

Original Article

Binary Form of Pre-Decision-Options Leads Confidence Value in Naturalistic Decision-Making

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Received: 06 June 2024

Revised: 07 October 2024

Accepted: 30 October 2024

Published: 29 November 2024

Abstract - Binary Pre-Decision-Making (BPDM) is crucial in understanding the intuitive and Naturalistic Decision-Making (NDM) process. In a binary decision, individuals choose between two options, streamlining the decision-making process and making it more straightforward. This study explores the inherent simplicity of BPDM and its impact on Internal Value Assessment (IAV) before making decisions. During pre-decision, BPDM serves as a filtering mechanism, influencing the dominant aspects of IAV. The cognitive association between BPDM and confidence personality metrics is examined, emphasizing the intellectual exploration of individuals within the decision-making context. The binary filtering pattern of BPDM offers advantages such as conflict avoidance, a feasible sense of decision, and an enhancement of IAV. IAV is a critical decision-making component, deeply intertwined with self-esteem and intellectual exploration. The study validates these assertions through an extensive analysis involving 510 participants who made decisions using binary and multiple-choice questions. The results, validated through binomial tests and scale reliability analysis, underscore the robust support for BPDM in the NDM process. The findings suggest that the binary pre-decision process is instrumental in thriving contexts, promoting complexity avoidance and contributing to a more confident and satisfactory final decision.

Keywords - Binary-filtering, Cognitive-systems, Decision-making, Internal assessment value, Option deduction.

1. Introduction

An ordinary individual or organization faces complex and uncertain environments while making decisions [19]. Naturalistic Decision-making (NDM) is an approach to understanding how individuals and teams make decisions in complex, dynamic, and real-world settings [3]. NDM principles can be applied to understand how individuals and teams make decisions within options availability-based contexts [18]. It is crucial to weigh the advantages and disadvantages of each option before selecting one [12,16]. It creates internal bias during the pre-decision phase, which leads to a significant impact on intuitive-based final decisions. A minimal amount of study has been carried out in the context of human behavioral-based decision-making [6,8,20]. So, to address and overcome the complexity of decision-making, it is essential to analyze and find a feasible way of decision-making in a cognitive context. With this background, this study proposes the option deduction mechanism, which can support finding the optimum solution from multiple options to a binary filtering system. This study is intended to examine cognitive analytics-based human behavioral decision systems. This study proposes the 'Binary Pre-Decision Making (BPDM)' for ease of analysis, option deduction, and conflict avoidance purposes. However, every searching of human

thought process seeks lots of options. When the options are at a limited level, they can help them find optimized solutions. Whenever the options are exceeded, the decision becomes more complex. The intuitive cognitive process, during the decision process, needed a certificate such as Internal Assessment Value (IAV). Comparatively, with a single option and numerous options, the binary value is highly effective. So BPDM is highly associated with IAV. Single and direct choice leads to less interest, and multiple choices lead to conflicts, but the binary value of pre-decision boosts confidence (IAV).

1.1. Internal Assessment Value (IAV)

Internal assessment value is a cognitive certificate value, which gives confidence whenever human prediction results are optimized positively. This IAV increases or decreases depending on whether the decision becomes good or not. This IAV plays a crucial role in binary-based choices rather than multiple choices. Uncertainty and internal conflicts high at a cluster of options arise majorly at that point of decision picking. This study recommends that having BPDM in the pre-decision phase is essential and better. This can provide better IAV compared to numerous options and a single option since a single direct solution creates a lack of interest in decision-



making and reduces the intellectual exploration of the decision-making context.

1.2. Contribution of this Study

- Explore the concept of Binary-Pre-Decision Making (BPDM)
- Justifies that BPDM is essential to enhance the internal assessment value trigger associated with the confidence level of human personality.
- BPDM majorly benefits in terms of avoiding internal options conflict, making option deductions from multiple options, and providing enough confidence even if there is a direct answer or without options.

While analyzing the background of human decision contexts, many self-intuitive and situational metrics impact the decisions, such as cognitive association, perception, past experiences, and situational influences [9]. So, perceptual-based BPDM and its importance are discussed further.

2. Literature Review

Decision-making is vital in any field, and it is based on existing information [5]. There are numerous influences while making decisions, such as analyzing the option availability, option deductions, and decision arrival. Among these, one or multiple intersectional associations may influence the decisions. In general, human decision-making is a problem-solving skill in various contexts, from individual to organizational front-end administrator decision contexts [11]. With that extension, the concepts are derived as NDM acknowledges the complexities and uncertainties inherent in everyday decision situations and highly focuses on options and cognitive-intuitional-based decisions. This type of correlative perceptual decision is highly related to metacognition [7]. Perspective and perception differences are significantly impacted by various influential factors such as the decision over multiple option availability, existing information, and experiences.

It connects with the decision-making of Prospect theory, which describes how humans misperceive costs and probability by using a value function and a weight function and models the rationality of humans [13,14,21]. Prospect theory, which describes how humans misperceive costs and probability by using a value function and a weight function, models the rationality of humans. However, the decision-making dilemma takes into account a single aggregate metric, such as cost.

The ultimate answer is established by taking into account the criterion and selecting the option with the highest value. So, reducing the multiple to binary can reduce the analyzing cost and conflict. To do that, it is essential to convert multiple to binary options. Making binary decisions involves choosing between two options, often referred to as alternatives, choices, or outcomes. Binary decisions are inherently simpler than

decisions with multiple options. The choice is narrowed down to a dichotomy, making the decision-making process more straightforward. Moreover, the BPDM at pre-decision can enhance IAV, which cognitively relates to the personality confidence metric. In most cases, confidence and decision accuracy are correlated, meaning that greater confidence is linked to better decision accuracy [15]. This IAV cognitively relates to the intellectual exploration of an individual, especially in the context of decision-making.

