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Implications of zero party data on user decision-making in digital advertising. The implications of behavioral economics on decision-making. Aplicación de los datos de parte cero en la toma de decisiones de los usuarios en la publicidad digital. Implicaciones de la economía conductual en la toma de decisiones.

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ABSTRACT
Today's digital advertising is predominantly founded on third party data such as third party cookies, which track the browsing behavior history. This information is then used by advertisers to deliver tailored advertising content to specific audiences. The data collected by cookies is incomplete in the sense that it reflects past browsing behavior instead of providing information on current interests and specific consumption desires. Therefore, the advertisement content based on third party data might have a discrepancy with the user's consumption intent. Despite this discrepancy, several biases play a role in the decision-making process. These influences lead to the user consuming a service or good, which initially was not rationally meant to be purchased. Zero party data (ZPD) allows a company to collect direct information from its users. Through the means of intentionally provided data by users (such as user profiles, forms and surveys), digital advertisers could create more pertinent advertising content. This advertising content is then based on the interests and consumption intent of a user, instead of being based on their browsing history (third party data). Due to an increased need of online privacy, third party cookies will disappear. A research through surveys and interviews has been conducted to suggest an alternative data collection strategy. This work intends to assess the impact of digital advertising using ZPD, by analyzing the potential decrease in discrepancy between rational consumption intent and actual consumption. Digital advertisement based on ZPD is a win-win solution for the user and the advertisement company.

RESUMEN
La publicidad digital actual se basa predominantemente en datos de terceros, como las cookies, que rastrean el historial de comportamiento de navegación. Los datos recogidos por estas son incompletos; reflejan el comportamiento de navegación pasado en lugar de aportar información sobre los intereses actuales y deseos de consumo. Por eso, los anuncios basados en datos de terceros pueden no corresponder a la intención de consumo. A pesar de eso, hay varios sesgos que intervienen en el proceso de toma de decisiones. Estas influencias llevan al usuario a consumir un bien que, en un principio, no pretendía racionalmente consumir.
Los datos de parte cero permiten a una empresa recoger información directa de sus usuarios. A través de datos proporcionados intencionadamente por los usuarios (como perfiles de usuario, formularios y encuestas), los anunciantes podrían crear contenidos publicitarios más pertinentes. Se lleva a cabo una investigación mediante encuestas y entrevistas para sugerir una alternativa. Este trabajo pretende evaluar el impacto de la publicidad digital utilizando datos de parte cero, analizando la posible disminución de disparidad entre la intención racional de consumo y el consumo. La publicidad digital basada en datos de parte cero es una solución que beneficia tanto el usuario como la empresa anunciante.

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1. Introduction

The process of decision-making is defined as the cognitive action that results out of a selection of different possible alternatives. This reasoning is either based on assumptions of values, or on personal preferences and beliefs. As a result, decision-making is either a rational process (in accordance with reason, or logic), or an irrational process (unfunded on reason or logic). Whether rational or irrational, it is a frequent process. On average, a person has around 35,000 decisions to make per day. Some might be simple and effortless, such as picking which soft drink to have at lunch, whereas others might require control and logic, such as calculating the time a certain itinerary would take.

In Thinking Fast and Slow, Kahneman & Tversky (2011) explain how these two thinking models operate in very distinctive ways. System 1 is the most frequent; it is used 98% of the time. It is instinctive, unconscious and based on emotions. This system is used to answer a simple mathematical question such as 2 + 2. On the contrary, system 2 is used only 2% of the time. Effortful, and therefore slow, it uses logic and consciousness to provide a response. It is used to determine for instance the number of times the letter "O" is present in this sentence. Browsing is defined as the "act of looking through a set of information quickly, without a specific sense of purpose" (Technopedia, 2016) , and "to walk around a store looking at things without intending to buy anything, or without knowing exactly what you want to buy" (Cambridge Dictionary, 2022) . Therefore, browsing uses system 1. System 2 works in a slower manner as it requires effort to lead to logical conclusions. It is used for instance to resolve hard problems and evaluate pros and cons. When answering a complex survey on personal goals, or completing a form that requires conscious attention, then, system 2 is used.

For all the decisions that are rather easy and intuitive, which are the ones handled by system 1, the human brain needs to rely on shortcuts as it would take too much time, effort and energy to reflect on every basic daily decision. Therefore, it makes use of all past experience of its decision-making in order to generate a fast response, often influenced by a large variety of biases. This work focuses on these biases and their impact.

