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## ORIGINAL ARTICLE

# Alleviating administrative burden through digitalization and redesign: A laboratory experiment on student financial aid in Germany

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**Abstract**

Individuals encounter and experience different costs, conceptualized as administrative burdens, when seeking access to social welfare programs. Scholars and practitioners suggest that digitalizing and redesigning application processes could alleviate and shift some of these negative experiences. However, empirical research testing whether real interventions achieve this remains scarce. In a laboratory experiment, we randomly assigned participants ( $n = 120$ ) to one of two application processes for a student financial aid program: the standard paper-based or a digitalized and redesigned application procedure. Students encountering the latter experienced significantly less administrative burdens, were more satisfied, and completed a higher proportion of process steps. Furthermore, functional literacy improved the experience of the bureaucratic encounter. These findings reveal the potential of redesigning and digitalizing application processes to alleviate administrative burdens.

**KEYWORDS**

administrative burden, digitalization, financial aid, laboratory experiment, welfare program application

**INTRODUCTION**

Encountering administrative burdens in citizen-state interactions can be a frustrating and stressful experience for individuals (Hattke et al., 2020; Herd & Moynihan, 2022). Administrative burdens can result in denied access to a social welfare program (Bell et al., 2022; Peeters, 2020). In addition, they might keep citizens from applying to social welfare programs despite being eligible (Bettinger et al., 2012; Herd et al., 2013). Administrative burden has been defined as “an individual’s experience of policy implementation as onerous” (Burden et al., 2012, p. 741). More specifically, citizens experience

administrative burdens as learning, compliance, and psychological costs (Baekgaard & Tankink, 2022; Madsen, Lindgren, & Melin, 2022; Madsen, Mikkelsen, & Moynihan, 2022; Moynihan et al., 2015). Individuals experience bureaucratic encounters as stressful if they face administrative burdens. Here, citizens potentially experience the costs as potential threats, for example, when they heavily depend on access to social welfare programs (Bell et al., 2022; Christensen et al., 2020).

Accordingly, administrative burdens potentially harm beneficiaries and undermine the provision of essential public services (Daigneault & Macé, 2020; Herd & Moynihan, 2022; Linos et al., 2022). Initiatives to simplify

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and redesign bureaucratic procedures increasingly utilize digital solutions (Giest & Samuels, 2022; Herd et al., 2013; Schou & Hjelholt, 2019), and scholars suggest the usefulness of digital application procedures (e.g., Lindgren et al., 2019). However, research addressing how digitalizing and redesigning policy procedures affects citizens' immediate experiences of administrative burden remains scarce (some notable exceptions are Bell et al., 2023; Madsen, Lindgren, & Melin, 2022; Madsen, Mikkelsen, & Moynihan, 2022; Peeters & Widlak, 2023). Moreover, we must assess whether they enable citizens to overcome difficulties while applying (e.g., Løberg, 2021). We approach this research gap with a laboratory experiment. The experiment features a prominent German social welfare program: student financial support (Bettinger et al., 2012). We examine individuals' experiences of administrative burdens when applying for access to student financial support and address how digitalization combined with a thorough redesign of the application process can alleviate these negative experiences.

Thus far, administrative burden research has focused primarily on the origins (Baekgaard, Moynihan, & Thomsen, 2021; Bell & Smith, 2022; Campbell et al., 2023; Peeters, 2020) and consequences of administrative burdens (Barnes, 2021; Daigneault & Macé, 2020; Heinrich, 2016; Sievert et al., 2022; Sievert & Bruder, 2023). Furthermore, scholars addressed strategies citizens use to manage administrative burdens (Bell et al., 2022; Döring & Madsen, 2022; Masood & Azfar Nisar, 2021). Still, focusing on approaches intended to alleviate administrative burdens in social welfare programs remains underexplored. In particular, we lack insights regarding the effects of practical and readily applicable approaches to burden reduction. This study analyzes how citizens experience different administrative burdens by comparing a standard paper-based process to a redesigned digital one.

We implemented a laboratory experiment to investigate students' experiences when applying for financial support from the German Federal Training Assistance Act (BAfoeG). In 2016, about 18% of all German students received financial support through BAfoeG, of which 79% stated they could not finance their university education otherwise (Middendorff et al., 2017). Three years later, just 11% of German students received BAfoeG (Destatis, 2020), prompting calls for a more accessible and less bureaucratic application procedure. In 2018, the German for-profit startup "DeineStudienfinanzierung" ("yourstudyfinance") launched a redesigned digitalized application service to BAfoeG as a structural approach to alleviate the experience of administrative burden. In our laboratory experiment, we compare the standard application (which generates high administrative burdens) and the

### Key Practitioner Message

- Digitalizing bureaucratic processes converts information from a physical format to a digital one and, thus, helps implement a thoughtful redesign of the process.
- A digitalized and redesigned application process for welfare programs heavily reduces the level of administrative burden that applicants experience.
- Practitioners should consider the target audience's abilities when designing bureaucratic procedures to avoid disadvantaging citizens with lower bureaucratic capabilities.

digitalized and redesigned process (which generates low administrative burdens). We randomly assigned  $n = 120$  students to the two application processes. Subsequently, we measured their perceptions of administrative burdens, satisfaction, and performance in the procedure. The results reveal the tangible impact of redesigning and digitalizing application services. The digital process reduces the negative experience of administrative burdens, improves satisfaction, and helps students complete more process steps.

Our study contributes to the existing literature in three ways: First, we provide causal evidence about how the (re-)design of a specific bureaucratic encounter affects the applicants' experiences (Doughty & Baehler, 2020; Gilad & Assouline, 2022). While the laboratory experiment provides strong causal inferences solely for this specific setting, discussing these insights provides implications for scholars and practitioners. Implementing a thorough redesign using a digital solution promised to shift the burdens away from citizens, which applies to many welfare policies requiring an application process. Second, we address the relevance of individual characteristics for citizens' experiences and, thus, follow an apparent trend in the recent administrative burden literature (Bell et al., 2023). Individuals differ in how effectively they can deal with administrative burdens (Chudnovsky & Peeters, 2021; Masood & Azfar Nisar, 2021), a claim we further probe in our research design. Our findings highlight that functional literacy reduced the experience of learning costs. Contrary to our expectations, core self-evaluations and personal vulnerability did not influence the perceptions of administrative burdens related to student-aid applications. These findings suggest that the specificity of individual characteristics matters. While previous research shows that administrative burdens are distributive (i.e., affect vulnerable groups to a

higher degree), in our case, this cannot be explained by individual attributes such as financial vulnerability. Third, our study provides insights into the interrelatedness of different costs. Our digitalization intervention included reducing learning and compliance costs. Still, the findings reveal that participants also experienced lower psychological costs as a result. Thus, we suggest that learning and compliance costs can significantly affect psychological costs.

## THEORETICAL FRAMEWORK

### Administrative burden as a threat

The experience of administrative burdens as stressful originates in three distinct cost categories (Baekgaard & Tankink, 2022; Herd & Moynihan, 2022; Moynihan et al., 2015). First, learning costs constitute the time and effort needed to search for and evaluate relevant information about a welfare program before applying to and accessing it. They encompass all investments necessary to learn about eligibility, entrance requirements, and how to gain access (Barnes, 2021). Next, compliance costs result from following extensive administrative rules and requirements to access services, for example, providing extensive documentation or enduring long waiting periods. They also include financial costs, such as fees or travel costs, necessary to apply to welfare programs (Baekgaard, Mikkelsen, et al., 2021; Jenkins & Nguyen, 2022). Third, psychological costs include the stress an individual must deal with when they comply with administrative processes. This can entail frustration related to learning and compliance costs, the feeling of losing autonomy, or the adversities caused by sanctions (Sievert & Bruder, 2023). Moreover, psychological costs include perceived injustice during the interactions with intrusive officials and uncertainty about whether gaining access to social services will be successful (Döring & Madsen, 2022; Thomsen et al., 2020; Underlid, 2007). On the structural level of administrative burdens as state actions (Christensen et al., 2020), research indicates detrimental consequences for beneficiaries' health (Heinrich, 2016) and, thus, the need to reduce them to increase take-up (Daigneault & Macé, 2020; Herd et al., 2013). Accordingly, public administration scholars have shown that citizens perceive administrative burdens as stressful, resulting from increased anger, frustration, and confusion (Hattke et al., 2020).

