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Generic or Specific Search Terms: What Do Citizens Type in the Google Search Bar to Obtain Political Information?

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ABSTRACT

Facing a policy issue, citizens use search engines such as Google to seek political information. Although some scholars have expressed concern that higher user control, and high choice might induce selectivity, existing literature has neglected the role of search terms in the echo chamber debate. This study applied two cross-section surveys during two referendum votes to expose respondents to mock Google webpages ($N = 728$; $N = 820$). With thematic coding analysis and logistic regressions, the study indicates that citizens rarely use the search bar to search for only like-minded information sources and that individual-level characteristics are not drivers of search terms. Though search terms foresee self-selection in the results' page for some motivated citizens, ranking remains the main driver of self-selection for most citizens.

KEYWORDS

Search engines; Political information selection; Selective exposure; Echo chamber; Referendum vote; Google; Algorithmic personalization

Introduction

Search engines such as Google outpace all other applications to obtain political information (Knobloch-Westerwick, Mothes, Johnson, Westerwick, & Donsbach, 2015). Approximately 90% of Internet users utilize search engines to navigate the Internet to obtain information, including political information (Lee, Kim, & Scheufele, 2016). Likewise, 56% of Internet users first use a search engine, instead of a specific website to search for political information (Dutton & Reisdorf, 2017). Users type in their queries to obtain a filtered, personalized, and abridged list of available political information sources (Courtois, Sleuchten, & Coenen, 2018; Flaxman, Goel, & Rao, 2016). Despite the broad consensus that search engines are pivotal information gatekeepers in democracies (Trevisan, Hoskins, Oates, & Mahouly, 2018), the research agenda on online political information seeking has neglected the role of users' search terms.

Disregarding the search bar, scholars have concentrated on the search engine results page (SERP) and the reinforcement of personalized communication as a potential threat to democracy (see Cho, Ahmed, Hilbert, Liu, & Luu, 2020; Zuiderveen Borgesius et al., 2016). However, the Internet has introduced not only high choice information environments in the online sphere (Beam, Hutchens, & Hmielowski, 2018) but also interactivity in information seeking, which implies that users can explicitly express their interests and preferences (Slechten, Courtois, Coenen, & Zaman, 2021). That is, prior to self-selecting political information sources from an algorithm-recommended and personalized list, citizens inform the search engine's algorithm about their search expectations by entering terms in a search bar. This interaction offers users a high degree of control, creating the possibility for online echo chambers (Sunstein, 2001). What is more, a recent study by Trielli and Diakopoulos (2022) has indicated that what user type in a search bar, i.e., user-input bias, might more strongly reinforce echo chambers than algorithmic personalization, i.e., filter bubble (Pariser, 2011). Thus, Internet interactivity, and notably search terms, are part of the awakening regarding motivated selectivity in political information seeking online.

This exploratory study questions search queries in the context of referendum voting. That is, it analyzes search terms from citizens facing a policy issue in a direct-democratic vote campaign. It benefits from two cross-section surveys during two referendum votes in Switzerland – The Energy Act (2017) and the Tax Proposal and Pension Financing

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Reform (2019) – with respondents being exposed to mock Google webpages. A thematic coding analysis of respondents' search queries ($N = 728$; $N = 820$) was used to evaluate user queries typed in a Google search bar when seeking political information. This content analysis served as the dependent variable. Then, logistic regressions were applied to examine not only whether individual-level drivers moderate search terms but also to explore whether and how the search terms mirrored self-selection behavior in the SERP.

Overall, this article contributes to the literature on selective exposure and online political information selection by ensuring a comprehensive understanding of the use of search engines to obtain political information. Previous research has concentrated either on the selection of information in a SERP and disregarded search terms, or it has highlighted the influence of search terms on algorithmic personalization. However, existing studies have neither examined the individual-level drivers of search terms, nor how search terms relate to self-selection behavior. This study analyzes then not only what citizens type in a search bar but also how this mirrors their information self-selection behavior at a SERP. Presumably, it is the first study that pinpoints this two-step process (for a noteworthy exception see Slechten, Courtois, Coenen, & Zaman, 2021).

The selective exposure hypothesis in an online information environment

The selective exposure hypothesis (see Knobloch-Westerwick, Mothes, & Polavin, 2020; Smith, Fabrigar, & Norris, 2008) draws upon cognitive dissonance theory (Festinger, 1957), social identity theory (Tajfel & Turner, 1979) and expected information utility (Sears & Freedman, 1967). It has been further developed by the motivated political reasoning perspective (Taber & Lodge, 2006).

Recently, the Internet has surged research on motivated selectivity because of its characteristics, notably that of high-choice and interactivity. In his seminal book, Schroeder (2018) stated that the Internet encompasses almost all existing information in one place, supplying easy and unlimited access to political information. Therefore, Internet users can actively seek political information; this information is not imposed on them (Hargittai, Neuman, & Curry, 2012; Neuman, Park, & Panek, 2012). While this new paradigm promises a functioning democracy (Hindman, 2009), i.e., accuracy motivations, scholars are concerned that the features of the Internet may strengthen motivated selectivity, i.e., defensive motivations. Sunstein (2001) argued that citizens construct echo chambers to access only consonant political information. Furthermore, Pariser (2011) stated that personalized algorithms filter out discrepant political information and keep citizens in like-minded bubbles.

Nevertheless, recent findings assert that online information seeking is more complex than assumed (Bakshy, Messing, & Adamic, 2015). Scholars found mixed empirical evidence regarding the echo chamber hypothesis. First, some studies indicate that a high degree of user control motivates individuals to screen out dissonant information in an online information environment (Bennett & Iyengar, 2008; Iyengar & Hahn, 2009). Haidt (2012) specified that individuals use the Internet to avoid alternative opinions and to fill their matrix with only like-minded information. Furthermore, Schulz and Roessler (2012) proved that individuals are unable to exploit the diversity of viewpoints easily accessible online. Additionally, Bakshy, Messing, and Adamic (2015) stated that only a minority of citizens explicitly search for discrepant information. Indeed, most citizens are unaware that they remain in echo chambers (Gillani, Yuan, Saveski, Vosoughi, & Roy, 2018).

