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Financial reporting transparency, citizens' understanding, and public participation: A survey experiment study

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Abstract

This study investigates the conditions under which transparency contributes to citizens' understanding of financial reporting and examines how this enhanced understanding is associated with public participation. To this end, a survey experiment was conducted in which two attributes of financial reporting transparency (i.e., content clarification and presentation format) were the manipulated variables, whereas citizens' understanding and public participation were the outcome variables. Results demonstrate that the provision of explanations to clarify obscure technical jargon does have a positive effect on citizens' understanding. A similar effect was found for the provision of graphical and visual representations. However, the study reveals that there is no additional benefit in simultaneously providing both explanations of technical jargon and visual aids. Furthermore, findings show that the levels of public participation are highest among the individuals who felt they understood the financial information the best, but yet possessed the lowest level of actual understanding.

1 | INTRODUCTION

Governments all around the world are involved in a number of transparency initiatives. These initiatives have been expected to produce a wide range of positive outcomes, including citizen participation (Cohen et al. 2017; Cucciniello et al. 2017; Halachmi & Greiling 2013; Manes Rossi 2019; Manes Rossi et al. 2019; Meijer et al. 2012; Piotrowski & Borry 2010; Porumbescu et al. 2017). In principle, informed citizens should be better placed to contribute to the democratic process. However, recent research has highlighted the need for further investigation, as greater transparency may not automatically translate into higher participation (Muthomi & Thurmaier 2020; Ruijer & Meijer 2020; Worthy 2015), hence the need to untangle the relationship between transparency and public participation and, particularly, to clarify the mechanisms that may link the former to the latter.

This study contributes to addressing this gap by focusing on the case of government financial reporting transparency. Drawing on the public administration literature, the study highlights a component of transparency that has often been taken for granted and has never been fully and explicitly investigated, namely information understandability. Understandability, in turn, is a crucial prerequisite for usability. For financial reports, it becomes all the more relevant, because despite widespread attempts by governments to communicate financial information to their communities, citizens are often barely able to understand and interpret such information (Manes Rossi et al. 2019). Existing literature offers limited evidence about how to improve citizens' understanding and how such understanding can affect citizens' attitudes or behaviors.

In particular, this study aims at analyzing whether transparency influences citizens' understanding of financial information and whether this enhanced understanding affects public participation. To this end, the research focuses on local governments, that is, the tier of government closest to citizens. The analysis was carried out in New Zealand, which has a long tradition in the provision of high-quality financial information to the general public (Benito et al. 2007; Laswad & Botica Redmayne 2015). In the last 30 years, the New Zealand public sector experienced accrual accounting from the early 1990s, modified IFRS from 2007 to 2012, and IPSAS-based standards after 2012. Keeping governments accountable to the general public and encouraging active public participation are considered objectives of primary importance for the country.

Our study contributes to the literature in several ways. First, it investigates a facet of transparency that has never been explicitly examined, namely the understandability of disclosed information. Second, it contributes to the literature on government accounting and reporting in that (i) it adopts citizens' viewpoint, which has mostly been neglected by extant research, and (ii) it analyses the conditions for improving understandability of public-sector financial reporting. Third, it makes an attempt to untangle the relationship between transparency and public participation by looking at the role of citizens' understanding. Fourth, with respect to citizens' understanding, it recognizes the importance of distinguishing between objective and subjective understanding, and it highlights the relevant implications.

The remainder of the paper is organized as follows. The next section illustrates the literature review and provides the motivations for the predicted associations among transparency, citizens' understanding, and public participation. The research methods are presented in Section 3, and the results are summarized in Section 4. The final two sections discuss the findings and conclude the paper by raising implications for both theory and practice, acknowledging the limitations of the study, and offering directions for future research.

2 | LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Transparency has been defined as "the ability to look clearly through the windows of an institution" (Den Boer 1998, p. 105). In a recent literature review, Cucciniello et al. (2017) grouped the definitions of transparency into two categories focused, respectively, on the availability and accessibility of information. The former relates to the breadth of available information, whereas the latter considers stakeholders' access to information. In this last respect,

Heald (2006, 2012) distinguished between upward and downward transparency (i.e., from subordinates to superiors and vice versa) and between inward and outward transparency (i.e., from outside to inside an organization, and vice versa). Over the years, a growing number of articles have been published about the role of available and accessible information in the practice of public administration (e.g., Meijer et al. 2012; Pina et al. 2007; Welch & Wong 2001; Wirtz et al. 2019; Worthy 2015). Most studies have focused on the outward dimension of transparency and on "external stakeholders (e.g., citizens) as the primary audience of government information" (Cucciniello et al. 2017, p. 36).

The availability and accessibility of information, however, do not necessarily translate into the understandability of the disclosed information. Understandability refers to the simplicity and clarity of information (Drew & Nyerges 2004; Grimmelikhuijsen & Meijer 2014; Larsson 1998) and is particularly relevant as a precondition for information usability (van Helden & Reichard 2019), so much so that it can be considered an attribute of transparency itself. In this last respect, scholars have introduced a distinction between nominal and real transparency (Heald 2006). Nominal transparency refers to available and accessible information, whereas real transparency requires that such information is understandable and, thus, processable.