The following considerations arise: Individuals determine a situation to be stressful when they perceive it as threatening to themselves (Lazarus & Folkman, 1984). Encountering administrative burdens when accessing social benefits is a prime example of a potential threat.

Individuals generally apply for social benefits because they depend on them (Gielens et al., 2019). If they encounter administrative burdens, this decreases their (perceived) chances of successfully navigating the administrative procedures. Thus, they may be denied access to the welfare program (Heinrich, 2018). The different costs associated with administrative burdens each introduce unique aspects that can contribute to the experience of a bureaucratic encounter as threatening. Learning and compliance costs pose a direct threat to access when citizens are unsure about procedures or unable to comply with the demands. Psychological costs pose more indirect threats to access, for example, via the wish to avoid the stigma associated with a social program.

### Digitalization as threat reduction

Bureaucratic encounters leave citizens little to no discretionary power concerning the intensity of administrative burdens. Citizens must generally rely on other actors to reduce the administrative burdens for them. Previous research indicates that this should be easiest to achieve by the public organization responsible for the respective bureaucratic process (Herd et al., 2013). However, reducing the administrative burden for citizens requires, among others, the political will to actively change the status quo and the administrative capacity to remove structural barriers (Compton et al., 2022; Herd & Moynihan, 2018; Linos & Riesch, 2020). Alternatively, third-party organizations like nonprofit or for-profit actors often attempt to alleviate the costs of burdens for citizens (Herd & Moynihan, 2018; Nisar, 2018).

Burden reduction is often rather the shifting of the burden from citizens to actors redesigning the bureaucratic process. Herd et al. (2013) have investigated automatic enrollment to reduce learning and compliance costs for citizens by shifting the burden towards the responsible government agency and away from individual citizens. In another example, a non-governmental actor organized safe spaces for marginalized citizens when meeting administrators, which reduced psychological costs for the citizens (Nisar, 2018). When such initiatives shift structural administrative burdens, the overall situation is less threatening for citizens trying to access a welfare program. Therefore, citizens' experience of the situation will change from being stressful to a more neutral assessment. This is because individuals encounter fewer difficulties and need to worry less about coping responses (Folkman et al., 1986).

An intuitively appealing way to reduce administrative burdens is the digitalization of the application processes. Digitalization allows for the thorough redesign of

bureaucratic procedures, thus changing the citizens' experiences of administrative burden (Madsen, Lindgren, & Melin, 2022; Madsen, Mikkelsen, & Moynihan, 2022; Peeters, 2023). This notion requires the political intention to reduce or shift administrative burden and actors implementing the new procedure(s) seamlessly. Several recent examples indicate that digital solutions can also increase costs and aggravate negative experiences (Giest & Samuels, 2022; Madsen, Lindgren, & Melin, 2022; Madsen, Mikkelsen, & Moynihan, 2022). For instance, algorithmic applications may very well "trigger exclusionary mechanisms for citizens" (Peeters & Widlak, 2023, p. 863) or produce errors within bureaucratic procedures (Widlak & Peeters, 2020). Still, when digitalization is accompanied by a thoughtful redesign of the established process, it can result in a beneficial digital transformation (Leonardi & Treem, 2020). Therefore, given the absence of administrative errors or additional barriers, a simple digitalized redesign of a bureaucratic application process should change how citizens experience the bureaucratic encounter.

Digitalization specifically allows for redesigning administrative procedures (e.g., application processes). Our reasoning focuses on comparing an originally paper-based procedure with the same procedure in a digital format. Such approaches often introduce a digital clone fulfilling the same purpose as the original forms in the paper-based procedure. Still, digitalization allows a more fine-grained structuring of the content, for example, questions about income or other eligibility criteria. Digitizing such procedures also allows minor optimizations, like the reduction of repetitive question in the case of originally multiple paper-based forms. We argue that a digital and redesigned bureaucratic procedure should shift burdens away from the citizens. First, digitizing bureaucratic procedures helps reduce learning costs because entering relevant data is often easier. For example, when entering information about the income situation, a digital tool can adjust which information must be entered in the following. In paper-based procedures, such adaptive designs are not possible and, thus, citizens must develop a detailed understanding of the procedure to enter the necessary information correctly. Second, compliance costs should also decrease. This is primarily because such procedures should allow handing in relevant documents, for example, proof of income, in a digital format. Third, psychological costs may also decrease to some degree (even though this likely depends on the specific bureaucratic procedure). For example, digital procedures allow giving real-time information about eligibility and, thus, reduce applicants' stress. These arguments relate to the perspective on administrative burdens as threats. Lowering burdens through the digitalization

and redesign should make the bureaucratic procedure less threatening, resulting in lower psychological costs. Thus, overall, we expect that citizens perceive lower levels of administrative burdens when following a digitalized and redesigned bureaucratic procedure:

**Hypothesis 1.** Citizens perceive lower administrative burdens in a digitalized and redesigned procedure as compared to the standard paper-based bureaucratic procedure.

Citizens' experiences of bureaucratic encounters relate to central outcomes in public organizations (Nicholls et al., 2012). While concepts like citizen satisfaction constitute relevant outcome variables, they are quite underexplored in the core administrative burden literature. Therefore, we broaden our theoretical arguments by examining the conceptually related red tape literature. Following this literature, we focus on citizen outcomes related to the experience of the process by combining perceptual (procedural satisfaction) and behavioral (performance) citizen outcomes.

When citizens evaluate bureaucratic encounters, their emotional experiences significantly shape their experiences (Hattke et al., 2020). Experiencing the situation as frustrating and stressful, resulting from high administrative burdens, likely causes citizens to feel dissatisfied with the process. Previous insights from experimental red tape research reveal that a burdensome bureaucratic process decreases perceptions of procedural satisfaction in citizens (Tummers et al., 2016). Correlational evidence also finds that satisfaction is negatively linked to perceptions of bureaucratic red tape (Blom et al., 2021; George et al., 2021; Kalucza & Hattke, 2020). We transfer these arguments to administrative burden and argue that a digitalized and redesigned bureaucratic procedure should affect citizens' perceptions beyond perceived burdens. Such a procedure should result in less frustration and dissatisfaction, often associated with paper-based processes. Thus, we suggest that a digitalized and redesigned procedure that reduces administrative burdens should also increase citizens' satisfaction with the process.

**Hypothesis 2.** Citizens are more satisfied when following a digitalized and redesigned procedure (low burden) as compared to a standard bureaucratic procedure (high burden).

In addition to satisfaction, we also focus on how well participants perform during the application procedure. Several case studies from the administrative burden literature indicate that individuals struggle to meet the

demands of burdensome application procedures (Herd & Moynihan, 2018; Masood & Azfar Nisar, 2021; Nisar, 2018). This often includes processing the different steps necessary to navigate the overarching process, for example, successfully filling out different forms or providing all the necessary information in time. For citizen-state interactions, and specifically the procedures relevant for application processes, we suggest that reducing administrative burdens, especially in the form of learning and compliance costs, should decrease the demands citizens face (Madsen & Mikkelsen, 2022). If they face fewer demands, navigating the process and the steps involved will be easier and potentially more straightforward. This should enable them to perform better, specifically filling in forms faster or more accurately.

**Hypothesis 3.** Citizens will perform better (e.g., a higher proportion of steps completed) when following a digitalized and redesigned (low burden) as compared to the standard bureaucratic procedure (high burden).

## Human capital in bureaucratic encounters

In addition to the impact of the digitalization of the application procedure, we suggest the relevance of citizens' human capital (Christensen et al., 2020; Döring, 2021). In particular, previous research indicates that individuals experience situations depending on different personal and situational characteristics (Lazarus & Folkman, 1984). In the literature on administrative burdens, human capital has been theorized to influence experiences with bureaucratic encounters (Christensen et al., 2020; Döring & Madsen, 2022; Madsen & Mikkelsen, 2022). Individual human capital factors exist prior to the citizen-state interaction. Thus, they influence both the experience of administrative burden and individual behavior in bureaucratic encounters (Chudnovsky & Peeters, 2021). In line with previous research on stress and coping (Lazarus & Folkman, 1984), we investigate three factors. First, we examine personality as a general determinant of how individuals approach stressful situations (i.e., core self-evaluations). Second, we also consider an individual's ability to manage stressful situations, such as bureaucratic encounters (i.e., functional literacy). Third, we investigate an individual's vulnerability or dependency on the support of accessing a social program. These factors all determine how individuals approach and navigate bureaucratic encounters, each from a different angle. While core self-evaluations constitute broad and stable personality traits (Chang et al., 2012; Judge et al., 2003), vulnerability (Chudnovsky & Peeters, 2021)

and functional literacy (Döring, 2021) are more context-specific. For example, vulnerability is an economic circumstance that changes, and functional literacy relates specifically to bureaucratic encounters.

