.0092		-0.8984 *		0.3550		0.5699		-0.3193		0.2149		-0.6742		-0.8892 *	
7		0.7338 *		1.8546 ****		0.3901		2.5288 ****		1.1209 **		-0.3436		1.7950 ***		-1.4645 ***		0.6741		2.1386 ****	
8	Distinguishes f5	-0.1407		0.2964		0.9336 *		1.9481 ***		0.4370		1.0742 **		2.0888 ****		0.6372		1.6517 ***		1.0145 *	
9		2.6374 ****		1.7456 ***		2.3174 ****		0.6203		-0.8918 *		-0.3200		-2.0172 ***		0.5718		-1.1254 **		-1.6971 ***	
10	Distinguishes f3	1.5559 ***		2.9164 ****		1.8918 ****		0.6203		1.3605 ***		0.3359		-0.9356 *		-1.0245 **		-2.2961 ****		-1.2716 **	
11		0.1848		2.1604 ****		1.8957 ****		0.5486		1.9756 ****		1.7110 ***		0.3639		-0.2646		-1.6117 ***		-1.3471 **	
12		0.0056		0.7456 *		1.4261 ***		0.5414		0.7400		1.4204 ***		0.5358		0.6804		-0.2043		-0.8847 *	
13	Distinguishes f4	-0.7721 *		-0.1433		0.9626 **		0.0656		0.6289		1.7347 ***		0.8377		1.1058 **		0.2089		-0.8970 *	
14	Distinguishes f1 Distinguishes f5 Distinguishes f1 Distinguishes f2 Distinguishes f5	2.2218 ****		2.2880 ****		2.1581 ****		3.2017 ****		0.0662		-0.0637		0.9799 *		-0.1298		0.9137 *		1.0436 *	
15		1.0312 **		2.3398 ****		2.5323 ****		3.4042 ****		1.3086 ***		1.5010 ***		2.3730 ****		0.1924		1.0644 *		0.8720 *	
16		-1.7552 ****		0.4736		-1.9520 ****		0.3829		2.2288 ****		-0.1969		2.1381 ****		-2.4256 ****		-0.0907		2.3349 ****	
17		-1.2838 ***		-0.6152		0.1578		-0.5416		0.6686		1.4416 ***		0.7422		0.7730 *		0.0736		-0.6994	
18	Distinguishes f3	-0.8211 *		0.7443 *		-1.0720 **		-0.4859		1.5654 ***		-0.2510		0.3352		-1.8164 ***		-1.2302 **		0.5862	
19		-0.3901		1.7396 ****		-0.6523		1.1498 **		2.1297 ****		-0.2623		1.5399 ***		-2.3920 ****		-0.5898		1.8022 ***	
20		-0.6810		0.2281		-1.3246 ***		-0.6813		0.9091 *		-0.6435		-0.0003		-1.5527 ***		-0.9094 *		0.6432	

(continues)

Q-samples	Distinguishing/consensus	C1 vs C2	sig.	C1 vs C3	sig.	C1 vs C4	sig.	C1 vs C5	sig.	C2 vs C3	sig.	C2 vs C4	sig.	C2 vs C5	sig.	C3 vs C4	sig.	C3 vs C5	sig.	C4 vs C5	sig.
21	Consensus	-0.6140		0.0059		-0.3472		-0.0651		0.6199		0.2668		0.5489		-0.3531		-0.0710		0.2821	
22		1.3627	***	0.2520		0.6110		0.0232		-1.1107	**	-0.7517		-1.3395	**	0.3589		-0.2288		-0.5878	
23		-0.7109		-1.1466	**	-1.1324	**	-1.2461	**	-0.4357		-0.4215		-0.5352		0.0142		-0.0995		-0.1137	
24		0.4089		-1.4494	***	-1.0720	**	-0.6027		-1.8583	***	-1.4809	***	-1.0116	*	0.3774		0.8467		0.4693	
25	Consensus	-0.3713		-0.1391		-0.0714		-0.4147		0.2322		0.2999		-0.0434		0.0677		-0.2756		-0.3433	
26	Distinguishes f5	1.1313	**	0.0088		0.4478		-0.8591	*	-1.1225	**	-0.6835		-1.9904	***	0.4390		-0.8679	*	-1.3069	**
27		0.7166		-0.9109	*	-0.9959	**	-0.6543		-1.6274	***	-1.7125	***	-1.3709	**	-0.0850		0.2565		0.3416	
28	Distinguishes f3 Distinguishes f4	-0.1365		-1.2615	***	0.8861	*	-0.2566		-1.1250	**	1.0225	**	-0.1202		2.1475	****	1.0048	*	-1.1427	**
29		1.7830	****	0.3369		2.4667	****	0.7953		-1.4461	***	0.6837		-0.9878	*	2.1298	****	0.4583		-1.6715	***
30		1.5437	***	-0.2935		1.2114	**	-0.3989		-1.8372	***	-0.3324		-1.9426	***	1.5049	***	-0.1054		-1.6102	***
31		2.1506	****	0.0643		-0.7017		1.7247	***	-2.0864	****	-2.8523	****	-0.4259		-0.7659		1.6604	***	2.4263	****
32		0.5392		-0.2733		0.7521	*	-0.5716		-0.8125	*	0.2130		-1.1108	*	1.0255	**	-0.2983		-1.3237	**
33	Distinguishes f2 only	1.0357	**	-0.6738		0.0312		-0.5967		-1.7094	***	-1.0044	*	-1.6323	***	0.7050		0.0771		-0.6279	
34		0.3627		-0.2203		-0.1872		-0.8245	*	-0.5830		-0.5499		-1.1872	**	0.0331		-0.6042		-0.6372	
35		-0.5581		0.3077		-0.9933	**	0.2601		0.8658	*	-0.4352		0.8183		-1.3010	***	-0.0475		1.2535	**
36	Distinguishes f5 only	0.1759		0.0574		-0.2083		1.6378	***	-0.1185		-0.3841		1.4619	***	-0.2657		1.5804	***	1.8461	***
37	Distinguishes f5 only	-0.3872		-0.5178		-0.4401		2.1950	****	-0.1306		-0.0529		2.5822	****	0.0777		2.7128	****	2.6351	****
38		0.4458		-1.2407	***	-1.5797	***	-0.3032		-1.6865	***	-2.0255	****	-0.7490		-0.3390		0.9375	*	1.2765	**
39		0.3562		-0.6093		-0.7985	*	0.6564		-0.9656	*	-1.1547	**	0.3002		-0.1891		1.2657	**	1.4548	***
40	Distinguishes f2 only	2.3513	****	-0.4383		-0.3159		0.1865		-2.7896	****	-2.6672	****	-2.1648	****	0.1224		0.6248		0.5024	

(continues)

Q-samples	Distinguishing/consensus	C1 vs C2	sig.	C1 vs C3	sig.	C1 vs C4	sig.	C1 vs C5	sig.	C2 vs C3	sig.	C2 vs C4	sig.	C2 vs C5	sig.	C3 vs C4	sig.	C3 vs C5	sig.	C4 vs C5	sig.
41	Distinguishes f3	0.2886		-1.3306	***	-0.2399		0.6421		-1.6193	***	-0.5285		0.3534		1.0908	**	1.9727	***	0.8819	*
42		0.7605	*	-0.9729	**	-0.3766		0.0402		-1.7334	***	-1.1371	**	-0.7203		0.5963		1.0131	*	0.4168	
43	Distinguishes f3 only	0.3260		-1.1998	**	0.5135		-0.0559		-1.5258	***	0.1875		-0.3819		1.7133	***	1.1439	**	-0.5694	
44	Distinguishes f1 Distinguishes f2	1.9099	****	-0.9741	**	-0.9727	**	-1.2093	**	-2.8840	****	-2.8826	****	-3.1192	****	0.0014		-0.2352		-0.2367	
45	Distinguishes f2	2.5909	****	-0.1912		-0.6460		0.5030		-2.7821	****	-3.2369	****	-2.0879	****	-0.4548		0.6942		1.1491	**
46	Distinguishes f2 only	1.1710	**	-0.0515		-0.1072		0.0636		-1.2225	**	-1.2781	**	-1.1073	*	-0.0557		0.1151		0.1708	
47	Distinguishes f4	-0.4837		-0.8342	*	1.1791	**	-0.2304		-0.3504		1.6629	***	0.2534		2.0133	****	0.6038		-1.4095	**
48		-1.1887	**	-0.7821	*	-0.9795	**	-0.2764		0.4065		0.2091		0.9122	*	-0.1974		0.5057		0.7031	
49		-2.3892	****	-0.1889		-2.6668	****	-2.4658	****	2.2003	****	-0.2775		-0.0766		-2.4778	****	-2.2769	****	0.2010	
50		1.1075	**	0.1468		-0.0483		0.3869		-0.9606	*	-1.1558	**	-0.7206		-0.1952		0.2401		0.4352	
51		-0.7008		-0.9052	*	0.5137		-0.9919	*	-0.2044		1.2145	**	-0.2911		1.4190	***	-0.0866		-1.5056	***
52	Distinguishes f2 Distinguishes f4	-2.3868	****	-0.5758		-1.5125	***	-3.4035	****	1.8110	***	0.8743	*	-1.0166	*	-0.9367	*	-2.8277	****	-1.8910	***
53	Distinguishes f5	-2.2313	****	-0.6519		-1.9001	****	-3.2874	****	1.5794	***	0.3312		-1.0561	*	-1.2482	**	-2.6355	****	-1.3873	**
54	Distinguishes f2 only	-2.1204	****	-0.3479		0.1881		-0.5788		1.7725	***	2.3085	****	1.5416	***	0.5360		-0.2309		-0.7669	
55	Distinguishes f5	0.5504		0.9156	*	-0.5436		2.0056	****	0.3652		-1.0940	**	1.4553	***	-1.4591	***	1.0901	*	2.5492	****
56	Distinguishes f2 only	-2.3873	****	-0.2563		-0.1625		-0.5575		2.1310	****	2.2248	****	1.8298	***	0.0938		-0.3012		-0.3950	
57	Distinguishes f2 Distinguishes f5	-1.6269	***	0.3934		-0.1860		-2.6104	****	2.0203	****	1.4409	***	-0.9835	*	-0.5794		-3.0038	****	-2.4244	****
58		-0.4715		-0.6359		-1.0494	**	0.2829		-0.1644		-0.5779		0.7545		-0.4135		0.9188	*	1.3324	**
59	Distinguishes f2	-2.2068	****	-0.7465	*	-0.8598	*	0.7666		1.4602	***	1.3470	***	2.9734	****	-0.1132		1.5132	***	1.6264	***
60		0.5617		0.6242		1.1749	**	0.3417		0.0625		0.6132		-0.2200		0.5507		-0.2825		-0.8332	
61		-0.0480		0.1430		1.3244	***	0.8953	*	0.1910		1.3724	***	0.9432	*	1.1814	**	0.7522		-0.4292	
62		-0.9132	*	-0.1468		0.2041		-0.0459		0.7664		1.1174	**	0.8673	*	0.3510		0.1009		-0.2500	

