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The Influence of Nudging Strategies on Decision-Making: A Behavioural Study of Generation Z's Public Finance and Budgetary Preferences



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Abstract

The study's purpose is to analyse the influences of nudge strategies linked to public borrowing, tax responsibilities, social equity, economic welfare, and state budget engagement on the behavioural intentions of Generation Z undergraduates. The study employs two distinct face-to-face cluster interviews and nine experimental scenarios to examine how the framing effect, a nudging strategy, influences the public financial decisions of young adults from various universities. This experimental approach provides valuable insights into behavioural public finance by integrating psychological and economic principles. According to the findings, the framing effect significantly influences the behavioural intentions of Generation Z undergraduates. Furthermore, they reveal that effective nudges can enable these young adults to make more informed decisions about public finance and budgeting. This study is among the few that systematically performs an experimental design to examine the effects of various nudging approaches on Generation Z's public finance and budgeting decisions. It also offers practical implications for policymakers, educators, and financial institutions, which aim to enhance budget awareness and literacy and encourage responsible financial behaviour of Generation Z.

Keywords

Behavioural Public Finance · Budgeting · Generation Z · Framing Effect · Nudge

JEL Classification

H60 · H61 · I23 · A23



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The Influence of Nudging Strategies on Decision-Making: A Behavioural Study of Generation Z's Public Finance and Budgetary Preferences

Competence in financial areas, such as financial, tax, and budget literacy, significantly increases the effectiveness of decision-making processes at both individual and societal levels. Individuals' financial literacy is recognised as a necessary skill to navigate an increasingly complex economic environment. For this reason, many studies have explored various strategies to strengthen individuals' understanding of financial concepts, with a special emphasis on university students at a formative stage in developing long-term financial behaviours (Ansong & Gyensare, 2012; Formanova et al., 2021; Machova et al., 2019; Sebastião et al., 2024; Khurshid et al., 2024). Within this context, behavioural economics has gained prominence as an approach that examines how cognitive biases and psychological factors influence decision-making. One of the most widely discussed concepts in this field is nudging, which refers to subtle interventions designed to steer individuals towards more beneficial choices without restricting their freedom of choice (Thaler & Sunstein, 2008). In public finance and budgeting, nudging strategies have been increasingly used to encourage responsible financial behaviour, such as savings, tax compliance, and prudent budget management recently (Hasseldine & Hite, 2003; Niemeyer et al., 2018).

The decision-making processes of individuals, particularly in the context of public finance and budgeting, have progressively been explored through the lens of behavioural economics. Traditional economic models assume that individuals act rationally, maximising their utility based on available information. However, behavioural economics challenges this assumption by emphasising the role of cognitive biases, heuristics, and psychological influences on decision-making (Kahneman & Tversky, 1979). One of the most influential concepts emerging from this field is Nudge Theory, developed by Thaler and Sunstein (2008), which suggests that subtle modifications in choice architecture can systematically influence individuals' decisions without restricting their freedom of choice. While Nudge Theory has been widely applied in areas such as health, consumer behaviour, and environmental policies, its implications for public finance and budgeting remain relatively underexplored, particularly among younger populations such as Generation Z (Jin et al., 2020; Keller & Szakál, 2023).

Despite the growing body of literature on nudges, several research gaps persist. First, while previous studies have examined the role of nudges in shaping consumer behaviour (Levin & Gaeth, 1988), tax compliance (Milkman et al., 2011), and public good provision (Baker II et al., 2009), limited attention has been given to their specific effects on public finance decision-making among younger demographics. Given that Generation Z is emerging as a key stakeholder in economic and policy discussions, it is essential to understand how nudging strategies influence their financial and budgetary choices. Second, while studies have explored the impact of framing effects on financial decision-making (Mountain et al., 2020; Weijers et al., 2021), there is a lack of empirical research applying an experimental design to systematically investigate the effects of different nudging approaches—both positive and negative—on budget-related decisions. Lastly, existing research has largely overlooked the cultural and institutional context of public finance decision-making, particularly in developing economies, where socioeconomic and policy frameworks may shape the effectiveness of nudges in unique ways.

Afonso and Mahr (2024) emphasised the need for further research on the relationship between nudge theory and behavioural public budgeting and financial management. This study addresses these shortcomings using an experimental design to examine the nudge effect on the public finance and budgeting decisions of Generation Z undergraduate students in Türkiye. It systematically investigates how exposure

to nudging practices affects decision-making outcomes by conducting face-to-face cluster interviews with undergraduates from multiple public universities. Through applying nine carefully designed scenarios, the study compares the decision-making behaviour of students exposed to different types of nudges, i.e. positive and negative framing techniques, with those never nudged. This experimental approach measures how nudges affect students' public finance and budget preferences and provides policy recommendations based on the findings.

By situating the research within the broader literature on behavioural public finance, this study significantly contributes to the theoretical and practical debate on the effectiveness of nudge strategies in financial decision-making. The findings provide empirical evidence on how choice architecture affects young individuals' budget participation, transparency, and fiscal responsibility. Moreover, the study provides valuable insights for policymakers, educators, and public finance experts seeking to design interventions that promote financial literacy and responsible budgeting behaviours among new generations and offers a nuanced perspective on the role of nudges in shaping economically sound decision-making processes. The following section presents the theoretical framework. The second section reviews the literature on nudging strategies and individuals' behavioural intentions in various fields. After this, we detail our methodology and then present the findings. In the concluding sections, we discuss these results, outline policy recommendations, and summarise our conclusions.

Theoretical Framework

Behavioural economics claims that individuals' economic decisions are not solely guided by rational self-interest but are also shaped by psychological, cognitive, and social factors. Unlike traditional economic theories, behavioural approaches emphasise the systematic biases and heuristics individuals employ in their decision-making processes (Kahneman & Tversky, 1979). This field investigates how individuals process information, perceive risks, and make choices, offering more nuanced and dynamic frameworks beyond conventional models. In this context, Nudge Theory is a significant approach that advocates for environmental adjustments to improve individuals' decision-making processes. Richard H. Thaler and Cass R. Sunstein systematically framed the theory in their 2008 publication, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (Thaler & Sunstein, 2008).

A nudge can be defined as environmental or structural changes aimed at facilitating or positively influencing individuals' decisions without restricting their freedom of choice. These changes assume that individuals often rely on cognitive biases and bounded rationality in decision-making (Tversky & Kahneman, 1974). Nudges are implemented through choice architecture, which reshapes the decision-making environment to guide individuals towards beneficial choices without restricting their freedom. The Prospect Theory, developed by Kahneman & Tversky (1979), has significantly contributed to explaining individuals' decision-making behaviour under risk. The theory asserts that individuals perceive losses and gains differently and decide to avoid losses. Similarly, behavioural patterns such as default effects and time inconsistency, play a critical role in the nudge approach.