Understandability becomes all the more relevant with reference to governments' financial information, as most citizens lack specialist accounting knowledge and struggle to comprehend governments' financial reports (Beattie et al. 2004; Ferry & Eckersley 2015; Grossi & Soverchia 2011; Hepworth 2017; Jones et al. 1985; Jones & Pendlebury 2004; Lapsley 1992; Stanley et al. 2008; Yusuf et al. 2013). Previous literature mainly focuses on the availability and accessibility of governments' financial information, for instance, by looking at timely publication of information, use of e-government tools, and so forth (e.g., Ebdon & Franklin 2004; Robbins et al. 2008). Conversely, research examining if such information is understandable is largely absent.

Understandability is a multidimensional phenomenon, which can be seen as a function of content complexity and presentation format (Kelton & Pennington 2012; Marcus et al. 1996; Porumbescu et al. 2017; Sweller 1994). The former has been defined as a necessary condition for understandability and represents the intrinsic complexity of the information displayed. The latter has been defined as a sufficient condition for understandability and refers to the manner in which the information is presented (Porumbescu et al. 2017). Popular financial reporting literature addresses both these aspects. The purpose of popular financial reporting is to provide the information necessary to "meet the transparency, accountability, and public participation needs of citizens" (Yusuf & Jordan 2015, p. 17). Popular reports are meant to be easily understandable by those public sector stakeholders who lack accounting and financial knowledge (Cohen & Karatzimas 2015). To this end, brevity (between two and seven pages) is usually recommended (Stanley et al. 2008). Furthermore, popular financial reports mitigate content complexity by avoiding sophisticated jargon and providing definitions and explanations of technical terms (Manes Rossi et al. 2019). As for presentation format, popular financial reports often include "visual aids such as tables, figures, and pictures where possible to convey information" (Yusuf & Jordan 2012, p. 46). Extant literature, however, does not explicitly investigate whether and how actual understanding is indeed improved. The relationship between understandability (both in its content complexity and presentation format conditions) and actual understanding is often assumed and never explicitly examined or accounted for. The present study takes an initial step toward addressing this gap.

With specific respect to content complexity, prior accounting research (Ebdon 2002; Jones et al. 1985; Kuang et al. 2020; Nguyen & Kimura 2020; Smith & Taffler 1992; Stevens et al. 1983) underlined that the sophistication of accounting language makes accounting information incomprehensible for the majority of users. The psychology literature similarly suggested that understanding is facilitated when readers are familiar with the language used in a given document. This literature has frequently examined how to improve non-expert comprehension analyzing the case of legal documents. Technical legal vocabulary is certainly one of the factors compromising understanding (Hartley 2000; Torres & Roig 2005). In that regard, Masson and Waldron (1994) found that the use of common words (which match the readers own vocabulary) and of explanations for technical terms is helpful in making concepts more accessible to readers. At the same time, the education literature highlights that good vocabulary knowledge supports reading comprehension (Schmitt et al. 2011) and that a glossary may overcome readers' difficulties in

understanding (Hu & Nation 2000). These studies suggest that less content complexity (henceforth referred to as "content clarification" to simplify the interpretation of signs) requires lower levels of mental effort to process the content. In line with these studies, in this paper, the provision of explanations as to the meaning of individual items and the minimization of obscure technical vocabulary are offered as ways to pursue content clarification and, thus, increase the understandability of information. Therefore, our first hypothesis can be stated as follows:

H1. *Content clarification increases citizens' understanding.*

As for presentation format, the psychology and education literatures list several advantages of providing graphical and visual representations. Levin (1981) provided evidence that illustrations facilitate learning and listed several functions (e.g., increased attractiveness of information; increased readers' interest; reiteration of information; concrete representation of information; integration of information; improved information processing; information retention). Marcus et al. (1996, p. 52) pointed out that graphical material "that highlights important information should reduce unnecessary cognitive effort and assist understanding." Graphical and visual representations usually require a limited amount of cognitive transformations. In other words, they present the information in such a way that "users do not have to store any data in working memory, because the necessary data are always available in the display and are easily retrieved" (Vekiri 2002, p. 282; Tait et al. 2010). Consequently, cognitive resources are available for additional processing and reasoning (Zhang & Norman 1994). Furthermore, graphical and visual representations contribute to the creation of mental images, which assist dynamic reasoning and problem solving (Larkin & Simon 1987; Vekiri 2002). They also enhance information retention and facilitate the interaction of new with prior knowledge (Cook 2006; Narayanan et al. 1995). In addition, they help readers identify the key points of a message and the relations among elements (Robinson & Kiewra 1995; Winn 1987, 1991; Yung & Paas 2015). It is worth noting that graphical representations are particularly efficient in various computational tasks, because they simplify information search and extraction, thanks to "perceptual inferences" (Larkin & Simon 1987, p. 98; Hollands & Spence 1998). Drawing on this evidence, we hypothesize that exposure to graphical and visual representations will exert a positive effect on citizens' understanding.

H2. *Exposure to graphical and visual representations increases citizens' understanding.*

According to the psychology and education literatures, readers can take advantage from the simultaneous provision of verbal and visual aids. The dual coding theory, in particular, suggests that verbal and visual information are processed and stored in two independent subsystems of working memory (Paivio 1990). Their simultaneous use can increase the capacity of working memory, because more information can be processed (Kirschner 2002). Furthermore, readers can create associations between verbal and visual information when they are presented together (Clark & Paivio 1991). Many studies have confirmed these findings and recommend presenting verbal and visual information together (Mayer & Anderson 1991, 1992; Moreno & Mayer 1999). Mayer et al. (1996), in particular, found that a summary (i.e., a short explanative text meant to reduce cognitive load) is more effective when accompanied by visual aids. This evidence is not entirely consistent with our experiment in that the verbal component in our experiment is composed of short explanations of individual items as opposed to an overarching narrative. Nevertheless, it does lead to hypothesize that the effect of content clarification on citizens' understanding may vary according to presentation format. In other words, our hypothesis is that content clarification and presentation format may interact and reinforce each other.