2. Origin.

By 2024, cookies are predicted to disappear for user privacy reasons. This means that a website owner will not be allowed to collect user data through cookies in order to share it with a third party, also known as third party data (TPD). Companies will not be able to rely on user data gathered through any type of external website (Caccavale, 2021). In January 2020, Google posted "Users are demanding greater privacy - including transparency, choice and control over how their data is used - and it's clear, the web ecosystem needs to evolve to meet these increasing demands." (Google Chromium Blog, 2022). In order to answer this need,

several alternatives are being worked on. One of the solutions that remains is to rely on first party data (FPD), which is information a company is collecting directly from its users and ZPD, as it is part of the data that companies have and will keep having at their disposal. FPD is the information that companies gather directly through their own channels, information such as website interactions, booking history and user behavior. When consent is granted, these are details about a company's online users that are gathered and owned by that company.. On the other hand, ZPD is defined as "Data that a customer intentionally and proactively shares with a brand. It can include preference center data, purchase intentions, personal contexts, and how the individual wants to be recognized by the brand." (Bleich, 2022).

Unlike FPD, ZPD does not rely on the behavior of users but rather on the information that users deliberately share. This method is therefore relatively simple, as it does not require complex tracking systems and tools to interpret this behavior in order to gain learnings out of it. In addition of being accurate, relevant and compliant with regulations "Zero party data is very cost effective, most of the time it's already in a brand's system, it just needs to be harnessed and used correctly. The customer has handed it over; it doesn't have to be paid for." (Still, 2022) Being able to work with a cost effective data solution for digital advertisement (DA) is already a factor contributing to an increased return on advertisement investment.

Working on alternative solutions to third party cookies-based advertisement is a current and urgent need for marketers. Leveraging on ZPD is a convenient and cost efficient data collecting method to answer to the user demand of greater transparency and control on their data. However, for such data collection method to be adopted by marketers for DA one crucial question needs to be answered: Does relying on DA based on ZPD alone generate a higher conversion rate than other available methods such as DA based on TPD.

In order for a solution to be adopted, it needs to be proven successful. For it to be successful, two key points need to be fulfilled. The primary one is user satisfaction. In fact, a transaction can only be done through user satisfaction and approval. A user is free to consume or not, and will therefore consume only when wishing to do so. The second point is company performance. From a business perspective, companies adopt a certain solution only if it is has proven effective and efficient, meaning that it generates results within a certain cost margin.

3. Methodology

The methodology of this work has as priority to identify and suggest potential solutions leading to a win-win situation for both the online user and the company marketer. Only a method that benefits both parties is considered as a potential DA data technique to implement.

4. Structure

The work focuses on a set of eight biases and heuristics that are present in a user journey; the paradox of choice, the availability bias, the confirmation bias, the consistency bias, the bandwagon effect, the anchoring bias, the Ikea effect, and the affect heuristic. The work aims to analyze how these biases affect the consumption process, and more specifically the online consumption process of a user. A deeper research is made on the process from a user initial consumption intent to the actual transaction. The goal of it is to understand the role of each bias in this specific process. To do so, a concrete representative example is developed through each section to conceptualize the influence of each bias in the purchasing process. Once this process is clarified, a research is made to bring potential solution on how to make use of the different biases in a win-win situation for both the online user and the company marketer. This is done through the support of conducted surveys and behavioral economics findings. The user interest is always put at the center of each reflection given that any purchase action initially comes from the user.

5. Surveys

In order to compile this work, two different surveys has been conducted: Survey A and Survey B. The purpose was to do an A/B test through them. Each survey is composed of 7 questions. Both surveys were done through Google form. All answers were provided digitally. 40 participants filled each survey. Therefore, in total 80 people participates in the conducted surveys. Respondents were all English speakers. The survey fields did not include any personal information such as contact details or age. Since the subject of the study is applicable to anyone who is an Internet user, there was no need to restrict the participants based on specific criteria.

Survey A acts as reference point as it aims to understand the behavior of online users on the current existing DA method. The current DA method is predominantly based on TPD. On the other hand, Survey B aims to understand the behavior that online users would have in a situation where instead of being subject to DA based on TPD, they were subject to DA based on ZPD. While the first three questions of each survey focus on different points, the remaining four are identical for both survey.

