

Cognitive bias in defense acquisition decision-making: insights from the Armed Forces of the Philippines

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151

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Abstract

Purpose – This research examines the role of cognitive biases in defense acquisition decision-making within the Armed Forces of the Philippines (AFP). It focuses on five such biases – loss aversion, overconfidence, anchoring, confirmation bias and groupthink – and their effects on acquisition decisions aimed at supporting AFP modernization goals. The study also investigates contextual constraints that heighten susceptibility to these biases and hinder optimal decision-making.

Design/methodology/approach – The study used a mixed-methods approach combining document analysis, key informant interviews and a survey questionnaire. Data were collected from nine key informants – chief planning, procurement and contracting officers from each AFP service – and six survey respondents with acquisition team experience. Triangulation across these sources enhanced validity and reliability.

Findings – Loss aversion emerged as the most frequently cited bias among key informants, while survey respondents identified groupthink as the most prevalent. Participants reported difficulty recognizing the onset of biases, noting that their effects were often realized only after decisions had been made. Leadership-organizational weaknesses and limited research capacity were identified as contextual factors that increased susceptibility. Proposed mitigation strategies included debiasing interventions, establishing a dedicated R&D command and implementing continuing education reforms.

Originality/value – This study addresses a significant research gap by empirically examining cognitive biases in defense acquisition within the AFP. It contributes original insights into how such biases affect decision-making and modernization outcomes, and it proposes defense-specific strategies for mitigation.

Keywords Cognitive biases, Defense acquisition, Decision-making, Armed Forces of the Philippines, Loss aversion, Overconfidence, Anchoring, Confirmation bias, Groupthink, Leadership, Organizational weaknesses, Procurement efficiency, Modernization

Paper type Research article

Introduction

Since the foundational work of [Tversky and Kahneman \(1974, 1986\)](#), [Kahneman et al. \(1982\)](#), [Kahneman and Tversky \(1996\)](#), heuristics and cognitive biases have been widely studied across fields such as (1) business (e.g. [Bazerman and Moore, 1998](#); [Ben-David et al., 2013](#);

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Bukszar and Connolly, 1988; Joyce and Biddle, 1981; Moore *et al.*, 2007; Zajac and Bazerman, 1991; Amankwah-Amoah, 2015); (2) finance (e.g. Barber and Odean, 2001; Benartzi and Thaler, 1995; Statman *et al.*, 2006); (3) medicine (e.g. Blumenthal-Barby and Krieger, 2015; Dawson and Arkes, 1987; Wears and Nemeth, 2007); (4) health/safety (e.g. Arney *et al.*, 2014; Edmondson, 2018; Hersing, 2017; Newman *et al.*, 2017); (5) law (e.g. Bystranowski *et al.*, 2021; Casper *et al.*, 1989; Chapman and Bornstein, 1996; Oeberst and Goeckenjan, 2016; Rachlinski *et al.*, 2011) and (6) computer science (e.g. Aranda and Easterbrook, 2005; Cohen *et al.*, 2003; Drury-Grogan *et al.*, 2012; Goecke *et al.*, 2018). The common thread in all these studies is that decision-makers harness heuristics in response to complexity and uncertainty in their surrounding environment, the downside of which may be suboptimal decision results.

Research on this topic has emerged relatively late among military-defense scholars (Alexandru, 2018; Janser, 2007) and remains limited compared to non-military studies, perhaps because examining military decision-making often involves sensitive and confidential issues. In the Philippines, Antig (2018) conducted a related study on developing competent strategic planners among Air Force officers. However, no subsequent research has examined defense acquisition decision-making in the Philippines as influenced by heuristics and cognitive biases, leaving a substantial gap in the literature.

At the same time, such research is critically urgent because it directly affects national security concerns, both internal and external. Defense acquisition is defined as “deciding what to buy, how to buy, and how to support the military systems and platforms needed to execute roles and missions” (Defense Security Cooperation University, Institute for Security Governance, 2021). The process involves (1) determining defense requirements and capabilities needed; (2) acquiring those capabilities in a timely, cost-effective and sustainable manner and (3) ensuring adequate resources to acquire, deploy and sustain them (Defense Security Cooperation University, Institute for Security Governance, 2021).