Note: *, **, *** and **** are differences statistically significant considering p-values lower than 0.05, 0.01, 0.001 and 0.0001 (respectively).

	Standard error of differences				
	C1	C2	C3	C4	C5
C1	0.3430				
C2	0.3684	0.3922			
C3	0.3684	0.3922	0.3922		
C4	0.3684	0.3922	0.3922	0.3922	
C5	0.4122	0.4336	0.4336	0.4336	0.4714

Note: Correlation coefficients are calculated between the z-scores of ranked Q-samples for each component. SED stands for ‘Standard Error of Differences’ and it is based on the components’ standard errors.

APPENDIX O: Distinguishing/consensus Q-samples when determining full P set components

Q-samples	Distinguishing/consensus	C1 vs C2	sig.	C1 vs C3	sig.	C1 vs C4	sig.	C2 vs C3	sig.	C2 vs C4	sig.	C3 vs C4	sig.
1	Distinguishes f1 only	-1.7343	****	-1.2124	***	-1.2061	***	0.5219		0.5282		0.0063	
2		-0.5866	*	0.0059		-0.6727	*	0.5925	*	-0.0861		-0.6786	*
3	Distinguishes f3 only	-0.3098		1.0950	***	-0.1705		1.4049	***	0.1393		-1.2656	***
4	Distinguishes f2 Distinguishes f3	1.5614	****	2.2827	****	0.3522		0.7213	*	-1.2092	***	-1.9305	****
5		-0.6638	*	0.1065		-0.5540		0.7703	**	0.1097		-0.6606	*
6	Distinguishes f3	0.8313	**	-0.7831	**	0.3626		-1.6145	****	-0.4687		1.1458	***
7		-0.4186		0.0306		0.4684		0.4492		0.8870	**	0.4378	
8	Distinguishes f2 Distinguishes f3	-1.6025	****	-0.6459	*	0.0509		0.9566	**	1.6534	****	0.6968	*
9	Distinguishes f2	2.1925	****	0.3731		0.8854	**	-1.8194	****	-1.3071	***	0.5123	
10	Distinguishes f2 Distinguishes f4	2.5203	****	0.4757		1.6306	****	-2.0446	****	-0.8897	**	1.1549	***
11	Distinguishes f2 Distinguishes f4	2.9740	****	0.3384		1.1436	***	-2.6356	****	-1.8304	****	0.8052	*
12	Distinguishes f2 Distinguishes f3	2.3564	****	0.6047	*	-0.1720		-1.7517	****	-2.5284	****	-0.7767	*
13	Distinguishes f2 only	1.9082	****	-0.1064		-0.2519		-2.0145	****	-2.1601	****	-0.1455	
14	Distinguishes f2 Distinguishes f4	1.0579	***	0.1028		1.8804	****	-0.9551	**	0.8225	**	1.7777	****
15	Distinguishes f4 only	0.4865		0.4232		1.9043	****	-0.0633		1.4178	***	1.4811	***
16	Distinguishes f3 Distinguishes f4	-0.0089		0.9747	***	1.6151	****	0.9836	***	1.6240	****	0.6404	*
17	Distinguishes f3 only	0.0710		-0.6988	*	0.1368		-0.7698	**	0.0658		0.8356	*
18	Distinguishes f3 Distinguishes f4	0.3804		1.3504	****	2.2180	****	0.9699	**	1.8375	****	0.8676	**
19	Distinguishes f3 Distinguishes f4	0.2180		1.5473	****	2.8110	****	1.3293	***	2.5929	****	1.2636	***
20	Distinguishes f1 Distinguishes f4	0.5563	*	0.7284	**	2.0619	****	0.1721		1.5056	****	1.3335	***

(continues)

Q-samples	Distinguishing/consensus	C1 vs C2	sig.	C1 vs C3	sig.	C1 vs C4	sig.	C2 vs C3	sig.	C2 vs C4	sig.	C3 vs C4	sig.
21	Distinguishes f3 only	-0.2696		0.7439	**	-0.3894		1.0134	***	-0.1198		-1.1332	***
22	Distinguishes f3	0.3831		-1.3530	****	-0.2560		-1.7362	****	-0.6392	*	1.0970	***
23	Consensus	-0.0087		-0.0342		-0.1866		-0.0255		-0.1779		-0.1523	
24	Distinguishes f1 only	-1.2609	****	-1.1613	***	-1.4962	****	0.0996		-0.2352		-0.3349	
25		0.3048		-0.3460		0.1007		-0.6508	*	-0.2040		0.4467	
26	Distinguishes f3 only	-0.2621		-0.8888	**	-0.2384		-0.6268	*	0.0237		0.6504	*
27		-0.8441	**	-0.3292		-0.4750		0.5149		0.3691		-0.1458	
28	Distinguishes f4 only	0.2111		0.4060		-0.8247	**	0.1949		-1.0358	***	-1.2307	***
29	Consensus	-0.3342		-0.4451		0.0635		-0.1109		0.3977		0.5086	
30	Distinguishes f3 Distinguishes f4	0.1431		-2.2469	****	-1.0574	***	-2.3900	****	-1.2006	***	1.1895	***
31		-1.2175	***	-0.8728	**	-0.1768		0.3448		1.0407	***	0.6959	*
32	Distinguishes f1 Distinguishes f3	-0.5305	*	-1.5916	****	-0.8744	**	-1.0611	***	-0.3439		0.7172	*
33	Consensus	-0.3318		-0.0737		0.0421		0.2580		0.3739		0.1158	
34	Distinguishes f1 only	-0.5751	*	-1.0811	***	-0.8210	**	-0.5061		-0.2459		0.2601	
35	Distinguishes f1	-1.7893	****	-1.3096	***	-2.0416	****	0.4798		-0.2523		-0.7320	*
36	Distinguishes f1	-2.8806	****	-1.8730	****	-2.4121	****	1.0076	***	0.4685		-0.5391	
37		-0.5178		-0.5007		-0.6373	*	0.0171		-0.1196		-0.1366	
38	Distinguishes f1 only	-1.5478	****	-1.1889	***	-1.0537	***	0.3589		0.4941		0.1352	
39	Distinguishes f1 only	-1.0646	***	-1.3751	****	-0.8460	**	-0.3105		0.2186		0.5291	
40	Distinguishes f1 only	-1.3213	****	-1.7211	****	-1.1148	***	-0.3998		0.2065		0.6063	

(continues)