H3. *The positive effect of content clarification on citizens' understanding will be stronger in the presence of exposure to graphical and visual representations.*

A further issue is whether improved understanding will translate into stronger public participation, which has been defined as "the direct or indirect involvement of stakeholders in decision making" (Quick & Bryson 2016,

p. 158). In democracies, citizens are considered the most relevant stakeholders, and public participation is essential for their relationship with government. A sizeable and growing literature exists on public participation in decision making, especially in the area of public budgeting (Miller et al. 2019). This literature has mainly investigated: participation methods, and particularly the different selection, communication, decision, and authority devolution modes (Nabatchi 2012; Shybalkina 2021); the role played by the actors involved (Liao & Schachter 2018; Zhang & Feeney 2018); the conditions for a successful implementation (Barbera et al. 2016; Gordon et al. 2017); and the outcomes of citizen participation (Brun-Martos & Lapsley 2017; Hong & Cho 2018). In this last respect, scholars encourage public involvement as a way to build trust, legitimacy, and political support (Irvin & Stansbury 2004), as well as public interest and value (Nabatchi 2010; Reich 1990). Designing and incorporating public participation, however, remain a challenge for local and central governments (Bryson et al. 2013). To tackle this challenge, transparency is a frequently mentioned strategy (Cohen et al. 2017; Manes Rossi et al. 2019; Porumbescu et al. 2017), as informed citizens and civil society organizations are in a better position to engage their governments in a dialogue (Halachmi & Greiling 2013; Harrison & Sayogo 2014; Matheus & Janssen 2020). In other words, information is essential for making rational choices and, thus, a valuable contribution (Muthomi & Thurmaier 2020, p. 521). However, increasing transparency has been shown not to automatically improve public participation (Ruijer & Meijer 2020; Worthy 2015). Hence, the need to untangle the relationship between transparency and public participation and, particularly, to clarify the mechanisms that may link the former to the latter.

To this end, citizens' understanding can be viewed as a potentially crucial link. This concept has been mentioned also by some recent research about public participation. This research is particularly interesting in that it links citizens' understanding to transparency issues and recognizes its importance for meaningful participation (Brun-Martos & Lapsley 2017; Muthomi & Thurmaier 2020). With specific respect to financial reporting, the popular reporting literature points out that having informed citizens is a precondition for establishing an effective dialogue with them (Jordan et al. 2016; Weeks 2000). The logical premise is that providing financial information that the average citizen can understand is the starting point for generating interest and participation (Biancone et al. 2016; Kloby 2009; Manes Rossi et al. 2019). Drawing on this literature, our expectation is that greater transparency will encourage citizens' participation only if it succeeds in increasing citizens' understanding. Thus, our last hypothesis is as follows:

H4. *Greater citizens' understanding is associated with greater public participation.*

Figure 1 summarizes the conceptual model and the hypotheses to be tested.

3 | METHODS

To test the hypotheses, we conducted a survey experiment that followed a 2 × 2 factorial, between subject designs.

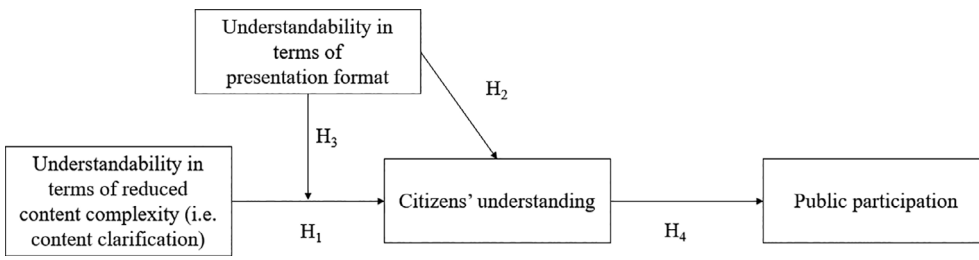

FIGURE 1 Conceptual model

3.1 | Participants

One hundred and fifty eight students from different Colleges of Massey University (Palmerston North, New Zealand) were enrolled in the experiment. Participants were randomly assigned to the different treatments in order to increase external validity (Seltman 2018). They were also asked to provide some preliminary information, namely age, gender, ethnicity, family residency, education, university college, knowledge of accounting, and voting behavior. All these characteristics were used as control variables. The randomization process was successful in that none of the aforementioned characteristics differed at the 0.05 level across the four groups.

Sample characteristics are displayed in Table 1. The average age of participants is 28. Participants aged 30 and above account for 37% of the sample and are likely to be part-time students, as Massey University offers several part-time programs, which are particularly suitable for working students. There is a prevalence of females (72%) and of New Zealand Europeans and Europeans (59%). The large majority of participants declared that their families do not live in Palmerston North (87%). On average, students have completed 2.6 years of university studies. As for University College, Massey Business School is the most represented (88%). Consistently, participants declared, on average, to be familiar with accounting and to have a good knowledge of accounting (4.42 on a 7-point Likert scale). Finally, voting behavior is in line with average New Zealand voter turnout. Descriptive statistics for control variables within the four experiment groups are shown in Appendix S1.