Second, existing literature demonstrated that fears of ever-increasing polarization and fragmentation due to selective exposure online are exaggerated (see for a review Valentino, Banks, Hutchings, & Davis, 2009). For example, Garrett (2009), Garrett, Carnahan, & Lynch (2013), and Song, Cho, and Benefield (2020) emphasized that the Internet allows easier access not only to consonant but also to discrepant political information. Moreover, Fletcher and Nielsen (2017) demonstrated that online audiences are not more fragmented than offline audiences. This matches recent findings from Guess (2021) who demon-

strated that 50–65% of media diets overlap between Republicans and Democrats, proving that echo chambers exist only for a very few citizens.

Furthermore, the filter bubble hypothesis extended the research on selective exposure to algorithmic personalization. The literature on this subject presents differing conclusions. Muddiman (2013) and Hong and Kim (2018) have inferred that search engines display mainstream and political information read by others. Algorithmic personalization is guided by not only the online behavior of a user, i.e., content-based filtering, but also the cross-section of other users' online behaviors, i.e., collaborative filtering (Cho, Ahmed, Hilbert, Liu, & Luu, 2020). Conversely, scholars have asserted that search engines provide diverse political information sources. In two exploratory studies, Haim, Graefe, and Brosius (2018) detected neither self-selection nor algorithm personalization, and Steiner, Magin, Stark, and Geiss (2020) concluded that search engines' algorithms ensure content diversity on current political issues. These inconclusive findings have scaled-down democratic fears regarding filter bubbles on the Internet.

Last but not least, there is considerable evidence that self-selection among online political information is strongly driven by rankings on a SERP. In other words, Internet users trust search engines to supply their personalized, most relevant political information sources on top of the SERP (Ghose, Ipeirotis, & Li, 2019; Kammerer & Gerjets, 2014; Lorigo et al., 2008; Pan et al., 2007; Trevisan, Hoskins, Oates, & Mahouly, 2018; Unkel & Haas, 2017). This digital bandwagon effect fosters the importance of algorithm ranking and also trumps the echo chamber hypothesis.

Extending motivated selectivity to search terms

In his pioneering work related to motivated reasoning, Kunda (1990) stated that the consumption of political information is driven by either accuracy or directional motivations. Although this paper acknowledges this work, it considers accuracy and directional search terms as one political information selection strategy, i.e., specific search terms, and compare this overarching strategy with the alternate political information selection strategy of trusting search engines, i.e., typing generic search terms.[1] That is, this paper questions the contemporary trust hypothesis that postulates that search engine's users trust the algorithmic ranking and (only) select sources that are on top of a SERP. In line with Trielli and Diakopoulos (2022), this paper postulates that search engine's users exploit the Internet interactivity to type search queries that reflect their search expectations, i.e., user-input bias.

Therefore, this paper highlights two umbrella information selection strategies when typing a search query in a direct democratic vote context: generic or specific search terms. On one hand, analyzing algorithmic personalization in an election context in Germany, Unkel and Haim (2019) highlighted that citizens primarily use generic search terms. Going one step further, it can be hypothesized that this generic search terms' pattern is stronger in a direct democratic vote context. Facing a direct democratic vote, citizens lack latent political predispositions e.g., political party preferences) to anchor their political information selection. Citizens face the highly demanding task of opinion formation in a state of relative ignorance (De Angelis, Colombo, & Morisi, 2020; De Vreese, 2007). These prior works offer the hypothesis that citizens lack a clear prior stance on the policy issue at stake either because it is a complex or unfamiliar policy, or because it has no direct link to their daily lives. Thus, citizens provide generic political search terms to only specify the policy issue that interests them, and let algorithms do the job to determine the most relevant personalized sources of information. In other words, individuals type generic search terms because they lack motivation or policy knowledge to obtain neither accurate nor directional information.

On the other hand, some recent studies demonstrated that citizens utilize specific search terms to guide algorithmic personalization for easier selection of desired sources of information. Specific search terms express a desire to obtain a specific political content or source of information. Thus, specific search terms reflect existing and precise information expectations, rather than an accuracy or a directional motivation. This matches the most recent literature on user-input bias for political information. Trielli and Diakopoulos (2022) investigated how citizens' search terms, i.e., user-input bias, relate to selective exposure, and how this self-selection behavior interacts with algorithmic personalization.

Blassning, Mitova, Pfiffner, and Reiss (2023) studied online search patterns in direct-democratic votes. Combining surveys and qualitative coding, they concluded that most ballot-related searches start with neutral, rather than pro or contra search terms. Indeed, a citizen might be willing to obtain consonant political information, or to avoid dissonant political information. Further to this, the expected relevance of an information source might be used as a shortcut to ease information selection. Metzger, Hartsell, and Flanagin (2020) demonstrated that source credibility is a stronger predictor of motivated selectivity than cognitive dissonance. Thus, citizens might target not only a specific political content, but also a specific political information provider.

Building upon this inconsistent literature, this paper states a first research question (RQ1) that examines *to what extent do citizens type different search terms to obtain political information on the same policy issue?* That is, are citizens motivated to choose search terms that target specific information content, e.g., partisan, credible or like-minded sources of information; or, are they motivated to use generic search terms, trusting the search algorithms to provide the most relevant personalized sources of information?

Going a step further, it can be expected that differences in search behavior are motivated by different individual-level characteristics. In their study, Trielli and DIakopoulos (2022) compared search terms from individuals with different ideological positions during the 2018 midterm elections in the United States. With a qualitative thematic coding method, they identified a significant difference in search terms based on party attachment. Similarly, Blassning, Mitova, Pfiffner, and Reiss (2023) pinpointed different search behavior related to different voting groups with selective exposure patterns for the most salient vote ballot, i.e., proponents more frequently searched for pro-policy arguments and opponents more frequently searched for contra-policy arguments in comparison to non-voters. To further these preliminary results, this paper state a second research question (RQ2) *how do individual-level characteristics motivate different search queries?*

Considering the interaction between search terms and algorithmic personalization, Trielli and Diakopoulos (2022) detected no significant differences in Google's search results page despite the differences in partisan search terms. They argued that either the algorithm's mainstream effect neutralizes the differences in search terms or the algorithm culls its preselected list only from a very limited set of online political information sources. Similarly, Cho, Ahmed, Hilbert, Liu, and Luu (2020) experimentally manipulated a real-world search engine. They detected that algorithm-recommend content generated by self-generated search terms, rather than socially generated search terms, fosters an overall pattern of polarization and ideological reinforcement.