Q-samples	Distinguishing/consensus	C1 vs C2	sig.	C1 vs C3	sig.	C1 vs C4	sig.	C2 vs C3	sig.	C2 vs C4	sig.	C3 vs C4	sig.
41	Distinguishes f1 only	-0.7875	**	-0.6985	*	-1.0527	***	0.0890		-0.2651		-0.3541	
42		-0.4461		-0.3684		-0.6131	*	0.0777		-0.1670		-0.2447	
43	Consensus	0.4392		-0.1380		0.2170		-0.5772		-0.2222		0.3550	
44	Distinguishes f3 Distinguishes f4	0.0041		-1.8725	****	-0.6585	*	-1.8766	****	-0.6626	*	1.2140	***
45	Distinguishes f3 only	-0.1092		-1.0592	***	-0.3726		-0.9500	**	-0.2634		0.6866	*
46		-0.1382		-0.6648	*	0.2351		-0.5266		0.3732		0.8998	**
47		1.0505	***	0.5112		-0.4217		-0.5393		-1.4722	***	-0.9329	**
48	Distinguishes f3 only	0.3001		1.8515	****	0.4405		1.5514	****	0.1404		-1.4110	***
49	Distinguishes f2 only	1.2591	***	0.3955		-0.0648		-0.8636	**	-1.3239	***	-0.4603	
50	Distinguishes all	0.8296	**	2.3626	****	3.2719	****	1.5329	****	2.4423	****	0.9093	**
51	Distinguishes f1 only	2.7554	****	2.9746	****	2.4686	****	0.2192		-0.2868		-0.5060	
52	Distinguishes f3 Distinguishes f4	0.0717		2.2269	****	-0.7405	*	2.1552	****	-0.8122	**	-2.9674	****
53	Distinguishes f3 only	0.0529		1.6529	****	0.0076		1.6000	****	-0.0453		-1.6453	****
54	Distinguishes f2	-0.6624	*	0.9208	***	0.3670		1.5832	****	1.0293	**	-0.5538	
55		-0.4752		-0.4316		-0.7659	*	0.0435		-0.2907		-0.3343	
56	Distinguishes f3 only	-0.2494		1.3310	****	0.0721		1.5804	****	0.3215		-1.2589	***
57	Distinguishes f2 only	-0.7574	**	0.3773		0.0046		1.1347	***	0.7620	*	-0.3728	
58		-0.5984	*	0.5046		-0.7111	*	1.1031	***	-0.1126		-1.2157	***
59	Distinguishes f3 only	0.1410		1.6147	****	0.3942		1.4737	****	0.2532		-1.2205	***
60	Distinguishes f1 only	-1.0826	***	-1.1878	***	-0.7215	*	-0.1052		0.3611		0.4663	
61	Distinguishes f1 Distinguishes f2	-1.6232	****	-1.0404	***	-0.6235	*	0.5829	*	0.9997	**	0.4169	
62	Distinguishes f2 Distinguishes f3	1.9501	****	0.9873	***	-0.5315		-0.9628	**	-2.4816	****	-1.5188	***

Note: *, **, *** and **** are differences statistically significant considering p-values lower than 0.05, 0.01, 0.001 and 0.0001 (respectively).

	Standard error of differences			
	C1	C2	C3	C4
C1	0.2462			
C2	0.2651	0.2828		
C3	0.2791	0.2960	0.3086	
C4	0.2985	0.3144	0.3263	0.3430

Note: Correlation coefficients are calculated between the z-scores of ranked Q-samples for each component. SED stands for 'Standard Error of Differences' and it is based on the components' standard errors.

APPENDIX P: Discount test (matrix of results)

	a	b	c	d	e	f	g	h	i
IP_1	-	-	-	-	-	-	-	-	-
IP_2	0	0	1	1	1	1	1	1	1
IP_3	0	0	1	1	1	1	1	1	1
IP_4	0	0	0	1	0	1	1	1	1
IP_5	0	0	0	1	1	1	1	1	1
IP_6	0	0	1	1	1	1	1	1	1
IP_7	1	1	1	1	1	1	1	1	1
IP_8	0	0	0	1	1	1	1	1	1
IP_9	0	0	0	1	1	1	1	1	1
IP_10	1	1	1	1	1	1	1	1	1
IP_11	0	0	0	0	0	1	1	1	1
IP_12	0	0	1	1	1	1	1	1	1
IP_13	0	0	0	0	1	1	1	1	1
II_2	0	0	1	1	1	1	1	1	1
II_3	0	1	0	1	1	1	1	1	1
II_4	0	0	0	1	1	1	1	1	1
II_5	0	0	0	1	1	1	1	1	1
II_7	1	1	1	1	1	1	1	0	0
II_8	0	0	0	1	1	1	1	1	1
II_9	0	0	0	1	0	1	1	1	1
II_11	0	0	0	0	1	1	1	1	1
II_12	0	0	1	1	1	1	1	1	1
II_13	0	0	0	1	1	1	1	1	1
II_14	0	0	0	1	1	1	1	1	1
II_15	0	0	1	1	1	1	1	1	1
II_16	0	0	0	1	1	1	1	1	1
II_17	0	0	0	1	1	1	1	1	1
II_18	0	0	0	1	1	1	1	1	1
II_19	0	0	0	0	0	0	1	1	1
II_20	0	1	1	1	1	1	1	1	1
II_21	0	0	1	1	1	1	1	1	1

APPENDIX Q: Experimental screens (in Brazilian Portuguese)

Term of Consent


Decisão de investimento e cenário informacional

Termo de Consentimento

Você está sendo convidada(o) a participar como voluntária(o) na pesquisa vinculada ao projeto específico de doutorado em Controladoria e Contabilidade da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo (FEA/USP), desenvolvido pela aluna Bianca Quirantes Checon, com orientação do prof. Dr. Lucas Barros e coorientação do prof. Dr. Altay de Souza.

- O questionário tem duração prevista de 10 a 15 minutos e envolve a simulação de um cenário de decisão de investimento prospectivo em ações de uma empresa de capital aberto, a partir da divulgação de informações financeiras e não-financeiras.

- Ao final do questionário, serão feitas algumas perguntas de cunho sociodemográfico e de feedback sobre a pesquisa, com o fim apenas de compreender dados globais dos participantes, sem qualquer intenção de identificação pontual da sua participação.

- Você é livre para interromper a pesquisa a qualquer momento, sem prejuízo algum. Suas respostas serão analisadas juntamente com as respostas dos demais participantes, zelando sempre pela manutenção do anonimato da sua participação.

- O processo não prevê respostas certas ou erradas, apenas as mais adequadas a você.

- Qualquer informação em que você se sinta desconfortável em revelar, não a revele. Durante a participação, não prevemos riscos para você maiores do que aqueles relativos a uma vida normal cotidiana.

Caso você tenha dúvidas sobre a pesquisa, entre em contato com a aluna Bianca Quirantes Checon pelo e-mail bianca.checon@usp.br. Ao final da coleta do questionário, será sorteado entre os respondentes concluintes um vale-presente no valor de R\$ 200,00 da Livraria Cultura. Na tela final do questionário, será solicitada uma indicação de e-mail válido para comunicação sobre o sorteio.

Você receberá uma cópia deste formulário de consentimento no e-mail indicado por você.

Caso esteja de acordo com os termos acima, por favor, selecione a opção 'Sim, eu aceito participar da pesquisa' na caixa de diálogo abaixo.

* **1. Você aceita participar da pesquisa?** 

Sim, eu aceito participar da pesquisa

Não aceito participar da pesquisa.

Task description

Decisão de investimento e cenário informacional

Leia o texto abaixo com atenção

Você acabou de receber R\$50.000,00 como uma herança inesperada de um parente distante. **Como investidor**, você estuda as melhores opções para alocar esse recurso dentro do seu portfólio diversificado de investimento e as ações da empresa XYZ S/A chamaram a sua atenção.

Você não tem nenhuma ação da XYZ S/A dentro da sua carteira e, para decidir se você irá investir na empresa ou não, você resolve buscar mais informações sobre a companhia.

Após ter acesso a essas informações, você decidirá se investirá ou não na empresa e quanto dinheiro será alocado na compra.

Nas próximas telas, essas informações são apresentadas. É importante dizer que, uma vez avançada a página, não é possível voltar para a informação anterior.

Para prosseguir, aperte o botão 'Próximo'.

Anter.

Próximo

Operational context, business model, sector information and random assignment

Decisão de investimento e cenário informacional

Informações sobre modelo de negócio, setor e contexto operacional

A XYZ S/A é uma empresa de manufatura de alimentos fundada em 1980 no Brasil e listada em Bolsa de Valores desde 2010. Seu objeto social inclui desde a compra de matéria-prima com fornecedores locais, seu beneficiamento, a produção até a venda para grandes lojas atacadistas e varejistas. Todas as ações emitidas são ordinárias.

A empresa conta com 3 fábricas estrategicamente localizadas nas regiões Sul, Centro-Oeste e Nordeste e 5 pontos de distribuição. Seu mercado de atuação é o nacional, com presença nas 15 principais capitais do país.

O setor de transformação industrial alimentício, junto ao de bebidas, é considerado como o principal do país e não sofre grandes variações sazonais, havendo uma leve alta no consumo durante o quarto trimestre. O setor se manteve em crescimento nos últimos 5 anos e as projeções para os próximos 5 anos continuam positivas.

* 1. Para continuar, selecione a alternativa que contenha o seu mês de nascimento:



- Janeiro - Abril - Julho
- Março - Junho - Novembro
- Maio - Agosto - Outubro
- Fevereiro - Setembro - Dezembro

Anter.