Löfgren & Nordblom (2020), who address the lack of theoretical work in the nudge literature by offering a structured model for decision-making processes, presented a theoretical framework to explain individual decision-making mechanisms and responses to behavioural interventions, particularly nudges. They concluded that nudges are most effective in inattentive decision-making scenarios. It emphasised that altering the choice architecture can guide behaviour without significantly changing economic incentives. Hummel and Maedche (2019) quantified nudge effect sizes and identified conditions for their effectiveness through a systematic review (2008-2018) and meta-analysis. They found a median effect size of 21%, emphasising the role of context, nudge category, and settings, while noting digital nudging as an emerging research field.

From a different perspective, Grüne-Yanoff et al. (2018) not only differentiate nudges and boosts theoretically but also examine them through mechanistic models. This approach helps evaluate the applicability and effectiveness of these two policy types structured. Accordingly, the success criteria for nudges and boosts policies are different, and both approaches can be effective or ineffective depending on specific contextual conditions. For instance, nudges rely on the stability of environmental triggers, whereas boosts depend on individuals' motivation to learn new cognitive strategies.

Criticisms of Nudge Theory often focus on subjective ethical boundaries and the risk of individuals being manipulated. For example, in the study by John (2023), the ethics of "nudge" policies in public decision-making was examined and compared standard nudges—subtly influencing individuals without their awareness—with "nudge+" approaches that aim to boost awareness and autonomy. Accordingly, it argued that "nudge+" policies are often ethically preferable. On the other hand, increasing awareness is not always ideal, as automatic guidance can sometimes be more beneficial than requiring complex decision-making. Additionally, contextual and cultural differences can limit the effectiveness of nudge strategies (Loewenstein et al., 2013). However, these criticisms do not eliminate the fact that Nudge Theory is a multi-faceted approach that demonstrates the practical implications of behavioural economics. Efforts to shape individuals' decision-making environments for better choices hold theoretical and practical potential. In this context, the behavioural biases underlying the Nudge Theory provide a crucial foundation for understanding how framing techniques influence individuals' decision-making processes.

Framing refers to presenting specific information positively or negatively to influence individuals' decision-making behaviour. The seminal work on framing effects conducted by Tversky & Kahneman (1981) demonstrated that preferences could vary significantly depending on how identical information was presented. Positive framing highlights beneficial outcomes, unlike negative framing, which emphasises undesired outcomes and is particularly effective in public policy communication, as individuals are often susceptible to how information is framed (Zheng et al., 2023). Furthermore, the emotional mechanisms underlying the framing effect in decision-making determine how gain and loss frames influence risk preferences. Emotional attraction is central to the framing effect to ensure gains and aversion to sure losses. Methodological factors, such as the probability of outcomes, significantly influence the effect's strength (Gosling & Moutier, 2019).

Literature Review and Hypotheses

The literature on the effects of nudge strategies, including positive or negative framing, has highlighted its applicability across various domains.

Studies on students and the framing effect

Several studies have been conducted to examine the framing effects on the behavioural decisions of students within various scientific fields in the 1980s. For example, Levin & Gaeth (1988) analysed framing effects on the consumer behaviours of students, showing that positive information was perceived more favourably. Brendl et al. (1995) investigated a study of the framed appeals designed to encourage college students to eat breakfast. Mountain et al. (2020) measured the sensitivity of financial decisions related to student loans to gender bias and framing effects based on data collected from 1,847 participants in the United States. Weijers et al. (2021) focused on evaluating the effects of different types of nudging on the learning process, student motivation, and long-term behavioural changes. Keller & Szakál (2023) also provided large-scale experiment testing to measure students' expected effort in preparing for an exam, highlighting the contradictions between two key theories in behavioural economics and psychology: *prospect theory* and *regulatory focus theory*.

Studies on public policy decisions and the framing effect

Recent studies have explored the implications of framing on public policy decisions. Kirchler & Maciejovsky (2001) examined the psychological factors influencing tax compliance, focusing on the interplay between trust in authorities and the power of enforcement. McCaffery & Baron (2004) examined how framing effects shape public perceptions of tax policies, especially those involving household composition, marriage, and children. They found that framing significantly influences tax policy preferences and perceptions of fairness. Chong and Druckman (2007) also discussed the effects of framing on political decision-making processes and found that positive framing could enhance public support. Baker II et al. (2009) added to the experimental literature on public goods provision by testing the effects of different donation-matching mechanisms on individual contributions. While Kuhn (2013) observed that positively framing public expenditure significantly improved perceived service quality, John (2023) explored the ethical dimensions of "nudge" policies in public decision-making.

Studies on public finance and budgeting and the framing effect

In addition to these studies, the framing effect has become a key reference point in public finance and budgeting. For example, Milkman et al. (2011) found that presenting tax filing messages with positive framing substantially improved tax compliance. Dolan and Metcalfe (2015) highlighted that presenting abstract concepts like budget information in a positive frame could enhance public approval. Anderson (2017) conducted an experimental study on individuals' tendencies to report the use of tax in behavioural economics and public finance. By examining the effectiveness of the "nudge" effect on tax compliance, he provides evidence on ways governments can increase indirect tax collection. Boun My & Ouvrard (2019) examined economic instruments in supporting environmental public goods. They compared the effects of "nudges" and "taxes" based on individuals' environmental sensitivity and demonstrated that environmental sensitivity is a key determinant in responses to economic incentives. In addition, Alexander & Balavac-Orlic (2022) indicated that academics and policymakers should benefit from positive and negative framing and emphasise their effects in accounting for how respondents' financial and tax literacy moderates their tax morale. Kuroki and Sasaki (2023) conducted a survey experiment on budget officers employed by 1,741 local governments in Japan. They searched how budget analysts make decisions in public budgeting, mainly revealing how time discounting rates influence budget allocations. Afonso and Mohr (2024) explored the choice architecture of government budget simulations and highlighted how design elements in these simulations influenced decision-making processes beyond simple nudges. They provided insights into how behavioural intentions can be leveraged to enhance public engagement and decision-making in governmental budgeting processes.

Studies on public finance and budgeting, young adults, and the framing effect

Studies on young adults' awareness and attitudes towards public finance and budgeting have recently increased. Cross-cultural comparisons indicated that cognitive biases and framing effects shape young adults' decision-making processes (Jin et al., 2020). In this context, presenting budgetary issues using positive framing strategies can enable young individuals to make more informed choices. Garcia et al. (2019) conducted a notable study examining the effects of positive framing on youth attitudes towards public finance. It demonstrated that highlighting the positive aspects of public spending led to more favourable perceptions among young individuals, thereby increasing their trust in public finance. The study also found that such approaches were particularly practical for Generation Z. Similarly, Lüdtkke et al. (2021) found that young individuals were more likely to support environmentally conscious public budget elements, such as taxes, when communicated using positive messages. Furthermore, another study showed that using simple and positive language in national budget communications helps young adults understand budget dynamics

and increases their interest in fiscal processes. Its findings underscore the significant potential of positive framing strategies to enhance the effectiveness of fiscal policies targeting young adults (Smith et al., 2020).