TABLE 1 Demographic characteristics of participants ($N = 158$)

Control variables	Mean/percentage	SD
Age	28	9.51
Gender		
Male	0.28	–
Female	0.72	–
Ethnicity		
New Zealand European and European	0.59	–
Asian and Pacific	0.32	–
Other	0.09	–
Family residency		
Palmerston North Yes	0.13	–
Palmerston North No	0.87	–
Education (completed years of university studies)	2.6	2.33
College		
Massey Business School	0.88	–
Other Colleges	0.12	–
Knowledge of accounting	4.42	1.36
Vote		
Yes	0.65	–
No	0.30	–
Maybe	0.05	–

Note: This table reports descriptive statistics for the full sample of 158 observations.

3.2 | Data collection

Massey University students were invited to take part in a study that would examine how transparency affects individuals' understanding of financial reports and, consequently, their propensity for public participation. The research project was preliminary approved by Massey University Human Ethics Committee. The survey experiment was administered online, using Qualtrics. The link to the questionnaire was provided on the university web-based course-management system, and all students were asked to voluntary contribute to the research. Students were offered an economic incentive consisting in the opportunity to win an NZ$100 Amazon voucher. Students were also guaranteed anonymity. After agreeing to participate in the research, students were provided with instructions and exposed to the Statement of Revenue and Expense of Palmerston North City Council (PNCC). Students were presented with accounting and financial data for this municipality (which are also available online on the City Council's web page) in order to stimulate their interest, as local governments are closest to citizens and Palmerston North is the local government where Massey University is located. For increased realism, formats were kept similar to those used in actual PNCC financial reports.

Each student was randomly assigned to one of the four treatment groups, as displayed in Figure 2. The financial reports to which the four treatment groups were exposed were the same, except for the level of content clarification and the presentation format. To increase internal validity and, thus, the ability to make causal conclusions (Seltman 2018), the experiment was blinded. After treatment, all students were required to respond to another set of questions, identical across all groups.

3.3 | Variable measurement

3.3.1 | Financial reporting transparency

Content clarification and presentation format were used as explanatory variables in the experiment. Each was operationalized as a dichotomous variable by means of two conditions, as also displayed in Figure 2. Content

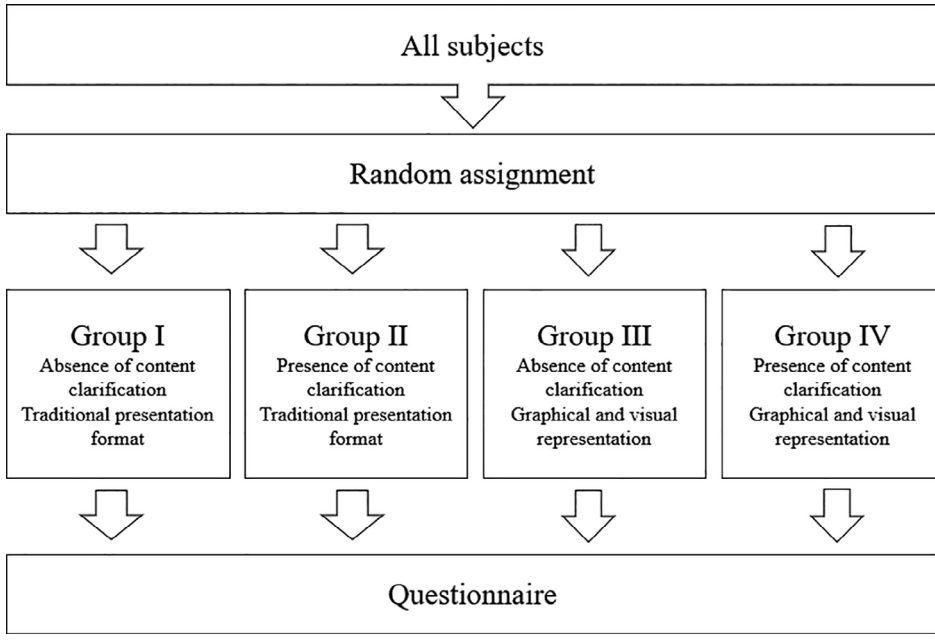

FIGURE 2 Experimental design

clarification was characterized as the provision of comments to explain and exemplify technical jargon. In other words, the financial information provided to participants was the same under both conditions. The only difference was that, under the "presence of content clarification" condition (content clarification = 1), additional explanations were provided to clarify the meaning of technical terms, thus enhancing understandability. Conversely, none of these explanations was provided under the "absence of content clarification" condition (content clarification = 0). As for presentation format, in the graphical and visual representation condition (presentation format = 1), financial statements were enriched by graphs and charts. Conversely, in the traditional presentation format condition (presentation format = 0), participants were given financial statements without any visual aids. The stimuli used in the experiment are available in Appendix S2.

3.3.2 | Citizens' understanding

Understanding can be viewed as a two-dimensional construct comprising objective and subjective understanding (Pintrich 1999). Objective understanding is the individuals' actual capacity to comprehend and interpret the information conveyed. Subjective understanding is the individuals' self-perception of their understanding. The psychology literature underlines that subjective understanding is very important, because it enhances aspirations, commitment, and accomplishment (Bandura 1993).