Sometimes, those decisions may cause fruitful experiences or lessons so that in the future, one may think about those decisions based on consequences to avoid or to take risks over those similar contexts, single and multiple attributes-based decisions [2,10]. However, NDM is not limited to individual decision-making [17]. It also explores how teams collaborate, communicate, and share information to arrive at decisions collectively. Thus, it is essential to compile information and consider the positive aspects as well as drawbacks of each option. Selecting an appropriate alternative is a must before making any decisions. This decision yields the intended results and is supported by relevant data. Making a decision is a process rather than an instantaneous event. The decision is vital in and of itself, but most people remember how the decision turned out [1,4]. With these details, we further discuss the BPDM process.

3. Proposed Methodology

This study analyzes and explores the binary-picking contexts of human decision-making. This is a type of human cognitive-neuro decision pattern formation. Compared to picking a direct answer or solution, the comparison makes sense in exploring individual thinking and perception capability. Procedural way of studies, situational impacts, and education lead and push toward the binary picking concept in decision contexts.

Binary designs are aligned in various literacy integral parts like classification decisions such as linear or nonlinear, direct decisions such as yes or no, this or that, verbal and oral language alignments are designed in such a way as synonyms or antonyms and even digital input '1' or '0'. So, in general, the decisions are always and majorly focused on binary alignments. Binary Decision-Making (BPDM) is a fundamental aspect of our daily lives and is applicable across various domains.

Whether it is choosing between simple everyday options or making strategic business decisions, the principles of binary decision-making remain essential. To prove justification of binary decision with the following Research Questionnaire (RQ)

RQ1: Why do the decisions always have Binary bias rather than a Direct answer

RQ2: Direct answer VS binary choices among multiple options
 RQ3: Impact of choosing the Direct answer vs. binary Picking

Analyzing internal relationships among choices and in-front solutions leads to effective decision practice through applied cognitive psychology, which provides detailed clarity about the decision-thriving process. One of the vital parts of the decision-making context and every decisive major that ends up with a bilinear context in all pre-decision phases. In that phase, the bilinear selective pattern is one of the major causes of biases, uncertainty, pre-decision thriving, and conflicts during decision-making. Regardless of numerous choices, most human thought processes derive binary-picking problems. There is uncertainty during simple to complex decision-making day-to-day activities such as ‘whether we use this route or not’ and ‘whether I invest in this business or another’. This becomes the major root of internal biases in every human being’s nature while the neck of every decision-making context. Furthermore, it explores the analysis of the binary picking problems in multiple contexts of decision-making.

3.1. RQ1: Why Do the Decisions Always have Binary Bias Rather than a Direct Answer

The human cognitive sense always desires to make decisions and explore with their cognitive perceptions. Judgmental and proneness of their internal validation by comparative caliber. Being in nature, life along with decisions is what they made as an individual or societal organizing design.

Figures 1a and 1b illustrate the context of picking pen in direct and binary contexts. Figure 1a represents the decision relationship through a dotted line indicating less confidence (i.e. Less IAV), and Figure 1b reveals strong IAV in binary option decisions. While considering a direct questionnaire, the answer might be a dilemma due to internal biases unless the context is much needed.

In the binary decision, a critical notification will be aligned with a cognitive internal cue and the desired perspective. While considering binary choices, there will be chances of picking among options the intentional desire attitude carried out.