Hypotheses

The literature review provides strong evidence for the influence of framing effects on behaviour intentions, public finance, and budgeting. Building on this foundation, the theoretical framework of the study is based on the idea that behaviour can be shaped through framing. Consequently, we have developed the following hypotheses to achieve the study's aim:

H₁: The framing of public borrowing, whether positive or negative, significantly influences the behavioural intentions of Generation Z undergraduates.

H₂: The positive framing of tax responsibilities and their role in financing public services significantly influences the behavioural intentions of Generation Z undergraduates.

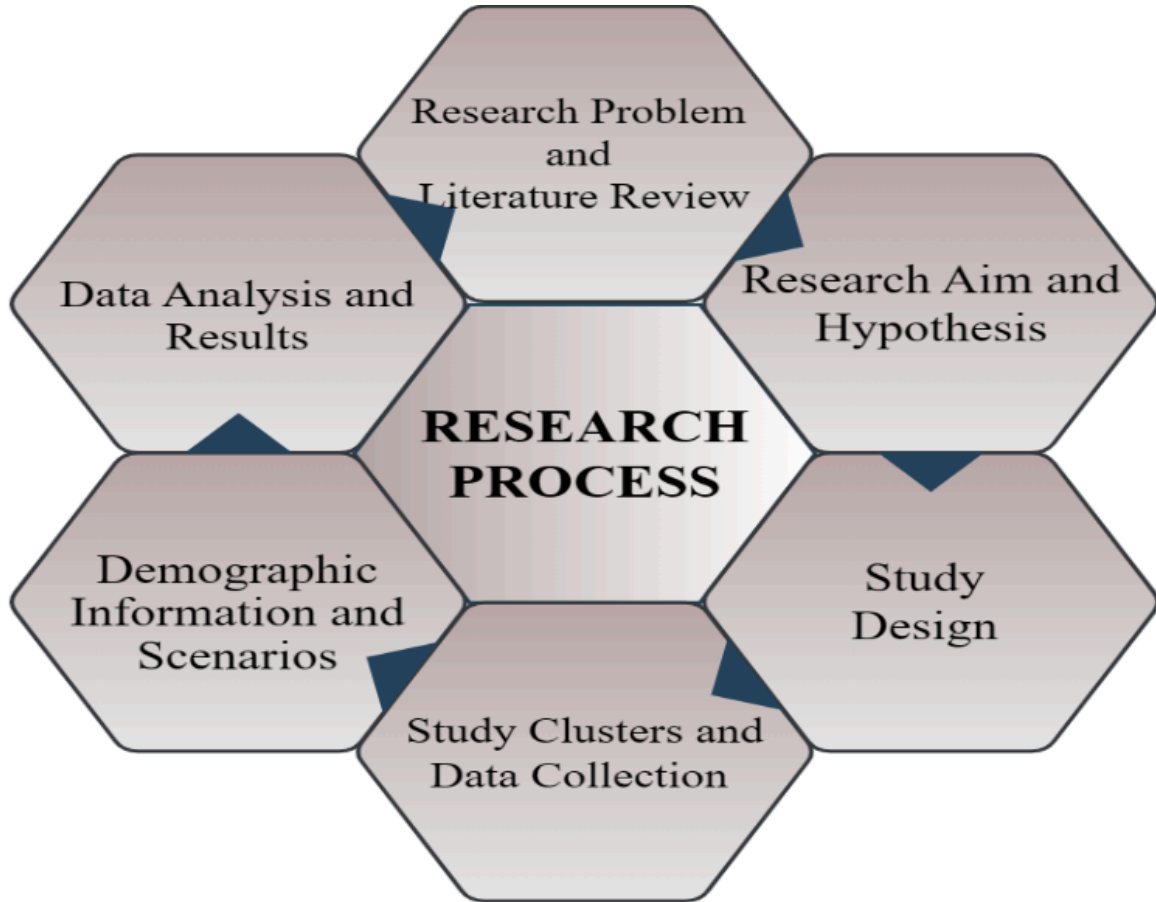
H₃: The positive framing of taxes as essential for social equity and economic welfare significantly affects the behavioural intentions of Generation Z undergraduates.

H₄: The positive framing of comprehensive state budget engagement significantly influences the behavioural intentions of Generation Z undergraduates.

Methodology

We used an experimental design involving face-to-face interviews with undergraduates in Eskişehir Osmangazi University (ESOGU), Çanakkale Onsekiz Mart University (ÇOMU), Mersin University (MEU) and Sakarya University (SAU) in Türkiye. universities in Türkiye to test our hypotheses that marked the choice architecture and nudge strategies. Thus, we could statistically investigate how the nudge implementations affected the public finance and budget decisions of Generation Z undergraduates. Nudge is any aspect of the choice architecture that predictably alters people's behaviour without forbidding any options or significantly changing their economic incentives (Thaler & Sunstein, 2008) and plays a role in influencing individuals' decisions (Saulitis et al., 2024). From this perspective, the research revealed the differences in decision-making between those exposed to nudges (positive or negative) and those not exposed to any nudges. For this reason, nine scenarios were designed to investigate the public finance and budgetary decisions of undergraduates. The research, whose stages are illustrated in [Figure 1](#), allowed us to analyse each group's responses and compare their means to identify potential differences between the control and experimental clusters.

Figure 1
Research process



Source: Own elaboration.

In this single-stage cluster study, we aimed to reveal the nudging effects on Generation Z undergraduates' decisions and attitudes on public finance and budgetary topics and improve the political recommendations by paying attention to the results we reached. To achieve our aim, we systematically performed the research process based on two main cluster designs as control and experiment. This design was preferred in other studies that investigated the differences between multi-clusters (Benson et al., 2022; Schrills et al., 2020; Razak & Habbe, 2019; Ben-Ami et al., 2014). For this reason, we conducted eight interviews in ESOGU, ÇOMU, MEU and SAU institutions face-to-face, including four control and four experimental clusters, with undergraduates from October 2024 to December 2024; in other words, we organised one control and one experimental cluster interviews in each university and conducted a total of 16 cluster interviews in the whole data gathering process.

In this research, we did not employ an equivalence-framing design typically used in risky choice scenarios developed by (Tversky & Kahneman, 1981). Instead, we aimed to explore how individuals' behavioural intentions change when the consequences of an action are framed or without framing. In the initial research stage, interviews were conducted using the control clusters, during which no nudging interventions claimed by Thaler & Sunstein (2008) were implemented. In the control cluster interviews, participants were asked to respond to nine questions that did not include any statements regarding nudge strategies. In other words, we included a control group with only baseline information that did not have any experimental manipulation. The researchers developed the relevant questionnaire, focusing on topics such as the state budget, public revenues and expenditures, and borrowing. Possible responses ranged from one, "never agree," to

10, "totally agree." The Social Sciences Ethics Committee of Sakarya University approved the questionnaire during the initial phase of the research process, based on decision number '12/01' made at the meeting on 07.06.2023, with reference number 58. In this stage, the participants in the control cluster from each university got together in a meeting room. However, a key consideration was ensuring that each student received an individual questionnaire, preventing any influence from each other's responses.