In order to gain further insight, three different experts have been interviewed on this topic. Alexander Brzenska is Senior Manager Guest Intelligence at Kempinski Hotels S.A, with proficiency in data acquisition and utilization. His role primarily involves overseeing the implementation of data catching strategies and ensures their seamless orchestration. He has successful executed diverse ZDP methodologies to augment guests' experience during their stay. Octavian Oancea is currently holding the role of Director Product Management at Sabre. He has experience in the fields of revenue management in the aviation industry and

has worked for different airlines across multiple countries. He acts as speaker in several conferences and frequently writes articles on Revenue Management, including "The implications of behavioural economics for pricing in a world of offer optimization" (Oancea, 2021). The third expert did not provide permission for name publication.

The written interview consisted of an introduction to the work, followed by six questions on their thoughts, experience and point of view. The questions treated on the use of ZPD for the development of DA.

6. A chosen set of advertisement options

The first set objective was to demonstrate the effect of the paradox of choice (Schwartz, 2004) on decision-making. When choosing, users search for the biggest utility possible, meaning the most useful, profitable and beneficial possible outcome. Consumers will tend to endlessly search for the optimal choice, the one that would maximize this utility. The paradox of choice lies in the fact that this process of choosing the best alternative will end up generating more suffering than happiness. The first learning showed how survey respondents actively prefer a controlled and limited choice of options. On the contrary, a user search history does not have a frame and delimitation as it includes a large variety of categories. When it comes to the data from which DA is based on, a majority (75% for survey A and 88% for survey B) claims to prefer being subject to DA based on a pre-selection of shared interests. As per the survey results, by creating DA based on a list of interests proactively provided by the user, companies would answer to the preference of users. By aligning to the user expressed preference, companies would increase the user positive feeling and perceived utility, which ultimately are emotions that stimulate satisfaction, and is the first step towards customer loyalty (DeFranzo, 2021). Loyal customers is what companies strive to achieve, as customer retention is less costly than customer acquisition (Krieg, 2022). The tendencies highlighted by the survey results are in line with choice paradox behaviors. In terms of received DA, first, a reduced set of options is preferred over a vast choice of options in order to increase satisfaction. Second, users actively prefer to be subject to DA based on limited shared interests, instead of a broader variety factors collected through their search. Therefore, users prefer a reduced and controlled DA option for an increased utility to an uncontrolled and large choice option. These two factors create a win-win situation for the user and for the online retailer.

7. Availability bias under control

The second objective was to identify in which ways the availability bias can be applied to support users in consuming items aligned with their consuming intent. The availability bias is the tendency that human beings have on extensively relying on information that is available in their minds rather than information that is

actually relevant. A combination of research and survey results analysis leads to the conclusion that the implementation of DA based on ZPD has potential to stimulate conversion of items with meaningfulness for the user. Additionally, an increase in successful DA based on ZPD would result in a decrease of DA based on TPD, which would consequently diminish the purchases of meaningless items.

Audiences targeted by DA tend to be subject to the same advertisement through different channels, apps and devices throw-out the cookie life duration. It is unlikely that seeing the same image multiple times increases conscious preference to the product or service. However, it plays a key role in the availability bias. Once system 1 is in charge of making a choice, the availability of a particular DA in the mind gives the product a higher chance to be reminded in comparison to other products.

With this logic, in order to stimulate the purchasing of products that are meaningful to users, companies should rely on DA based on voluntarily shared ZPD. ZPD should be about factors that are important and linked to goals, values and principles. In this way, the availability bias becomes a tool to "nudge for good" (Lades, 2020) so that users consume products and services which they initially consciously meant to purchase.

8. Reversing the confirmation bias

The third objective focused on the confirmation bias. This bias refers to the aptitude to understand and make sense of information as a mean to validate one's initial belief. It aimed to evaluate through which means this bias could be used in the benefit of the user. And this in order for them to be triggered in purchasing products and services aligned with their intent instead of being biased towards irrelevant content. The survey demonstrated that there is in fact a possibility to do so by using the ZPD form completion process as an initial base. The confirmation bias is more likely to arise from meaningful content voluntarily and consciously provided by the user through the ZDP form filling process, instead of adhering to meaningless content retrieved from TPD DA.