In previous literature, objective understanding is commonly measured by asking individuals to perform a task (Grunert & Wills 2007), which often consists of answering a series of close-ended questions (Mangen et al. 2013). The higher the number of correct responses, the greater the objective understanding. Consistently, in this study, participants were asked five multiple-choice questions, and the test score was used to measure objective understanding. Each question offered an "I do not know" option to discourage respondents from guessing. "Do not know" responses were assigned a neutral score, whereas wrong answers were assigned a negative score. In line with previous literature about financial information users' needs (IPSASB 2013; Jordan et al. 2016; Lapsley 1992; Manes Rossi et al. 2019), the questions focused on the local government's revenues and expenditures. All questions covered themes, which could be potentially interesting to the readers. The precise wording of each question is presented in Appendix S3.

Subjective understanding was measured using two items as suggested by Porumbescu et al. (2017). First, respondents were asked to rate their level of understanding using a 7-point Likert scale (1 = not understood at all, 7 = understood very well). Second, they were asked to rate their confidence that their answers were correct (1 = not confident, 7 = very confident). These items are also displayed in Appendix S3. A factor analysis was then conducted. The resulting scale of subjective understanding showed good internal consistency (Cronbach's alpha = 0.852). The corresponding variable was generated by taking the mean of the relevant item scores.

3.3.3 | Public participation

Prior literature identified different levels of public participation, "depending on the characteristics of the deliberation process and the distribution of responsibility between governments and citizens for the final decision" (Barbera et al. 2016, p. 29). In particular, three levels of participation can be distinguished (Moynihan 2003, 2007; Ruijer et al. 2017): pseudo, partial, and full participation. Pseudo participation implies a one-way communication (Nabatchi 2012); citizens are recipients of information and dialogue opportunities are limited. Partial participation involves citizen consultations, but it has limited impacts on public decisions. It is usually aimed at investigating citizen preferences (across a set of pre-defined alternatives) about public issues. Finally, under full participation, citizens "have an authentic discourse with government" (Moynihan 2007, p. 61); this is the highest possible stage of involvement.

In this study, public participation was measured by asking subjects if they would be willing to take part in three different initiatives, each reflecting one of the levels described above. The three items use a 7-point Likert scale (1 = very unlikely, 7 = very likely). The precise wording of the questions is presented in Appendix S3. A factor analysis was then performed and, since the uniqueness of each item was very low, the items were combined into one construct. The resulting scale of public participation showed good internal consistency (Cronbach's alpha = 0.890). The corresponding variable was generated by taking the mean of the relevant item scores.

An overview of the variables used in the study is presented in Table 2.

4 | RESULTS

4.1 | Descriptive statistics

The descriptive statistics for the outcome variables are presented in Table 3, for the entire sample and also separately for each group and experimental condition. For the purposes of interpretation, it is important to notice that objective and subjective understanding were not measured over the same scale.

4.2 | Regression and marginal analyses

The hypotheses were tested using regression analysis. The presence of heteroscedasticity was detected using the Breusch–Pagan test and controlled for with specifications that produced robust SE estimates.

For the first three hypotheses, the dependent variables were objective and subjective understanding (Models 1 and 2, respectively). The results are presented in Table 4.

Exposure to content clarification significantly improves individuals' objective ($p = 0.002$) and subjective understanding ($p = 0.002$). This is consistent with the descriptive statistics (Table 3) whereby both objective and subjective understanding were averagely higher among subjects who were exposed to content clarification (means 3.35 and 5.68, respectively, for objective and subjective understanding) relative to their peers who were not (means 2.44 and 5.00). Therefore, Hypothesis 1 is supported using both objective and subjective understanding as the outcome variable.

TABLE 2 Variable measurement

Manipulated variables	Measurement
Content clarification	Dichotomous variable
Absence of content clarification	No explanation provided (codified as 0)
Presence of content clarification	Provision of comments to explain and exemplify technical jargon (codified as 1)
Presentation format	
Traditional presentation format	No graphs nor charts provided (codified as 0)
Graphical and visual representation	Provision of graphs and charts (codified as 1)
Outcome variables	**Measurement**
Objective understanding	Test score (five multiple-choice questions)
Subjective understanding	Factor analysis (two items on a 7-point Likert scale)
Public participation	Factor analysis (three items on a 7-point Likert scale)

TABLE 3 Descriptive statistics for the outcome variables

Variables		Objective understanding		Subjective understanding		Public participation	
Groups	***N***	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Group I	42	1.95	2.27	4.61	1.45	3.69	1.59
Group II	35	3.49	1.96	5.61	1.41	3.78	1.76
Group III	44	2.91	1.80	5.39	1.01	3.76	1.60
Group IV	37	3.22	1.55	5.74	1.34	3.79	1.76
Groups with no content clarification (I, III)	86	2.44	2.09	5.00	1.30	3.73	1.58
Groups with content clarification (II, IV)	72	3.35	1.75	5.68	1.37	3.79	1.75
Groups with traditional presentation format (I, II)	77	2.65	2.26	5.06	1.51	3.74	1.66
Groups with graphical and visual representations (III, IV)	81	3.05	1.69	5.55	1.18	3.77	1.66
Sample	158	2.85	1.99	5.31	1.37	3.75	1.66

Note: The table illustrates the descriptive statistics for the outcome variables, namely objective understanding, subjective understanding, and public participation. The descriptive statistics are presented for the whole sample ($N = 158$) and also separately for each group and experimental condition.