Individuals have distinct sensitivities towards positive and/or negative stimuli, and based on this sensitivity, individuals may approach or avoid specific outcomes (Chang et al., 2012). This sensitivity depends on their core self-evaluations, a higher-order personality trait composed of self-esteem, generalized self-efficacy, emotional stability, and locus of control (Judge et al., 2003). Core self-evaluations reflect how individuals appraise their worthiness, effectiveness, and capability (Judge et al., 2003). Individuals with high core self-evaluations can be considered sensitive to positive and insensitive to negative stimuli. In contrast, the opposite holds for individuals with low core self-evaluations (Chang et al., 2012). In the bureaucratic context, we expect individuals with low core self-evaluations to be sensitive to administrative burdens. Administrative burdens are more likely appraised as a threat and something that must be endured. On the other hand, individuals with high core self-evaluations are less sensitive to negative stimuli, which should lead them to perceive administrative burdens as less of a threat (Carver et al., 1989).

**Hypothesis 4.** High core self-evaluations positively affect citizens' experiences in bureaucratic processes.

When individuals are aware of potential coping responses to a threat, they experience a situation in which this threat occurs as less stressful (Lazarus & Folkman, 1984). For bureaucratic encounters, one's capacity to successfully deal with bureaucratic processes is such a potential response (Gordon, 1975; Kristensen et al., 2012). In this study, this individual capacity is conceptualized as functional literacy (Döring, 2021). Functional literacy is a perceptual measure of how well an individual thinks they understand bureaucratic language (Döring, 2021). With the security of a potential coping response at hand, citizens should experience administrative burden as less threatening in the first place and be able to better manage the bureaucratic encounter itself.

**Hypothesis 5.** Functional literacy positively affects citizens' experiences in bureaucratic processes.

An individual's general vulnerability and specific dependency on the successful outcome of citizen-state interactions have been at the core of administrative burden literature. Scholars have theorized and empirically

shown that administrative burdens have a distributive quality (Gordon, 1975; Herd & Moynihan, 2018; Masood & Azfar Nisar, 2021; Nisar, 2018). Administrative burdens, such as learning, compliance, and psychological costs, restrict citizens' access to public services (Herd & Moynihan, 2018; Moynihan et al., 2015). Individuals in a vulnerable group bear higher costs from the same bureaucratic procedure as compared to the general population (Nisar, 2018). This vulnerability is an individual characteristic that increases the need for a successful outcome of an application to a welfare program. Hence, disadvantaged individuals will experience the administrative burden as more threatening. In this research context of students applying for financial support, an individual's vulnerability is conceptualized as financial insecurity (Christensen et al., 2020).

**Hypothesis 6.** Financial insecurity negatively affects citizens' experiences in bureaucratic processes.

## DATA AND METHOD

### Digitalizing the application for German student financial support

Our study focuses on the social program managing student financial support from The German Federal Training Assistance Act (BAfoeG). This welfare program constitutes the single largest provider of financial support to students in Germany. The federal program provides monthly payments to eligible students. The program provides 50 percent of the sum as a grant and the other half as an interest-free loan. While the maximum amount of monthly support is currently 934 €, students receive, on average, 503 € (BAMF, 2023). A student's general eligibility for the program and the specific amount of granted financial support depends on the student and their parent's financial situation, the educational status of siblings, and their progress within their study program. Students must fill in between three and ten application forms, depending on their situation. These forms can be accessed online as PDFs or are provided by the local office for financial study assistance (so-called BAfoeg agencies). Students need to complete all forms every year to receive continued financial support. Overall, the recurring standard paper-based application imposes extensive administrative burdens on students.

The for-profit startup “DeineStudienfinanzierung” (translates to “yourstudyfinance”) offers a redesigned and digitalized alternative to this process. With their service,

students can fill in all necessary information via an online portal, similar to a standard online survey. Subsequently, they receive the completed application with all necessary forms filled in digitally. This service costs 30 € for a one-time application or 80 € for a subscription that lasts the length of one's university degree. Table 1 outlines the costs of administrative burden for each application process. The direct comparison reveals what the redesign for the digital process entails. The three main features are the digital setup, reduced redundancies, and a modernized design. For this research project, we were able to access the digital platform provided by “DeineStudienfinanzierung.” Thus, we were able to include the redesigned process in the experimental study that we conducted.

### Procedure

We conducted a laboratory experiment to test our hypotheses (see Figure 1) (Anderson & Edwards, 2015; Tepe & Prokop, 2017). Participants first completed a survey including measures about human capital. In the second step, they encountered the bureaucratic application process—participants filled in a first-time application for the German Federal Training Assistance Act (BAfoeG). The application was not for themselves but for a fictitious person. Using fictitious data ensured the protection of participants' sensitive income data and allowed for measurement and comparison of performance. All participants received an envelope with instructions and a description of the same fictional student, including all the necessary information to complete the application. Participants in the paper process group additionally received the four necessary forms for the application as printouts. Participants in the digital process group received a link to register at the online portal, providing the digital application process and supplementary instructions on how to use the platform. Regardless of the treatment group, participants had 20 minutes to complete as much of the application as possible. This time frame was necessary to ensure all participants had enough time after the application procedure to complete the second part of the survey within 45 minutes. After 20 minutes, all materials were collected in the envelopes again, and the digital process group participants were instructed on how to exit the online portal. After going through the bureaucratic process, all participants completed a survey that included the dependent and sociodemographic variables. All measures were the same for both experimental groups. Exemplary materials can be found in Appendix A (Figures A1–A3).

TABLE 1 Manifestation of administrative burden in the BAfoeG application process.

Administrative burden	Standard process	Digital process
<b>Learning costs</b>		
Is the student eligible?	No general rules or guidelines provided; Provision of examples of eligible individuals online; option to talk to an employee of the BAfoeG-Agency; assessment provided on approval of the application	Eligibility assessment included in the process; information provided after filling in half of necessary data points for an application
Which of the 10 forms need to be filled in?	Information in title of the forms; Online questionnaire	Algorithm determines necessary questions and follow-up information needed and fills in information into forms
Where can the information be found that is needed to fill in the forms?	Option to make an appointment at the local BAfoeG-Agency	Additional help function with short explanations for every question with links to blog posts with more comprehensive information
Which supporting documents need to be provided?	Small markings in the forms themselves indicate need for proof	Comprehensive list of all needed documents at the end of the process
<b>Compliance costs</b>		
Filling in required forms	PDF format; redundancies on each form	Survey style questionnaire in online portal; each data point only asked for once; only relevant data points asked for
Providing supporting documents	Copies of documents	Scans of documents
Sending the application	Via Post or Email	Via Post or Email
<b>Psychological costs</b>		
Uncertainty about amount of financial support	Assessment provided on approval of the application	Accurate estimate of financial support after half of data point are filled in
Dependency on family members to provide information and supporting documents	Inherent in the system	Inherent in the system
Dependency on success with little alternatives	Inherent in the system; option for a student loan included	Inherent in the system; options for stipends and student loans included

## Participants

The study was conducted in June 2020 in the research laboratory at the University of Hamburg in Germany. Participants were not aware of the study's topic prior to participating. In four sessions with 30 participants each, a total of 120 students participated and completed the experiment. Sessions were randomly assigned to one of the two bureaucratic processes, resulting in 60 participants having to complete the traditional paper process and 60 participants of the other two sessions the digital process. The randomization on the session level was necessary as part of the instructions had to be read aloud by the experimenter, and participants should be prevented from being immediately aware of there being different

experimental groups. The relevant sample characteristics are presented in Table 2.