Próximo

Example of a screen presentation for the traditional format (continues on the next page)

 Decisão de investimento e cenário informacional

Informações financeiras: XYZ S/A



(em milhares de reais)

Demonstração dos Fluxos de Caixa	Nota	X1	X0
Caixa gerado pelas atividades operacionais	(b, c, d)	-2.000	-1.200
Caixa gerado pelas atividades de investimento		-300	-4.565
Caixa gerado pelas atividades de financiamento	(a)	-1.500	4.300
Variação de caixa		-3.800	-1.465
Saldo de caixa e equivalentes no final do exercício		3.500	7.300
Saldo de caixa e equivalentes no início do exercício		7.300	8.765



(em milhares de reais)

Balanco Patrimonial		31/12/X1		31/12/X0			
Ativo	Nota	31/12/X1	31/12/X0	Passivo	Nota	31/12/X1	31/12/X0
Caixa e equivalentes de caixa		3.500	7.300	Contas a pagar		8.000	6.400
Contas a receber		4.000	6.100	Empréstimos e financiamentos	(x)	11.000	13.400
Estoques	(c)	2.500	1.900	Outros passivos circulantes		1.300	2.800
Outros ativos circulantes		900	1.500	Total do passivo circulante		20.300	22.600
Total do ativo circulante		10.900	16.800	Empréstimos e financiamentos	(x)	3.005	6.500
Outros ativos não circulantes		600	1.100	Outros passivos não circulantes		1.200	3.000
Imobilizado	(f)	18.000	20.300	Total do passivo não circulante		4.205	9.500
Intangível		5.500	5.500	Capital	(v)	9.000	9.000
Total do ativo não circulante		24.100	26.900	Reservas	(g)	1.495	2.600
Total do Ativo		35.000	43.700	Total do patrimônio líquido (PL)		10.495	11.600
				Total do Passivo e do PL		35.000	43.700



(em milhares de reais)

Demonstração do Resultado do Exercício		X1	X0
Receita	(b)	40.000	21.600
(-) Custo dos produtos vendidos	(c)	-25.400	-10.500
= Lucro bruto		14.600	11.100
(-) Despesas logísticas, comerciais e administrativas	(d)	-15.700	-10.580
(-) Despesas financeiras	(a)	-2.500	-1.625
= Prejuízo do exercício	(g)	-3.600	-1.105
Resultado por ação		-3,80	-1,11

Example of a screen presentation for the traditional format (continuation)



Notas explicativas

A empresa tem uma política de investimento traçada para os próximos 5

- (a) anos para aumentar os processos automatizados nas fábricas e centros de distribuição a qual foi financiada por capital de terceiros.
- (b) Aumento da receita líquida pelo aumento no volume de vendas
- (c) Aumento de estoques se deu pelo aumento dos preços na matéria-prima influenciados pela inflação.
- (d) Aumento das despesas operacionais devido aos investimentos tecnológicos feitos nos centros de distribuição da empresa.
- (e) Não houve nova emissão de ações em X1, mantendo 1 milhão de ações emitidas a R\$0 cada uma, todas pulverizadas no mercado.
- (f) Houve baixa de imobilizado no período.
- (g) Não haverá distribuição de dividendos referente ao período de X1.

Principais indicadores de desempenho 

	X1		X0	
Retorno sobre o Patrimônio Líquido	-32,50%		-10,00%	
Lucro antes de impostos, juros e depreciação	R\$	600	R\$	1.720 (em milhares de reais)
Margem LL/Receita (ajustado despesa financeira)	-2,75%		2,41%	
Endividamento total	426,92%		471,55%	

Anter.

Próximo

Example of a screen presentation for the narrative format


Decisão de investimento e cenário informacional

Informações financeiras: XYZ S/A



TEXTO NARRATIVO SOBRE A POSIÇÃO FINANCEIRA DA XYZ S/A (PERÍODOS DE X1 E X0)
DADOS EM MILHARES DE REAIS, INFORMAÇÕES AUDITADAS, SEM RESSALVAS.

Informações sobre a liquidez/caixa da empresa/fontes de financiamento

A retração do EBITDA de - 65,12% foi fortemente dirigida pelo aumento de parte das despesas operacionais (X1: R\$ 15.700; X0: R\$ 10.580) e do custo dos produtos vendidos (R\$ 25.400 em X1 e R\$ 10.500 em X0); se for observado o fluxo de caixa operacional, ele teve uma variação negativa de 67% (X1: - R\$ 2.000; X0: - R\$ 1.200) no período.

Contas a receber diminuíram 34,42% em relação ao período anterior (X1: R\$ 4.000; X0: R\$ 6.100). Estoques apresentaram um aumento de 32% devido ao aumento dos preços na matéria-prima influenciados pela inflação (X1: R\$ 2.500; X0: R\$ 1.900).

As despesas de capital se dão pela atualização de tecnologia para as fábricas: o fluxo de caixa de investimento saiu de (R\$ 4.565) para (R\$ 300), o que representa um aumento de 93%. Houve baixa de imobilizado no período (saldo de imobilizado em X1: R\$ 18.000; X0: R\$ 20.300, efeito líquido da depreciação).

A empresa tem uma política de investimento traçada para os próximos 5 anos para aumentar os processos automatizados nas fábricas e centros de distribuição a qual foi financiada por capital de terceiros. Em X1, os valores de empréstimos se reduziram pelo pagamento de dívida e juros (proporção de empréstimos de curto prazo versus de longo prazo está em 83% em X1 versus 70% em X0, saldos contábeis de curto prazo: X1: R\$ 11.000; X0: R\$ 13.400; longo prazo: X1: R\$ 3.005; X0: R\$ 6.500).

O endividamento total diminuiu de 472% em X0 para 427% em X1. O caixa gerado pelas atividades de financiamento apresentou uma queda entre períodos (X1: - R\$ 1.500; X0: R\$ 4.300), oriundo do pagamento de juros e principal que tinham vencimento até o fim do exercício.

Performance financeira e rentabilidade

A receita líquida passou de R\$ 21.600 para R\$ 40.000 (incremento de 85%) pelo aumento no volume das vendas. O aumento no CPV foi acima da variação da receita devido a inflação do período (de R\$ 10.500 para R\$ 25.400, aumento de 142%, controlada o aumento nas vendas). Também houve um aumento nas despesas logísticas, comerciais e administrativas (de R\$ 10.580 para R\$ 15.700 - aumento de 48%) devido aos investimentos tecnológicos feitos nos centros de distribuição da empresa. Isso gerou uma queda no lucro operacional (antes de despesas financeiras) de 117% (- R\$ 1.100 em X1 versus R\$ 520 em X0).

O prejuízo em X1 foi de - R\$ 3.600 (X0: - R\$ 1.105, variação negativa de 226%), sendo a margem do lucro sobre a receita (ajustadas despesas financeiras) de - 3% em X1 versus 2% em X0. Não houve nova emissão de ações em X1, mantendo 10 milhões de ações emitidas a R\$ 9 cada uma, todas pulverizadas no mercado. Com isso, o resultado por ação foi de - R\$ 3,60 em X1 (X0: - R\$ 1,11).

O Retorno sobre o Patrimônio Líquido caiu de - 90% para - 32,59% de X0 para X1 em grande parte pela diminuição da margem lucro líquido/receita líquida e pelo aumento nas despesas operacionais.

Não haverá distribuição de dividendos referente ao período de X1.

Anter.
Próximo

Example of a screen presentation for the past market data information

 Decisão de investimento e cenário informacional

Informações de mercado acionário

Abaixo, são apresentadas algumas informações referentes ao desempenho da XYZ S/A e suas ações no mercado acionário.

A leitura delas é livre - ou seja, você pode avançar as telas caso não tenha interesse em alguma ou em todas as informações.

Ao final de cada tela, haverá uma pergunta confirmando a leitura/não-leitura da informação. 



Preço da ação/Lucro (última cotação)	R\$	2,79
Capitalização de mercado (market cap)	R\$	156.000 <small>(em milhares de reais)</small>
Histórico de preço médio (últimos 12 meses)	R\$	15,60
Histórico de retornos médios (últimos 12 meses)		0,13%
Volume negociado médio (últimos 12 meses)	R\$	5.000 <small>(em milhares de reais)</small>

1. Você leu as informações? 

Sim

Não

Anter. Próximo

Environmental data

 Decisão de investimento e cenário informacional

Informações socio-ambientais

Abaixo, são apresentadas informações socio-ambientais retiradas do Relatório Anual da XYZ S/A (período: X1, informações auditadas):

- Redução no consumo de água usada no processo produtivo em 15% nos últimos dois anos.
- Projetos de educação continuada aos funcionários de todos os níveis hierárquicos.
- A XYZ S/A tem um programa de retorno de embalagens plásticas à empresa, para reciclagem e reaproveitamento em embalagens futuras.

1. Você leu as informações? 

Sim
 Não

Anter.
Próximo

News from media

 Decisão de investimento e cenário informacional

Notícias diversas sobre a XYZ

Essas são três manchetes recentes sobre a empresa XYZ S/A:

- "XYZ abre processo seletivo para trainees"
- "Funcionários da XYZ arrecadam fundos para evento beneficente"
- "XYZ lança embalagem comemorativa colecionável"

1. Você leu as informações? 

Sim
 Não

Anter.
Próximo

Experimental questions

Levando em conta todas as informações da XYZ S/A que você considerou como relevantes, responda às seguintes questões:

* 1. Numa escala de 0 a 1, quão **propenso** você está para investir nas ações da XYZ? 

