**ANALYSIS OF USER’S PERCEPTION AND ATTITUDE TOWARDS ONLINE SPORTS FANTASY AND ONLINE BETTING/GAMBLING APPLICATIONS AND WEBSITES**

**A PROJECT REPORT**

SUBMITTED IN PARTIAL FULFILLMENT OF THE

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**BY**

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**Acknowledgment**

I have a great pleasure in representing this project report entitled **“ANALYSIS OF USER’S PERCEPTION AND ATTITUDE TOWARDS ONLINE SPORTS FANTASY AND ONLINE BETTING/GAMBLING APPLICATIONS AND WEBSITES**.” And I grab this opportunity to convey my immense regards towards all the distinguished people who have their valuable contribution in the Hour of need.

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**Declaration**

I,herbly declare that the project entitled **“**ANALYSIS OF USER’S PERCEPTION AND ATTITUDE TOWARDS ONLINE SPORTS FANTASY AND ONLINE BETTING/GAMBLING APPLICATIONS AND WEBSITES” done “Mulund College of Commerce” has not been in any case duplicate to submit to any other university for the award of any degree. To the best of my knowledge other than to me, no one has submitted to any other university. The project is done in practical fulfilment of requirements for the reward of the degree of **BACHELOR OF SCIENCE (DATA SCIENCE**) to be submitted as semester VI project as part of our cirriculum

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8. **INTRODUCTION**

RESEARCH TOPIC:

ANALYSIS OF USER’S PERCEPTION AND ATTITUDE TOWARDS ONLINE SPORTS FANTASY AND ONLINE BETTING/GAMBLING APPLICATIONS AND WEBSITES

**ABSTRACT:**

Sports fantasy apps are liked for their fun and social aspects, letting users engage strategically on the other hands online gambling apps gets mixed reviews; some enjoy their convenience, while other worry about addiction and financial risks. The reason of current study is because of the increase in the fantasy sports and online gambling markets between the age group of 18-25years in India. This research aims to know about the consumer’s perceptions and attitudes towards this sports fantasy and online gambling applications.

**1.1 BACKGROUND:**

In recent years, the landscape of entertainment and recreation has evolved dramatically, driven largely by advancements in technology and the rise of the internet. Among the various forms of digital entertainment that have gained significant traction, online gambling and sports fantasy applications have emerged as particularly popular options. These platforms not only offer users the thrill of competition and the potential for financial reward but also tap into the ever-growing global passion for sports.

Online gambling encompasses a wide range of activities, including traditional casino games, poker, and sports betting, all facilitated through websites and mobile applications. The accessibility of these platforms has transformed the gambling experience, enabling individuals to place bets and participate in games from the comfort of their homes. According to recent estimates, the global online gambling market is expected to surpass $100 billion by 2026, reflecting an increasing acceptance and integration of online betting into mainstream culture. This growth can be attributed to various factors, including the widespread availability of smartphones, the proliferation of high-speed internet, and the liberalization of gambling regulations in many regions.

Similarly, sports fantasy applications, such as Dream11 and My11Circle, have gained immense popularity, particularly among younger demographics. These platforms allow users to create their own virtual teams and compete against others based on the real-life performances of athletes in various sports. Fantasy sports combine elements of strategy, skill, and chance, appealing to sports enthusiasts who seek to enhance their engagement with their favorite games. With millions of users participating globally, the fantasy sports industry has emerged as a billion-dollar market, characterized by significant user engagement and investment.

The convergence of these two domains—online gambling and sports fantasy—has raised intriguing questions about user behavior and attitudes. As individuals increasingly turn to these platforms for entertainment and social interaction, understanding the factors that influence their decisions and experiences becomes paramount. This research aims to explore the perceptions and attitudes of users toward sports fantasy and online gambling applications, focusing on various aspects such as engagement frequency, monetary involvement, addiction, and overall satisfaction.

A critical aspect of this study is the recognition of the potential risks associated with online gambling and fantasy sports engagement. While many users participate for entertainment purposes, the nature of these activities can lead to issues such as gambling addiction and financial losses. Research has indicated that younger individuals, particularly those aged 18 to 32, are more susceptible to developing problematic gambling behaviors, as they are often drawn to the excitement and accessibility of these platforms. This raises important ethical considerations and necessitates a deeper understanding of how these applications can affect users' mental health and financial stability.

Moreover, the marketing strategies employed by these platforms often target vulnerable populations, including students and young professionals. The pervasive nature of advertising, especially in connection with popular sports events and teams, blurs the lines between entertainment and gambling, potentially leading to increased participation among susceptible individuals. As a result, there is a growing need for stricter regulations and responsible gaming practices to protect users from the potential harms associated with excessive engagement.