These decisions are central to achieving the modernization goals of the Armed Forces of the Philippines (AFP), as mandated in Republic Act 7898 (AFP Modernization Act of 1995) and amended in 2012 by Republic Act 10349. The RP-US Joint Defense Assessment (JDA, 2003) revealed critical deficiencies in the AFP’s (1) systemic approach to policy planning; (2) personnel management and leadership; (3) defense expenditures and budgeting; (4) acquisition; (5) supply and maintenance; (6) quality assurance for existing industrial base and (7) infrastructure support. The Feliciano Fact-Finding Commission Philippines (2003) further highlighted issues of graft and corruption in the retirement system, modernization fund and procurement processes (Supreme Court E-Library, Memorandum Order No. 17, 2011). More recently, the Defense Planning Guidance of 2016–2022 identified misaligned acquisition priorities, resulting in ill-informed procurement decisions (Department of National Defense, 2019).

In this context, this study addresses the following research questions: (1) Are AFP defense acquisition professionals aware of their susceptibility to cognitive biases? (2) Which cognitive biases do they perceive as most influential and why? (3) What contextual factors do they perceive increase their vulnerability to these biases? (4) How do they perceive the impact of these biases on acquisition decision-making? and (5) What remedies or interventions do they propose to reduce the impact of such biases?

Methodology

A mixed-methods approach was used, integrating qualitative and quantitative data collection and analysis, which included three reliable data-gathering instruments: document analysis, key informant interviews (KIIs) and a survey questionnaire.

Relevant documents, including laws and circulars-memoranda, procurement reports, capability assessments and defense contracts, were analyzed to identify patterns, inconsistencies and misalignments that could indicate the presence of cognitive biases, providing empirical evidence of their impact on procurement priorities and decisions. These documents were obtained through online research and from acquisition agent offices.

The primary data source consisted of the KII sample of nine key informants (three each from the three major services of the army, navy and air force): three chief acquisition planning officers, three chief procurement officers and three chief contracting officers. They were identified through personnel lists and organizational charts of the AFP's three major services, which detailed their functions and responsibilities. The chief acquisition planning officer initiates and coordinates the development of acquisition plans; identifies needs and outlines strategies; prepares documentation and coordinates with stakeholders to ensure a well-executed acquisition process. The chief procurement officer conducts market research; prepares bid documents; ensures compliance with procurement laws and standards and evaluates potential suppliers. Lastly, the chief contracting officer establishes requirements; solicits bids; reviews all proposed solicitations; awards contracts and manages contract performance to ensure contract compliance. KIIs followed a semi-structured format aligned with the study's five research questions.

The secondary, minor data source was a survey administered to six acquisition personnel (two from each of the three major services) with prior or current acquisition team experience. The survey instrument explored additional aspects of the acquisition process to either support or challenge the findings from the KIIs, serving as a triangulating and cross-validating tool.

In all, the total sample consisted of nine key informants and six survey respondents. All were male, in their 40s for the team leaders and late 30s for the team members, and all of them were married.

Both the content of the KII and the survey questionnaire were subjected to the review of two faculty members of the National Defense College of the Philippines (NDCP) and the Command General Staff College (CGSC) who were teaching management courses touching on acquisition systems. The 30-min interviews were personally administered in the informants' respective offices. The survey questionnaires were initially distributed and returned by email. However, it was later determined that face-to-face interviews would provide richer insights, as the emailed responses were brief and offered limited detail. Most data were qualitative and analyzed using content analysis. The limited quantitative data were examined through frequency counts and rankings.