## Measures

### Dependent variables

For measuring *perceived learning*, *compliance*, and *psychological costs*, we developed measurement items inspired by the one-item measure for bureaucratic red tape (Rainey et al., 1995). This established measurement approach includes two steps. First, it defines the concept of interest. Second, it asks participants to rate their perceptions of the concept's prevalence. The three

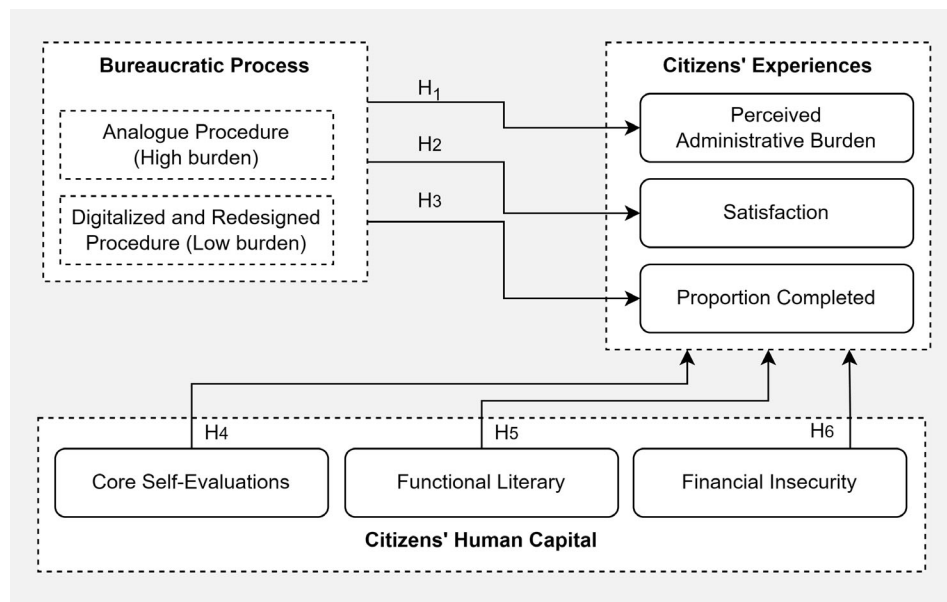


FIGURE 1 Overview theoretical framework and hypotheses.

TABLE 2 Sample characteristics.

Variable	Value (%)	Mean	SD
Gender			
Female	67 (56%)		
Male	50 (42%)		
Non-binary/other	3 (2%)		
Previous experience with BAfoeG			
No experience	62 (52%)		
Unsuccessful application	13 (11%)		
Successful application	45 (37%)		
Paper process ( $N = 60$ )			
Previous knowledge of non-governmental actor			
Yes	4 (7%)		
No	56 (93%)		
Digital Process ( $N = 60$ )			
Previous knowledge of non-governmental actor			
Yes	5 (8%)		
No	55 (92%)		
Core self-evaluations		3.53	0.64
Functional literacy		3.47	
Financial insecurity		3.47	1.19

Note:  $N = 120$  participants.

items were phrased as follows: "The term '\_\_\_ costs' describes the type of burden that citizens experience when they \_\_\_\_. How do you personally perceive the \_\_\_ costs in the process that you just experienced?"

Learning costs were described as having to search for information about bureaucratic processes and having to evaluate this information regarding its relevance. Compliance costs were described as having to follow extensive administrative rules and requirements in bureaucratic processes. Psychological costs were described as feeling stressed, frustrated, or insecure because of bureaucratic processes. *Procedural satisfaction* was measured with a 4-item scale adapted from Kaufmann and Tummers (2017) ( $\alpha = 0.90$ ). All survey items were measured on a 5-point Likert scale. The *proportion completed* was measured by calculating the percentage of data points filled out by the participants (based on the total necessary data points). For the paper procedure, 136 data points needed to be filled in to be able to complete the application, while there were 110 necessary data points for the online procedure (of which 13 data points were not necessary for the BAfoeG application procedure itself, but mandatory to be able to use the online portal).

## Covariates

We measured core self-evaluations with a 12-item scale adapted from Judge et al. (2003) ( $\alpha = 0.87$ ). Functional literacy (3 items,  $\alpha = 0.85$ ) was measured using the original German items from the administrative literacy scale developed by Döring (2021). Financial insecurity was measured with three items ( $\alpha = 0.85$ ) designed for this study. They asked about perceived financial insecurity previously, currently, and during the whole period spent

at university. All measures can be found in Appendix B (Tables B1 and B2).

## RESULTS

### Descriptive statistics

Descriptive results show that, on average, participants score relatively high on core self-evaluations and

functional literacy and tend to feel financially insecure. However, this variable has a larger variance compared to the others. Table 3 displays the continuous variables' means, standard deviations, and correlations.

Visualizing students' experiences split into whether participants experienced the paper-based or the digital process reveals a clear pattern. As indicated in Figure 2, participants encountering the digitalized and redesigned process perceived the bureaucratic encounter as less burdensome compared to those experiencing the paper-

TABLE 3 Descriptive statistics and correlation matrix.

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1 Age	27.1	6.06								
2 Core self evaluations	3.53	0.64	0.01							
3 Functional literacy	3.47	0.90	0.03	0.34***						
4 Financial insecurity	3.47	1.19	0.08	-0.36***	-0.14					
5 Learning costs	3.18	0.97	-0.07	-0.19*	-0.23*	0.17				
6 Compliance costs	3.38	0.83	0.03	-0.04	-0.11	0.05	0.56***			
7 Psychological costs	3.28	1.04	0.12	-0.13	-0.06	0.17	0.51***	0.58***		
8 Procedural satisfaction	2.91	1.05	0.02	0.00	-0.05	-0.20*	-0.31***	-0.42***	-0.64***	
9 Performance	53.2	15.8	-0.05	-0.06	0.19*	-0.15	-0.26**	-0.08	-0.04	0.12

Note: *N* = 120 participants.  
 \**p* < 0.05; \*\**p* < 0.01; \*\*\**p* < 0.001.