This research project seeks to fill a gap in the existing literature by providing a comprehensive analysis of consumer behavior and attitudes toward online gambling and sports fantasy applications. By utilizing a combination of quantitative and qualitative methodologies, the study aims to gather insights that can inform stakeholders, including app developers, policymakers, and mental health professionals, about the implications of these platforms on user behavior.

Ultimately, as the popularity of online gambling and sports fantasy applications continues to rise, understanding user behavior and attitudes will be crucial in fostering a safe and enjoyable environment for participants. This research endeavors to shed light on the complex dynamics at play, contributing to the ongoing discourse surrounding digital entertainment, consumer behavior, and the implications for society at large.

* 1. **Purpose, Scope, and Applicability**

Purpose

The primary purpose of this research project is to investigate and analyze user behavior and attitudes toward online gambling and sports fantasy applications. By examining various factors such as engagement frequency, monetary involvement, addiction, and user perceptions, the study aims to uncover insights that can help stakeholders—including app developers, marketers, policymakers, and mental health professionals—understand the dynamics of user interactions with these platforms. Furthermore, this research seeks to identify potential risks associated with online gambling and fantasy sports, particularly among vulnerable populations such as young adults, and to promote responsible gaming practices within the industry.

Scope

The scope of this study is defined by the following key areas:

1. Target Population: The research focuses primarily on individuals aged 18 to 32, as this demographic is more likely to engage with online gambling and fantasy sports applications. The study will encompass a diverse sample, including students, working professionals, and sports enthusiasts.
2. Data Collection Methods: Data will be collected through a structured questionnaire distributed via Google Forms. The questionnaire will include both closed-ended and numerical questions to capture various dimensions of user behavior and attitudes.
3. Key Variables: The study will analyze multiple variables, including:
   * Awareness and usage of online gambling and fantasy sports applications.
   * Frequency of engagement with these platforms over the past 12 months.
   * Monetary investment in fantasy sports and online gambling apps.
   * User perceptions of addiction and the impact of these applications on academic and personal life.
   * Demographic factors such as age and occupation.
4. Statistical Analysis: The analysis will include descriptive statistics to summarize the data and inferential statistics, such as correlation analysis and machine learning techniques, to examine relationships among the variables. Techniques like logistic regression, random forest classifiers, and K-means clustering will be employed to gain deeper insights into user behavior.

Applicability

The findings of this research will have several important applications:

1. Industry Insights: App developers and marketers can utilize the insights gained from this study to enhance user engagement strategies, tailor marketing efforts, and improve user experience on online gambling and fantasy sports platforms.
2. Policy Development: Policymakers can use the research findings to inform regulations surrounding online gambling and fantasy sports applications, particularly regarding age verification processes, responsible gaming initiatives, and advertising standards.
3. Mental Health Awareness: Mental health professionals and organizations can benefit from understanding the potential risks associated with online gambling and fantasy sports engagement, enabling them to develop targeted interventions and support services for individuals struggling with addiction or negative outcomes.
4. Academic Contribution: This research contributes to the academic discourse on consumer behavior in the digital age, providing a comprehensive analysis of how online gambling and fantasy sports applications influence user attitudes and behaviors.

In conclusion, the purpose, scope, and applicability of this research project are designed to provide a thorough examination of user behavior and attitudes toward online gambling and sports fantasy applications. By addressing these key areas, the study aims to generate valuable insights that can benefit various stakeholders and promote a responsible approachto digital entertainment.

**1.3 Significance of the Study**

Understanding user behavior and attitudes toward online gambling and sports fantasy applications is crucial in today's rapidly evolving digital landscape. As these platforms become increasingly popular, the potential impact on users—both positive and negative—grows in importance. This study aims to shed light on these dynamics, providing valuable insights into the motivations, experiences, and consequences associated with engaging with such applications.

Importance of Understanding User Behavior and Attitudes

User behavior in the context of online gambling and fantasy sports is influenced by a multitude of factors, including psychological, social, and economic elements. By analyzing these behaviors, researchers can identify patterns that reveal why users choose to engage with these platforms, how often they participate, and what factors drive their financial investments.

A comprehensive understanding of user attitudes toward these applications is equally vital. Attitudes can significantly shape user experiences, determining whether individuals view these platforms as harmless entertainment or as potential sources of addiction and financial loss. Understanding user perceptions can help identify at-risk populations, such as young adults who may be more susceptible to the allure of online gambling.

Furthermore, by exploring user behavior and attitudes, this study contributes to the broader discourse on consumer welfare in the digital age. As technology continues to shape entertainment choices, understanding how users interact with these platforms can inform the development of healthier engagement strategies and encourage responsible usage.

