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ABSTRACT

Variability of Key Performance Indicators of Falcon AP. Bren on Losing and Winning Matches in the MSC 2024 Final Against Selangor Red Giant

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I. INTRODUCTION

Esports have grown into a global industry, attracting millions of viewers and creating a major cultural and economic impact. As competitive titles like Mobile Legends: Bang Bang become more professionalized, they now demand high levels of strategy, skill, and teamwork comparable to traditional sports [1]. With the rise in tournament size and stakes, there is a growing need for performance analysis to support better gameplay and decision-making. In esports, performance analysis helps teams develop tactics, assess strengths and weaknesses, and prepare for competition. Like in traditional sports, using match data allows teams to adjust strategies based on their opponents and in-game situations [2]. However, while esports research is expanding, there is still limited analysis focused on mobile titles and their tactical elements. This study addresses that gap by analyzing the 2024 MSC Final between Falcon AP Bren and Selangor Red Giant. By examining key gameplay and statistical indicators through structured notational and statistical analysis, this research aims to uncover performance patterns that contributed to match outcomes and support strategy development in mobile esports.

II. METHODS

This study employed a quantitative performance analysis approach to examine gameplay patterns in the MSC 2024 Grand Final between Falcon AP Bren and Selangor Red Giant. A total of seven matches ($N = 7$) replays from the final series were collected and analyzed, with data sourced from official YouTube broadcasts and Liquipedia match statistics, both of which are widely used and publicly accessible platforms for esports analytics. Key performance indicators (KPIs) related to team fights, objective control (e.g., Lord and Turtle), zoning, ganking, and lane-based engagements were extracted using manual notational analysis. Data were logged and categorized by outcome (win or loss) to determine variations in tactical execution. The following statistical methods were applied: descriptive statistics to summarize gameplay trends across matches, and independent sample t-tests to compare KPIs between winning and losing games ($p < 0.05$). Test-retest reliability was conducted, with a minimum threshold of $r > 0.80$, and the percentage of coding error was maintained below

10%, consistent with accepted standards in performance analysis research.

III. RESULTS AND DISCUSSION

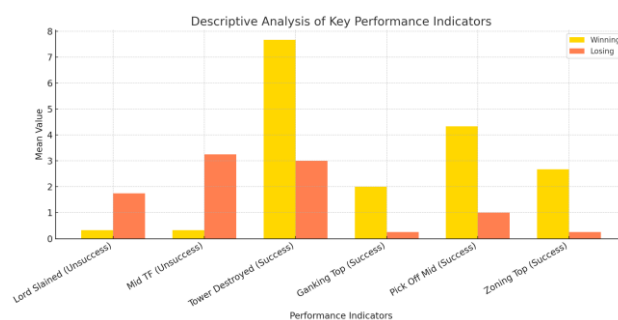


Fig. I: Descriptive mean value of indicators.

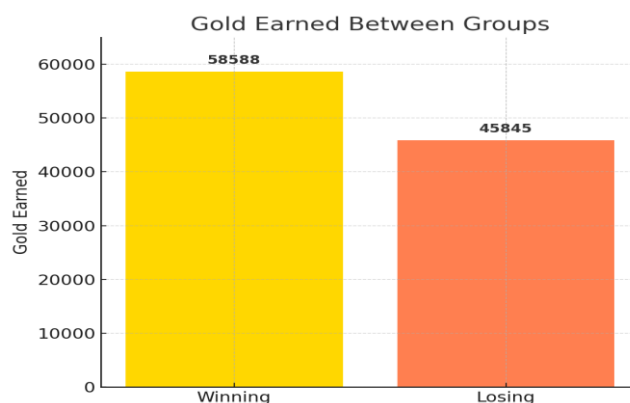


Fig II: Gold earned between winning and losing matches.