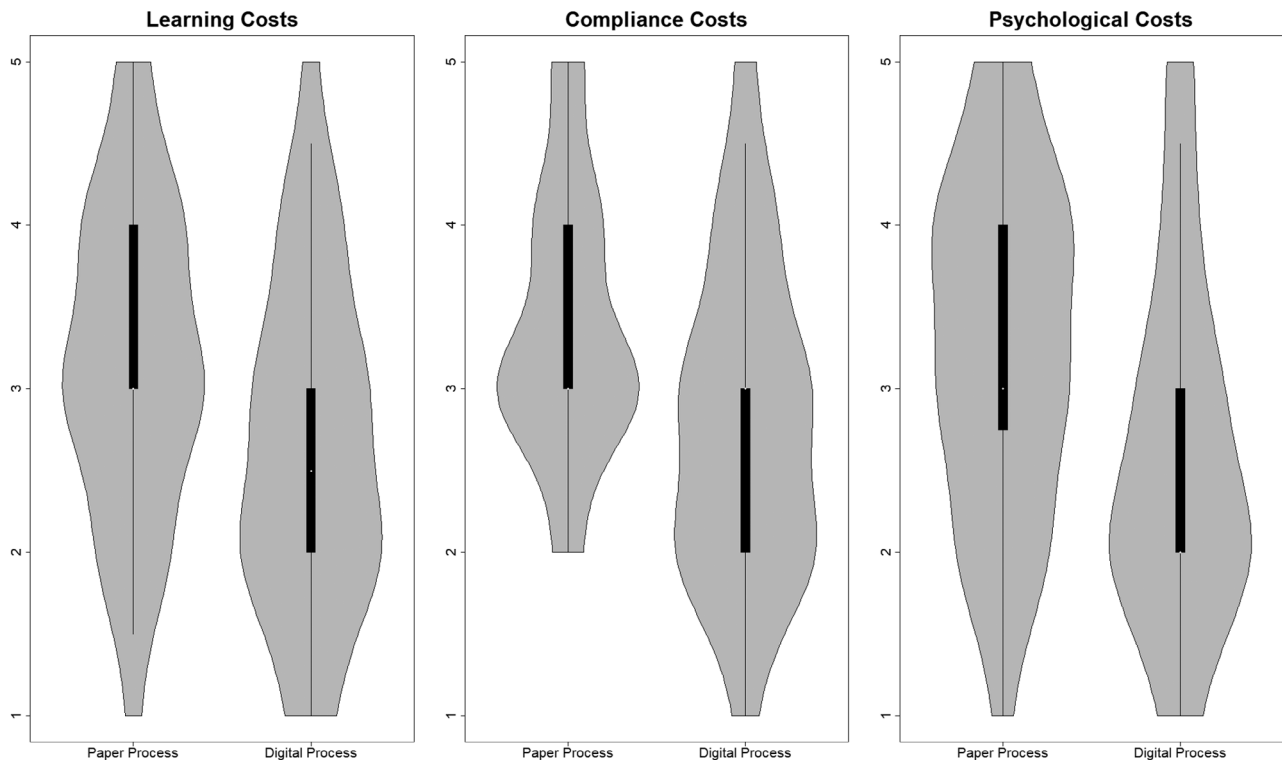
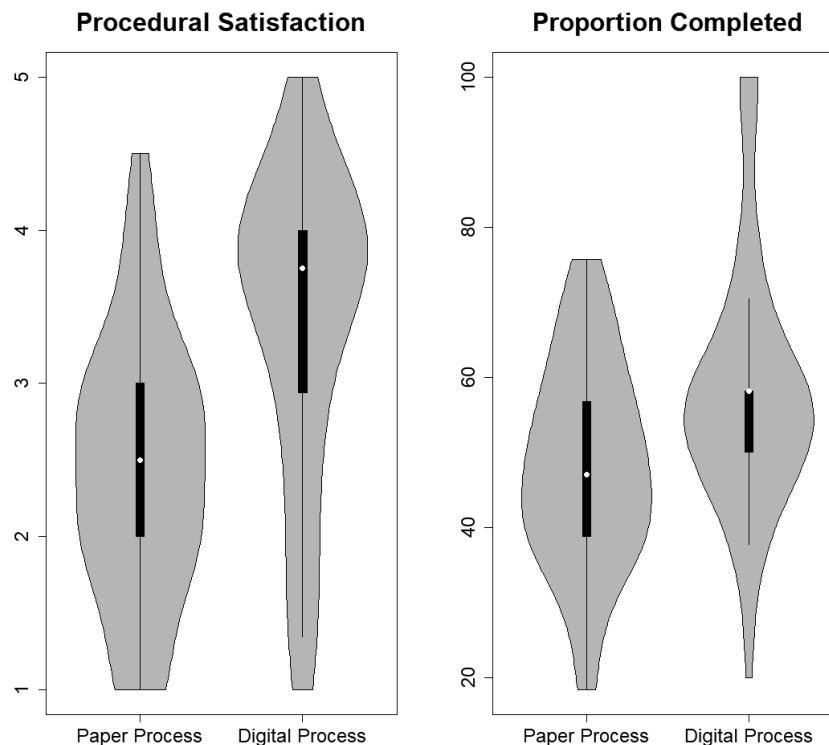


FIGURE 2 Violin plots of the costs of administrative burden. 1 = very low, 2 = low, 3 = medium, 4 = high, 5 = very high. White dot = median; black box = interquartile range; grey plot = density distribution. Paper process *N* = 60; digital process *N* = 60.



**FIGURE 3** Violin plots of citizen outcomes. 1 = very low; 2 = low, 3 = medium, 4 = high, 5 = very high. White dot = median; black box = interquartile range; grey plot = density distribution. Paper process  $N = 60$ ; digital process  $N = 60$ .

based process. The same pattern can be observed in Figure 3. Participants in this group report higher satisfaction with the bureaucratic encounter and seem to outperform those in the paper-based process group.

## Hypothesis testing

The multiple regression analysis in Table 4 shows the influence of the digitalized and redesigned treatment and the human capital variables on citizens' experiences of the bureaucratic encounter. For H1, the analysis indicates that the digital process reduces the experience of all three types of costs of administrative burden compared to the paper-based process: learning costs (Model 1:  $b = -0.570$ ,  $SE = 0.178$ ,  $p < 0.001$ ), compliance costs (Model 2:  $b = -0.624$ ,  $SE = 0.169$ ,  $p < 0.001$ ), and psychological costs (Model 3:  $b = -0.705$ ,  $SE = 0.198$ ,  $p < 0.001$ ). These results lend support for H1. Digitalizing and redesigning the process also positively influences both procedural satisfaction (Model 4:  $b = 0.956$ ,  $SE = 0.175$ ,  $p < 0.001$ ) and performance (Model 5:  $b = 9.019$ ,  $SE = 2.736$ ,  $p < 0.01$ ) compared to the paper-based process, providing supporting H2 and H3.

In our study, core self-evaluations and financial insecurity, as parts of human capital, do not influence participants' experiences of the bureaucratic encounter. Thus,

in our study, we did not find support for Hypotheses 4 and 6. The last human capital variable, functional literacy, however, reduces learning costs (Model 1:  $b = -0.234$ ,  $SE = 0.104$ ,  $p < 0.05$ ) and increases performance (Model 5:  $b = 4.446$ ,  $SE = 1.601$ ,  $p < 0.01$ ). Thus, we find some evidence supporting H5. Still, the support is only partial because we could not find an influence on compliance costs, psychological costs, or procedural satisfaction.

## DISCUSSION

This article examined individuals' experiences of administrative burden when applying for a welfare policy, with the primary goal of examining how digitalization (including a thorough redesign) can help alleviate administrative burdens. To test our hypotheses, we implemented a laboratory experiment featuring an actual application procedure for student financial support from The German Federal Training Assistance Act (BAfoeG). The results show that the digitalized redesign of the application process significantly reduces the experienced costs of administrative burden. Furthermore, the redesign positively influenced participants' satisfaction with the process and the proportion of process steps completed. Contrary to our expectations, participants' personality (core self-

TABLE 4 Results of regression analysis for attitudinal and behavioral outcome measures.

	Administrative burden				
	Learning costs	Compliance costs	Psychological costs	Procedural satisfaction	Performance proportion completed
	Model I	Model II	Model III	Model IV	Model V
Digital process (baseline = paper process)	−0.570*** (0.178)	−0.624*** (0.169)	−0.705*** (0.198)	0.956*** (0.175)	9.019** (2.736)
Core self-evaluations	−0.206 (0.154)	−0.058 (0.146)	−0.209 (0.172)	−0.002 (0.151)	−3.995 (2.369)
Functional literacy	−0.234* (0.104)	−0.116 (0.099)	−0.016 (0.116)	−0.064 (0.102)	4.446** (1.601)
Financial insecurity	0.062 (0.082)	−0.011 (0.078)	0.080 (0.091)	−0.123 (0.080)	−2.164 (1.261)
Previous experience (baseline = no experience)					
Unsuccessful application	−0.437 (0.295)	0.110 (0.279)	0.269 (0.328)	−0.276 (0.289)	3.616 (4.521)
Successful application	−0.081 (0.194)	−0.020 (0.185)	0.053 (0.216)	−0.180 (0.191)	3.147 (2.988)
Constant	4.587*** (0.729)	4.038*** (0.691)	3.760*** (0.811)	3.192*** (0.715)	53.290** (11.192)
R <sup>2</sup>	0.177	0.121	0.133	0.249	0.184
Adj. R <sup>2</sup>	0.133	0.074	0.087	0.209	0.141

Note:  $N = 120$  participants. Standard errors appear in the parentheses below the Coefficients.  $VIF < 2$ .

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

evaluations) and vulnerability (financial) did not affect how they experienced the bureaucratic process. However, individuals' functional literacy had a positive influence.