Following the completion of interviews with the control clusters, face-to-face meetings were conducted with the experimental clusters. The participants in this cluster were asked to respond to the same nine questions, which contained manipulated statements highlighting the positive or negative framing, known as nudging interference. Because individuals can be influenced by the framing effect, a common nudge strategy can result in varying preferences and behaviours among them (Liu et al., 2024). In our experiment, the framing effect was prioritised to understand perceptions of undergraduates' public finance and budgetary decisions. Alexander & Balavac-Orlic (2022) suggested that academics and policymakers should benefit from positive and negative framing in designing survey questions and scenarios. Thus, communicators can functionalise manipulated messages integrated with relevant questions through positive or negative framing to promote their targeted behaviours (Ben-Ami et al., 2014). The framing effect refers to the phenomenon where people attribute different meanings to the psychological value of a choice depending on whether it is presented in a positive or negative context (Tversky & Kahneman, 1981). Positive framing highlights beneficial outcomes, but negative framing emphasises undesired outcomes (Zheng et al., 2023).

We focused on revealing the framing effect in the research since people can be nudged and influenced; framing is a powerful tool within nudge implementations, as Thaler & Sunstein (2008) mentioned. To reveal the framing effects in the experimental cluster, we included informative short texts regarding each question before asking it. This approach allowed us to analyse participants' responses influenced by the framing implementations and facilitate comparisons between the differences between the nudged and non-nudged youths. We cared that each question posed to the experimental clusters would be answered individually, like the control cluster format.

Sample, study clusters, and data collection

In our research, we implemented the sample selection criteria in several ways. First, we conducted "Basic Budgeting Awareness" seminars attended by 4.170 undergraduates across 42 educational units at ESOGU, ÇOMU, MEU and SAU institutions between December 2023 and May 2024. These seminars provided an opportunity to inform participants about the key topics of public finance and budgeting. Next, we randomly selected the participants who attended these seminars in each higher education institution for the experimental groups using the Excel RAND function. Random selection is one of the main requirements for experimental research to ensure that bias or prejudice in the personal characteristics of individuals is evenly distributed between groups in providing internal validity (Creswell, 2012). It is important to clarify that we invited only undergraduates who had not taken any courses on public finance or budgeting during their higher education to participate in the experiments. This implementation was intended to ensure that the participants had a similar level of knowledge about public finance and budgeting to provide external validity. Finally, 34 undergraduates participated in the experiments.

Regarding the participants in the control cluster, the students were randomly selected from each university among those who had not attended the relevant seminars, in contrast to the students in the experimental cluster. Additionally, particular attention was given to ensuring that these students had not undertaken any courses related to public finance or public budgeting during their education period, as followed in the experimental cluster. This approach was adopted to ensure that the participants in the control cluster possessed a similar level of knowledge about state budgeting. Our goal was to mitigate the risk of



external validity threats, which prevent to generalise the results to a broader population (Creswell, 2012; Guala & Mittole, 2005). If we had not taken this precaution, learned knowledge within the relevant courses could have directly affected the responses, especially from the students who registered for these courses at least once. Thus, we could not have generalised the results for the population. Finally, 34 undergraduates attended the interviews, which was consistent with the number applied to the experimental cluster.

Clusters, divided into equal sizes as a principal procedure (Kumar & Indrayan, 2002), were determined using a random selection process and single-stage sampling that provided every member of the population an equal or predetermined chance of selection, and the level of precision for results derived from the data is easy to calculate (Iqbal Jeelani et al., 2018). The cluster sizes, sometimes decided by non-statistical considerations (Kumar & Indrayan, 2002), are determined based on the research objective, desired level of precision, available resources, and money and time costs (Okechi et al., 2024) that affect decreasing the cluster size (Iqbal Jeelani et al., 2018). Additionally, when comparing two or more means using an independent t-test, the sample size should be estimated at least 30 participants per cluster (Dattalo, 2018). Accordingly, considering the limitations of the study, we invited 68 undergraduates, including 34 from the control and 34 from the experimental cluster. [Table 1](#) summarises the selection process of participants in terms of inclusive and exclusive criteria.

Table 1

Selection process of participants

Experimental Cluster	
Inclusive Criterion	Including 4.172 undergraduates who attended “Basic Budget Seminars” conducted by the researchers in the sample universities.
Exclusive Criterion	Excluding 792 undergraduates who studied public finance and budget topics at least once in their education period.
Control Cluster*	
Inclusive Criterion	Including 168.016 undergraduates who did not attend “Basic Budget Seminars” in four sample universities.
Exclusive Criterion	Excluding undergraduates who studied public finance and budget topics at least once in their education period.

Note: The data were gathered by the open-access statistics of the sample universities from the official websites. We communicated with these students through their e-mail addresses. Source: Own elaboration.

In the given sample of participants in the experimental cluster, a higher level of budget awareness is assumed because of their availability in budget seminars. Therefore, it is conceivable that the participants in this cluster, who belong to the group with greater budget awareness, show a higher level of interest in public finance and budget-related topics than the control cluster. Consequently, a direct interaction between public finance and budgetary decisions and positive or negative framing effects may exist, and this interaction was intended to be detected within the limited sample used in our study. Another significant issue was that all participants received a \$7 gift card after completing the cluster interviews.

Demographic information and scenarios

We collected data from 68 undergraduates from ESOGU, ÇOMU, MEU and SAU institutions. The questionnaire was divided into two sections. The first section asked demographic questions, including the responses' university, faculty, degree, and gender. [Table 2](#) presents the details about demographic information, universities, and degree of participants as well as descriptive statistics.

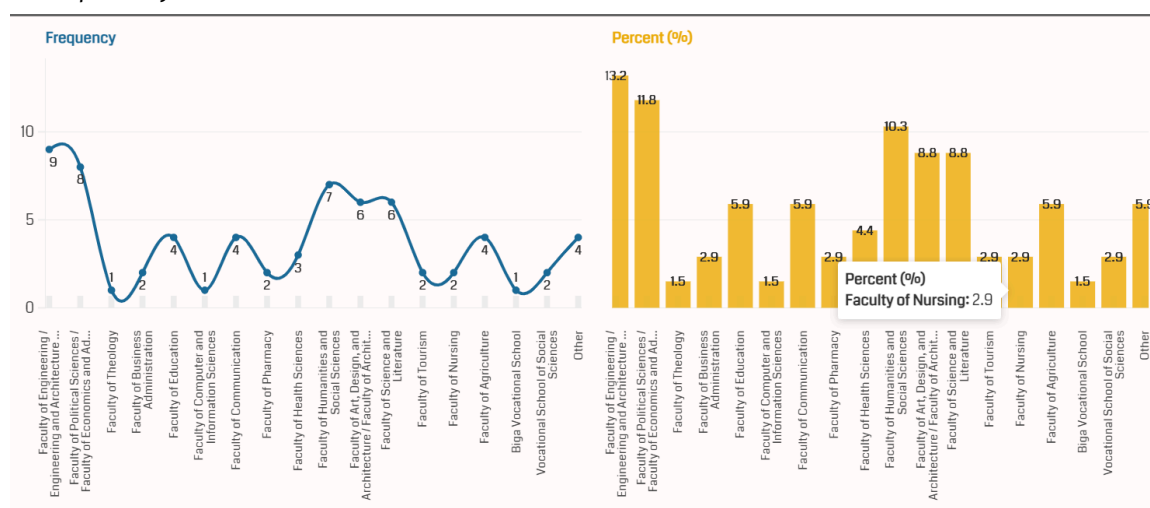
Table 2
Demographic information of participants and descriptive statistics