TABLE 4 Tests of between-subjects effects

	Model 1—Objective understanding Coeff., Robust SE	**Model 2—Subjective understanding Coeff., Robust SE**
Number of observations	158	158
R^2	0.09	0.11
Content clarification	1.533***	1.007***
	0.482	0.327
Presentation format	0.956**	0.779***
	0.444	0.271
Content clarification × presentation format	−1.226**	−0.650
	0.609	0.423
Constant	1.952***	4.607***
	0.351	0.225

Note: The table reports the regression results for the impact of content clarification and presentation format on objective (Model 1) and subjective understanding (Model 2). Both variables are dichotomous. The models also include the interaction between the two variables.

*, **, and *** denote significance at 0.1, 0.05, and 0.01 level, respectively.

Presentation formats including visual aids also significantly improve participants' objective ($p = 0.033$) and subjective understanding ($p = 0.005$). Once again, this is consistent with the descriptive statistics (Table 3) whereby both objective and subjective understanding were averagely higher among subjects who were provided with graphical and visual representations (means 3.05 and 5.55, respectively, for objective and subjective understanding) relative to their peers who received the traditional presentation format (means 2.65 and 5.06). Therefore, Hypothesis 2 is also supported using both objective and subjective understanding as the outcome variable.

As for whether presentation format moderates the relationship between content clarification and citizens' understanding (Hypothesis 3), the interaction between content clarification and presentation format was found to be significant only with respect to objective understanding ($p = 0.046$). Remarkably, the sign was negative.

More specifically, marginal analysis (Figure 3) highlighted a positive and statistically significant effect of content clarification on objective understanding only when participants are provided with a traditional presentation format (+1.53, $p = 0.001$). Conversely, content clarification has no significant effect for participants presented with graphical and visual representations ($p = 0.41$). Correspondingly, graphical and visual representations greatly enhance objective understanding in the absence of content clarification (+0.96, $p = 0.033$), but they have no significant effect for participants receiving content clarification ($p = 0.519$). In other words, both content clarification and visual aids positively affect objective understanding. However, since objective understanding is not statistically different across treatment groups II, III, and IV, there is no additional benefit in simultaneously providing both explanations of technical jargon (i.e., content clarification) and graphs and charts (i.e., graphical and visual representations). This result does not support Hypothesis 3.

For subjective understanding, the interaction between content clarification and presentation format was not significant ($p = 0.12$). Nevertheless, we performed a marginal analysis to further investigate the issue. The marginal analysis highlighted a positive and statistically significant effect of content clarification on subjective understanding when participants are provided with a traditional presentation format (+1.01, $p = 0.002$). Conversely, content clarification has no significant effect for those presented with a graphical and visual representation ($p = 0.185$). Correspondingly, a graphical and visual representation greatly enhances subjective understanding in the absence of content clarification (+0.78, $p = 0.005$), but it has no significant effect on those participants receiving content clarification ($p = 0.691$). Similar to the findings for objective understanding, in other words, both content clarification and graphical and visual representations positively affect subjective understanding, but providing them simultaneously yields no additional benefits. Once again, Hypothesis 3 is not supported.

The last step in the analysis was to test Hypothesis 4, whereby greater understanding is expected to result in greater public participation. To this end, correlations were initially computed among objective understanding, subjective understanding, and public participation (Table 5). Objective understanding and public participation were found to be negatively correlated. Conversely, the correlation between subjective understanding and public participation was positive.

As for regression analysis, Table 6 displays the results from linear regression models predicting public participation. For the sake of readability, estimates of those control variables that were insignificant at 5% are not tabulated. The table shows that objective ($p = 0.001$) and subjective ($p = 0.017$) understanding remain oppositely associated with public participation even after controlling for potential confounders. Furthermore, the interaction between objective and subjective understanding was negative ($p = 0.059$).

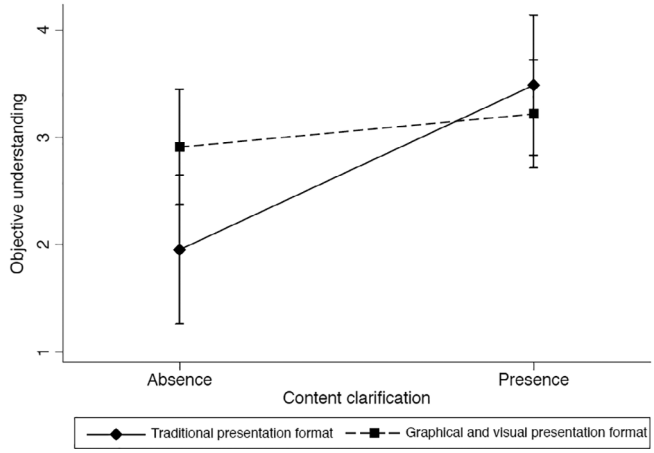

FIGURE 3 Two-way interaction between content clarification and presentation format on objective understanding

In this last respect, marginal analysis (Figure 4) highlighted a statistically significant negative effect of objective understanding on public participation regardless of whether subjective understanding is low (−0.50, $p = 0.057$) or high (−1.33, $p = 0.001$). It also showed a statistically significant positive effect of subjective understanding on public participation, but only when objective understanding is low (+1.22, $p = 0.001$). This indicates that the potential positive impact of subjective understanding on public participation is most pronounced for those who understand financial information the least. Conversely, when objective understanding is high, public participation is seemingly unaffected ($p = 0.366$) by the level of subjective understanding.