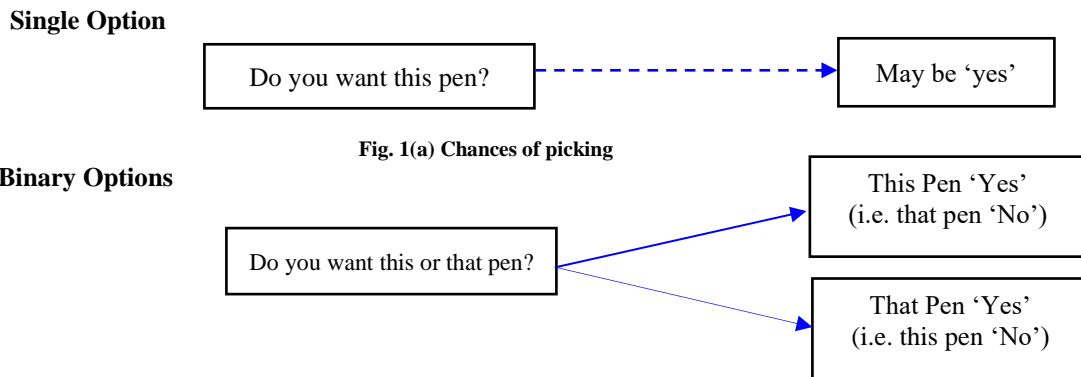


Fig. 1(a) Chances of picking

Fig. 1(b) Chances of picking in direct answer vs. binary decision context

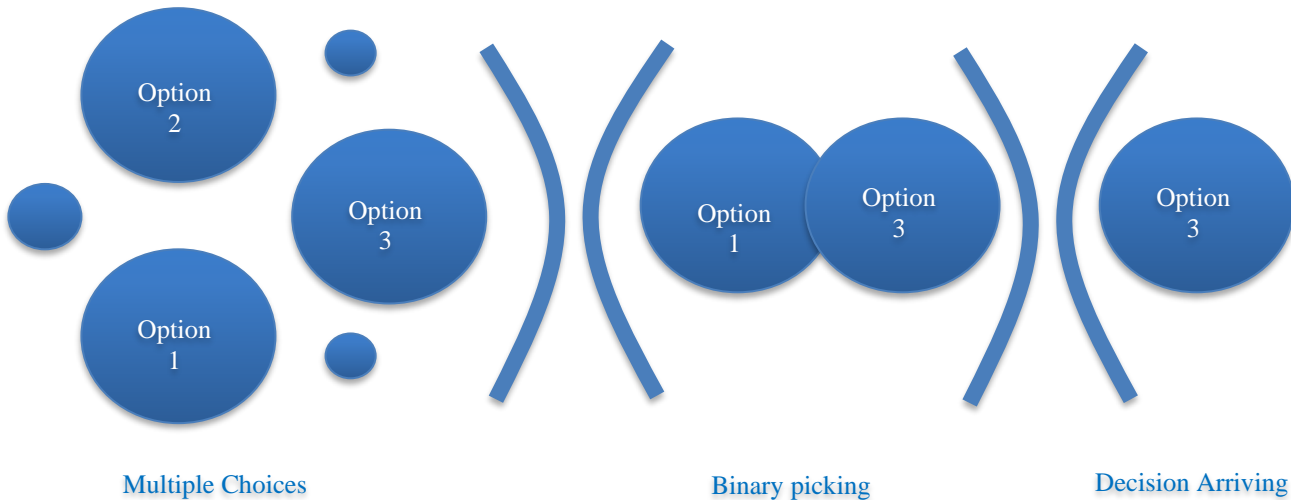


Fig. 2 Option Deduction-Cognitive- Decision Arriving process

Hence, the confidence level and Internal Assessment Value (IAV) satisfaction correlate with decisions on binary rather than multiple and single answers. Moreover, internal intellectual and thinking capabilities are explored compared to non-thinking, such as direct answers and conflict due to multiple options. Figure 2 shows the cognitive decision-making process from multiple clusters of options. Herewith, the option deduction process plays an important role, which is connected with the IAV tuning and exploring cognitive cues for seeking specific decisions among various options 1, option 2, and option 3. These induce the analyzing part, which is subsequently given as input for the options deduction in terms of a binary mid-term solution. Finally, from the binary options, the cognitive influences of the decision arriving. The binary-picking of options increases the IAV and provides enough confidence to make a particular decision.

3.2. RQ2: Direct Answer vs. Binary Choices among Multiple Choices

Numerous choices exist with interpersonal interest biases while making every decision, such as this or that or not needed. While analyzing those decisions, comparatively binary choices arriving is an important neck end to taking every decision rather than multiple-choice. Moreover, even if a direct answer such as ‘yes’ or ‘no’ also comes in a binary sense rather than a unique or single direct answer. The binary way of picking provides less conflict. It increases internal cognitive satisfaction while deciding on a specific context rather than multiple choices, as well as direct way picking (i.e. without options). While making the majority of decisions, numerous instances have effects and influences on the final arrival process. The effects and influences while making decisions may correlate with artificial information input as well as socially deliberated such as reputations, reviews, etc. So, the analysis takes all these into account, and the analysis process has been initiated by the internal cognitive system phases, as shown in Figure 3. Afterwards, after analyzing the various inputs, the cutdown or option deduction process happens for IAV, increasing to attain immediate binary selection.

Option deductions are essential to avoid biases and to select the competency incremental process. This makes sense of interpersonal-cue satisfaction to move towards specific picking. Then, at the final phase, while reaching the optimum IAV increase, the solution is reached.

While analyzing the decision context, the IAV value increases from the cluster of options to a specific option-picking task. Figure 4 illustrates that when there were numerous options, the IAV value was in the bias stage. This state leads to numerous complexities in making decisions. Option cutdown and filtration of choices become essential parts of this state.

The bias stage occurs during the option deduction phase, and then, after certain influence decisions arrive from the binary filtering state, there were no feasible options for deciding hugely, so human cognitive intention tries to pick out the binary optimum feasible options in the pre-decision state.