	Frequency	Percentage	Median	Mode	Std. Variation
University					
ESOGU	17	25	2.47	2,00	1.113
ÇOMU	17	25			
MEU	17	25			
SAU	17	25			
Degree					
1 st year	4	5,9	2.85	3,00	1.026
2 nd year	25	36,8			
3 rd year	20	29,4			
4 th year	15	22,1			
More than four years	4	5,9			
Gender					
Woman	23	66,2	1.34	1	0.477
Man	45	33,8			
Total	68	100			

Source: Own elaboration.

Table 2 shows that participants from each university were evenly distributed, with the majority having registered for interim degrees. Figure 2 displays the distribution of participants across various educational units.

Figure 2
Participants by education units



Source: Own elaboration.

The data in the figure are represented as a line graph on the left showing frequency and as a bar chart on the right showing percentages. As previously explained, we randomly selected the participants. We developed two forms: one containing the experimental cluster's relevant text messages and another without text messages for the control group. However, the questions in the questionnaire did not differ for each cluster. In other words, this design allowed us to measure differences in public finance and budgetary decisions among Generation Z undergraduates, comparing statically those nudged by positive or negative framing

with those not exposed to text-based nudges. Thus, we tried to reveal the estimated framing effects on individuals in terms of public revenues, expenditures, debiting, and auditing. Table 3 presents the scenarios.

Table 3

Text messages, questions, and themes of scenarios

<i>Scenario 1 (S1–Impact of Public Borrowing on Future Generations)</i>	
Text message directed at participants in the experimental cluster who were nudged using negative framing.	“When ordinary revenues, such as taxes, are insufficient, public borrowing leads to a portion of the future generations' welfare being used today. In other words, public borrowing is a burden inherited by future generations from today.”
Relevant Question	According to the new legal arrangement, tax rates and amounts will be reduced. Thus, public expenditures will be financed primarily by borrowing. Do you agree with this implementation idea? Please point your response from 1 (never agree) to 10 (totally agree). Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree
<i>Scenario 2 (S2 - Benefits of Public Borrowing)</i>	
Text message directed at participants in the experimental cluster who were nudged using positive framing.	“Protecting and enhancing our country's economic strength is directly related to public borrowing. Public debts are used in critical areas, such as financing strategic projects and supporting economic growth, thereby positioning our country in a stronger place.”
Relevant Question	According to the new legal regulation, tax rates and amounts will be reduced. Thus, a new fiscal policy will be implemented, where public expenditures will primarily be financed through borrowing. Do you agree with this implementation idea? Please point your response from 1 (never agree) to 10 (totally agree). Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree
<i>Scenario 3 (S3 - Taxation Responsibilities vs. Conveniences)</i>	
Text message directed at participants in the experimental cluster who were nudged using positive framing.	"Just as military service is a debt of victory, taxes are a debt that citizens must pay on time."
Relevant Question	According to the new legal regulation, certain conveniences will be provided to those who fail to pay their taxes on time (for example, the removal of late payment interest and penalties, waiving the collection of taxes below a certain threshold, or instalment plans for tax debts and penalties). Do you agree with this implementation idea? Please point your response from 1 (never agree) to 10 (totally agree). Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree
<i>Scenario 4 (S4 - Tax Obligation)</i>	
Text message directed at participants in the experimental cluster who were nudged using positive framing.	“Expenditures in areas such as education, healthcare, and social assistance are important for improving the overall welfare of our society and enhancing the quality of life for every individual. By paying taxes, you contribute to the financing of these public services.”
Relevant Question	According to Article 73 of the Constitution of the Republic of X country: "Everyone is obliged to pay taxes according to their financial capacity to meet public expenditures." Do you agree with the obligation for citizens to pay taxes? Please point your response from 1 (never agree) to 10 (totally agree). Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree
<i>Scenario 5 (S5 - Impacts of Taxes on Social and Economy Welfare)</i>	
Text message directed at participants in the experimental cluster who were nudged using positive framing.	“Contributing to the state budget each year by paying taxes is not just a tax payment; it is also an investment in the progress of our country and the welfare of our society.”
Relevant Question	As part of the public austerity policy, the rates and amounts of many taxes will be increased. Do you agree with this regulation? Please point your response from 1 (never agree) to 10 (totally agree).

Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree	
Scenario 6 (S6: Informing about the Citizen's Budget Guideline)	
Text message directed at participants in the experimental cluster who were nudged using positive framing.	“Due to the technical complexity of understanding the Central Government Budget Law (also known as the State Budget), a simplified version of these laws, called the Citizen's Budget Guideline, is shared with the public every year. This allows citizens to easily track budget revenue and expenditure projections as well as actual figures.”
Relevant Question	According to a newly adopted decision, the content and publication information of the document titled "Citizen's Budget Guideline" will be shared with the public through various communication channels (such as SMS, email, public service announcements, etc.). Do you agree with this implementation idea? Please point your response from 1 (never agree) to 10 (totally agree)
Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree	
Scenario 7 (S7 - Budget Monitoring by Citizens)	
Text message directed at participants in the experimental cluster who were nudged using positive framing.	“Citizens having sufficient knowledge and understanding of the state budget supports their awareness of budget rights. This enables the formation of a conscious group of citizens who question where the taxes they pay are being spent.”
Relevant Question	It is foreseen that various monitoring tools, such as social audits, citizen charters, and citizen report cards, will be used to support citizen-focused oversight of the budget. Do you agree with this implementation idea? Please point your response from 1 (never agree) to 10 (totally agree).
Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree	
Scenario 8 (S8: Participating in Budgetary Processes)	
Text message directed at participants in the experimental cluster who were nudged using positive framing.	“Citizen oversight is one of the fundamental elements of a democratic society. Actively participating in monitoring the alignment of public expenditures with their intended purposes will create a more sustainable economy for future generations, making society stronger and more resilient.”
Relevant Question	Do you agree with the idea that citizens' observations and feedback on the state budget will strengthen financial accountability from a societal perspective? Please point your response from 1 (never agree) to 10 (totally agree).
Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree	
Scenario 9 (S9 - Education of Budget Literacy)	
Text message directed at participants in the experimental cluster who were nudged using positive framing.	“State budget literacy helps individuals and society as a whole make healthier economic decisions by providing the ability to read, analyse, and understand the state budget.”
Relevant Question	It is foreseen that a university-wide elective course titled "Budget Literacy" will be added to the curriculum of higher education institutions. Would you choose this course if it were offered? Please point your response from 1 (never agree) to 10 (totally agree).
Never Agree <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 Totally Agree	

Source: Own elaboration.