A. Descriptive Analysis

The descriptive analysis highlighted pronounced differences between winning and losing conditions across several key performance indicators. According to Figure 1, winning matches demonstrated a significantly higher average number of towers destroyed ($M = 7.67$) compared to losing matches ($M = 3.00$), underscoring the critical role of objective control in competitive Mobile Legends play. Proactive macro-

level actions such as mid-lane pickoffs ($M = 4.33$ vs. 1.00), top-lane ganks ($M = 2.00$ vs. 0.25), and top-area zoning ($M = 2.67$ vs. 0.25) were notably more frequent in victorious scenarios, reflecting superior map pressure and team coordination. By contrast, losing matches saw elevated counts in reactive behaviors, including lord slains ($M = 1.75$ vs. 0.33) and mid-lane team fights ($M = 3.25$ vs. 0.33), suggesting inefficient resource allocation and suboptimal objective prioritization. These results support prior findings that emphasize the strategic significance of early objective control and structured macro play in esports performance [3].

Based on Figure 2, analysis of the gold economy further reinforced the importance of economic dominance: winning matches averaged 58,588 gold compared to 45,845 in losses, a substantial difference of 12,743 gold. This economic advantage facilitates earlier item power spikes, enhances map control, and supports stronger objective and team-fight outcomes, aligning with established research on the influence of resource accumulation in MOBA-style esports [1].

B. Inferential Analysis

TABLE I
SIGNIFICANCE VARIABLES

Variables	Losing	Winning	<i>p</i> value
Lord slained (Unsuccess)	1.75 ± 0.5	0.33 ± 0.5	0.018
Mid team fight (Unsuccess)	3.25 ± 1.5	0.33 ± 0.58	0.026
Tower destroyed (Success)	3 ± 1.41	7.67 ± 1.16	0.006
Ganking top (Success)	0.25 ± 0.50	2.00 ± 1.00	0.027

Independent-samples t-tests (Table 1) confirmed that several performance indicators differed significantly between winning and losing matches. Tower destructions were significantly higher in wins ($M = 7.67$, $SD = 1.16$) than losses ($M = 3.00$, $SD = 1.41$), $t(5) = -4.641$, $p = 0.006$, $d = -3.55$. Top-lane zoning and ganking also showed significance: Zoning Top, $M = 2.67$ vs. 0.25 , $t(5) = -5.944$, $p = 0.002$, $d = -4.54$; Ganking Top, $M = 2.00$ vs. 0.25 , $t(5) = -3.090$, $p = 0.027$, $d = -2.36$. A strong trend emerged for mid-lane pickoffs ($M = 4.33$ vs. 1.00), $t(5) = -2.548$, $p = 0.051$, $d = -1.95$, indicating a large effect despite narrowly missing conventional significance. Conversely, losing conditions had significantly more unsuccessful lord attempts ($M = 1.75$ vs. 0.33), $t(5) = 3.485$, $p = .018$, $d = 2.66$, and mid-lane team-fight failures ($M = 3.25$ vs. 0.33), $t(5) = 3.136$, $p = 0.026$, $d = 2.40$. These findings suggest that proactive strategies, zoning, ganking, and objective taking are strong predictors of success, while overreliance on reactive engagements corresponds with match deficits. Thus, tactical execution not only characterizes

performance but also offers predictive insights in elite Mobile Legends play.

IV. CONCLUSIONS

The findings from both descriptive and inferential analyses demonstrate that Falcon AP Bren's performance in the MSC 2024 Final was heavily influenced by key macro-level strategies and objective control. Victories were marked by proactive gameplay such as effective zoning, successful ganking, and higher tower destruction, highlighting the importance of map pressure and structured team execution. Conversely, losses were associated with reactive behaviors, including overcommitment to mid-lane team fights and failed lord contests, which reflected suboptimal decision-making and resource allocation. Inferential statistics confirmed these patterns, with significant differences observed in several indicators, reinforcing their predictive value in match outcomes. Collectively, the results underscore that consistent success in high-level Mobile Legends competition relies not only on mechanical skill but also on strategic clarity, coordinated macro execution, and efficient in-game adaptations.

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