0 (nada propenso/não investiria na empresa) | 1 (muito propenso/investiria na empresa)

* 2. Considerando o montante total disponível de R\$ 50.000,00, quanto você **alocaria** nas ações da XYZ (a alternativa de investimento seria comprar Títulos do Tesouro Nacional)? 

R\$ 0,00 | R\$ 50.000,00

Anter.

Próximo

Manipulation checks, internal levels and post-assessment questions (continues on the next page)



Abaixo, estão listadas algumas perguntas em relação à tarefa executada. Pedimos gentilmente que você as responda com atenção.

* 1. Na escala de 0 a 1, sua propensão em investir nas ações da XYZ foi: 

- Alta
- Média
- Baixa

* 2. A empresa estava: 

- Em boa performance financeira
- Em má performance financeira

* 3. Quais informações da XYZ foram decisivas para a sua decisão?

Por favor, escreva na caixa de texto abaixo todas as informações que você considerou como relevantes para decidir se você investiria ou não na empresa XYZ: 

Manipulation checks, internal levels and post-assessment questions (continuation)

* 4. Na página de informações financeiras, você viu: 

- Demonstrações contábeis com notas explicativas
- Texto narrativo

* 5. Quão cansada/o você está? 

0 (nada cansada/o) | 10 (muito cansada/o)

* 6. Quão sonolenta/o você está? 

0 (nada sonolenta/o) | 10 (muito sonolenta/o)

* 7. Quanto esforço mental lhe foi exigido para essa tarefa? 

0 (pouco esforço) | 10 (muito esforço)

* 8. O quanto você gostou de realizar essa tarefa? 

0 (detestei) | 10 (adorei)

Control questions (continues on the next page)



Decisão de investimento e cenário informacional

Questões de perfil

1. Indique a sua idade (em anos completos): 

2. Tem experiência anterior de investimento em mercado acionário? 

Sim

Não

3. Se a resposta anterior foi 'Sim', quantos anos (completos)? 

4. Dentre os fundos de investimento abaixo, e seus respectivos possíveis rendimentos, qual representaria sua opção de investimento preferida? 

- Fundo de Investimento A: médio 7,00%, máximo 7,70%, mínimo 6,10%
- Fundo de Investimento B: médio 10,10%, máximo 11,80%, mínimo 2,10%
- Fundo de Investimento C: médio 12,40%, máximo 19,00%, mínimo (-) 4,00%
- Fundo de Investimento D: médio 18,00%, máximo 30,00%, mínimo (-)20,00%
- Fundo de Investimento E: médio 20,00%, máximo 80,00%, mínimo (-) 40,00%

Control questions (continues on the next page)

5. Curso de graduação: 

- Administração
- Atuária
- Contabilidade
- Economia
- Outro (especifique)

6. Ano de ingresso: 

7. Curso de graduação concluído? 

- Sim
- Não

8. Está na Pós-Graduação? 

- Sim, em Especialização/MBA.
- Sim, no Mestrado Acadêmico
- Sim, no Mestrado Profissional
- Sim, no Doutorado
- Não

Control questions (continuation)

9. Se marcou 'Sim' na questão anterior, por favor, indique a área de estudos: 

- Administração
- Atuária
- Contabilidade
- Economia
- Outro (especifique)

10. Gênero 

- Feminino
- Masculino
- Prefiro não responder

11. A faixa de renda que você/sua família melhor se adequa é: 

- Menor que R\$ 937,00
- De R\$ 937,00 até R\$ 2.811,00
- De R\$ 2.811,01 até R\$ 5.622,00
- De R\$5.622,01 até R\$ 8.433,00
- De R\$ 8.433,01 até R\$ 11.244,00
- De R\$11.244,01 até R\$ 14.055,00
- Maior que R\$ 14.055,00

APPENDIX R: Financial statements, financial notes and KPIs for XYZ's good and bad performances

- Good financial performance

(em milhares de reais)			
Demonstração dos Fluxos de Caixa	Nota	X1	X0
Caixa gerado pelas atividades operacionais	(b,c,d)	9.200	6.440
Caixa gerado pelas atividades de investimento		-5.300	-6.505
Caixa gerado pelas atividades de financiamento	(a)	-1.100	-1.200
<i>Varição de caixa</i>		<u>2.800</u>	<u>-1.265</u>
Saldo de caixa e equivalentes no final do exercício		10.300	7.500
Saldo de caixa e equivalentes no início do exercício		7.500	8.765

(em milhares de reais)				(em milhares de reais)			
Balanco Patrimonial	Nota	31/12/X1	31/12/X0	Passivo	Nota	31/12/X1	31/12/X0
<i>Ativo</i>				<i>Passivo</i>			
Caixa e equivalentes de caixa		10.300	7.500	Contas a pagar		3.400	3.000
Contas a receber		3.100	3.000	Empréstimos e financiamentos	(a)	4.400	1.500
Estoques	(c)	1.900	1.500	Outros passivos circulantes		800	300
Outros ativos circulantes		1.500	900	<i>Total do passivo circulante</i>		<u>8.600</u>	<u>4.800</u>
<i>Total do ativo circulante</i>		<u>16.800</u>	<u>12.900</u>				
Outros ativos não circulantes		1.100	600	<i>Passivo não-circulante</i>			
Imobilizado		23.300	20.000	Empréstimos e financiamentos	(a)	1.500	3.000
Intangível		5.500	5.500	Outros passivos não circulantes		1.000	1.200
<i>Total do ativo não-circulante</i>		<u>29.900</u>	<u>26.100</u>	<i>Total do passivo não-circulante</i>		<u>2.500</u>	<u>4.200</u>
<i>Total do Ativo</i>		<u>46.700</u>	<u>39.000</u>	Capital	(e)	15.000	15.000
				Reservas	(f)	20.600	15.000
				<i>Total do patrimônio líquido (PL)</i>		<u>35.600</u>	<u>30.000</u>
				<i>Total do Passivo e do PL</i>		<u>46.700</u>	<u>39.000</u>

(em milhares de reais)			
Demonstração do Resultado do Exercício		X1	X0
Receita	(b)	40.000	35.700
(-) Custo dos produtos vendidos	(c)	-14.700	-12.500
= <i>Lucro bruto</i>		<u>25.300</u>	<u>23.200</u>
(-) Despesas logísticas, comerciais e administrativas	(d)	-12.700	-14.280
(-) Despesas financeiras	(a)	-2.500	-1.625
= <i>Lucro antes do IR</i>		<u>10.100</u>	<u>7.295</u>
(-) IR		-4.500	-2.448
= <i>Lucro líquido</i>		<u>5.600</u>	<u>4.847</u>
Resultado por ação		5,60	4,85

Notas explicativas

A empresa tem uma política de investimento traçada para os próximos 5 anos

- (a) para aumentar os processos automatizados nas fábricas e centros de distribuição a qual foi financiada por capital de terceiros.
- (b) Aumento da receita líquida pelo aumento no volume de vendas
- (c) Aumento de estoques/CPV se deu pelo aumento dos preços na matéria-prima influenciados pela inflação.
- (d) Diminuição das despesas operacionais devido aos investimentos tecnológicos feitos nos centros de distribuição da empresa.
- (e) Não houve nova emissão de ações em X1, mantendo 1 milhão de ações emitidas a R\$9 cada uma, todas pulverizadas no mercado.

Os dividendos do resultado de X1 serão distribuídos na proporção de 50% do

- (f) lucro líquido, os quais dependem da aprovação da assembleia ordinária que ocorrerá nos próximos dias.