However, these articles overlooked the interaction between search terms and self-selection behavior at a SERP. A noteworthy exception is Slechten, Courtois, Coenen, and Zaman (2021) who developed an online research platform that not only copies a Google interface, but also retrieves real search results from the actual Google page. Their goal was to study the entire user-platform interaction from the onset, i.e., typing a search query, to the final stage, i.e., selecting an information source. They concluded that ranking remains the most prominent predictor of information selection. However, they also detected that users played an active role and sometimes defied the algorithmic ranking by reformulating their queries. Furthering this goal, this paper postulates that it is seminal to determine if Internet users that express their information expectations are motivated to go beyond the algorithmic ranking. This raises the third research question (RQ3) *to what extent individuals typing different search terms also display different self-selection behavior at a SERP?* That is, do citizens who type specific search terms – instead of generic search terms – go beyond the ranking to find information that matches their expectations, or do they still opt for the topmost ranking as suggested by the existing literature?

Materials and methods

Two online cross-section surveys were run during the two referendum votes in Switzerland in 2017 ($N = 728$) and 2019 ($N = 820$). Thematic coding and logistic regressions were applied to the

obtained data. The polling agency Qualtrics distributed the Weblink invitations and recruited respondents from an online opt-in panel. To ensure a representative sample, language, age, gender, and canton (i.e., subnational units) quotas were defined. The surveys were available in German and French. They could be completed on a computer or a smartphone. Each survey lasted approximately 11 minutes.

Case selection: two referendum votes

Considering that a significant policy issue boosts the volume of online searches (Trevisan, Hoskins, Oates, & Mahouly, 2018), it can be assumed that a referendum vote acts as a search catalyst, fostering information seeking through search engines. Search engines serve as compasses that optimize and ease political information seeking. A referendum vote is then a suitable case to investigate how citizens use search engines to obtain information about a policy issue.

The Energy Act (2017) and the Tax Proposal and Pension Financing Reform (2019) referendum votes in Switzerland were suitable contexts to investigate search queries from citizens facing a policy issue. Indeed, referendum votes often concern complex, and sometimes unfamiliar, policies. In such a state of relative ignorance, citizens might be tasked with a highly demanding policy choice (De Angelis, Colombo, & Morisi, 2020; De Vreese, 2007). However, Linder and Mueller (2017) stressed that Swiss citizens are accustomed to being confronted with complicated policy choices and to seeking political information to gain knowledge on such choices.

Regarding our research questions, 88.7% of the Swiss population aged 14 and older regularly use the Internet (The Swiss Federal Statistical Office, 2020). Moreover, Latzer, Festic, & Kapeler (2020) proved that the Internet has become the most used resource for seeking sources of political information in Switzerland; among Swiss citizens, 77% access the Internet to consume news, notably to obtain political information (Newman, Fletcher, Klageropoulos, & Kleis Nielsen, 2019). Figure 1 demonstrates how this assumption is confirmed. It displays Google trends with search terms "abstimmung" (German) and "votation" (French) used in Switzerland from November 2015 to November 2020. It pinpoints sharp increases in Google searches for political information before each direct-democratic vote in Switzerland

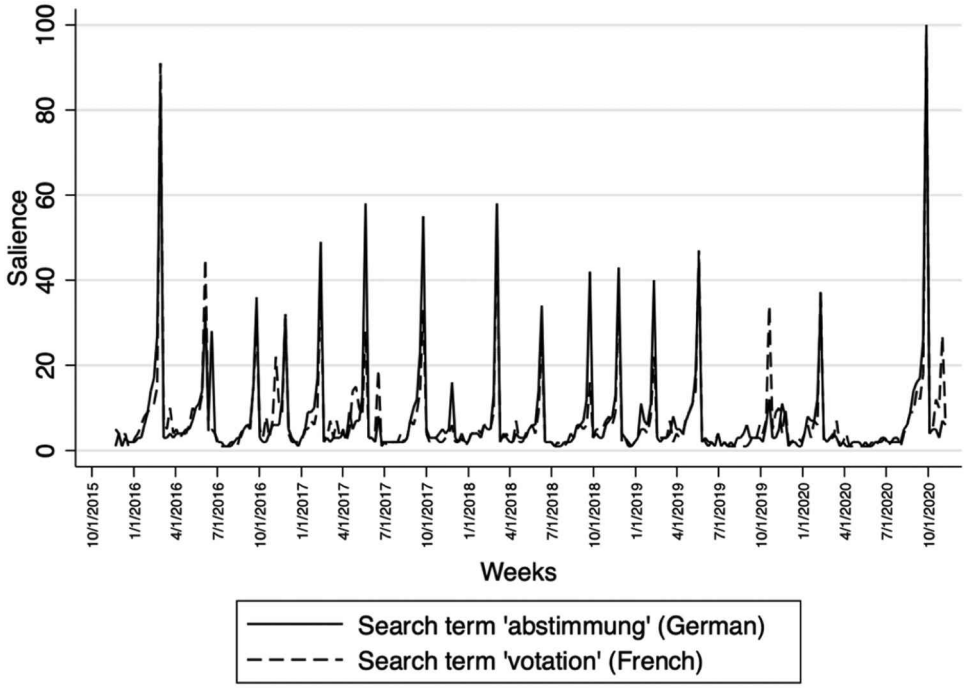

Figure 1. Google trends in Switzerland from 11/22/2015 to 11/08/2020.

(approximately four times a year). Higher spikes can be observed during February 2016 and September 2020 when numerous policies, i.e., respectively (4) and (5), were on the ballot. Conversely, the absence of spikes from March to August 2020 can be explained by the cancellation of direct-democratic votes due to COVID-19.

Context – the energy act referendum

The Energy Act was on the ballot on May 21, 2017. The government presented it to prepare Switzerland for the upcoming changes in the energy market. It followed three main objectives: increase energy efficiency, promote renewable energy, and stop the use of nuclear energy in Switzerland. It can be assumed that respondents held some prior knowledge and/or opinions on the subject, as the energy-environment topic has been an ongoing debate in Switzerland since the 2011 Fukushima incident. Using political advertisements as a proxy to measure campaign intensity, Heidelberger (2021) concluded that the Energy Act campaign ranked 10th out of 75 direct-democratic campaigns from 2013 to 2021.