Results

The five research questions generated responses that pivoted around the following themes:

Theme 1: awareness and susceptibility of AFP acquisition professionals to cognitive biases in decision-making

All nine KII informants confirmed that they were aware of cognitive biases that had affected their decision-making. They had received training and additional coursework that helped them understand what cognitive biases are and how such biases can influence decisions. However, they noted that it was not easy to recognize immediately when they had succumbed to these biases. One informant explained that cognitive biases operate unconsciously, making it difficult to determine whether one has been affected. According to one informant, "in the actual situation of decision making, we attend to so many things to consider, such that we fail to be fully aware of our cognitive biases anymore." Another informant echoed this sentiment, remarking that "we cannot be always alert to guard ourselves against cognitive biases every time."

Similarly, the six survey respondents were familiar with cognitive biases, having covered them in management decision-making training. They recognized their own susceptibility, though, as one respondent noted, "how or when do we know if we are already succumbing to any of these cognitive biases?"

Theme 2: cognitive biases that AFP acquisition professionals perceive as most influential and their underlying causes

This question took time for the informants to answer accurately. Initially, their responses varied. One reason was that the literature uses different terms for the same bias (e.g. stability

bias as status quo bias, optimism bias as overconfidence and groupthink as the bandwagon effect). To generate more consistent responses, informants were shown a list of ten common cognitive biases from the literature and provided with brief definitions and explanations. With this recall aid, their responses became more uniform. Using a ranking method, the nine informants identified the top five cognitive biases as loss aversion, anchoring, groupthink, overconfidence and confirmation bias.

The highest-ranked bias, loss aversion – the tendency to prefer avoiding losses over achieving equivalent gains (Tversky and Kahneman, 1981) – reflected informants' fear of project risks, which left them "blind" to potential gains.

The second-ranked bias, anchoring – overreliance on initial information (Aranda and Easterbrook, 2005) – was described by one informant who admitted that early cost estimates or supplier recommendations often weighed heavily in his final decisions. Even when better information became available, he continued to rely on the original estimates.

Groupthink – conformity to group consensus or an effort to support group harmony (Janis, 1972) – was noted by one key informant who described setting aside personal beliefs to impress his team that he was in consensus with the overall opinion. Another observed that groupthink resembled the bandwagon effect, where one team member, often the team leader, dominates the discussion, swaying others to follow.

Overconfidence – the overestimation of one's knowledge or abilities (Weinberg, 2009) – was identified by another key informant, who noted that higher-ranking officials' confidence in their views sometimes caused the teams to neglect contingency planning, wasting time and money on substandard equipment. Another informant volunteered that senior leaders often believed themselves incapable of making incorrect judgments.

Finally, confirmation bias – the tendency to favor information that confirms or supports pre-existing, long-held beliefs – was acknowledged by one informant who admitted to repeatedly highlighting evidence that supported preferred courses of action while contradictory evidence was downplayed or ignored.

To minimize time and elicit more uniform responses, the same protocol was used with survey respondents, who were also shown the list of biases. Their ranking deviated somewhat from the KII results: groupthink was ranked first, followed by anchoring, confirmation bias, loss aversion and overconfidence last. Asked why groupthink ranked highest, one respondent explained, "We are only team members and we tend to follow what our senior officers tell us."

Theme 3: environmental factors affecting AFP acquisition professionals contributing to susceptibility to cognitive biases

Many key informants reported that their susceptibility to cognitive biases was reinforced by two main factors: (1) insufficient research capability and (2) leadership and organizational weaknesses.

On the insufficiency of AFP research capabilities, one informant explained acquisition decision-makers often lacked relevant and accurate information, which pushed them to rely on cognitive biases. Another noted that while abundant information exists in the external markets, inadequate research capacity prevents its capture and analysis, leaving decision-makers dependent on personal perceptions or the views and opinions of senior officials.

On leadership and organizational weaknesses, a synthesis of the informants' responses indicated that in defense acquisition teams, leadership was focused too heavily on short-term benefits at the expense of addressing the root causes of procurement inefficiencies. One informant cited "poor communication and coordination among key stakeholders at many levels in the defense acquisition hierarchy," which he believed intensified cognitive biases. Another informant emphasized the entrenched "culture of military leadership" where "one has to obey first before he complains," highlighting the influence of bureaucratic seniority and hierarchy.