	<u>X1</u>		<u>X0</u>	
Retorno sobre o Patrimônio Líquido (ROE)	17%		15%	
EBITDA	R\$	14.300	R\$	10.120 (em milhares de reais)
Margem LL/Receita (ajustada despesa financeira)	20%		18%	
Endividamento total	55%		46%	

- *Bad financial performance*

Demonstração dos Fluxos de Caixa	Nota	(em milhares de reais)	
		X1	X0
Caixa gerado pelas atividades operacionais	(b,c,d)	-2.000	-1.200
Caixa gerado pelas atividades de investimento		-300	-4.565
Caixa gerado pelas atividades de financiamento	(a)	-1.500	4.300
<i>Varição de caixa</i>		<u>-3.800</u>	<u>-1.465</u>
Saldo de caixa e equivalentes no final do exercício		3.500	7.300
Saldo de caixa e equivalentes no início do exercício		7.300	8.765

Balanco Patrimonial	Nota	(em milhares de reais)		Nota	(em milhares de reais)	
		31/12/X1	31/12/X0		31/12/X1	31/12/X0
Ativo				Passivo		
Caixa e equivalentes de caixa		3.500	7.300	Contas a pagar		8.000 6.400
Contas a receber		4.000	6.100	Empréstimos e financiamentos	(a)	11.000 13.400
Estoques	(c)	2.500	1.900	Outros passivos circulantes		1.300 2.800
Outros ativos circulantes		900	1.500	<i>Total do passivo circulante</i>		<u>20.300 22.600</u>
<i>Total do ativo circulante</i>		<u>10.900</u>	<u>16.800</u>	Empréstimos e financiamentos	(a)	3.005 6.500
Outros ativos não circulantes		600	1.100	Outros passivos não circulantes		1.200 3.000
Imobilizado	(f)	18.000	20.300	<i>Total do passivo não-circulante</i>		<u>4.205 9.500</u>
Intangível		5.500	5.500	Capital	(e)	9.000 9.000
<i>Total do ativo não-circulante</i>		<u>24.100</u>	<u>26.900</u>	Reservas	(g)	1.495 2.600
<i>Total do Ativo</i>		<u>35.000</u>	<u>43.700</u>	<i>Total do patrimônio líquido (PL)</i>		<u>10.495 11.600</u>
				<i>Total do Passivo e do PL</i>		<u>35.000 43.700</u>

Demonstração do Resultado do Exercício		(em milhares de reais)	
		X1	X0
Receita	(b)	40.000	21.600
(-) Custo dos produtos vendidos	(c)	-25.400	-10.500
= <i>Lucro bruto</i>		<u>14.600</u>	<u>11.100</u>
(-) Despesas logísticas, comerciais e administrativas	(d)	-15.700	-10.580
(-) Despesas financeiras	(a)	-2.500	-1.625
= <i>Prejuízo do exercício</i>	(g)	<u>-3.600</u>	<u>-1.105</u>
Resultado por ação		-3,60	-1,11

	X1		X0	
Retorno sobre o Patrimônio Líquido	-32,59%		-10,00%	
Lucro antes de impostos, juros e depreciação	R\$	600	R\$	1.720 (em milhares de reais)
Margem LL/Receita (ajustada despesa financeira)	-2,75%		2,41%	
Endividamento total	426,92%		471,55%	

Notas explicativas

A empresa tem uma política de investimento traçada para os próximos 5

- (a) anos para aumentar os processos automatizados nas fábricas e centros de distribuição a qual foi financiada por capital de terceiros.
- (b) Aumento da receita líquida pelo aumento no volume de vendas
- (c) Aumento de estoques se deu pelo aumento dos preços na matéria-prima influenciados pela inflação.
- (d) Aumento das despesas operacionais devido aos investimentos tecnológicos feitos nos centros de distribuição da empresa.
- (e) Não houve nova emissão de ações em X1, mantendo 1 milhão de ações emitidas a R\$9 cada uma, todas pulverizadas no mercado.
- (f) Houve baixa de imobilizado no período.
- (g) Não haverá distribuição de dividendos referente ao período de X1.

APPENDIX S: Narrative format for XYZ's good and bad financial performances (in Brazilian Portuguese)

- *Good financial performance*

TEXTO NARRATIVO SOBRE A POSIÇÃO FINANCEIRA DA XYZ S/A (PERÍODOS DE X1 E X0)
DADOS EM MILHARES DE REAIS; INFORMAÇÕES AUDITADAS, SEM RESSALVAS.

Informações sobre a liquidez/caixa da empresa/fontes de financiamento

A evolução do EBITDA de 41% foi fortemente dirigida pela diminuição de parte das despesas operacionais (X1: R\$ 12.700; X0: R\$ 14.280) e pelo aumento da margem bruta (X0: R\$ 25.300; X1: R\$ 23.200) se for observado o fluxo de caixa operacional, ele teve uma variação positiva de 43% (X1: 9.200; X0: R\$ 6.440) no período.

Contas a receber se mantiveram em níveis parecidos com o do período anterior (X1: R\$ 3.100; X0: R\$ 3.000). Estoques apresentaram um aumento de 27% devido ao aumento dos preços na matéria-prima influenciados pela inflação (X1: R\$1.900; X0: R\$ 1.500).

O aumento nas despesas de capital se deu pelo incremento em atualização de tecnologia para as fábricas: o fluxo de caixa de investimento saiu de (R\$ 6.505) para (R\$ 5.300), o que simboliza um aumento de aproximadamente 18%. A outra parcela do aumento da renovação do imobilizado da empresa se deu por financiamento de curto e longo prazo (saldo de imobilizado em X1: R\$ 23.300, X0: R\$ 20.000, efeito líquido da depreciação).

A empresa tem uma política de investimento traçada para os próximos 5 anos para aumentar os processos automatizados nas fábricas e centros de distribuição a qual foi financiada por capital de terceiros. Com isso, foram feitas novas aquisições de empréstimos pelos antigos estarem vencendo (proporção de empréstimos de curto prazo versus de longo prazo está em 77% em X1 versus 53% em X0; saldos contábeis de curto prazo: X1: R\$ 4.400, X0: R\$ 1.500; longo prazo: X1: R\$ 1.500; X0: R\$ 3.000), o que gerou um aumento do endividamento total de 46% em X0 para 55% em X1. O caixa gerado pelas atividades de financiamento se manteve em níveis similares entre períodos (X1:--R\$ 1.100; X0: --R\$ 1.200), oriundo do pagamento de juros e principal que tinham vencimento até o fim do exercício.

Performance financeira e rentabilidade

A receita líquida passou de R\$ 35.700 para R\$ 40.000 (incremento de 12%) pelo aumento no volume das vendas. Apesar do aumento no CPV ter sido acima da variação da receita devida a inflação do período (de R\$ 12.500 para R\$ 14.700 – aumento de 18%, controlada o aumento nas vendas), houve uma diminuição das despesas logísticas, comerciais e administrativas (de R\$ 14.280 para R\$ 12.700 – diminuição de 12%) devido aos investimentos tecnológicos feitos nos centros de distribuição da empresa. Isso gerou um incremento no lucro operacional (antes de despesas financeiras) de 41% (R\$ 12.600 em X1 versus R\$ 8.920 em X0).

O lucro líquido em X1 foi de R\$ 5.600 (X0: R\$ 4.847, variação positiva de 15,53%), sendo a margem do lucro sobre a receita (ajustadas despesas financeiras) de 20% em X1 versus 18% em X0. Não houve nova emissão de ações em X1, mantendo 10 milhões de ações emitidas a R\$9 cada uma, todas pulverizadas no mercado. Com isso, o lucro por ação foi de R\$ 5,60 em X1 (X0: R\$ 4,85).

O Retorno sobre o Patrimônio Líquido subiu de 15% para 17% de X0 para X1 em grande parte pelo aumento da margem lucro líquido/receita líquida.

Os dividendos do resultado de X1 serão distribuídos na proporção de 50% do lucro líquido, os quais dependem da aprovação da assembleia ordinária que ocorrerá nos próximos dias.

- *Bad financial performance*

TEXTO NARRATIVO SOBRE A POSIÇÃO FINANCEIRA DA XYZ S/A (PERÍODOS DE X1 E X0)
DADOS EM MILHARES DE REAIS; INFORMAÇÕES AUDITADAS, SEM RESSALVAS.

Informações sobre a liquidez/caixa da empresa/fontes de financiamento

A retração do EBITDA de -- 65,12% foi fortemente dirigida pelo aumento de parte das despesas operacionais (X1: R\$ 15.700; X0: R\$ 10.580) e do custo dos produtos vendidos (R\$ 25.400 em X1 e R\$ 10.500 em X0); se for observado o fluxo de caixa operacional, ele teve uma variação negativa de 67% (X1: -- R\$ 2.000; X0: -- R\$ 1.200) no período.

Contas a receber diminuíram 34,42% em relação ao período anterior (X1: R\$ 4.000; X0: R\$ 6.100). Estoques apresentaram um aumento de 32% devido ao aumento dos preços na matéria-prima influenciados pela inflação (X1: R\$ 2.500; X0: R\$ 1.900).

As despesas de capital se dão pela atualização de tecnologia para as fábricas: o fluxo de caixa de investimento saiu de (R\$ 4.565) para (R\$ 300), o que representa um aumento de 93%. Houve baixa de imobilizado no período (saldo de imobilizado em X1: R\$ 18.000, X0: R\$ 20.300, efeito líquido da depreciação)

A empresa tem uma política de investimento traçada para os próximos 5 anos para aumentar os processos automatizados nas fábricas e centros de distribuição a qual foi financiada por capital de terceiros. Em X1, os valores de empréstimos se reduziram pelo pagamento de dívida e juros (proporção de empréstimos de curto prazo versus de longo prazo está em 83% em X1 versus 70% em X0; saldos contábeis de curto prazo: X1: R\$ 11.000, X0: R\$ 13.400; longo prazo: X1: R\$ 3.005; X0: R\$ 6.500).

O endividamento total diminuiu de 472% em X0 para 427% em X1. O caixa gerado pelas atividades de financiamento apresentou uma queda entre períodos (X1: -- R\$ 1.500; X0: R\$ 4.300), oriundo do pagamento de juros e principal que tinham vencimento até o fim do exercício.