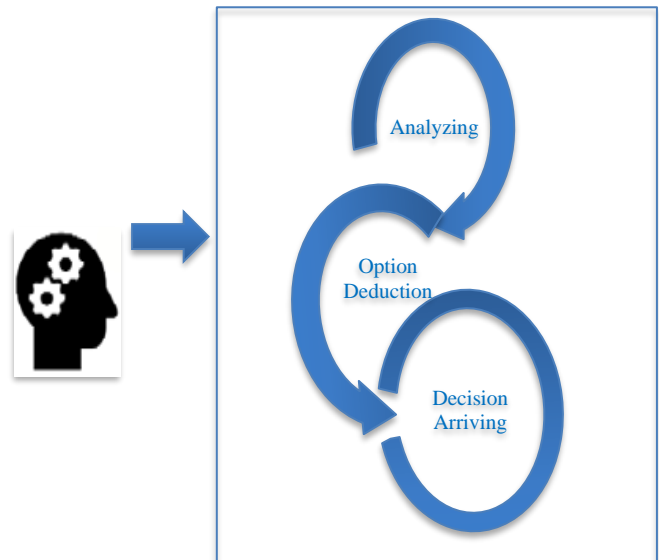


Fig. 3 Phases of Cognitive-BPDM

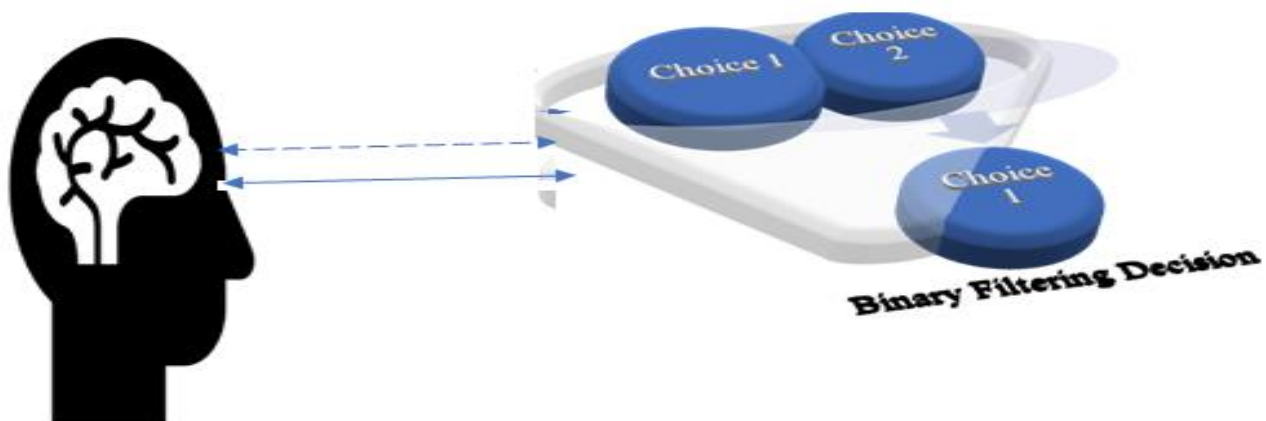


Fig. 4 Cognitive alignment during decision-making from binary options

Table 1. BPDM decision formation**Algorithm: Binary Filtering Decision**

Step 1: Decision arriving from the possibility of solutions where $P(S)$, $S = \{s_1, s_2, \dots, s_n\}$
 Step 2: Initiating context with n number of option
 Step 3: Get a sufficient feasibility analysis
 Step 4: **If** ((internal assessment value (i.e. $r > 0.5$) or (stop consideration) **do**
 Step 5: **Evaluate** picking choices of existing binary solution
 Step 6: **End if** the optimum solution picked as a decision from the binary filtering
 Step 7: **Else** redo from the Step 2

3.2.1. Importance of Cognitive Pre-Decision-Binary Picking State

There is a vital role in the pre-decision binary picking of cognitive state. Herewith, the phase has been aligned with multiple inter-relationship and processing tasks that are highly carried out before making any decision. Analyzing the overall feasibility of existing solutions for particulars, cutdown, or option detection after filtering all existing pick binary values, and the final decision is arriving. These increase the IAV as well as gaining exploring the experiences such as from clustering options to specific. Moreover, it boosts the decisive capability from various options. Compared to single atomic decisions and clustering options, binary pre-decision provides clarity regarding the steps, such as moving forward to make a specific decision or not. This feasible outcome highly correlates with IAV, the outcome of an individual satisfaction value with existing options and constraints-based variance. Choose between two feasible outcomes instead of numerous outcomes ('0' or '1') rather than choices or a single choice. Comparatively, the binary filtering pre-decision confidence (i.e. IAV) provides the internal ability to prove rather than single choices as well as avoid conflicts in numerous choices. While considering additional criteria that have various situational and available contexts. Thinking of additional context, there are numerous influences and environmental factors provide numerous choices. However, the solution from binary picking provides more optimistic chances of exploring the intellectual and cognitive process in a decision-making context rather than a single solution or a bunch of options since these all might increase the ability of the neural linguistic processing system. The following algorithm illustrates binary pre-decision-making steps, as shown in Table 1.

3.3. RQ3: Impact of Suppose to Choose the Direct Answer vs. Binary Picking

While considering the selection from various options, numerous inconsistencies are played, which create internal human biases, too. With the period concern, the feasibility of options and the time spent analyzing them make a huge impact on every decision. With time concerns, electing or picking and making decisions might become mandatory. Feasibility analysis always depends on both things: one is the existing

options in that particular context, and another integral and vital component is the time needed to analyze and take the options. The above pseudocode illustrates the binary-filtering decision among feasible options. During the pre-decision process, the outcomes are most probably decided unless an additional criterion might be added to the loop. If the IAV value increases among the particular feasible values, then those values transfer as the final decision. The additional criteria were based on time and availability, and option-based decisions arrived.

4. Experimental Setup

The study was conducted among 510 participants, and online data was collected. Explained the questionnaire, and the link was shared. The institutional review board approved this study. The age group of participants was between the ages of 23 and 35. They were provided with their concern about the selection. The case study was conducted in different contexts using the same questionnaire. A binomial analysis was conducted. The Jamovi open-source statistical software is used as a tool. This study consists of two sets of rounds. In the initial round, a simple questionnaire was asked, and the question was 'Do you want to invest in the share market?' with an option of 'Yes' or 'No' as shown in Table 2.