Biases are natural processes. It is therefore challenging to create an environment where such bias would not be applicable. However, in order to solve this confirmation bias loop of relatively unimportant items purchases, one thing can be addressed: the initial information on which the confirmation bias starts. The concept of Libertarian Paternalism, which was initially introduced to by Nobel Prize winner Richard Thaler is defined as "taking actions to influence affected parties' choices to make those parties better off, given that no coercion is involved in the actions." (Fas, 2022) . In line with this concept, there should be no pre-defined or default option provided by an external party, no matter how ethical it is said to be. In order to stay in a "win" circle for the user, the choice and freedom to choose should remain in the user hands. This is why the solution

suggested consists of giving the opportunity to users to share information through a form. The data shared should be important and meaningful information on what their goals, principles and values are. The mere fact of reflecting on these questions already consist a more solid and meaningful initial base to the confirmation bias than a spontaneous online search. This ZPD provided through the form can then be used to display DA on items in relations to that shared information. In this way, the process allows to ensure the confirmation bias is applied to a set of items related to relevant and significant information. And this ultimately ensures an increase in the level of relevancy and importance of items purchased.

9. Closing the cognitive dissonance gap

The fourth objective was first to highlight the existence of cognitive dissonance in DA decision-making, and its link to the consistency bias. Secondly, the objective was to demonstrate that this bias has the potential to influence user decision-making for their own interest. Through a correlation analysis of several survey answers and sequential game assumptions, the deduction was made that there is potential to reduce the user cognitive dissonance gap by using ZPD form as consistency reference point. Unlike with TPD, DA based on ZPD would then be consistent with user purchasing intent.

Two angles were to be discussed in this section; at first, the importance of asking relevant questions and second how to align thoughts with actions. The consistency bias is a natural phenomenon for human beings. Aiming to be unaffected by it would require a constant level of concentration that would not be viable for the human brain. Therefore, solutions should be found on how to make use of this bias in one's advantage instead of trying to remove it from the mental processes. The consistency bias is a consequence resulted from a first action; the brain wants an action made at certain moment to be consistent with a statement or action made in the past. With this logic, by focusing on the initial statement or action, the consistency can be steered towards the desired direction. The type of questions asked and how these questions are asked heavily influence this initial statement, which users then align with. In marketing, questions are often asked in the marketer's advantage to trigger a next step in the customer funnel. These techniques are not always successful as other parallel consistencies might be influencing the decision-making. This could lead to a confusion and lack of decision ownership from the user side. By providing the chance to users of sharing information on meaningful topics through questions on their goals, principles and values, the ZPD form would act as strong and reflected personal initial statement for future decision made by system 1 to rely on. In fact, through all survey questions analyzed, the consistency bias is visible through the difference between respondents of Survey B (who in a first instance were asked to reflect on important factors and have aligned to that input), and respondents of Survey A.

Leaving the bias aside, "consistency" refers to "the quality of always behaving or performing in a similar way" (Cambridge Dictionary, 2022), therefore without contradiction. At an emotional level, it is when there is harmony between one's thoughts, words and actions. A lack of consistency leads to cognitive dissonance, which refers to the "mental discomfort that results from holding two conflicting beliefs, values, or attitudes." (Cherry, 2022) The discomfort and painful state of dissatisfaction is quite common. Several emotions are linked to it such as anxiety, shame and regret. The natural reaction to it is either to try changing one's own thoughts in order to align with the actions, or vise-versa, to try changing one's actions for them to be aligned with the thoughts and values. In a situation where a user is tempted by digital advertisement to consume a product that was initially not meant to be purchased it can lead to different scenarios.

By focusing the form fields and questions on the user goals, principles and values, and by developing DA based on this proactively shared ZPD the average coherence between the user intentions and the user actions would increase. The user cognitive dissonance gap reduces, and consequently generates positive feelings. This harmony actively participate in the user satisfaction, and therefore increases the chances of a meaningful and satisfied transaction.

10. The zero party data trend

The fifth objective consisted of analyzing the possibility of using the Bandwagon effect as a mean to support ZPD sharing and generating a database increase through the phenomenon of trend. The bandwagon effect refers to the phenomenon where human beings act in a certain way primary because of the mere reason that other people act in that specific way. For this specific section, survey answers were not used but the input from the expert interviews was utilized.