For robustness, since the three items through which public participation was measured reflect three different levels of participation, the regression was re-run separately for each item. The signs and significance of objective and subjective understanding were confirmed across all three items. The negative interaction, on the contrary, remained significant only for the lightest ("pseudo") form of participation.

TABLE 5 Correlation matrix ($N = 158$)

		1	2	3
1	Objective understanding	1.000		
2	Subjective understanding	0.502***	1.000	
3	Public participation	−0.196**	0.137*	1.000

Note: The table shows the Pearson correlation coefficients among objective understanding, subjective understanding, and public participation.
*, **, and *** denote significance at 0.1, 0.05, and 0.01 level, respectively.

TABLE 6 Regression analyses predicting public participation

	Public participation Coeff., Robust SE
Number of observations	158
R^2	0.254
Objective understanding	−0.230*** 0.065
Subjective understanding	0.292** 0.121
Objective understanding × subjective understanding	−0.077* 0.040
Gender: female	0.565* 0.287
Ethnicity: Asian and Pacific	0.850*** 0.278
Ethnicity: other	1.785*** 0.509
Constant	2.922*** 0.761

Note: The table reports the regression results for the impact of objective and subjective understanding on public participation. In these final iterations, all non-significant control variables were dropped. Suppressed estimates: age, family residency, education, college, knowledge of accounting, and vote.
*, **, and *** denote significance at 0.1, 0.05, and 0.01 level, respectively.

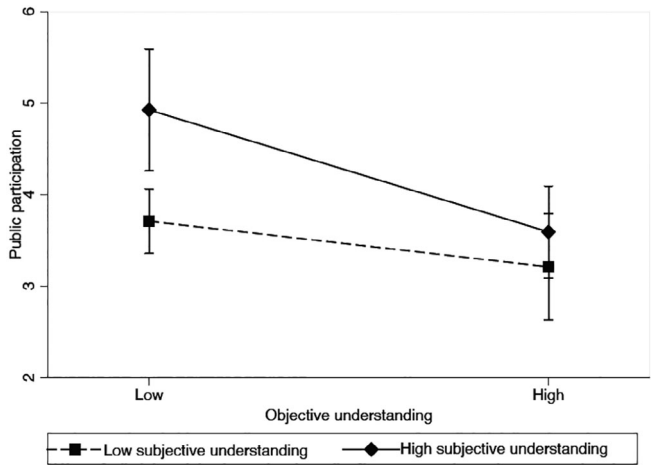

FIGURE 4 Two-way interaction between objective and subjective understanding on public participation. High and low are calculated at one SD above and below the mean, respectively

The findings, thus, provide mixed support for Hypothesis 4. On the one hand, we found a negative association between objective understanding and public participation. On the other, in line with Hypothesis 4, we found that greater subjective understanding predicts greater public participation, although this only holds for respondents with poor objective understanding.

5 | DISCUSSION

The aim of this study was to investigate the conditions under which transparency contributes to citizens' understanding of financial reporting and whether this enhanced understanding is associated with public participation. To this end, a survey experiment study was conducted. The manipulated variables were two attributes of financial reporting transparency, namely content clarification and presentation format. The outcome variables were citizens' understanding and public participation.

The findings of this paper reveal that content clarification (obtained through the provision of explanations about accounting concepts and technical jargon) has a positive impact on citizens' understanding, both in its objective and subjective components. Similar results were found with reference to the provision of graphs and charts. Therefore, Hypotheses 1 and 2 were both supported.

Contrary to expectations, however, content clarification and presentation format were not found to reinforce each other, thus failing to support Hypothesis 3. In particular, when citizens' understanding is measured by objective understanding, content clarification and presentation format significantly interact in determining understanding, but this interaction is negative. A possible explanation for this finding is that integrating information from two sources (textual explanations and graphical representations) is in itself a highly demanding cognitive task, which may result in greater complexity (Vekiri 2002). In our experiment, however, the pieces of information provided to participants were small and simple. An alternative explanation, therefore, is that too many "attempts" to reduce cognitive efforts (Marcus et al. 1996) may not yield the intended additional benefits: once the content is clarified by means of explanations, visual aids do not add much to understanding, and vice versa.

The paper also investigated the relationship between citizens' understanding and public participation. The results provide partial support for Hypothesis 4. In line with Hypothesis 4, a positive relationship was found to exist between subjective understanding and public participation. On the contrary, objective understanding was found to

negatively affect citizen participation. This latter result is quite surprising, as it contradicts the expectation that informing citizens is a key precondition for fostering participation. Furthermore, objective and subjective understanding were found to negatively interact in predicting public participation, in general, and with specific respect to "pseudo" participation. Interestingly, the propensity toward public participation is seemingly greatest among those who have high levels of subjective understanding, but low levels of objective understanding: in other words, the people who feel they have understood financial information the best, but, in fact, have not. This finding is consistent with the Dunning–Kruger effect, which predicts a tendency for incompetent individuals to overestimate their ability and performance (Kruger & Dunning 1999). This gap between perceived and real understanding suggests that subjective understanding can play an important role in explaining public participation. The relevance of subjective understanding in driving public participation may depend on its ability to nurture individual self-efficacy (Bandura 1993). Thus, the choice to participate is explained by the sense of self-efficacy stemming from subjective understanding, rather than by rational motivations produced by an objective understanding of financial information.