These results contribute to the administrative burden literature in three ways. First, we theorize and empirically test how a digitalized redesign affects individuals' experiences of administrative burdens. Our research theorized that digitalization (Peeters, 2023), when accompanied by a thoughtful redesign, results in considerable benefits (Leonardi & Treem, 2020). Indeed, digitalizing and redesigning bureaucratic procedures allows for shifting burdens away from the citizens (Herd et al., 2013; Pierce & Moulton, 2023). We argued that lowering learning and compliance costs through digitalization and redesign reduce the threats that a bureaucratic procedure poses. This, in turn, reduces the experiences of administrative burdens more generally and even increases individual performance. Our reasoning suggests that both citizens and public organizations benefit from such endeavors. Application processes become more manageable and less time-consuming, also at the backend, where street-level bureaucrats decide eligibility. The digitalization initiative should make applications much easier while not necessarily increasing the workload for public

organizations (Negoita et al., 2023). We provide causal evidence about how a specific bureaucratic encounter's (re-)design affects the applicants' experiences (Doughty & Baehler, 2020; Gilad & Assouline, 2022). While the laboratory experiment provides strong causal inferences solely for this specific setting, discussing these insights provides broader implications for scholars and practitioners. Implementing a thorough redesign using a digital solution allowed shifting the burdens away from citizens. In general, participants experienced lower levels of burdens and performed better. The presented approach may be applicable to many welfare policies requiring an application process. We encourage scholars to further explore potential digitalization efforts, including redesigns, to subject this claim to additional empirical testing.

Second, our study contributes to research focusing on how individual differences affect experiences of administrative burdens. First, core self-evaluations did not influence citizens' experiences of the bureaucratic procedure. Administrative burden was expected to influence individuals with low core self-evaluations (Chang et al., 2012; Kammeyer-Mueller et al., 2009). Thus, it is surprising that we could not identify an impact of core self-evaluations on any of the perceptual and behavioral

measures. Second, feeling financially insecure did not influence the participants' experience. In this regard, we must note that the sample does not represent the German student population. For one, 37% of participants receive BAfoeG financial support, while only 11% of all German students do (Middendorff et al., 2017). Furthermore, around two-thirds of German students felt financially secure (Middendorff et al., 2017), while less than half of the study participants reported feeling financially secure. As students receive financial compensation for participating in laboratory experiments, we are not surprised by certain self-selection. This discrepancy could have been exacerbated because of data collection during the COVID-19 pandemic, which increased financial worries for students. However, even with this increased share of financially insecure participants, we found no effect on the perception of the application procedure. This finding does not align with a core finding from the administrative burden literature, namely that the costs of administrative burden are distributive (Herd & Moynihan, 2018). Our findings cautiously suggest that the distributive effects of administrative burdens may not result from whether citizens *perceive* higher or lower levels of the different costs. Instead, unsuccessful program access due to vulnerability might be caused by other mechanisms, for example, higher rates of errors in the applications. Of the investigated individual human capital characteristics, only functional literacy (Döring, 2021) influenced the perception of the application procedure and how well students performed. Individuals who understand and feel comfortable with bureaucratic language experience less learning costs and perform better, supporting the variable's explanatory power for how well individuals navigate bureaucratic procedures (Bisgaard, 2023; Döring, 2021; Döring & Madsen, 2022). Interestingly, functional literacy did not alter the experiences of compliance and psychological costs but only decreased perceived learning costs. This finding is relevant because students with high functional literacy still complete a higher proportion of steps in the application. Apparently, learning demands contribute heavily to the necessary time investment of citizens (Barnes, 2021). One explanation for why the other human capital variables did not exhibit a significant effect is their specificity level. The least specific variable, personality, did not relate to the bureaucratic encounter. Next, the vulnerability did relate to the specific context of student financial support but less to the bureaucratic encounter (i.e., applying for financial support). Lastly, functional literacy (i.e., the ability to understand bureaucratic language) relates very specifically to the bureaucratic encounter of the experiment, in which participants were asked to fill in forms and identify what information they needed to provide at what point in the application process. Thus, we stress the need to develop

measures specifically accounting for the context of public encounters (Bisgaard, 2023; Döring, 2021).

Third, the results presented here indicate that the different cost categories associated with administrative burden influence each other. We suggest that psychological costs primarily arise because individuals endure learning and compliance costs (Hattke, 2020). In our design, learning costs were reduced by including an eligibility assessment in the process, automatically filling in the gathered data points into the relevant forms and including extensive additional material within a "help function" in the online portal. In addition, compliance costs were reduced by minimizing redundancies and modernizing the procedural design in the online portal (i.e., survey). In contrast, most psychological costs identified in the application procedure, such as dependency on family members or the dependency on the success of the application, are inherent to the welfare policy itself and cannot be changed. Nonetheless, our results indicate that participants experienced significantly lower psychological costs. This combination suggests some interdependencies of different costs. Learning and compliance costs pose direct threats related to program access. This perceived threat leads to psychological costs, namely feelings of confusion, frustration, and anger (Hattke et al., 2020). As the digital process reduces manifested administrative burden, citizens also experience a lower threat level. However, since our study was not primarily focused on these arguments, they should be tested in future research.

## LIMITATIONS

Our study comes with limitations, which are essential to note. First, this experiment was conducted with a small, non-representative sample. While this results from the setup of laboratory experiments (Anderson & Edwards, 2015), it might still affect the statistical results. For instance, lower statistical power might explain the absence of significant effects for vulnerability and personality. In this regard, since our sample exclusively consists of students, we cannot draw reliable inferences about other vulnerable populations. While students exhibit financial insecurity to some extent, they are not comparable to other vulnerable groups facing more significant disadvantages. Furthermore, unlike other demographic groups, students are likely used to digital procedures. Overall, the sample limits the generalizability of the findings. The sample structure could also cause some of the null findings in our study, for example, the lack of effects for H4 and H6.

Second, our design allows only a limited comparison of burden reduction. The digitalized process is a real-life application that cannot be altered. Hence, we cannot disentangle the three cost categories associated with

administrative burden. This limits our inferences because we cannot assess whether reducing one cost category was particularly relevant. Our results primarily indicate that reducing administrative burden through digitalization, in general, is beneficial. The design was also limited regarding the individual-level factors we could assess. We deliberately choose core self-evaluations, vulnerability, and functional literacy to cover different aspects of human capital. Since these do not allow to capture human capital entirely, future research should also consider including other human capital factors (Christensen et al., 2020; Chudnovsky & Peeters, 2021; Döring & Madsen, 2022). In addition, scholars should include additional proxies reflecting other types of capital, such as social capital (Putnam, 1995).

Third, the laboratory setting introduces several limitations. Most importantly, participants were asked to fill out the application for a fictitious person. This necessary measure (primarily for data privacy) reduced the realism of the experimental situation and might have especially affected the investigation of human capital variables. Participants knew that no real consequences would arise in the application procedure regardless of their behavior. Hence, the level of stress involved may be lower than for someone experiencing a real application situation. Examining this in more realistic settings would require the implementation of field experiments (Hansen & Tummers, 2020) or experience sampling methods (Fisher & To, 2012). The research design is also limited in assessing the outcome of the application processes, and thus, we could only measure the proportion of steps completed to infer performance. Other performance indicators, such as accuracy or successful enrollment, might change the results and should be included in further studies.

## PRACTICAL IMPLICATIONS

Zooming in on the practical implications of this experimental study, we note that the digitalized and redesigned application process is not just an online version of the established bureaucratic process that simply transfers information from a physical format to a digital one. Rather, the reduced redundancies, the modernized design, and the new process architecture constitute a significant improvement. The unambiguously positive impact of the digital transformation complements previous research from the burden-shifting literature, which finds that reducing administrative burdens for citizens by shifting them to the public actor has significant benefits for citizens (Herd et al., 2013).

Reducing administrative burden is an end and a means to achieve increased access or reduced dropout

(Fox et al., 2020; Herd & Moynihan, 2018). Our findings indicate the potential of targeted burden reduction to increase access to the welfare policy we studied (i.e., student financial support). 40% of participants using the digital application could imagine using the service in the future (of which 70% had not previously applied for BAfoeG). Apparently, the redesigned procedure sufficiently reduced the hurdles caused by learning, compliance, and psychological costs. Previous research on student financial support primarily focuses on increasing take-up through nudges (Bird et al., 2021) or how to reduce the burdens of paying back loans (Barr et al., 2021; Mueller & Yannelis, 2022). Our study adds insights related to the design of application procedures. In future digital transformation efforts, public organizations should start by evaluating the bureaucratic process and assess the impact of administrative burden (Doughty & Baehler, 2020; Peeters, 2023).