Performance financeira e rentabilidade

A receita líquida passou de R\$ 21.600 para R\$ 40.000 (incremento de 85%) pelo aumento no volume das vendas. O aumento no CPV foi acima da variação da receita devida a inflação do período (de R\$ 10.500 para R\$ 25.400; aumento de 142%, controlada o aumento nas vendas). Também houve um aumento nas despesas logísticas, comerciais e administrativas (de R\$ 10.580 para R\$ 15.700 – aumento de 48%) devido aos investimentos tecnológicos feitos nos centros de distribuição da empresa. Isso gerou

uma queda no lucro operacional (antes de despesas financeiras) de 111% (-- R\$ 1.100 em X1 versus R\$ 520 em X0).

O prejuízo em X1 foi de -- R\$ 3.600 (X0: -- R\$ 1.105, variação negativa de 226%), sendo a margem do lucro sobre a receita (ajustadas despesas financeiras) de -- 3% em X1 versus 2% em X0. Não houve nova emissão de ações em X1, mantendo 10 milhões de ações emitidas a R\$ 9 cada uma, todas pulverizadas no mercado. Com isso, o resultado por ação foi de -- R\$ 3,60 em X1 (X0: -- R\$ 1,11).

O Retorno sobre o Patrimônio Líquido caiu de -- 10% para -- 32,59% de X0 para X1 em grande parte pela diminuição da margem lucro líquido/receita líquida e pelo aumento nas despesas operacionais.

Não haverá distribuição de dividendos referente ao período de X1.

APPENDIX T: Spearman’s correlation matrix between experimental variables (DV’s and IV’s)

Variables	Propensity01	Propensitymoney	PresentationF	Performance	Amount_acctinfo	Amount_nonaacctinfo	Age	Investment.Experience	RiskTakingLevel	IncomeLevel	Graduate	Gender	Tiredness	Somnolence	MentalEffort	TaskingEnjoyment
Propensity01	1															
Propensitymoney	0.6663***	1														
PresentationF	0.1079	0.0288	1													
Performance	-0.681***	-0.403***	-0.115	1												
Amount_acctinfo	0.0683	0.1096	-0.057	0.0283	1											
Amount_nonaacctinfo	0.3480***	0.2617***	-0.027	-0.144	-0.087	1										
Age	-0.113	0.0470	0.0378	0.0529	-0.083	-0.180*	1									
Investment.Experience	0.0134	-0.046	0.0535	-0.087	0.0257	-0.077	0.3096***	1								
RiskTakingLevel	-0.063	0.1095	0.0068	0.0475	-0.024	-0.140	0.0583	0.1981*	1							
IncomeLevel	0.0782	0.0145	0.1933*	-0.144	-0.059	-0.031	0.3133***	0.2625**	0.2286*	1						
Graduate	-0.054	-0.065	-0.211*	-0.050	0.1629	0.0047	0.4225***	0.2842**	-0.148	0.0028	1					
Gender	0.1253	0.0803	0.0237	-0.110	0.1065	-0.099	0.1066	-0.096	-0.170	0.0501	0.2434**	1				
Tiredness	-0.067	-0.131	-0.060	-0.147	-0.087	-0.103	-0.139	-0.199*	-0.023	-0.099	-0.099	0.0653	1			
Somnolence	-0.191*	-0.329***	-0.037	-0.016	-0.111	-0.083	-0.087	-0.128	-0.015	0.0686	0.0978	0.1349	0.6486***	1		
MentalEffort	0.0545	0.0543	0.1528	-0.090	-0.159	0.0838	-0.163	-0.099	0.0210	0.0915	-0.085	-0.042	0.1292	0.0226	1	
TaskingEnjoyment	0.2220**	0.2566**	-0.116	-0.023	0.1196	0.1255	0.0141	-0.057	0.0379	-0.055	0.0212	-0.098	-0.257**	-0.378***	0.0205	1

Note: *** p< 0.01; ** p< 0.05; * p<0.1. Variables in bold are the DVs.

APPENDIX U: Models 5 and 6 considering ‘Propensity (in R\$)’ as a DV
For Model 5 (H1a, ‘LittleInvestExp’)

	InvestmentR\$ (%)
	<i>OLS</i>
	(5)
Constant	69.558*** (21.260)
Narr	2.102 (20.291)
Bad	-42.760** (18.975)
I(Narr * Bad)	-1.431 (26.431)
LittleInvestExp	-27.343 (16.073)
I(LittleInvestExp * Narr)	15.758 (22.749)
I(LittleInvestExp * Bad)	41.298** (18.267)
I(Narr * Bad * LittleInvestExp)	-16.827 (27.460)
LowRiskLevel	-9.666 (9.139)
MedRiskLevel	-17.179* (9.496)
Age	-0.315 (0.391)
Gender	1.320 (8.266)
Observations	35
R ²	0.484
Adjusted R ²	0.238
Residual Std. Error	17.716
F Statistic	1.963*

Note: OLS models, heteroscedasticity-robust standard errors in parenthesis. *p<0.1; **p<0.05; ***p<0.01.

For Model 6 (H1b, 'NotAcct')

	InvestmentR\$ (%) <i>OLS</i> (6)
Constant	30.505** (14.379)
Narr	2.193 (11.936)
Bad	-22.336*** (8.022)
I(Narr * Bad)	9.350 (13.890)
NotAcct	2.253 (8.490)
I(NotAcct * Narr)	-9.545 (14.085)
I(NotAcct * Bad)	3.985 (10.654)
I(Narr * Bad * NotAcct)	-5.782 (17.604)
LowRiskLevel	-2.740 (6.164)
MedRiskLevel	4.267 (8.002)
Age	0.208 (0.350)
Gender	1.322 (5.053)
Observations	83
R ²	0.191
Adjusted R ²	0.065
Residual Std. Error	20.638
F Statistic	1.520

Note: OLS models, heteroscedasticity-robust standard errors in parenthesis. *p<0.1;
p<0.05; *p<0.01

ANNEX 1: Example of a financial overview from Fuller's Brewery strategic report

James is a keen cyclist and has been for many years. In May 2017, he led the pack on this year's Fuller's & Shooting Star Chase Cycle Challenge and is a keen road racer. He may not be the fastest competitor in the peloton, but claims he is almost certainly the oldest!



Financial position and performance

The Group has a strong financial position as a cash generative business with a high quality, mainly freehold asset base and a ratio of net debt to pro forma EBITDA of 2.9 times (2016: 3.0 times).

We have grown revenue by 12% on the prior year with the majority of the growth driven by strong like for like trading within the Managed estate along with the impact of the five new and acquired pubs, four further Stable sites and the acquisition of Nectar in the prior period. Excluding Nectar our revenue has grown by 7%. Our operating profits before separately disclosed items grew by 5% to £42.9 million (2016: £40.9 million), with the largest contribution to growth again coming from the Managed Pubs and Hotels division, where profits grew by £1.5 million. EBITDA² increased by 8% to £70.5 million (2016: £65.0 million) reflecting our continued investments in our estate leading to a depreciation and amortisation increase of 16% on prior period.

The results reported within the financial statements are for the 53 weeks ended 1 April 2017, compared to the 52 weeks ended

26 March 2016. All commentary is for the statutory periods with the exception of like for like information. A summary of the impact of the 53rd week is detailed in the accompanying table with the additional 53rd week contributing £8.0 million of revenue and £0.8 million of adjusted profit³.

Finance costs

Net finance costs before separately disclosed items have increased by £0.6 million to £6.6 million with the significant capital investment in 2016 and continued investment in 2017 leading to a higher average level of debt compared to the prior period. The average cost of gross borrowing has decreased to 3.0% (2016: 3.1%) reflecting the reduction in interest rates.

The net interest expense on our defined benefit pension scheme is shown within separately disclosed items as the charge is driven by market conditions at an arbitrary point in time and is not associated with our underlying trading.

Separately disclosed items

Net separately disclosed items before tax of £3.0 million comprised £0.9 million profit on property disposals, offset by £1.3 million of

acquisition costs expensed, £1.5 million of business reorganisation costs, primarily related to The Fuller's Beer Company, £0.3 million deemed remuneration on the future purchase of shares in The Stable and a net interest charge on our pension deficit of £0.8 million. After separately disclosed items, profit before tax was therefore £39.9 million (2016: £39.2 million).

Tax

A full analysis of the tax charge for the year is set out in note 7 to the financial statements. Tax has been provided for at an effective rate of 21.2% (2016: 20.5%) on adjusted profits. The overall effective tax rate of 18.5% benefits from the deferred tax credit of £1.0 million relating to the reduction in the UK corporation tax rate from 18% to 17% from 1 April 2020.

The Group generates significant tax revenues for the Government. During the 53 weeks ended 1 April 2017, the total tax contribution of the Group to the UK Exchequer was £134.0 million (2016: £128.8 million) in taxes borne and taxes collected on behalf of colleagues, customers and suppliers.