6 | CONCLUSIONS

6.1 | Contributions

The paper offers some significant research contributions regarding the complex relationships among transparency, citizens' understanding, and public participation.

More specifically, our study provides an empirical contribution to the attempts, made by previous literature, to conceptually distinguish between nominal and real transparency and to explain the conditional implications of transparency (Heald 2006; Porumbescu et al. 2017). In this respect, the paper highlights the importance of understandability. It also provides evidence about two features of information that can significantly foster understandability, namely content clarification and visual aids. At the same time, it raises some doubts about the simultaneous use of multiple strategies to reduce cognitive efforts, as their combination may not produce additional benefits and may end up being redundant.

The paper also makes several contributions to the literature on government accounting and reporting. More specifically, we enrich prior literature by adopting a citizen perspective. Although citizens—as taxpayers, service consumers, and voters—can be considered among the most important users of public-sector financial reports, their role is still under-researched (van Helden & Reichard 2019). In addition, by drawing upon the psychology and education literatures, we examined some of the characteristics that are frequently indicated for popular reporting (Secinaro & Biancone 2015; Stanley et al. 2008; Yusuf & Jordan 2012), but whose impact on understanding has never been fully demonstrated.

The last key research contribution relates to the relationship between transparency and public participation by looking at the effect of objective and subjective understanding on citizen willingness to be involved in participatory processes. In particular, our results seem to show that the choice to participate is explained by the sense of self-efficacy stemming from subjective understanding, rather than by rational motivations produced by from the objective understanding of financial information.

The study offers also some relevant policy implications.

Currently, financial information is publicly available on many governments' websites. However, easy access to information is not enough to bring about a more informed and understanding citizenry. Our findings may be helpful for governments (and possibly standard setters) to identify the desirable features that can make financial reporting more comprehensible to citizens. Governments and standard setters should also be aware that the simultaneous use of multiple strategies to enhance understandability may not provide the expected additional benefits. These implications may also offer guidance in the development of a supranational (minimum) template for reporting to citizens.

Another relevant policy implication derives from the relationship between citizens' understanding and public participation. As mentioned, we found that those with the highest propensity toward public participation tended to have the lowest scores of objective understanding, combined with the highest levels of subjective understanding. This highlights the importance of citizens' self-efficacy (Bandura 1993). It also suggests that participating individuals may need to be actively supported in better understanding the issues at hand if they are to offer a meaningful contribution. Local and central governments that are actively involved in designing and incorporating public participation should be aware of these results. Participating individuals' objective understanding may be also increased through the participative process itself: as pointed out by Franklin and Ebdon (2007), public participation helps citizens' understanding and, consequently, reinforces citizens' active role. The relationship between understanding and participation may, thus, develop into a virtuous circle where greater participation improves citizens' understanding, which, in turn, boosts participation (Muthomi & Thurmaier 2020). At the same time, citizens' need for support and guidance raises the thorny issue of manipulation by government. While the distinction between competence development and indoctrination is self-evident in theory, the boundary is likely to be much fuzzier in practice.

6.2 | Limitations and future research directions

As any research, this study is not free of limitations. A first limitation refers to external validity and to the generalizability of results, as enrolled participants were all students from a single university (mainly a single college) in a single city. However, highly educated citizens are likely to be the target audience of government accounting and financial information. Furthermore, all survey experiments are characterized by lower external validity, as the analysis reports behavioral intentions and not observed behaviors. A second limitation pertains to construct validity. The literature about content clarification and presentation format is underdeveloped and does not offer validated procedures to manipulate these concepts. Therefore, we were unable to include reliable manipulation checks in our analysis. Some further limitations are related to the design of the experiment. Participants were only exposed to simple pieces of financial information and not to the whole PNCC financial report. This was intended to mimic the provision of popular reports, but it may have driven some of the findings. Furthermore, a raffle of one Amazon voucher was used to incentivize students to participate in the study. In principle, this may have affected respondent behavior to some degree, although we view this as too weak an incentive to jeopardize the validity of the study (Mohr and Kearney, 2021, p. 24). Finally, the survey was designed to be filled in on a laptop. However, respondents may have used other devices (e.g., smartphones). This may have amplified the perception of complexity of the information they were exposed to, especially when both explanations and graphical and visual representations were provided.[1]

The results and limitations of this study suggest several future research avenues. Research in different and broader contexts should expand the results of this study. The analysis of actual behaviors would improve the robustness of the findings. An intriguing line of inquiry would be whether explanations and visual aids do reinforce each other when the financial information to be presented is more comprehensive and complicated. Furthermore, future research should focus on the way in which the use of phones and other small electronic devices affects citizens' understanding of government information. It would also be interesting to extend the analysis to non-financial information in order to examine whether it elicits greater levels of citizen interest and public participation. Finally, it would be fruitful to investigate whether the effects of transparency and citizen understanding on public participation are influenced by the characteristics of the municipality (e.g., financial distress and governance arrangements).

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

ENDNOTE

[1] The authors are thankful to one of the referees for suggesting one of the possible limitations of the study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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