While analyzing confidence levels and credible values, we found that they are highly aligned with the options. Hence, the proportion value of 'Yes' is 0.531, and for 'No', it is 0.471, and the null value may be ignored. Herewith, the p-value is variance and not equal to 0.5 since it is in a bivariable context. For the 'Yes' confidence interval, the value is limited from 0.487 to 0.575 maximum, and for 'No', it is a minimum of 0.427 to a maximum hit of 0.515. Similar to the credible interval values 0.488 to 0.574 and 0.428 to 0.514 with respected values of 'Yes' and 'No'. Here, the proportion of 'Yes' is 0.531 and 'No' is 0.471. Herewith, the options are mutual exclusion and make the picking mandatory. In the second round, inclusive of the existing options, the third options also included such as do you have 'Bias' as shown in Table 3. While including the option 'Bias' for the same question among three different options is again taken along with existing ones. Which creates some internal bias against the same people who were distinctly answered while including the option. Hence, the p-value is significant since the alternate hypothesis was assumed to be greater than 0.5. Option bias is significantly impacted, and p values are significantly impacted as carried out at 1.000. However, the decision was made with a confidence level of 95%, with a limit of lower and upper. For 'Yes', it is 0.299, 'No' is 0.318, and 'Bias' is 0.280, with the maximum upper level being 1.00. Here, the proportion of 'Yes' is 0.333, 'No' is 0.353, and 'Bias' is 0.314. Considering both rounds while having binary options, participants have good IAV or confidence values compared to multiple options. Scale reliability metrics Cronbach's α and McDonald's ω negative values clearly indicate binary options lead to good reliability rather than multiple options, as shown in Table 4.

Table 2. Binomial test with two options

	Level	Count	Total	Proportion	P	95% Confidence Interval		95% Credible Interval	
						Lower	Upper	Lower	Upper
Questions	Do you want to invest in the share market?	510	510	1.000	< .001	0.993	1.000	0.993	1.000
Yes	0	239	510	0.469	0.170	0.425	0.513	0.426	0.512
	1	271		0.531	0.170	0.487	0.575	0.488	0.574
No	0	270	510	0.529	0.199	0.485	0.573	0.486	0.572
	1	240		0.471	0.199	0.427	0.515	0.428	0.514

Note. H_0 is proportion $\neq 0.5$

Table 3. Binomial test with multiple options

	Level	Count	Total	Proportion	p	95% Confidence Interval	
						Lower	Upper
Questions	Do you want to invest in the share market?	510	510	1.000	< .001	0.994	1.00
Yes	0	340	510	0.667	< .001	0.631	1.00
	1	170		0.333	1.000	0.299	1.00
No	0	330	510	0.647	< .001	0.611	1.00
	1	180		0.353	1.000	0.318	1.00
Bias	0	350	510	0.686	< .001	0.651	1.00
	1	160		0.314	1.000	0.280	1.00

Note. H_0 is proportion > 0.5

Table 4. Scale reliability statistics

Scale	mean	Cronbach's α	McDonald's ω
	0.333	-1.69e-16	-29.2

Note. Item 'Yes' correlates negatively with the total scale and probably should be reversed

5. Results

The reliability of the options makes a significant impact on the decision-making process. Scale reliability tests for the decision 'Yes' are impacted as Cronbach's α value is $-1.69e^{-16}$, which deliberately shows that while including the options, the scalability becomes entirely internal consistency affected in similar McDonald's ω as factor analytic among the options are significantly impacted as the decision-making context. Internal optional context and their inconsistency are also measured in terms of item-rest correlations. Even though those item-rest values are the same, the mean and standard deviation values have internal inconsistencies that occur during multiple options. In correlation, heatmap clearly states that when the options are single, such 'as conflict at the top level, Pearson correlation options have a high level of consuming and processing timing during multiple optional options compared to the binary level of options. Time, as well as existing options, are the vital metrics at pre-decision binary filtering alignment rather than a direct answer. Since, in direct answer, there were not many options as well, it is not necessary to spend time taking particular ones unless necessary. Time vs options over decision-making at the pre-decision phase. Figure 5 represents the X and Y axes and states the time and options. At each time point, place a data point or marker for

each clustering option, indicating its performance or relevant characteristics. This could include instances where a new clustering algorithm is introduced, parameters are modified, or any other significant decision points. Time and options typically involve visualizing how the choice of clustering options evolves, as shown in Figure 5.

This graph deliberately states that binary option filtering provides a feasible solution rather than a single or multiple clustering option. Whenever there are direct and multiple options, then linear seeking varies. In option 1, the linear level may be ignored since without option. Option 3 linear value goes negative. Comparatively, option 2 leads to positive optimum and feasible seeking capability rather than other options. The error bar is equally distributed in pre-decisions. This can be particularly useful in scenarios where different clustering algorithms, parameters, or settings are applied at different points in time and the way the model binary filtering compares their performance or effectiveness over time with direct clustering of options. The pre-decision phase is vital since the multiple options are into binary values in the clustering contexts. Human minds are always interested in picking the solution from the double value rather than single or multiple choices.