Total tax contribution (£m)



Excise duty	£42.4m
VAT	£43.7m
PAYE and Employees' NI	£19.1m
Corporation Tax	£9.2m
Business Rates	£9.8m
Employer's NI	£7.7m
Other taxes	£2.1m

Revenue	53 weeks 2016/17 £m	52 weeks 2016/17 £m	Reported 2015/16 £m	53 weeks YoY Var	52 weeks YoY Var
Managed Pubs & Hotels	261.3	255.9	238.4	10%	7%
Tenanted Inns	31.2	30.6	31.5	(1)%	(3)%
The Fuller's Beer Company	147.9	144.9	126.8	17%	14%
Less intercompany sales	(48.4)	(47.4)	(46.2)	5%	3%
Group revenue	392.0	384.0	350.5	12%	10%

Adjusted Profit	53 weeks 2016/17 £m	52 weeks 2016/17 £m	Reported 2015/16 £m	53 weeks YoY Var	52 weeks YoY Var
Managed Pubs & Hotels	32.4	31.8	30.9	5%	3%
Tenanted Inns	13.2	13.0	13.4	(1)%	(3)%
The Fuller's Beer Company	8.0	7.8	7.6	5%	3%
Central Costs	(4.1)	(4.0)	(5.0)	(18)%	(20)%
Operating profit³	49.5	48.6	46.9	6%	4%
Finance Costs	(6.6)	(6.5)	(6.0)	10%	8%
Adjusted profit⁴	42.9	42.1	40.9	5%	3%

³ Before separately disclosed items.

Financial Review continued

Pensions

The defined benefit pension scheme deficit has increased by £14.4 million to £37.9 million (2016: £23.5 million). The present value of pension obligations increased from £119.5 million to £149.3 million, this was driven by the assumed discount rate decreasing from 3.55% to 2.60%, RPI inflation assumptions increasing from 3.05% to 3.30% and a £3.2 million experience loss due to the updating of membership data following the 2016 triennial valuation. This was partly offset by an increase in the fair value of scheme assets of £15.4 million from £96.0 million to £111.4 million. Following the conclusion of the 2016 triennial valuation, the Company agreed to increase the deficit recovery payments to £2.0 million per annum from 1 January 2017 from £1.1 million. Deficit recovery payments of £1.3 million were therefore made during the financial year.

Shareholders' return

Adjusted earnings per share were 5% higher than last year at 61.39p (2016: 58.35p). The proposed final dividend of 11.55p per 40p 'A' ordinary share, together with the interim dividend of 7.25p per share already paid, makes a total of 18.80p and compares with a total

dividend of 17.90p last year. The total dividend per share has grown by 5% and will be covered 3.27 times by adjusted earnings per share, compared with 3.26 times in the previous year. Shareholders' equity at the year end was £312.8 million.

During the period 341,415 'A' ordinary 40p shares were purchased into treasury for a total of £3.5 million (2016: 274,000 'A' ordinary 40p shares and 1,000,000 'B' ordinary 4p shares for £4.4 million). In addition 105,764 'B' ordinary 4p shares were purchased for £0.1 million by or on behalf of the Trustees of the Long Term Incentive Plan to cover future issuance (2016: 146,028 'A' ordinary 40p shares and 225,281 'B' ordinary 4p shares for £1.8 million by or on behalf of the Trustees of the Share Incentive Plan and the Long Term Incentive Plan to cover future issuance). The average price paid was 1,036.5p per 'A' ordinary 40p share. The middle-market quotation of the Company's ordinary shares at the end of the financial year was 997.5p. The highest price during the year was 1,098p, while the lowest was 930p. The Company's market capitalisation at 1 April 2017 was £551.3 million (2016: £580.9 million).

Cash flow and net debt

The Group-generated cash available for discretionary spend was £59.6 million (2016: £56.8 million) with the increase due largely to EBITDA growth. In line with our long term investment strategy, we invested £55.8 million in capital expenditure (2016: £80.7 million).

We spent £35.0 million on continued investment in our existing business through pub refurbishment, new pub and restaurant site openings, investment in equipment at the Chiswick Brewery including the cross-flow filter, and increasing warehouse capacity at Cornish Orchards and Nectar.

We have also spent £16.6 million on the acquisition of four pubs that fit with our strategic goals – The Gun in London's Docklands, The Albert Arms in Esher, The King's Arms in Woodstock, and The White Star in Southampton. During the period we have acquired an additional 25% share in The Stable Pizza & Cider Limited for £2.7 million, taking our ownership to 76%, and paid £1.2 million in deferred contingent consideration to the former owners of Cornish Orchards. Asset disposals from the sale of properties within the tenanted portfolio raised £4.4 million and generated a separately disclosed profit of £0.9 million, which we will use to further invest in our estate as part of our property portfolio management.

Overall net debt has increased by £7.6 million to £206.1 million due to our commitment to investment in all aspects of our operations. Our pro forma net debt to EBITDA ratio has reduced to 2.9 times (2016: 3.0 times) reflecting our EBITDA growth in the period. Our committed facilities, along with our strong balance sheet position, give us the flexibility to invest strategically in the future should opportunities arise.

Sources of finance

The Group has £210 million of available long term facilities, £126.7 million of which has been extended for another year and is now available until August 2021. Of the remaining long-term facilities, £33.3 million is available to August 2020 and £50 million is available until August 2019. An additional £20 million facility is available until August 2017. Our undrawn committed facilities at 1 April 2017 were £35.5 million, with a further £15.3 million of cash held on the Balance Sheet.

Cash flow	2017 £m	2016 £m
EBITDA	70.5	65.0
Interest	(5.9)	(5.3)
Tax	(9.2)	(8.5)
Other	4.2	5.6
Cash available for discretionary spend	59.6	56.8
Capital expenditure	(35.0)	(66.0)
Acquisitions	(20.8)	(14.7)
Acquisition costs paid and other separately disclosed items	(2.4)	(1.1)
Property disposals	4.4	5.1
Dividends and share transactions	(13.2)	(15.0)
Cash flow	(7.4)	(34.9)
Non cash movement*	(0.2)	(1.0)
Net debt movement	(7.6)	(35.9)

* Prior period includes acquired debt on acquisition of G&M Leisure Limited.

Sources of finance	2017 £m	2016 £m
Bank debt	193.7	177.0
Other debt	27.7	27.7
Cash	(15.3)	(6.2)
Total net debt	206.1	198.5
Available committed facilities	35.5	52.0
% net borrowings fixed/hedged	57%	57%
Net Debt/EBITDA	2.9x	3.0x

£90.0 million of our borrowings at 1 April 2017 were hedged; £60.0 million is swapped at a blended interest rate of 1.89% (excluding bank margin), £20.0 million is subject to a cap of 2.1% and £10.0 million is subject to a cap of 1.73%. The interest rate swap agreements in place will allow us to continue to borrow a portion of our bank debt at a fixed interest rate until 2022.

The Group's financing is a mix of bank debt, debentures, cumulative preference shares, overdraft, cash and short term deposits as disclosed in notes 22, 24 and 26. Other financial assets and liabilities such as trade receivables and payables arise through the Group's operating activities. The Group does not trade in financial instruments.

Financial risks and treasury policies

The Group operates a centralised treasury function, which controls cash management and borrowings and the Group's financial risks. The objectives of the function are to manage the Group's financial risk; to secure cost effective funding for the Group's operations; and to minimise the adverse effects of fluctuations in the financial markets on the value of the Group's financial assets and liabilities, on reported profitability and on the cash flows of the Group. The Group Treasury team monitors the overall level of financial gearing weekly, with our short and medium term forecasts showing underlying levels of gearing which remain within our targets.

Transactions of a speculative nature are prohibited. The Group's treasury activities are governed by policies approved and monitored by the Board. The Group treasury team consists of the Finance Director and the Group Financial Controller.

Going concern statement

In adopting the going concern basis for preparing the financial statements, the Board has considered the business activities as set out within the Strategic Report along with the principal risks and uncertainties as detailed on pages 28 to 29. On the basis of current financial projections and having considered the facilities available, the Board are confident that the Group and Company have adequate resources to continue in operational existence for the foreseeable future. For this reason the Board considers it appropriate for the Group to adopt the going concern basis in preparing its financial statements.

Viability statement

The Directors have assessed the viability of the Group over the four year period to March 2021, taking into account the Group's current position and the potential impact of the principal risks documented on pages 28 and 29 in the Strategic Report. Based on this assessment, the Board have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period to March 2021.

Four years has been considered an appropriate period for assessment as that is the time horizon for which the Board analyses and reviews detailed strategic plans and is considered to be a good balance between providing a medium term horizon whilst not becoming speculative.

The assessment has taken into account the available debt facilities, analysed the key risks to the business and considered the effectiveness of internal controls and review processes. The Board have performed scenario modelling based on a worst case economic outlook, being a recession deeper than that triggered by the 2008/9 financial crisis.

Key factors considered include: the Group's asset backed balance sheet and strong financial position; the strength of the Group's credit and availability of finance; the ability to preserve significant cash flows by a reduction in discretionary investments; and the long term strategy and outlook of the Group.

James Douglas

James Douglas
Finance Director

8 June 2017

This year our delivery trucks have clocked up more than 720,000 miles. That's more than three times the distance to the Moon, where we would open a pub – but it's got no atmosphere.