Context – the tax proposal and pension financing reform referendum

This referendum was on the ballot on May 19, 2019. It concerned both corporate tax and public retirement provisions. It aimed at reinforcing the competitiveness of the Swiss tax system for companies as well as generating additional provisions to secure retirement pensions. The two dimensions – corporate tax and pensions – are hot topics in Switzerland. In 2017, a corporate tax reform and a retirement provision reform were separately voted on. The Swiss population rejected both. Furthermore, the Tax Proposal and Pension Financing Reform ranked 14th in the political campaign intensity rankings (Heidelberger, 2021).

A mock google webpage

To measure search terms, the two online surveys replicated a Google information-seeking task interface. The surveys took place five to six weeks before the ballot day, i.e., the beginning of the political campaign. Respondents were instructed to exploit the opportunity of using Google to search for information on the referendum vote. On the first page, they were asked to type a search query in a mock Google search bar. On the second page, they were exposed to a mock Google SERP with ten predetermined search results and instructed to click on as many information sources as they wanted to consult without any time restrictions. It is worth mentioning that search terms had no impact on the search results which were kept constant, and that respondents faced only one mock Google SERP. More than that, each respondent experienced the same search results, i.e., textual content, in the mock Google SERP with only variation in the ranking.

The two mock Google SERPs – in 2017 and 2019 – were similar in their layout but differed in their operationalization. Regarding the Energy Act (2017) case, respondents were exposed to a mock Google SERP that displayed a fixed ranking for the five first information sources. The two first information sources were Google ads from the two committees defending or opposing this reform. Then, positions 3, 4, and 5 were information sources from the government. The five remaining information sources were randomly allocated. This design is based on repeated real-world observations of previous referendum campaigns,[2] Then, concerning the Tax Proposal and Pension Financing Reform respondents were divided into 5 groups. The same 10 predetermined search results were used in all groups, but the ranking varied between the groups (for further details see Author (2022).[3] At the end, including a portion of random ranking within every group matches real-world algorithmically tailored SERP. That is, the ranking of search results varies across Internet users'. This additional variation displayed a different mock Google webpage for every respondent in both surveys. This is an ideal setting to ensure external validity, but also allows for comparisons between respondents, and not only at the group level.

To ensure external validity, the mock Google webpage mimicked the exact layout of a real-world Google webpage, i.e., color, font, and size (see Figure 2). The 10 sources of information were a reproduction of Google headlines from repeated real-world observations. Furthermore, the average number of words per search query

Figure 2. A mock Google webpage.[4].

was measured to ensure the internal validity of the measurements. Respondents typed on average 3.39 (SD = 2.38) and 2.76 (SD = 2.40) words per search query in the Energy Act survey and the Tax Proposal and Pension Financing Reform survey, respectively.

Thematic coding analysis

The thematic coding method identified and assigned themes across the respondents' search terms, following a coding reliability approach. This approach is identical to that of Trielli and Diakopoulos (2022) in an almost similar political context, and it aligns with Braun, Clarke, Hayfield, and Terry (2018) state-of-the-art recommendations. First, the coding unit was a respondent's search query. This unit could be either a syntactical sentence or a combination of words. Furthermore, an initial preview revised the typos, misspellings, and incoherent word orders. While this revision lessened dataset accuracy, it facilitated manual coding and reinforced reliability. Second, a subsample of 100 random search queries was scrutinized to define accurate themes.[5] Using human judgment and theoretical expectations, discrete themes were identified and conceptualized as domain summaries. Hence, the latent content from respondents' search terms required reading, interpretation, and theoretical background, as the themes were not directly observable. This qualitative phase generated a codebook for the last phase of reliable quantitative coding. This codebook contained a list of themes with labels, definitions, and examples.[6] Third, four independent coders extended the content analysis of the respondents' search queries to the whole dataset ($N = 728$; $N = 820$). These coders were university members, i.e., students or research assistants, in the field of political science. They possessed the necessary language skills, i.e., German and French and were familiar with political information and referendum votes. Finally, reliability was evaluated using Krippendorff's alpha. The intercoder agreement was 0.81 and 0.85 for the Energy Act and the Tax Proposal and Pension Financing Reform search queries, respectively. It confirmed the consistency of both the codebook definition and the thematic coding analysis.

Hierarchical codebook

A hierarchical codebook was developed to match respondents' search queries' themes (see Table 1). The first level determined whether the search query

Table 1. Hierarchical codebook – Definitions and examples of themes.

	Themes		Definition	Examples
First-level	1.1	Unclassified	Queries that are apparent errors or expressed desires to obtain no political information.	"keine," "???," "X," "Aucune motivation"
	1.2	Generic	Queries that are just keywords like "vote" or "referendum," or the name of the policy	"STA,F""energistrategie allgemei,n""Abstimmung 21. Mai 201,7""Abstimmung um was geht es" "energistrategie allgemein," "Abstimmung 21. Mai 2017," "Abstimmung um was geht es"
	1.3	Specific	Queries that target a type of information or an information source	
Second-level	1.3.1	Specific – Political actors	Queries that are tailored to reach a specific source of information such as a political party or the government	"Energiestrategie Bund," 'Info EVP, "Partei parolen," "Votation rffa avis udc"
	1.3.2	Specific – Confirmation/ Dissonance	Queries that look for either pro or contra information on the vote	"Pro Energistrategie," "Ja STAF,""Argumentarium gegen ES""Vorteile Energiestrategie""Initiativkomitee STAF" "Argumentarium gegen ES" "Vorteile Energiestrategie" "Initiativkomitee STAF"
	1.3.3	Specific – Balanced	Queries that specifically ask for balanced information, i.e., pro and contra, on the vote	"RFFA avantages et défauts","STAF pro kontr,a""pro und contra unabhangi,g""ES les arguments pour et contre" "STAF pro kontra," "pro und contra unabhangig," "ES les arguments pour et contre"
	1.3.4	Specific – Subdimension	Queries that try to obtain information on one or many of the subdimensions of the policy	"stratégie énergie coûts","renewable energy efficienc,y""energiekraftwerk,e""impact AVS" "renewable energy efficiency," "energiekraftwerke," "impact AVS"

is unclassified, generic, or directional. Unclassified search queries are inputs that are either apparent errors or expressed desires to obtain no information. A generic search query is just a mention of the referendum vote. It means that the respondent only aimed at obtaining any information on the policy issue. For example, the search terms are restricted to keywords like "referendum," "vote," or the name of the policy at stake. Finally, a specific search query targets a specific type of information content or source. It mirrors existing and precise information expectations. This follows Kunda (1990) who asserted that consumption of political information is driven by either accuracy or defensive motivations, Metzger, Hartsell, and Flanagin (2020) that highlights the prevalence of credibility sources, also literature that demonstrated that political cues can substitute for a thorough political information systematic reasoning (Colombo & Steenbergen, 2021; De Angelis, Colombo, & Morisi, 2020; Kriesi, 2005). Given the above, the second level determined four sub-themes within the directional theme.[7]