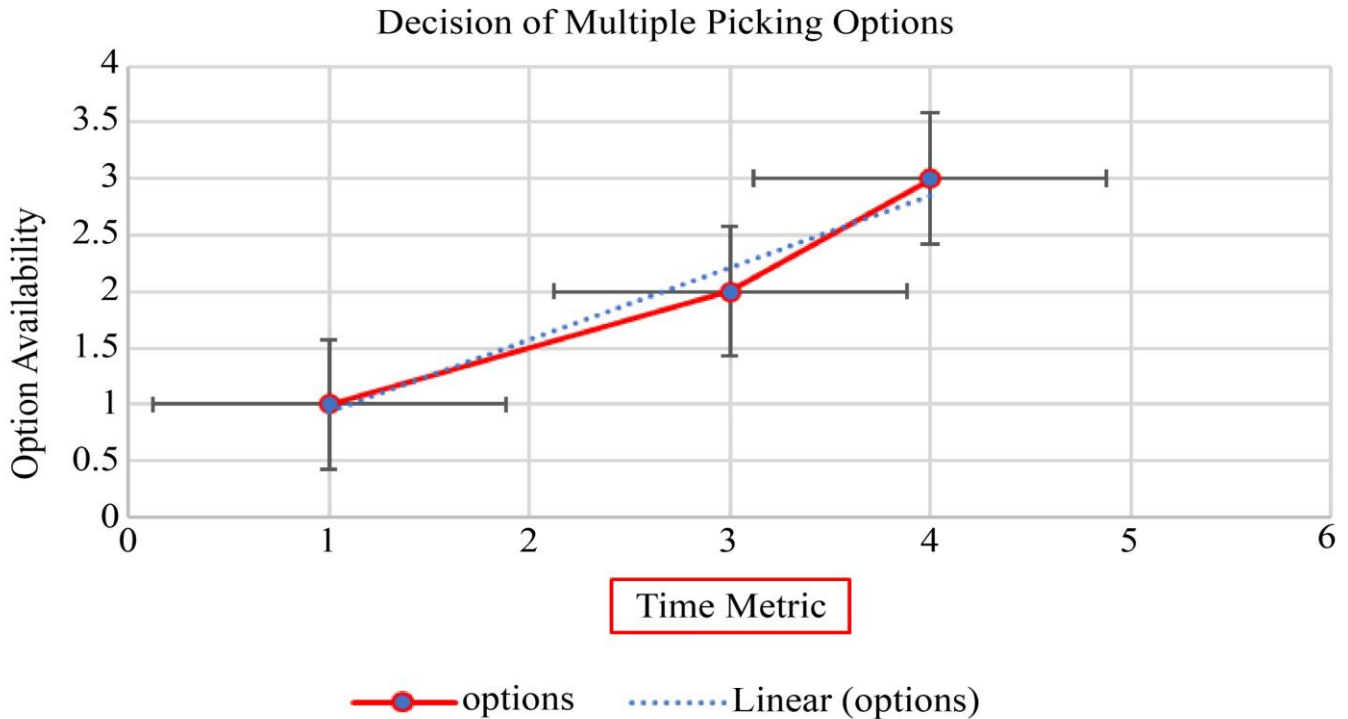


Fig. 5 Decision over direct and multiple decision options

5.1. Verification and Validation

In the decision context, there were numerous influences, such as external and situational factors, as well as past experiences that made internal biases. Analyzing that single option might consume a minimal amount of time, whereas huge at multiple options, as illustrated in Figure 6(a).

Similarly, the processing complexity with various options is deliberately shown in Figure 6(b). Compared with single and multiple options, binary picking is very feasible. Hence, the complexity level is minimal, but the analysis and exploration of intellectual efficacy are quite significant.

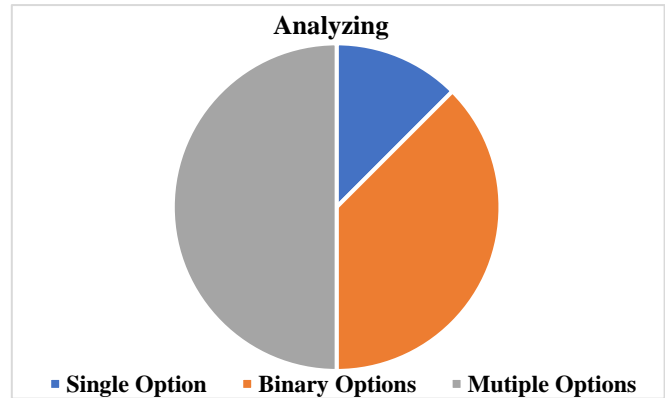


Fig. 6(b) Analyzing the complexity level of option picking

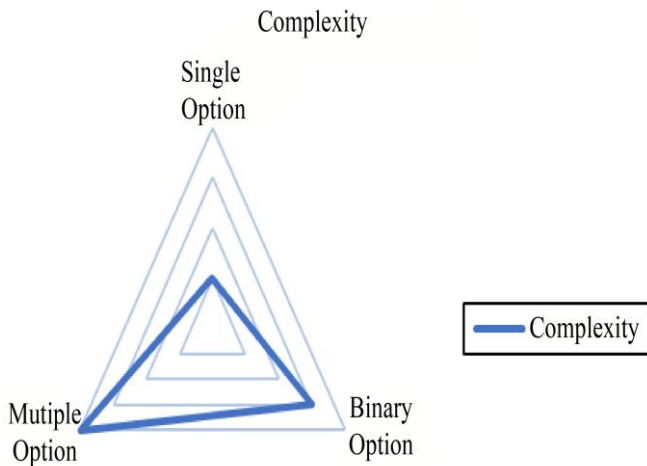


Fig. 6(a) Time-consuming during analyzing

Figure 7 states that various integral metrics of decision arriving context and their overall relations among those availabilities of options. Analyzing options, option deduction complexity, and decision arriving point. While auditing the single option or direct answer context, there are no pathetic or abnormal changes in the decision-picking context. Contradict in multiple or clustering options analyzing were timing, option deduction, and decision arriving appear as rational change after the option deduction point. Binary picking among multiple options and single options is gradual and has limited feasible direction at a decision point. Moreover, the major discrepancy is avoided during the binary filtering phase. It reduces abnormal decisions; the complexity of decisions becomes more manageable, and internal satisfaction (i.e. IAV) gradually increases.

5.2. Association of IAV and BPDM

Whenever the decision leads to optimized results, the IAV increases and vice versa. Moreover, BPDM is associated with IAV. BPDM is the pre-decision phase, which provides clarity about the final decision and increases the internal assessment value (IAV). IAV is a kind of interpersonal confidence factor that provides an individual with decision-making capability. The decision outcome may vary, but making a decision makes the human intellectual exploration.