When examining the connections between scenarios and hypotheses, it becomes clear that the first and second scenarios correspond to Hypothesis 1, as they address the implications and advantages of public borrowing. The third and fourth scenarios align with Hypothesis 2, focusing on the responsibilities and obligations associated with taxation. Scenario 5 is linked to Hypothesis 3, highlighting the socioeconomic impacts of taxation. Finally, Scenarios 6, 7, 8, and 9, exploring themes, such as budget literacy, citizen engagement in fiscal processes, and budget monitoring, are designed to test Hypothesis 4.

Findings and discussion

The data were analysed using IBM SPSS (Statistical Package for the Social Sciences) version 24. The reliability coefficient of the Cronbach's Alpha was calculated to be 0.465. A small value of Cronbach Alpha could be due to a small number of questions (Tavakol & Dennick, 2011). According to Pallant (2007), it is probable to perceive a low Cronbach's alpha coefficient in scales with less than 10 items. Based on the literature, the scale is considered reliable. Secondly, we conducted descriptive statistical analyses to present the findings of mean and standard deviation (Ekerim & Yilmaz, 2022). Additionally, kurtosis and skewness values were examined to determine whether we followed a normal distribution (Subaşı & Ocakci, 2024). Based on this assessment, we used parametric or non-parametric tests to compare the control and experimental clusters. Table 4 shows the findings of the descriptive statistical analyses and the kurtosis and skewness values for each theme.

Table 4
Descriptive statistics

	N	\bar{X}	SD	Skewness	Kurtosis
Control Cluster					
Impact of Public Borrowing on Future Generations (S ₁)	34	6.74	1.238	0.234	0.572
Benefits of Public Borrowing (S ₂)	34	5.76	2.583	0.041	-0.851
Taxation Responsibilities vs. Conveniences (S ₃)	34	5.74	3.078	-0.225	-1.391
Tax Obligation (S ₄)	34	8.03	2.480	-1.454	1.499
Impacts of Taxes on Social and Economic Welfare (S ₅)	34	3.06	2.131	1.096	0.233
Informing about the Citizen's Budget Guideline (S ₆)	34	6.71	2.444	-1.503	1.310
Budget Monitoring by Citizens (S ₇)	34	8.12	1.591	-0.444	-0.189
Participating in Budgetary Processes (S ₈)	34	7.79	2.422	-1.716	2.554
Education of Budget Literacy (S ₉)	34	7.35	2.616	-0.919	0.119
Experimental Cluster					
Impact of Public Borrowing on Future Generations (S ₁)	34	5.00	1.875	-0.088	-0.657
Benefits of Public Borrowing (S ₂)	34	7.59	1.305	-0.292	-0.807
Taxation Responsibilities vs. Conveniences (S ₃)	34	6.15	2.966	-0.515	-1.114
Tax Obligation (S ₄)	34	8.03	2.181	-0.692	-0.937
Impacts of Taxes on Social and Economic Welfare (S ₅)	34	5.47	1.080	0.925	0.804
Informing about the Citizen's Budget Guideline (S ₆)	34	9.32	1.296	-2.779	8.801
Budget Monitoring by Citizens (S ₇)	34	9.21	1.343	-3.188	13.486
Participating in Budget Processes (S ₈)	34	8.71	2.008	-1.979	3.086
Education of Budgetary Literacy (S ₉)	34	9.03	1.359	-1.364	1.192

Source: Own elaboration.

The kurtosis and skewness coefficients should fall between +2 and -2, indicating that the normal distribution assumption has been met (Demir & Kurtuluş, 2024; Hahs-Vaughn & Lomax, 2020). Thus, we focused on determining whether to use parametric or non-parametric tests, considering these values for each cluster and item. Accordingly, all items belonging to the control cluster were detected between +2 and -2. However, the findings of S₆, S₇, and S₈ in the experimental cluster were not calculated between these acceptable values ranges. To compare the means of clusters, we applied the independent samples t-test for S₁, S₂, S₃, S₄, S₅ and S₉, but the Mann-Whitney U test, one of the non-parametric tests, was conducted to analyse responses to S₆, S₇, and S₈. Table 5 presents the findings of independent sample t-test analyses.

Table 5
Findings of independent samples t-test analyses

Themes	Clusters	N	\bar{X}	SD	F	t	p*																																																								
Impact of Public Borrowing on Future Generations (S ₁)	Control	34	6.74	1.238	4.757	4.503	0.000																																																								
	Experimental	34	5.00	1.875				Benefits of Public Borrowing (S ₂)	Control	34	5.76	2.583	13.935	-3.674	0.000	Experimental	34	7.59	1.305	Taxation Responsibilities vs. Conveniences (S ₃)	Control	34	5.74	3.078	0.562	-0.562	0.576	Experimental	34	6.15	2.966	Tax Obligation (S ₄)	Control	34	8.03	2.480	0.031	0.000	1.000	Experimental	34	8.03	2.181	Impacts of Taxes on Social and Economic Welfare (S ₅)	Control	34	3.06	2.131	10.882	-5.886	0.000	Experimental	34	5.47	1.080	Education of Budget Literacy (S ₉)	Control	34	7.35	2.616	15.418	-3.316	0.000
Benefits of Public Borrowing (S ₂)	Control	34	5.76	2.583	13.935	-3.674	0.000																																																								
	Experimental	34	7.59	1.305				Taxation Responsibilities vs. Conveniences (S ₃)	Control	34	5.74	3.078	0.562	-0.562	0.576	Experimental	34	6.15	2.966	Tax Obligation (S ₄)	Control	34	8.03	2.480	0.031	0.000	1.000	Experimental	34	8.03	2.181	Impacts of Taxes on Social and Economic Welfare (S ₅)	Control	34	3.06	2.131	10.882	-5.886	0.000	Experimental	34	5.47	1.080	Education of Budget Literacy (S ₉)	Control	34	7.35	2.616	15.418	-3.316	0.000	Experimental	34	9.05	1.359								
Taxation Responsibilities vs. Conveniences (S ₃)	Control	34	5.74	3.078	0.562	-0.562	0.576																																																								
	Experimental	34	6.15	2.966				Tax Obligation (S ₄)	Control	34	8.03	2.480	0.031	0.000	1.000	Experimental	34	8.03	2.181	Impacts of Taxes on Social and Economic Welfare (S ₅)	Control	34	3.06	2.131	10.882	-5.886	0.000	Experimental	34	5.47	1.080	Education of Budget Literacy (S ₉)	Control	34	7.35	2.616	15.418	-3.316	0.000	Experimental	34	9.05	1.359																				
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	Experimental	34	8.03	2.181				Impacts of Taxes on Social and Economic Welfare (S ₅)	Control	34	3.06	2.131	10.882	-5.886	0.000	Experimental	34	5.47	1.080	Education of Budget Literacy (S ₉)	Control	34	7.35	2.616	15.418	-3.316	0.000	Experimental	34	9.05	1.359																																
Impacts of Taxes on Social and Economic Welfare (S ₅)	Control	34	3.06	2.131	10.882	-5.886	0.000																																																								
	Experimental	34	5.47	1.080				Education of Budget Literacy (S ₉)	Control	34	7.35	2.616	15.418	-3.316	0.000	Experimental	34	9.05	1.359																																												
Education of Budget Literacy (S ₉)	Control	34	7.35	2.616	15.418	-3.316	0.000																																																								
	Experimental	34	9.05	1.359																																																											