First, citizens type in search terms that are tailored to reach a specific source of information, i.e., political actor. The government (Kriesi, 2005) and a preferred political party (Dermont & Stadelmann-Steffen, 2019) remain the most credible political actors in the Swiss direct democracy. This also corresponds to Trielli and Diakopoulos' (2022) findings about the prevalence of partisan search terms.

Second, citizens type in search terms that look for either pro or contra information, i.e., confirmation or dissonance. They are either motivated to face consonant messages to reach a cognitive equilibrium (see for a review, Knobloch-Westerwick, Mothes, & Polavin, 2020; Smith, Fabrigar, & Norris, 2008), or they are motivated to explicitly search for dissonant messages (see, for example, Garrett et al., 2013; Song, Cho, & Benefield, 2020).

Third, citizens are also motivated to consider balanced information, because it provides higher utility. Driven by accuracy motivations, they weigh expected utility against cognitive dissonance (Knobloch-Westerwick & Kleinman, 2012). Thus, citizens type in search terms that ask for pro and contra, i.e., balanced information.

Fourth, citizens type in search terms to obtain information about one or many of the subdimensions of the political news event at stake, i.e., subdimensions. A referendum vote consists of multiple dimensions[8]; therefore, citizens are motivated to get informed about these subdimensions, because they may support some while rejecting others (Dermont & Stadelmann-Steffen, 2019). Such search queries are dependent on the existing political knowledge on the policy issue, and aim at specific information.

Finally, themes are mutually exclusive and collectively exhaustive. In other words, each search query input was assigned to only one theme/subtheme, and all search queries could be assigned to a theme or a sub-theme. The classification was operationalized into a nominal variable with six categories.

Independent variables

Both surveys started with inquiries on sociodemographic attributes, political attributes, and attitudes about the referendum. These independent variables ensured the representativeness of the dataset and isolated the individual-level drivers of the search queries (RQ2). Table 2 displays descriptive statistics and operationalization of the individual-level characteristics.

Next, the respondents were exposed to the mock Google webpage. After typing in a search query, each respondent chose as many of the ten predetermined sources of information from the mock SERP. In line with Jang (2014), a nominally scaled absolute selection rate was operationalized to determine whether different search terms mirrored different selection behavior when interacting with the SERP (RQ3). The absolute selection rate was a binary variable; a search result was assigned the scores of 1 if selected and 0 if not. On average, respondents picked 2.83 (SD = 1.77) (Energy Act) and 3.61 (SD = 1.86) (Tax Proposal and Pension Financing Reform) sources out of the ten headlines.

Table 2. Descriptive statistics and operationalization.

Variable	Operationalization	2017 *Energy Act*	2019 *Tax proposal and pension financing*
Language	(1) German-speaking;	66.07;	73.66;26.34
(in %)	(2) French-speaking	33.93	26.34
Sex	(0) male;	52.06;	5.80;49.20
(in %)	(1) female	47.94	49.20
Age	(1) 18–24 years old;	7.01;	11.59;
(in %)	(2) 25–34 years old;	13.60;	16.34;
	(3) 35–44 years old;	17.58;	17.68;
	(4) 45–54 years old;	23.21;	19.88;
	(5) 55–64 years old;	19.92;	16.71;
	(6) 65–74 years old;	13.60;	13.90;
	(7) older than 74 years old	5.08	3.90
Income	(1) below CHF 3'000;	6.91;	13.01;
(in %)	(2) CHF 3000 to CHF 5000	18.09;	27.63;
	(3) CHF 5001 to CHF 7000	22.86;	23.54;
	(4) CHF 7001 to 9000	19.90;	14.62;
	(5) CHF 9001 to 11,000	14.31;	10.09;
	(6) CHF 11,001 to 13,000	7.57;	5.85;
	(7) CHF 13,001 to 15,000	4.93;	2.49;
	(8) above CHF 15,001	5.43	2.78
Education	12-point scale from (1) no education to (12) university level	8.17	7.37(2.93)
(mean)		(3.10)	(2.93)
Political interest	4-point scale from (1) not at all interested to (4) very interested	3.00	2.91(.79)
(mean)		(0.78)	(0.79)
Political knowledge (mean)	Additive index from (0) low political knowledge to (4) high political knowledge	2.84 (1.15)	2.44(1.20) (1.20)
Trust in government	10-point scale from (1) not trust at all to (10) fully trust the government	6.09	6.44(1.81)
(mean)		(2.32)	(1.81)
Party closeness	(1) not close to a party	57.55;	55.42;
(in %)	(2) pretty close to a party	33.43;	37.56;
	(3) very close to a party	9.03	7.02
Vote choice	5-point scale from (0) absolutely no to (4) absolutely yes;	(0) 18.41;	(0) 9.40;
(in %)	4-point scale from (0) absolutely no to (3) absolutely yes;	(1) 9.34;	(1) 23.60;
		(2) 10.30;	(2) 54.80;
		(3) 13.46;	(3) 12.20
		(4) 48.49	
Internet as a source	5-point scale from (1) I never use the internet to (5) I daily use the internet		2.94
(mean)			(1.24)
Operating system	(0) Computer;	79.12;	6.12;39.88
(in %)	(1) Smartphone	20.88	39.88
N		728	820