While analyzing the decision context, the pre-decision point has a binary part of decisions (ex., do or not) that plays a vital role. Compared with multiple options, the binary options in the pre-decision phase may provide an optimum solution rather than numerous options or a single option. BPDM defines that most of the time, human decisions are after entering into binary choices and then conclude as one decision. Multiple choices lead to conflicts in the cognitive thought process, so the human brain always tries to make option deduction as the first state and move to a binary based decision. The reason behind this intuitive cognitive thinking is always looking for confidence boosters such as Internal Assessment Value (IAV).

5.3. Importance of BPDM

Figure 8 illustrates that compared with all other options, the binary decision picking led to an increase in interpersonal IAV value. It highly correlates with self-esteem and intellectual exploration notations in the decision-making context. Analyzing, option cutdown, decision arriving, and eventually, IAV values are low since the intellectual exploration possibilities among direct answers are so few. In other cases, option cutdown plays a significant effect in analyzing part. The cutdown option has the potential effect on cognitive bias and conflict deduction. The cutdown conflicts are highly at the multiple options part. After cutdown, the decision arriving is significantly effective in binary filtering context at decision making. Moreover, binary filtering highly supports the complexity deduction part rather than optional decisions. A notable thing among these decision-level IAV values is that they are significantly high in binary filtering decisions, comparatively single and multiple option decisions. Overall, the consumption of time, the accumulation of conflicts, and the effective way of decision-making could be added benefits of BPDM since even the direct single option might lead to the least interest in picking or making decisions. So, IAV might be at a low level.

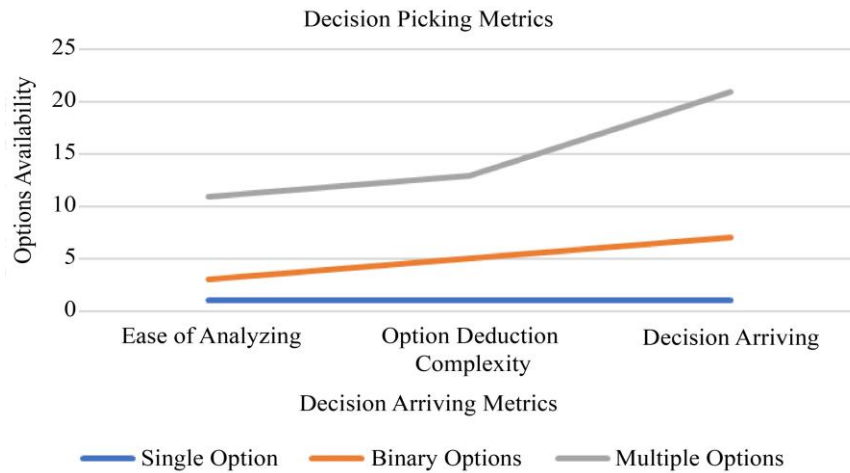


Fig. 7 Comparative metrics of decision arriving context

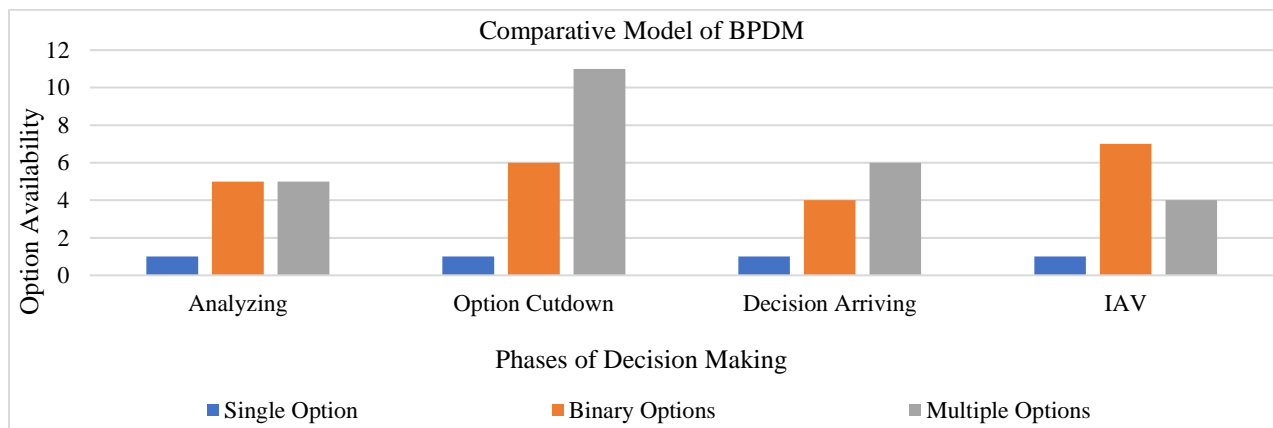


Fig. 8 Comparative impact over different options decisions

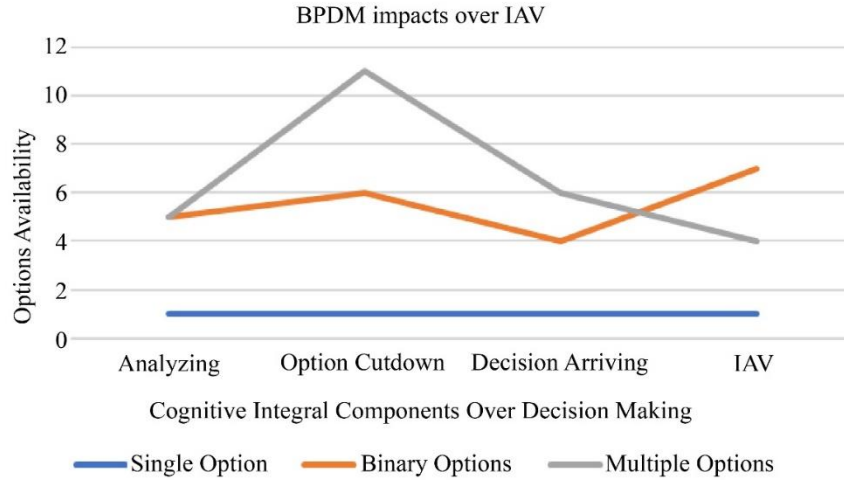


Fig. 9 Significant of IAV with different decision options

Figure 9 discloses the analysis, option cutdown, and decision arriving at binary filtering options that have significant IAV increase points rather than multiple and direct options. This IAV is highly associated with interpersonal skills, confidence levels, and intellectual exploring points in the decision-making context.