* p<0.05 independent samples t-test

Source: Own elaboration.

Table 5 shows statistically significant differences between clusters, except for the themes “Taxation Responsibilities v. Conveniences” and “Tax Obligation.” In detail, findings with a significance level of $p < 0.05$ are deemed statistically reliable (Kundurzhie et al., 2018). It means that the research data are evaluated at a 95% confidence interval, and the significance level is accepted at $p < 0.05$ (Subaşı & Ocakçı, 2024). In the first scenario, when examining the “Impact of Public Borrowing on Future Generations” findings, the difference is statistically significant between the control and experimental clusters. The means of the experimental cluster scored lower (5.00), indicating that the participants in the experimental cluster perceive a greater impact of public borrowing on future generations than the means of the control cluster (6.75). According to the conventional perspective on public debts in literature, consumers increase their spending when governments reduce taxes and run budget deficits, which transfers the debt load to future generations (Eichenberger & Stadelmann, 2010). Additionally, public debt burdens the next generation because more taxes are required to restore the same amount of discretionary income obtained before the issue (Otaki, 2015). From this perspective, we nudged the participants in the experimental cluster through negative framing, including a text that explained the possible unfavourable impacts of public borrowing on future generations. We aimed to reveal how this text would affect their perspectives, and we found that the nudged students considered public debts a burden inherited by future generations.

Regarding the “Benefits of Public Borrowing”, we asked the same question to the undergraduates again. However, in this step, we nudged the participants in the experimental cluster with the text, which explained that public borrowing is essential for strengthening the country's economy by funding strategic projects and supporting economic growth. We focused on comparing their attitudes towards the golden rule in public borrowing, which means that using public debt financing for investment projects stimulates growth in output and productivity (Kellermann, 2007). Accordingly, the experimental group scored significantly higher (7.59; $p < 0.05$) than the control group (5.76). It shows that they perceive greater benefits of public borrowing. This finding shows that the participants nudged with positive framing agreed on the validity of the golden rule in public borrowing more, as claimed in the literature (Kellermann, 2007; Minea & Villieu, 2009; Kamiguchi & Tamai, 2019). Furthermore, the mean of the experimental cluster is higher than that of the first question. It

indicates that the nudged undergraduates perceive the benefits of public borrowing more than its impacts on future generations.

For the undergraduates' perceptions regarding “taxation responsibility v. Conveniences,” the p-value is 0.576, higher than the significance threshold of 0.05. This finding indicates that the difference between the control group (5.74) and the experimental group (6.15) is not statistically significant. In addition, the control and experimental groups have similar perceptions of “tax obligation,” as reflected by identical means and the lack of any statistical difference ($p = 1.000$). The findings showed that positive framing related to taxation responsibilities or obligations is ineffective in this research context. It might be attributed to both cluster participants' awareness of tax obligations and recognition of the necessity of timely compliance with their tax duties. Similarly, in the research searched for tax compliance by Hasseldine & Hite (2003), positive framing was detected as ineffective in the male undergraduate cluster. As Druckman (2001) stated, framing effects are complex. They may succeed at times, while at others, they may fail. Despite common practice, it is just as crucial to document instances of unsuccessful framing effects as it is to note successful ones.

In terms of “Impacts of Taxes on Social and Economy Welfare,” the experimental group scored (5.47) significantly higher than the control group (3.06), indicating that they perceive greater social and economic benefits of taxes ($p < 0.05$). If governments can implement fiscal policies that boost social investments to improve the well-being of their citizens, their relationship with taxation and economic growth is anticipated (Vatavu et al., 2019). Especially regarding the effect of progressive taxation on welfare, it improves society's overall welfare or utility by shifting income from wealthier to poorer people through a mix of taxes and government expenditures (Bankman & Griffith, 1987). These findings highlight the importance of fostering positive perceptions of taxation by undergraduates who are nudged rightly, as such perceptions could strengthen public support for fiscal policies aimed at promoting social equity and economic well-being.

Concerning the ninth scenario, the experimental group (9.05) scored significantly higher than the control group (7.35), suggesting that the experimental group has a better comprehension of the importance of budget literacy, known as the ability to read, decipher, and understand public budgets, allowing for citizen participation in the budgetary process (Hidayat & Tauhid, 2022) ($p < 0.05$). Budget literacy is critical for citizens because engaging in the budgetary process acts as a school of democracy. It also provides significant positive externalities, such as enhancing fiscal transparency, accountability, and public participation at both central and local administrations (Kim et al., 2016). Research investigating the connection between nudge theory and budgetary participation supported our findings, and it proposed an online budget simulation tool to improve budget education, facilitate information sharing, and enhance citizen consultation in budgetary processes (Afonso & Mohr, 2024). Worldwide, public awareness towards to the state budget has recently been raised through media, civil society organisations, parliamentary discussions, and other initiatives. Governments should implement policies to promote budget literacy, highlighting its importance for civic engagement and poverty reduction (International Budget Partnership, 2012). [Table 6](#) presents the findings of Mann-whiney u test analyses for S_6 , S_7 , and S_8 .

Table 6

Results of Mann-Whitney U test analyses

Themes	Clusters	N	\bar{X}	Z	p*
Informing about the Citizen's Budget Guide (S_6)	Control	34	6.71	-5.833	0.000
	Experimental	34	9.32		
Budget Monitoring by Citizens (S_7)	Control	34	8.12	-3.232	0.000
	Experimental	34	9.21		
Participating in Budgetary Processes (S_8)	Control	34	7.79	-2.241	

Themes	Clusters	N	\bar{X}	Z	p*
	Experimental	34	8.71		0.001

* p<0.05 Mann-Whitney U-Test

Source: Own elaboration.