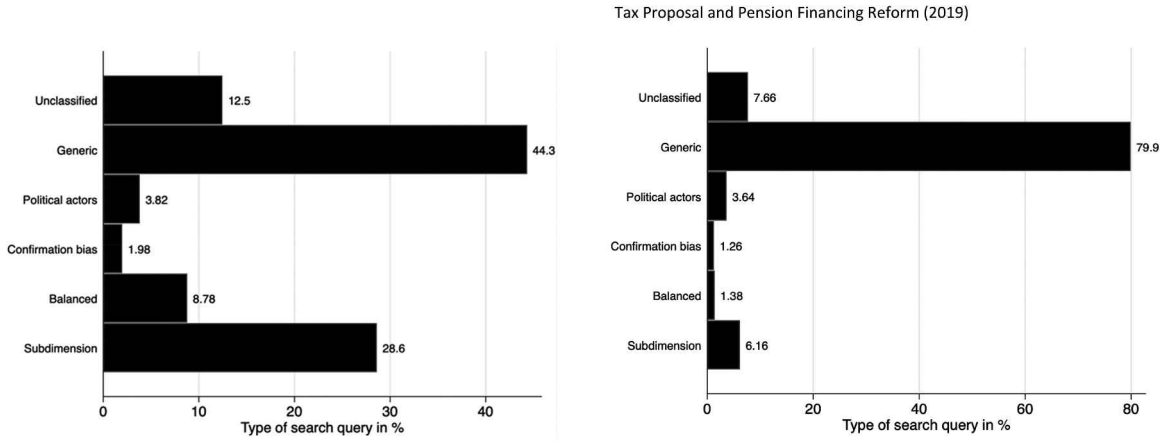

Figure 3. Search query themes (in percentage).

Empirical results

The analysis relies on a thematic coding analysis of the search terms. Figure 3 depicts the frequency (in percentage) of search query themes for both cases.

For the Energy Act case, approximately half of the respondents (44.3%) typed in a generic search query to obtain political information about the referendum. Typical search queries included "Abstimmung Energie Schweiz" or "Votation fédérale énergie 2017."[9] In contrast, 43.2% of respondents opted for a specific search query; they targeted a specific source of information and revealed their interests and preferences. To be precise, 28.6% of respondents were motivated to obtain information content related to the multidimensional aspect of the referendum at stake. For example, respondents typed in "Opinions sur le retrait du nucléaire," "La vérité sur les coûts réels," or "Sicherheit der Kernkraftwerke."[10] Moreover, 8.78% of respondents aimed to obtain balanced information content with queries such as "pro-contra Auswirkungen."[11] Unexpectedly, political actors (3.82%) and confirmation/dissonance (1.98%) search queries remained marginal.

Furthermore, 79.9% of the respondents typed in generic search terms when searching for political information about the Tax Proposal and Pension Financing Reform such as "votation 19 mai Suisse," or "STAF."[12] Thus, only 20.1% of the respondents were motivated to reveal their information expectations. Contrary to the Energy Act case, only 6.16% of the respondents targeted a subdimension of the referendum at stake. For instance, they typed "Pensionalter Frauen" or "AHV alter."[13] Moreover, only 1.38% of the respondents were motivated to obtain balanced information. Finally, 3.64% and 1.26% of respondents typed in political actors and confirmation bias search terms, respectively.

Next, two logistic regressions with robust standard errors were used to investigate the individual-level characteristics motivating the search terms.[14] The content analysis served as the dependent variable. It was operationalized into a binary variable. The base outcome category constituted the generic search terms. Figure 4 highlights how individual-level characteristics motivate specific search terms.

First, Figure 4 displays no significant impact of any individual-level characteristics on specific search terms. One exception is vote choice in the Energy Act context. A vote choice in favor of the Energy Act increases the odds that a respondent opt for generic search terms. Still, individual-level characteristics seem not to be (consistent) drivers of specific search terms.

Finally, to answer the third research question, this study used the self-selection task within the mock SERP. Two logistic regressions with robust standard errors were conducted to measure the moderating influence of search terms on information self-selection. The database was reshaped in a long format; each respondent was linked with ten

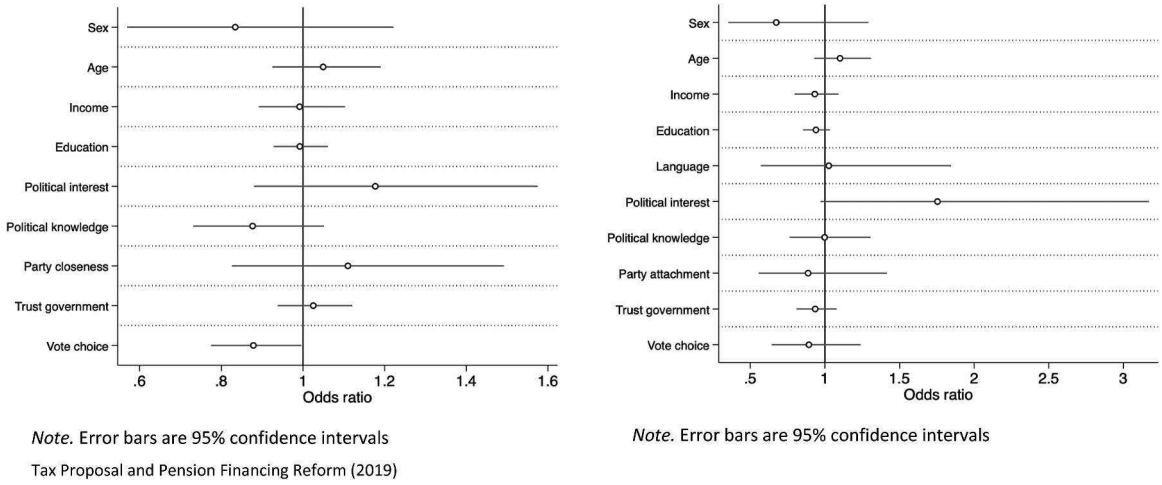

Figure 4. Logistic regressions – Individual-level drivers of specific search terms. Error bars are 95% confidence intervals

opportunities to select an information source from the mock Google webpage. The dependent variable is the absolute self-selection rate of information sources (0;1). Two-way interaction between search query themes and ranking was introduced to determine how the search terms mirror self-selection in the SERP.

Figure 5 disentangles the moderating influence of search terms on information selection in the SERP. First, the two-way interaction pinpoints the moderating influence of search terms on the self-selection of information sources ranked at the bottom of the mock Google webpage. In the Energy Act case, a specific search query increased the probability that respondents self-select a source of information that is neither a Google ad on top of the list nor a source of information ranked third to five. A t-test confirmed that the means of the absolute self-selection rate of information sources between search term themes are not significantly different (p-value = .580). This means that citizens typing in specific search terms did not select more sources of information; however, they selected different sources of information than citizens typing in generic search terms. Conversely, the analysis of the two-way interaction demonstrated that search terms did not have a moderating influence on the self-selection of Google ads or of information sources ranked on top of the mock Google webpage. Indeed, citizens were more likely to self-select sources on top of the SERP (apart from the Google ads) regardless of the search terms they used.