Our findings suggest further implications for practitioners. The digitalized and redesigned process increased procedural satisfaction more than it decreased administrative burdens. This result supports previous experimental evidence on citizens' satisfaction with bureaucratic processes (Kaufmann & Tummers, 2017; Tummers et al., 2016). In addition, we observed a meaningful effect on how well participants navigated the process (proportion completed). On average, participants in the digital process completed a significantly higher proportion of process steps (measured as the percentage of completed data points) than participants in the standard process during the same time. The simplification of the process and reduction of learning and compliance costs account for most of the improvement. Thus, while research on digital citizenship shows that existing inequalities can be exacerbated by requiring citizens to use digital formats (Chudnovsky & Peeters, 2021), carefully crafted solutions should positively affect the implementation of welfare programs more broadly. We advocate for implementing digital applications such as the one in our study. However, we want to end on a critical reflection: Policymakers and public organizations should develop and implement digitalized and redesigned procedures to alleviate and shift administrative burdens for citizens. If they fail to do so, for-profit actors can fill the gap and monetize on the situation, potentially disadvantaging citizens and reducing overall welfare.

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## CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

## ETHICS STATEMENT

This research adheres to the RESPECT Code of Practice for Socio-Economic Research which was certified by the WISO research lab at the University of Hamburg.

## INFORMED CONSENT

Informed consent was obtained from all subjects involved in the study.

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APPENDIX A: MATERIALS

Formblatt 1

Bitte füllen Sie diese Anlage sorgfältig in Druckschrift aus und kreuzen Sie Zutreffendes an.  
**Hinweis:** Sie sind nach § 60 Erstes Buch Sozialgesetzbuch verpflichtet, alle Tatsachen anzugeben, die für die Sachaufklärung erforderlich sind, und die verlangten Nachweise vorzulegen. Ihre Angaben sind gemäß den Vorschriften des Bundesausbildungsförderungsgesetzes (BAföG) für die Entscheidung über den Antrag notwendig. Kommen Sie Ihrer Mitwirkungspflicht nicht nach, kann Ihnen die Ausbildungsförderung nach dem BAföG versagt oder entzogen werden (§ 88 Erstes Buch Sozialgesetzbuch). Weitere Informationen zu Ihren datenschutzrechtlichen Informationsrechten nach Art. 13 Datenschutz-Grundverordnung (DS-GVO) finden Sie unter: <https://www.bafög.de/hinweis>

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 Eingangstempel  
 \_\_\_\_\_

## Antrag auf Ausbildungsförderung nach dem Bundesausbildungsförderungsgesetz (BAföG) I

**Ziele**

1 **Ich beantrage Ausbildungsförderung für den Besuch der/des**

Ausbildungsstätte Universität Hamburg
Klassen-/Schichtung 1. Semester Sozialökonomie
angestrebter Abschluss Bachelor

6  in Vollzeit  in Teilzeit

6 **Ich habe bereits früher einen Antrag auf Ausbildungsförderung gestellt**  nein  ja, und zwar beim

Amt für Ausbildungsförderung	bisherige Amts- und Förderungsnummer
------------------------------	--------------------------------------

8 **Personenbezogene Angaben**

Name Mueller	Geburtsname	Geburtsort Hannover
Vorname Hanna	Geburtsdatum 0 1 0 7 2 0 0 0	<input type="checkbox"/> männlich <input checked="" type="checkbox"/> weiblich
Staatensicherheitsnummer 1 2 3 4 5 6 1 2 3 4 5		

12  ledig  verheiratet/in eingetragener Lebenspartnerschaft seit\*  dauernd getrennt lebend seit\*  verwitwet seit\*  
 geschieden/aufgehoben seit\* Datum\* Tag Monat Jahr \* Datumsangabe nur bei Änderung gegenüber der letzten Erklärung

14 Staatsangehörigkeit  deutsch  andere, und zwar **B** Staatsangehörigkeit des Ehegatten/einget. Lebenspartners

15 **Anschrift am ständigen Wohnsitz**

Straße, Hausnummer Papenstr., 1	bei
PLZ 2 0 1 8 9	Ort Hamburg
E-Mail - Angabe empfohlen hanna_labor1-test2@yahoo.com	
Bundesland	
Telefon (mit Vorwahl) - Angabe empfohlen +4915187654321	

19 **Anschrift der Unterkunft während der Ausbildung (soweit bereits bekannt)**

Straße, Hausnummer	bei
PLZ	Ort
E-Mail - Angabe empfohlen	
Bundesland	
Telefon (mit Vorwahl) - Angabe empfohlen	

23 **Meine Bankverbindung**

Name und Sitz des Geldinstituts Sparkasse Hannover	
IBAN 0 5 3 1 2 5 0 5 0 1 8 0 1 9 1 0 3 3 7 2 3 4	
BIC S P K H D E 2 H X X X	
Sofort dies nicht Ihr eigenes Konto ist Name und Vorname des Kontoinhabers/der Kontoinhaberin (Legitimation durch gültigen Personalausweis erforderlich) Hanna Mueller	

28 **Der Bescheid sowie sonstiger Schriftverkehr sollen übersandt werden an:**

29  mich (Zelle 15 bis 18)  mich (Zelle 19 bis 22) **oder**  meinen Vater  meine Mutter  meine/n  
Sorgeberechtigte/n

30 **Angaben über meine leblichen Eltern oder Adoptiveltern:**

Vater Name Mueller	Vorname Paul	Geburtsdatum 2 1 0 4 1 9 7 0	verstorben am
Straße, Hausnummer Gibelstr., 15		PLZ 3 0 1 7 3	Ort Hannover
Staatsangehörigkeit: <input checked="" type="checkbox"/> deutsch <input type="checkbox"/> andere, und zwar			

Mutter Name Mueller	Vorname Iris	Geburtsdatum 1 5 0 6 1 9 7 3	verstorben am
Straße, Hausnummer Gibelstr., 15		PLZ 3 0 1 7 3	Ort Hannover
Staatsangehörigkeit: <input checked="" type="checkbox"/> deutsch <input type="checkbox"/> andere, und zwar			

37 Wenn beide Eltern leben, sind sie miteinander verheiratet oder in einer eingetragenen Lebenspartnerschaft verbunden?  ja  nein  dauernd getrennt lebend

**B** Bitte Belegie in Kopie beifügen, sofern in den Erläuterungen oder durch Ihr Amt für Ausbildungsförderung nichts Weiteres bestimmt ist.

FIGURE A1 First page of the standard application form.