According to the findings regarding public participation in the Open Budget Survey 2023, several governments have recently promoted public involvement in the budgetary processes, especially in formulating or approving the budget rather than in its implementation (International Budget Partnership, 2023). From this perspective, we designed three scenarios closely related to the citizens' budget and their participation in budgetary processes. In the "Informing about the Citizen's Budget Guide," we aimed to determine the perceptions of Generation Z undergraduates on how they know the importance and functions of the Citizens Budget Guideline. First, public budgets are generally technical documents. To contribute to making the budget more understandable and accessible for citizens, the "Citizens Budget Guideline" has been shared with the public by the Presidency Strategy and Budget Office in Türkiye (SBD, 2025), similarly in numerous developed and developing countries (International Budget Partnership, 2023). Accordingly, the experimental group scored (9.31) considerably higher than the control group (6.72), informing about the Citizens' Budget Guideline ($p < 0.05$). The Citizen's Budget Guideline is an effective tool for managing budget allocations and expenditures. Dolan and Metcalfe (2015) emphasised that making abstract concepts like budget information more comprehensible through positive framing could increase public approval in their research on behavioural public policies. As taxpayers, citizens fund social institutions, housing, public services, and infrastructure, letting them know how their money is spent and whether it is used effectively. Thus, access to relevant documents enables greater engagement in the budgetary process and improves trust in government (UNDP, 2021).

Concerning the "Budget Monitoring by Citizens", we focused on revealing the participants' perceptions about implementing the various monitoring tools of public budgets, such as social audits, citizen charters, and citizen report cards. Because a recent activity called budget watch is spreading around the globe (Ott et al., 2009). The experimental group (9.21) showed a significant advantage over the control group (8.12), supporting citizen-focused oversight of the budget more ($p < 0.05$). This finding indicates that Generation Z undergraduates are more likely to use relevant budget monitoring tools when they are informed of the roles of these tools in public life. Moreover, citizens should be involved in public life, monitoring the government's revenues and expenditures, offering feedback on its plans and programmes, and even opposing it when something goes wrong (International Budget Partnership, 2012).

Increasing public involvement in the budgetary processes can build trust between the government and the public by giving individuals a voice and enabling them to influence decisions (Ardanaz et al., 2023). Citizens should enhance their oversight of state budget execution to tackle issues such as incomplete legal frameworks, lack of transparency, corruption, and inefficient spending (Yakubov, 2021). From this perspective, we aimed to measure how the clusters of those nudged through positive framing and those not nudged perceive citizen participation in budgetary processes. The findings reveal that the experimental group scored significantly higher (8.71) than the control group (7.79) in terms of participation in budgetary processes ($p < 0.05$). This finding aligns with previous studies that emphasise the effectiveness of nudging in public financial behaviour (Afonso & Mohr, 2024). Similarly, Niemeyer et al. (2018) investigated participatory budgeting using a laboratory experiment and found that the dynamic feedback mechanism promotes participants' arousal, enhancing engagement in public budget decision-making. Liu et al. (2024) also nudged Chinese citizens in their experimental study and confirmed that emphasising public interest was more attractive than private interest for encouraging citizens to participate in public affairs. Citizens should participate more

actively in budgetary processes as providers of budget revenues and users of public goods and services financed from the budget to provide transparency, accountability, and financial sustainability (International Budget Partnership, 2012). As a result, the findings support H_1 , H_3 , and H_4 , as evidenced by the association of Scenarios 1, 2, 5, 6, 7, 8, and 9 with the expected outcomes. However, the findings do not corroborate H_2 , as the results derived from Scenarios 3 and 4 fail to provide sufficient evidence, leading to its rejection.

Conclusion and Recommendations

This study explored the possible impacts of nudging strategies on financial decision-making within public finance and budgeting, focusing on Generation Z undergraduates in Türkiye. First, the study contributed to enhancing the theoretical framework of behavioural public finance and budgeting, as considered by Afonso & Mahr (2024). It also broadened the understanding of how nudging strategies influence financial decision-making among Generation Z undergraduates by providing a foundation for their effective public finance interventions.

Second, the findings emphasised that nudging strategies, primarily positive framing, significantly influenced the participants' attitudes towards public borrowing. For instance, the experimental cluster agreed more with the idea that public debt can strengthen the economy than the control cluster. Moreover, they demonstrated a greater understanding of the importance of budget awareness, literacy, Citizen's Budget Guideline, and citizen participation in budgetary processes. Contrary to these findings, we detected that the positive framing regarding the scenarios of taxation responsibilities and obligations did not present a statistical difference between the control and experimental groups. Although framing can be a powerful tool, its effectiveness may vary depending on the context and the specific behaviour intentions. We consider that students in each cluster showed similar sensitivity towards their tax responsibilities and the importance of paying taxes. It seems undergraduates are generally mindful citizens despite registering for any formal course on the importance and necessity of tax payments in their education periods. It is highly possible that they had information about taxes' roles through various sources, such as social media, news, parents, or peers.

Regarding practical contributions, this experiment provided empirical evidence of the effectiveness of behavioural interventions in influencing students' budgeting decisions. Thus, nudging revealed that it could significantly advance financial awareness and responsible budgeting behaviours of Generation Z, who will be the taxpayers in the future. The results underscore the potential of nudging as a policy tool for addressing public finance decision-making challenges among young adults. In addition, they offered valuable insights for policymakers and educators to improve budget and tax literacy. In more detail, Generation Z undergraduates exposed to the framing effect, a common nudge strategy, were more willing than the control cluster participants to understand public finance and budgetary processes.

Implementing nudges within education can be essential for public financial intentions and decisions. From this perspective, positive or negative framing should be prioritised as a policy tool to tackle Generation Z's financial decision-making challenges. Furthermore, university administrators and policymakers should collaborate to generate a more informed and financially responsible generation. They should also include behavioural interventions in public finance, budgeting education, and the design of financial policies within higher education curricula.

Finally, we strongly recommend that governments and public institutions prioritise transparency and accessibility in budgetary processes. Reaching the correct information about public revenues, expenditures, and debts can increase public trust and participation in government policies. Even tools, such as citizen

audits, citizen agreements, and budget simulations, will further enhance citizen engagement and oversight of public budgets.

Limitations and Future Research

The study has some limitations. First, the sample is limited to Generation Z undergraduates in Türkiye, which might restrict the generalizability of the findings to other demographic groups or cultural contexts. We recommend that future research expand the study to include students from different educational backgrounds and geographical regions to examine potential cross-cultural differences in the effectiveness of positive and negative framing effects. Second, we benefited from the positive and negative framing of the study. However, the impact on public financial decision-making should be explored through other types of nudges, such as default options, incentives, and the use of social norms. In addition, future research should examine the role of personality traits and socioeconomic factors in moderating the effectiveness of nudge interventions. In conclusion, the effectiveness of nudging strategies may vary depending on individual differences, contextual factors, cultural features, and nudge design. Therefore, we recommend further research in public finance and budgeting and the remaining study fields.



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