The Tax Proposal and Pension Financing Reform case did not confirm this finding. The analysis of the two-way interaction demonstrated that search terms did not have a moderating influence on the self-selection of information. That is, the difference in search terms does not mirror differences in self-selection behavior. Though a visual difference in self-selection can be detected for the top 2 and top 5 rankings, this difference is not statistically significant. Furthermore, a t-test confirmed that there was no significant difference in the average number of self-selected information sources (p-value = .63).

Discussion

The recent debate on political information selection has pointed out the reinforcement of personalized communication in the online sphere (see for a review, Cho, Ahmed, Hilbert, Liu, & Luu, 2020; Zuiderveen Borgesius et al., 2016). The Internet has introduced high choice and interactivity to the political information environment, allowing for a high degree of user control (Cho, Ahmed, Hilbert, Liu, & Luu, 2020). Citizens type in search terms in a search bar and obtain a personalized list of available political information sources (Courtois, Sleuchten, & Coenen,

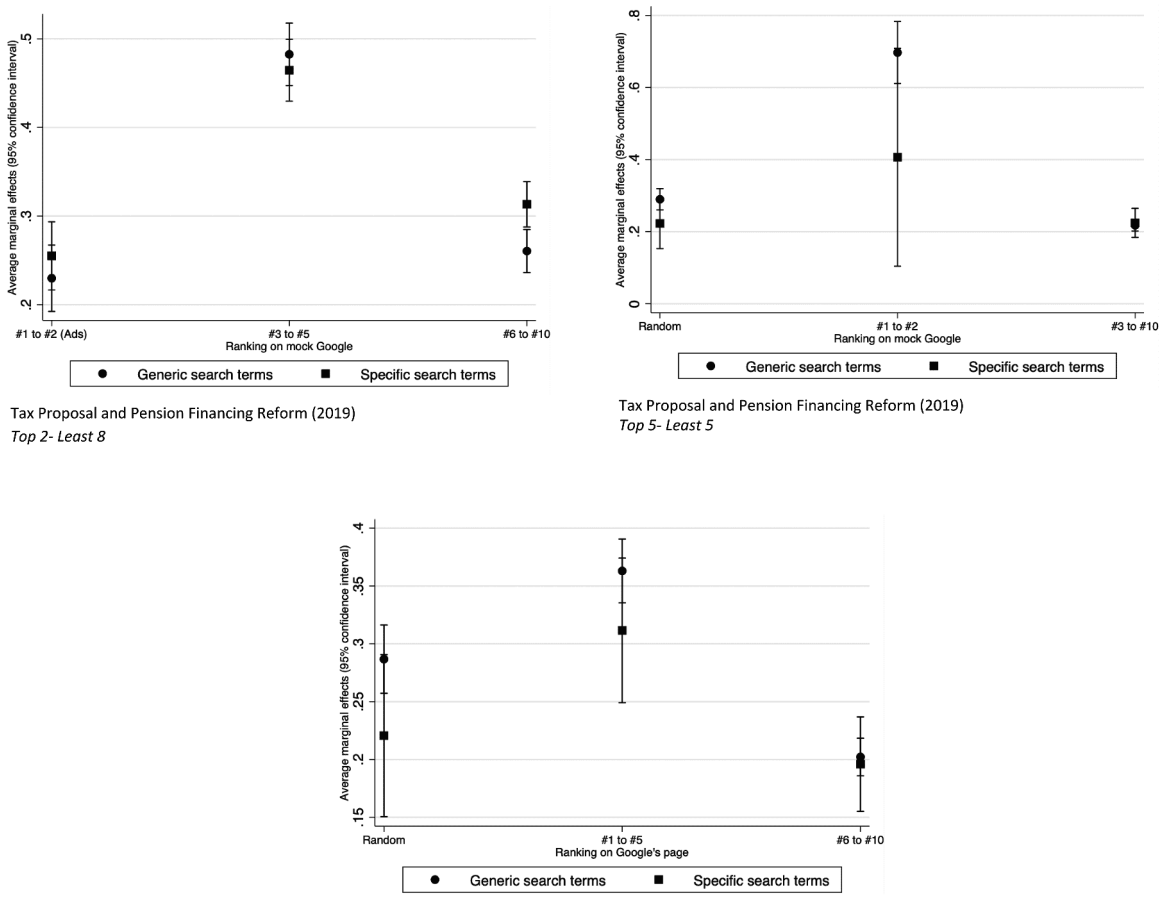

Figure 5. Binary logistic regressions -Two-way interactions with search query themes and rankings.

2018; Flaxman, Goel, & Rao, 2016). Furthermore, scholars have warned us of motivated self-selection of political information, e.g., echo chambers (Sunstein, 2001) or filter bubbles (Pariser, 2011). Therefore, scholars thoroughly examined the influence of algorithmic personalization and choice personalization at the SERP stage. However, the literature has disregarded the search bar stage. Yet, from a democratic perspective, a search query is not only essential for the algorithmic personalization but also informative for the self-selection of information in a SERP. This study examined the search terms used by citizens experiencing a policy issue.

To summarize, citizens type in different search terms to obtain information about the same political news event (RQ1). Our findings, especially in the Tax Proposal and Pension Financing Reform case, confirm that most citizens opt for generic search terms; no matter the topic, citizens tend not to open the door of echo chambers when typing in a search query on a Google webpage. This finding supports that of Unkel and Haim (2019) who stated that German citizens mostly type in generic search queries to obtain political information related to an election. However, some citizens are also motivated to reveal their information content expectations. In the Energy Act case, close to a third of the respondents aimed at political information about a subdimension of the referendum at stake. Meanwhile, our findings do not support the conclusions of Trielli and Diakopoulos (2022). We found that partisan search terms are extremely rarely used. Moreover, the results revealed that citizens are not driven by cognitive consistency expectations. Less than 2% of the respondents aimed at confirmation bias in their search queries.