5.4. Discussions

The novelty of this research is evident in its highlighting of the inherent simplicity of BPDM compared to decisions with multiple options. The unique contribution lies in the identification of a binary filtering pattern that not only streamlines the decision-making process but also grants advantages such as conflict avoidance, a feasible sense of decision, and an increase in IAV. This study breaks new ground by establishing a correlation between IAV and key psychological metrics, shedding light on the intricate interplay between decision-making processes and cognitive aspects of an individual. This study aims to address which might be the most suitable logic for optimum decision attainment in cognitive aspects. More than being data-oriented, this study focuses on the ideology behind decision-making as a vital context in the decision-making process. Moreover, decisions always become binary in the pre-decision process rather than multiple and single direct answers. This study focuses mainly on the decision and the availability of minimal or maximum options. Analyzing the existing solution in each instance, which provides one, binary or huge number of probability of outcomes existing. These led to more uncertainty in different decisions. Hence, the solution or picking among the options might be the same for different individuals but those decision-making processes are unique and individual perception and contextual matters. Analyzing the decision-making process requires a deep study of natural intelligence, cognitive linguistics, memory, and perception. While seeking decision-making by way of cognitive processing systems, there are binary filtering systems that play a vital role. Moreover, this binary filtering

decision starts regardless of the availability of options; it always focuses on and seeks from two values. The direct answer indirectly denotes the mandatory option. Since that option had minimal intellectual stimulus triggering, the IAV values were even in an idle state. Unless it is a mandatory option, picking or non-picking also becomes the binary filtering caption. Hence, the time required to analyze the results becomes very limited. In a contradictory way, clusters or erogenous data create numerous possibilities for conflicts and internal bias to go with the specific decision. Herewith, the time it takes to analyze has become so hectic. Unless the cutdown of the options among the cluster towards the binary filtering stage leads to complexity in the decision-arriving context. Binary filtering is the major pre-decision process that facilitates the balanced weight among the options and leads to a reasonable time of analyzing and cutting down the options for the final decision arriving process.

5.5. Limitations

This study highly defines the ideology background rather than proving the concept with experimental aspects since the decision-making process is one of the important cores of perception-based cognitive core systems. The very limited dataset is only considered. However, there has been no or minimal study that discloses the binary decision-making process with the cognitive alignment process. This study reveals that the binary decision process highly induces the IAV rather than a single direct answer and multiple options. There was numerous computational psychology application-related research required for human behavior prediction and reducing uncertainty over the behavioral model.

6. Conclusion

Binary -Decision-making is one of the vital functions of every species in all day-to-day activities. This is one of the important cores of NDM and has challenged traditional views of decision-making by embracing the complexity of real-world situations. The novelty of this research is evident in its

highlighting of the inherent simplicity of BPDM compared to decisions with multiple options. The unique contribution lies in the identification of a binary filtering pattern that not only streamlines the decision-making process but also grants advantages such as conflict avoidance, a feasible sense of decision, and an increase in IAV.

This study breaks new ground by establishing a correlation between IAV and key psychological metrics, shedding light on the intricate interplay between decision-making processes and cognitive aspects of an individual.

6.1. Future Scope

It provides valuable insights for improving decision-making processes, enhancing training programs, and designing systems that support individuals and teams in navigating the complexities of their environments. After the decision is implemented, assess the outcomes and learn from the experience to inform future decision-making. Moreover, these decisions increase human interpersonal Inner Assessment Values (IAV) and encourage the exploration of different options. Cognitive perception and individual intellect are highly expressed through the decision-making process.

To achieve the decision, there are essential multiple phases of cognitive perception, such as analyzing the various options of a particular context, cutting down the numerous options into a binary filtering process, and then a final decision arrival point. Overall, the binary filtering phases act as pre-decision and inhibit values, providing a level of human confidence with each decision. Since it is an integral part of human cognitive-based self-esteem boosters through self-intellectual exploration during the decision-making process,

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it further intends to conduct computational psychology-related studies and research initiatives to assist and predict uncertain human behavior and avoid negative emotional activities in the decision-making context.

Funding Statement

This study evolved from Anti-Nicotine therapy using Green Leaf Cigarettes and was funded by the institute research fund of Veltech High Tech Dr. Rangarajan and Dr. Sakunthala Engineering College. (Ref.VH/R&D/SMP/22-23/009).

Acknowledgement

Thanks to the management of Veltech High Tech, Dr Rangarajan and Dr Sakunthala Engineering College, And special thanks to the Research and Development team of the institution.

Credit Authorship Contribution Statement

V.Sabapathi Methodology, Writing- Original draft preparation, Writing- Review & Editing, Formal analysis, Kamalanaban: Conceptualization, Investigation, Review & Editing Supervision.

Ethical Approval

The Institutional Human Research Ethics Committee approved the study.

Data Availability

The datasets analyzed during the current study are available from the corresponding author upon reasonable request.

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