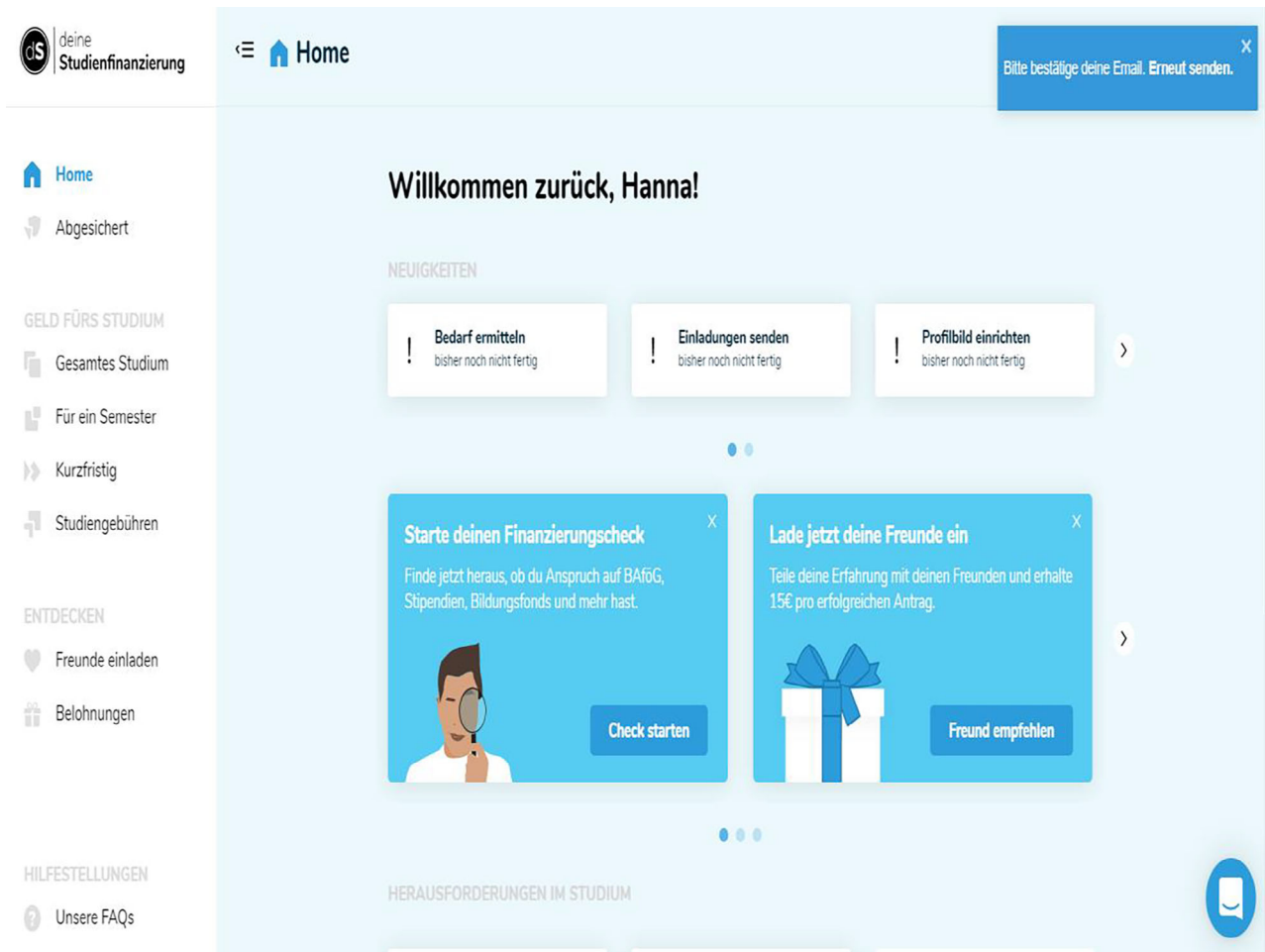


FIGURE A2 First page of the digital application form.

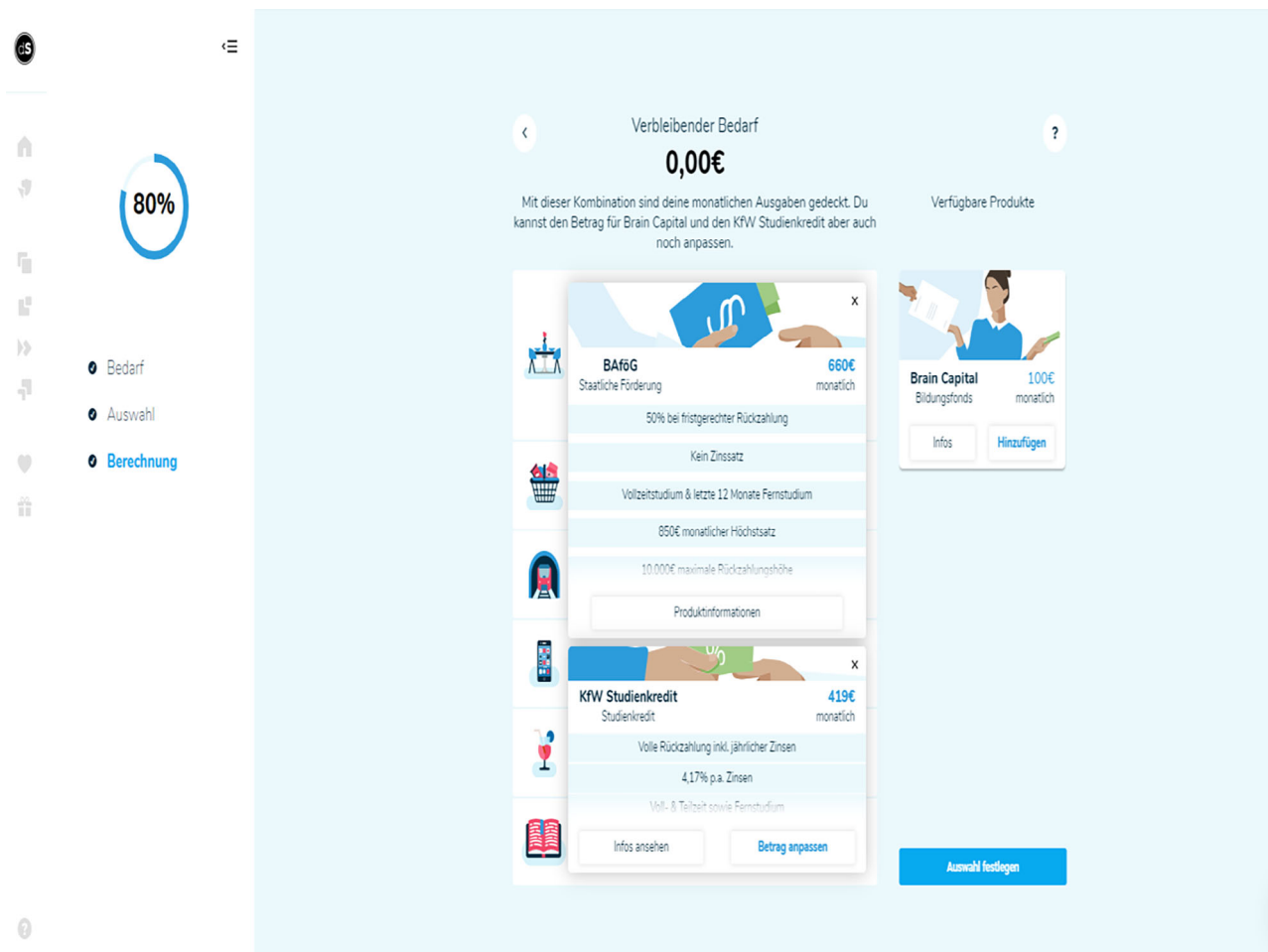


FIGURE A3 Page displaying eligibility assessment of the digital application form.

## APPENDIX B: MEASURES

**TABLE B1** Item descriptions of dependent variables.

Scales	Items	Descriptions
Learning costs	LC	The term “learning costs” describes the type of burden that citizens experience when they have to search for information about bureaucratic processes and have to evaluate this information regarding its relevance. How do you personally perceive the learning costs in the process that you just experienced?
Compliance costs	CC	The term “compliance costs” describes the type of burden that citizens experience when they have to follow extensive administrative rules and requirements in bureaucratic processes. How do you personally perceive the compliance costs in the process that you just experienced?
Psychological costs	PC	The term “psychological costs” describes the type of burden that citizens experience when they feel stressed, frustrated, or insecure because of bureaucratic processes. How do you personally perceive the psychological costs in the process that you just experienced?
Procedural satisfaction		How satisfied are you...
	PS01	...with the procedure to apply for BAfoeG?
	PS02	...with the duration of the procedure to apply for BAfoeG?
	PS03	...with this procedure to apply for BAfoeG compared to your expectations about such a procedure?
	PS04	...compared to an ideal procedure to apply for BAfoeG?

**TABLE B2** Item descriptions of human capital variables.

Scales	Items	Descriptions
Core self-evaluations		How much do you agree with the following statements?
	CSE01	I am confident I get the success I deserve in life.
	CSE02	Sometimes I feel depressed. (r)
	CSE03	When I try, I generally succeed.
	CSE04	Sometimes when I fail I feel worthless. (r)
	CSE05	I complete tasks successfully.
	CSE06	Sometimes, I do not feel in control of my work. (r)
	CSE07	Overall, I am satisfied with myself.
	CSE08	I am filled with doubts about my competence. (r)
	CSE09	I determine what will happen in my life.
	CSE10	I do not feel in control of my success in my career. (r)
	CSE11	I am capable of coping with most of my problems.
	CSE12	There are times when things look pretty bleak and hopeless to me. (r)
Functional literacy	FL01	It is easy for me to read complex texts with multiclausal sentences
	FL02	It is easy for me to read complex texts with bureaucratic terms (e.g., substitute income).
	FL03	It is easy for me to read complex texts with passive voice (e.g., The income will be taken as a permanent basis for your pension you're currently applying for.).
Financial insecurity	FI01	In the past, I have worried about my financial situation.
	FI02	I currently worry about my financial situation.
	FI03	For the duration of my studies, I feel financially protected.