In addition, the logistic regressions revealed that individual-level characteristics are no drivers of specific search terms (RQ2). This is in contrast

with Slechten, Courtois, Coenen, and Zaman (2021) who concluded that search queries are driven by user characteristics, e.g., education level, and with Blassning, Mitova, Pfiffner, and Reiss (2023) who highlighted the seminal role of political interest and age.

Furthermore, the two-way interaction between search terms and self-selection pointed out that search terms might moderate self-selection in the SERP (RQ3). In the Energy Act case, some citizens who typed in specific search terms were also motivated to go beyond ranking to consider information sources that mirror their content expectations. This is in line with Slechten, Courtois, Coenen, and Zaman (2021) who concluded that users might defy the algorithmic ranking. On the other hand, this finding has not been confirmed in the Tax Proposal and Pension Financing Reform case. In this case, no matter the search terms, citizens displayed similar information self-selection behavior. What is more, citizens (no matter the search terms they use) seem to self-select information sources on top of Google's list. This confirms that Internet users seem to trust Google to provide their most relevant personalized sources on top of the list (Pan et al., 2007)

Our findings underline the pivotal role of algorithmic personalization, because most citizens typed in a generic search query to get informed about a policy issue; however, it also proved that algorithmic personalization should be aware of the search terms that citizens use, because some citizens are motivated to exploit the high degree of user control to target their information expectations in the online sphere. This is in line with Slechten, Courtois, Coenen, and Zaman (2021) with users playing an active role to defy algorithmic ranking and expecting algorithms to consider their information expectations.

Furthermore, these motivated citizens do not aim at partisan or cognitively consistent sources of information. On the contrary, they are motivated to deepen their awareness of the policy issue by acquiring either subdimensions of or balanced information about the political news event. Thus, this paper rejects the echo chamber hypothesis in the context of the online information environment for a referendum vote. Although citizens can freely type in anything in a search bar to inform the search engine about their information expectations, they do not use this higher degree of control to open the echo chamber doors.

In addition, citizens adapt their information selection strategy to the policy issue at stake. For example, we found a sharp difference between the Energy Act and the Tax Proposal and Pension Financing Reform in terms of subdimensions and balanced search queries. A detailed examination of the two referendums highlighted that the Tax Proposal and Pension Financing Reform is a two-dimension policy, regarding both taxes and pensions, and the Energy Act is a multidimensional policy. This multidimensionality might have motivated citizens to benefit from the high degree of user control provided by a search engine to obtain information that mirrors their content expectations.

Limitations

This study's research design has a few limitations. First, it does not consider the interaction between search terms and algorithmic personalization. In a real-world context, each respondent would have a different content-based algorithmic filtering applied to their searches. As scholars have demonstrated, this algorithmic personalization moderates self-selection via rankings. Still, the aim of this study was to examine the interaction between search terms and self-selection behavior, and not between search terms and algorithmic personalization. Second, the research design does not consider the content of the mock headlines. Hence, it is likely that citizens might have considered the informational cues within the brief description available to guide their selections. Finally, this study highlights the significant role of the context with only two political news events. Further research would benefit from additional analysis of other political news events.

Conclusions

This study furthers the debates about political information selection online. Focusing on the search bar instead of the SERP has implications for several stakeholders. First, political actors should be aware that a policy issue, e.g., a referendum vote, acts as

a catalyst for online searches. It boosts citizens' use of search engines (see Figure 1). In most cases, citizens type in generic search terms and follow algorithmic personalization.

Second, information intermediaries, e.g., Google, should consider search terms as a parameter within algorithmic personalization. This study confirms that some citizens are motivated to inform the algorithm about their content expectations. More than that, some of these citizens are willing to defy the algorithmic ranking to obtain information that matches their expectations. Nevertheless, it seems that self-selection remains mostly driven by ranking, no matter the search terms. This emphasizes the seminal role of algorithmic personalization in democratic societies, with information sources that might open or close the door of the echo chamber or inflate or deflate filter bubbles, since the content is restricted or goes beyond the routine repertoire of a user.

Third, our findings indicate partisan, and confirmation bias search terms represent less than 5% of search queries. Although citizens have a high degree of control, their information self-selection strategy is not driven by defensive motivations, implying that the fear of echo chambers is overrated.

Notes

1. Although this paper slightly touches upon the different specific search terms that could be used as a political information selection strategy, i.e., partisan, credibility sources or directional search terms, differentiating between accuracy and directional search terms goes beyond the scope of this paper.
2. Considering that algorithmic ranking is driven by collaborative filtering, and also hyperlinks, it can be expected that webpages from the government appear on the top not only because they generate a lot of traffic, but also because the Act has already been debated in the Parliament.
3. To be transparent, a sixth group was initially included in the analysis. However, Google updated the design we used for the sixth group, and the new design was no more comparable. With that in mind, the decision to drop respondents from the sixth group was taken to ensure external validity and reliability of the measurement.
4. This mock Google webpage is an example extracted from the 2019 online survey. Headlines and snippets are in German; This mock Google webpage is extracted from the 2019 online survey. Headlines and snippets are in German. The code artifact that is displayed was not present for respondents. To be precise, this is a code to pipeline the most favorite political party of each respondent.
5. The subsample of 100 search queries was extracted from both surveys.
6. See Online appendix A1 for further details concerning the codebook and the instructions for coders.
7. As previously mentioned, differentiating between accuracy and directionally motivation goes beyond the scope of this paper. However, the decision to include sub-themes allows for a more overarching understanding of the search behavior and calls for further studies.
8. For example, the subdimensions of the Energy Act referendum were nuclear energy, renewable energy, living cost, energy efficiency, energy independence, and climate change.
9. The English translation is: "Vote energy Swiss" and "Federal vote energy 2017."
10. The English translation is: "Opinions on nuclear phase-out," "The truth about real costs," or "Nuclear power plant safety"
11. The English translation is: "pro-contra consequences."
12. The English translation is: "vote May 19 Switzerland," or "STAF"
13. The English translation is: "Retirement age women" or "OASI age."
14. A classification table measuring the goodness-of-fit of the models confirms that respectively 60.36% and 83.07% of predictions were correctly classified.

Disclosure statement

This manuscript has not been published and is not under consideration for publication elsewhere. I have no competing interests to disclose.

Notes on contributor

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Data availability of statement

The data that support the findings of this study are openly available in GitHub repository ZumofenG at https://github.com/ZumofenG/P6_SearchBarGoogle

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