Survey respondents, meanwhile, attributed their susceptibility to groupthink – their top ranked bias – to this same military culture. They did not mention the lack of research capability

but emphasized the pressures of their subordinate roles as members of the acquisition team. As one respondent volunteered, “Evaluation is more the function of team leaders and senior officers. We only do technical monitoring, that is, do routine checks if requirements are aligned, conduct follow-ups, but cannot say a contrary view to the leaders.”

Theme 4: perceived impacts of AFP acquisition professional cognitive biases on defense acquisition decision-making

Key informants provided a wealth of responses, indicating their seriousness about the role of cognitive biases in acquisition decision-making. Their responses were rich and often led to lively exchanges between interviewees and the interviewer. One such interaction concerned the difficulty of measuring the impact of cognitive biases. Informants explained that they could not pinpoint the exact moment when biases entered the decision process. As noted earlier, some described biases as operating unconsciously.

They emphasized that hindsight often revealed when a bias had influenced their decisions. In other words, the onset of cognitive biases cannot be anticipated or can one maintain a constant state of alertness to prevent it. As one informant explained, “we only know it is a cognitive bias working inside us after it has left a negative effect on our decision making.” Put differently, individuals realize they have been “tricked” by a bias only after its effects have become apparent.

Nonetheless, informants noted that once they became conscious of a bias, they could adjust their behavior to protect the quality of their decisions, realign them with their professional acquisition requirements and support AFP modernization goals. Although this realization often came late, they described correcting themselves and striving to avoid further influence of the bias.

When asked about the impact of cognitive biases, informants cited several negative consequences, including “misalignment of priorities,” increasing complexity and inefficiency and costly mistakes that undermined strategic objectives. Groupthink, for example, by emphasizing harmony and consensus, prevented consideration of alternatives and led to “weak and disastrous decisions.” Another informant stressed that hierarchical structures in the military “worsen groupthink by making it difficult for the other members of the team to voice different perspectives or challenge consensus thinking.”

Similarly, confirmation bias narrowed the decision-makers’ focus to evidence supporting pre-existing hypotheses, discouraging consideration of contradictory information. Anchoring bias was evident in reliance on early information leading to procurement decisions that are neither cost-effective nor of good quality. As one informant noted, treating first budget estimates as fixed led to “a less expansive analysis of alternatives.”

Overconfidence was also described as a persistent issue. Defense procurement leaders who overestimate their judgment often failed to plan for contingencies. One informant observed that “overconfident decision-making leads to increase of project risks while the morale of technical staff gets reduced because their expertise was discounted.” Another added that confirmation bias also hampers decision-making when procurement officers selectively process information, thus “impeding defense organizations from innovating and adapting to the changing environment because they fail or never evaluate alternative solutions fully.”

Theme 5: proposed remedies and interventions to mitigate cognitive biases in the AFP acquisition environment

Both key informants and survey respondents already had ideas on how to minimize cognitive biases, likely because acquisition professionals undergo training and, in some cases, pursue advanced studies in management.

In general, the key informants and survey respondents identified three remediation strategies to reduce, if not eliminate, cognitive biases:

- (1) *Formulation of debiasing policies.* Senior AFP leaders or agents themselves, may introduce systematic methods to reduce the variation caused by judgment and thus inhibit bias. One of the most frequently recommended debiasing strategy was simply raising awareness of biases – explaining when and how they are likely to occur, since they often operate unconsciously. Awareness enables acquisition professionals to be more alert to their influence.

Informants/respondents suggested improving how information is presented (e.g. through nudges), fostering more diversity of opinions within teams and encouraging more analytical approaches. While use of structured procedures has been mandated by the Government Procurement Reform Act (RA 9184), one informant noted that its implementation remains inadequate, as reflected in the RP-US Joint Defense Assessment (JDA, 2003), the Feliciano Fact-Finding Commission (2003) and the Defense Planning Guidance (2016–2022).