Marketers have an important role and responsibility when it comes to creating trends. Through the variety of biases that have been elaborated in this work, they have the possibility to create or destroy a trend by giving the impression that a large amount of people do or do not act in a specific way. In this case the majority of people claim to be in favor of being subject to DA based on a pre-selection of interests previously shared. As seen in the previous sections, the method of using ZPD to develop DA has a high benefit potential for the user, but also for the marketer. These figures should encourage marketers to use the bandwagon effect in their advantage by creating a trend around the behavior of "proactively sharing meaningful data". Simply by communicating this tendency, companies can build a data-catching strategy. (e.g.: "In average, over 81% of people claim to prefer receiving DA based on pre-selection of interests previously shared"). Instead of aiming to make a certain item be perceived as trendy, companies should focus their efforts into making the process

of sharing ZPD a trend. With this data, if provided permissions allow, more segmented messages can be elaborated for specific fields (e.g.: "30% of people mentioned that consuming local is an important factor for them to be considered when purchasing").

11. Anchoring to meaningful shore

In the conducted Survey B, the initial question asked participants to list three factors that are important to them and that they would like to consider when purchasing a product online. The input provided in this question was extremely interesting. From the total of 120 factors shared, a few were listed more frequently than others. "Delivery" is an important factor for 15% of participants. "Consuming local" for 30%. And as expected, "price" is mentioned for 42% of participants. Almost half of respondents of Survey B included price as one of the three important factors. Although there is thorough research on the price perception and willingness to buy, one of the elements affecting the price perception is its reference. "Store brand s' price image become a reference to consumers when purchasing a store brand product." (Levrini & Dos Santos, 2021). Anchoring refers to the fact that individuals have the tendency to be particularly influenced by the initial piece of information that is provided to them. It is very frequent phenomenon. As most items online can be searched through price comparatives sites, users are therefore more likely to find the lowest prices available for an item. Aligned with the concept of pain of paying (The BE Hub, 2019), it is likely that users have the unconscious tendency to use as anchor the cheapest price they have been subject to. Evidently, the cheapest option found might represent a minority in terms of availability. However, the anchoring bias is in place as a reference, making all other prices perceived as more expensive. The issue, in this specific case theory is not the actual price, but rather in the price reference. This creates a gap between the average online price of a product (what the price anchor should be) and the cheapest price findable for this product (what the anchor is).

The proactive ZPD sharing is a solution to this gap. By listing and specifically prioritizing important factors, users are able to anchor or adjust their anchoring according to that information. (e.g.: the price of a product made in China will not be the price of this same product made in Switzerland. The "important factor" in this case should be prioritized; purchasing a Swiss product, or purchasing a cheaper product). Through this process, an education phase takes place. This gives the user the possibility to consider a product based on one's principles, consuming objectives and values. This leads to a more realistic anchoring based on the defined criteria prioritization made. From the marketer's perspective, this is beneficial as well. A certain item is compared with other items based one top prioritized criteria, instead of several criteria. Therefore, it reduces competitiveness given that less items are being considered

Through the means of a ZPD online form, the steering of the anchoring bias in the benefit of the user would be possible. By ensuring such form has the feature to prioritize and rank factors, this would allow the user to only be influenced by the anchoring bias of the prioritized and meaningful criteria when subject to DA. Therefore, the user would be able to rationally compare items based on the same self-determined criteria.

12. Self-designing one's choice

The seventh objective aimed to investigate the possibilities to benefit from the Ikea effect as a mean for the user to commit to the ZPD shared, and specifically to value its outcome. Named after the famous furniture store, it was discovered through a study made by Michael I. Norton of Harvard Business School, Daniel Mochon of Yale, and Dan Ariely of Dukeit. It refers to the tendency that human beings have to value higher any item that has been made, assembled, or in which they have participated in the creation process (Norton et al, 2012). The survey results showed that the Ikea effect can play an influential role in the user benefit. By proportionally enjoying more the outcome of DA based on ZPD (instead of based on TPD), the user's likelihood to purchase aligned with their intent is higher.

The Ikea effect could positively contribute to the ZPD form as a useful solution. Creating something customized and personalized to one's identity also falls in the "construction" category. A questionnaire or form allowing users to freely build their own preference is in a way like picking the favorite ingredients to make a unique recipe. This data gathering method does not only allow the user to actively participate, it is also a meaningful participation as it requires the individual mind. On a proactive base, it asks user opinion, preference and principles.