- (2) *Creation of a dedicated R&D command.* To address DASAT-identified research capability gaps and improve informed decision-making, a dedicated R&D command would institutionalize research and development in defense organizations. Such a unit would foster a culture of learning and innovation while providing decision-makers with the tools and data needed to evaluate supplier options and align procurement with long-term modernization goals.
- (3) *Continuing education and advanced training.* The hierarchical culture and authority deference that perpetuates cognitive biases in defense acquisition should be mitigated through ongoing education. Innovation and adaptability require acquisition professionals to be creative, critical thinkers who engage in open dialogue. Training on debiasing techniques and decision-making frameworks can help personnel recognize and counter biases. More broadly, fostering an environment that values innovation, critical analysis, dissent and diverse perspectives is essential for sustaining an open and productive organizational culture.

Discussion

Key informants and survey respondents agreed that cognitive biases are prevalent in acquisition decision-making. They attributed this not only to their individual psychological histories and experiences but also to the external conditions – some within their control and others beyond it. These include job pressures, military organizational culture, leadership styles, research technology limitations, volatile defense markets, interactions with suppliers and stakeholders and shifting national security threats. Under such circumstances, it is natural for acquisition professionals to come under the influence of cognitive biases.

At the same time, as AFP acquisition agents, they hold responsibilities critical to the survival and security of the Philippines. Their work demands vigilance, as complacency or “business-as-usual” behaviors heighten susceptibility to bias. Even the five biases examined in this study – loss aversion, groupthink, anchoring, overconfidence and confirmation bias – can seriously distort decision-making. The risks are magnified if multiple biases operate simultaneously.

Although Philippine procurement provide guidance intended to align acquisition decision-making with AFP modernization goals, much remains to be done to prevent susceptibility to bias. Informants and the survey respondents identified three main strategies: debiasing policies, enhanced research capacity within the AFP and continuing education for acquisition professionals. While these strategies may help, awareness and knowledge alone cannot guarantee protection, since biases often operate unconsciously. Respondents emphasized that biases are rarely recognized in real time; awareness typically comes only in hindsight, after their effects have already been felt.

Regular and sustained continuing education for acquisition professionals is recommended. The curriculum, however, should go beyond teaching the basics of cognitive biases. It must include the study of Philippine society and culture, particularly the realities of the Filipino mindset, which encompasses both positive and negative elements. Reducing the negative elements is essential to mitigating bias – especially groupthink – given that Philippine national culture has been described as power-dominant and collectivistic (Hofstede, 1991, 1993, 2011; Montiel, 2012). These cultural characteristics make it difficult for Filipino acquisition professionals to completely avoid cognitive biases.

In addition, acquisition professionals must develop expertise across a broad range of knowledge areas. As Motlock (2021) identifies, these include program management, engineering, test and evaluation, life cycle logistics, financial management and cost estimating, along with a deep understanding of human behavior and organizational dynamics. Motlock introduced the concept of “behavioral acquisition” to highlight the importance of psychology, organizational behavior and politics in defense acquisition.

Achieving this requires a comprehensive and well-structured program of study, not merely seminar-type training. Faculty selection should extend beyond specialists in organizational development to include neuro-oriented psychologists and experienced scholars of Philippine society and culture. The goal is to develop acquisition professionals who not only understand the defense-security mission of the AFP but also appreciate how modernization efforts must build the AFP’s capacity to fulfill that mission.

Conclusion

This study demonstrated that cognitive biases have negative consequences for AFP acquisition decision-making. Addressing these effects requires a solid, rigorous and sustainable response through the implementation of debiasing policies, improvement of AFP research capability and continuing education for acquisition professionals.

This paper is an exploratory one. Despite the limited sample, it highlights the difficulty of containing cognitive biases, which are inherent to the brain’s cognitive system and serve as heuristics for managing complex information. A follow-up study with a larger sample of AFP informants and respondents is recommended to further validate and strengthen these findings.

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Ethical approval and informed consent statements

This study obtained the approval of the review board of the Command and General Staff College, Armed Forces of the Philippines.

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