The survey results already highlight this tendency. Survey respondents claim to be more likely to purchase a product that is linked to the important items than to the search done. Following the Ikea effect logic, once the time and effort is invested into the creation of the customized "digital advertisement menu" users will tend to proportionally like the DA they are subject to, more than any other DA. And this because they have created the process leading to it. As the Ikea effect has proved successful for many companies, this technique would be the occasions for marketers to implement cost-effective actions with high potential in terms of ROAS (return on advertisement spent).

13. The pursuit of a happy purchase

The eighth objective consisted in evaluating whether the affect heuristic (and specifically the positive emotion) has an impact on decision-making in DA. One of the shortcuts that system 1 uses to reach conclusions in a rapid manner is to rely on these emotions for decision-making, specifically when under time-pressure. This is called the affect heuristic. In a following step, it was analyzed how to trigger the affect heuristic in favor of a positive purchasing experience for the user. The survey results highlighted that by reducing the negative feeling associated with a purchase unaligned with one's intent, the overall purchasing experience improves which ultimately makes the user content and satisfied with the transaction.

This observation leads to conclude that in order to decrease the proportion of negative feelings linked to a purchase based on DA, the content of the advertisement needs to be aligned with the initial purchase intent. This way, without the presence of DA about products of services that are not directly linked with the initial purchase intent, the dissonance felt by the user can be reduced, leading to a decrease of the negative feeling associated with it.

In addition, by ensuring that users are not subject to DA on products and services that they did not initially mean to purchase, companies would increase the user positive feeling and perceived utility. Moreover, these are emotions that ultimately stimulate purchases.

14. Conclusion

All these eight outcomes combined point towards one solution that incorporates each identified win-win scenario. The solution to adopt based on the user satisfaction and on the company profitable digital performance of each of the eight sections is therefore the same; the implementation of digital advertisement based on zero-party data. The application of digital advertisement based on zero-party data consists of an online form provided by the advertising company available to users. Through this form, users are free to provide a list of goals that they are aiming to achieve, and a set of principles and values that they seek to fulfill in their daily habits. The user ranks these factors in terms of priorities and importance at that specific moment. This information shared by the user is the provided zero party data. Once the zero party data is collected and processed, the advertisement company owns, with the user consent, meaningful data on them. This meaningful and proactively shared data is then used to display relevant digital advertisement content to the user. As the digital advertisement content is relevant to the user, the conversion likelihood is higher.

15. Limitations and future lines of research

While the survey method allowed to get an initial understanding of some trends in the fields of decision-making in DA, there are numerous limitations to the method used. In order to gain statistical significance, the surveys are recommended to be supplied to larger groups within different environments (countries, cities, villages). With a larger and more broad sample size, the answers would better represent the overall general opinion of the online population. In addition, in an ideal scenario it would be more valuable to observe and analyze their decision-making behavior on DA instead of analyzing the answers to what they claim their decision-making behavior is. There is often a discrepancy between what people say they do, and what they actually do.

Both A and B surveys were directed to online users. With more time and resources, one additional interesting aspect that could have been explored is conducting the same type of A/B testing survey process but directed to marketers. This would have allowed of further understanding the companies' opinion on ZPD for DA in a quantitative manner.

In regards to the interviewees, a broader variety of expert profiles could have highlighted further angles to explore during the work. While the three profiles are very different, they are all part of a business environment, representing the companies and marketers' side. Receiving input from legal data protection departments, for instance, would have brought to the work a different point of view to comprehend better points that need attention.

Furthermore, in order to draw conclusions several deductions and assumptions have been made throughout the work, leaving room for errors and unverifiable suggested learnings. The paradox of this work is that multiple biases have very likely interfered in the research and interpretation of the work (such as the same confirmation bias). In addition, while the research is made around biases that have the potential to nudge user decision-making towards its own interest, the research has not actively been done on the biases that do not have the potential to be "reversible" for good.

While it is certain that third party cookies will disappear as announced by Google, what remains unknown is whether the suggested solution of ZPD collection would be legally approved and in line with consumer rights.

This work focused on the implications of ZPD on user decision-making in DA. However, the former process to the ZPD collection has not been discussed and investigated, nor the following process of processing the data

in order to display the accurate DA content. Having a smooth automation process and infrastructure in place is crucial to rely on ZPD.

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