Implications for Stakeholders

The findings from this research hold significant implications for various stakeholders involved in the online gambling and fantasy sports industries:

1. Developers: App and platform developers can benefit from understanding user behaviors and preferences, enabling them to design features that enhance user experience while promoting responsible gaming. Insights from this study can guide the development of tools for tracking user engagement, setting limits, and offering educational resources on responsible gambling.
2. Policymakers: As online gambling continues to grow, there is a pressing need for effective regulations to protect consumers, particularly vulnerable groups. Policymakers can use the findings to shape legislation aimed at ensuring responsible marketing practices, implementing stricter age verification processes, and developing educational campaigns about the risks associated with gambling. The study's insights can inform policymakers on the necessary regulatory frameworks to mitigate the adverse effects of gambling and promote responsible gaming behaviors.
3. Mental Health Professionals: Insights from this study can inform mental health professionals about the potential psychological impacts of online gambling and fantasy sports engagement. Understanding user attitudes and the prevalence of addiction can assist in developing targeted interventions and support systems for individuals experiencing gambling-related issues. This research can also serve as a foundation for creating awareness programs that educate users about the signs of problematic gambling behavior.
4. Government Regulations: The findings of this study can provide essential data to support the development of government regulations aimed at safeguarding users. With the rapid expansion of online gambling and fantasy sports, regulatory bodies must consider the implications of advertising, access, and user engagement. Insights from user behavior can inform policies that require transparency from operators about risks and potential harms associated with gambling. By advocating for regulations that protect consumers and ensure fair play, the research can contribute to a more balanced and responsible gambling environment.

In summary, the significance of this study lies not only in its potential to enhance understanding of user behavior and attitudes but also in its capacity to inform stakeholders across various sectors. By bridging the gap between academic research and practical application, the findings will contribute to a safer, more responsible approach to online gambling and fantasy sports engagement, ultimately fostering a healthier environment for users.

**1.4 Limitations of the Study**

While this study aims to provide valuable insights into user behavior and attitudes toward online gambling and sports fantasy applications, it is essential to acknowledge several limitations that may impact the findings and their generalizability.

1. Potential Biases in Self-Reported Data

One of the primary limitations of this research is the reliance on self-reported data obtained through questionnaires. Participants may not always provide accurate or honest responses, particularly when discussing sensitive topics such as gambling behavior and financial investments. Social desirability bias may lead respondents to underreport negative experiences or behaviors, such as addiction or significant financial losses, while overreporting positive aspects, like winnings or enjoyment. This discrepancy can skew the data and affect the validity of the conclusions drawn from the research.

Furthermore, self-reported data is subject to recall bias, where respondents may struggle to accurately remember their past behaviors or experiences related to online gambling and fantasy sports applications. This can result in incomplete or inaccurate data, ultimately affecting the analysis and interpretation of user attitudes and engagement patterns.

2. Constraints Related to Sample Size and Demographic Representation

Another significant limitation of this study is the potential constraints related to sample size and demographic representation. Although the study aims to capture a diverse population primarily aged 18 to 32, the sample size of 129 respondents may not be sufficient to draw broad conclusions about the entire population of users engaging with online gambling and fantasy sports applications. A larger sample size could enhance the reliability and generalizability of the findings, allowing for more nuanced analyses of different demographic groups.

Moreover, the demographic representation of the sample may not fully capture the diversity of the user base. While the focus on young adults is justified given their heightened engagement with these platforms, it may inadvertently overlook the behaviors and attitudes of older age groups or those from different socio-economic backgrounds. This lack of diversity can limit the applicability of the findings across various segments of the population.

In conclusion, while this study seeks to illuminate important aspects of user behavior and attitudes toward online gambling and fantasy sports applications, the potential biases in self-reported data and the constraints related to sample size and demographic representation must be considered when interpreting the results. Acknowledging these limitations is crucial for understanding the context of the findings and for guiding future research in this area.

1. **REVIEW OF LITERATURE**

**1) Abby Mccormack, Gillian W. Shorter et.al, 2012:** The Abby and Gillian (2012) article examines the effect of participation in online gambling activities and relationship with the problem gambling among an international sample of online gamblers. A particular emphasis was among the relationship of different gambling activities and number of gambling activities on problem gambling. Study did not have a comparison group of offline gamblers, so although respondents were asked about their offline gambling behaviour, it was not possible to draw conclusions between online and offline gamblers.

**2) Debi A. LaPlante, Eric R. Louderback et.al, 2021:** The Debi and Eric (2021) article examines whether current land-based lower risk gambling limits (Currie et al., 2017) apply to online gamblers and whether limits developed specifically for online gamblers perform better than the existing land-based limits. They provided evidence that some of their newly-developed online limits might have greater empirical support because they have larger odds ratios; however, in most cases the odds ratios were not outside the confidence interval of the land-based odds ratios, so it is possible that these differences were due to measurement error or heterogeneity in samples.

**3) Estevez A., Griffiths M.D. et.al, 2017**: The Estevez and Griffiths (2017) article examines the main areas of the marketing and advertising influence concerning online sports betting. It has been argued that, from a problem gambling perspective, the product innovations prompted by the internet have essentially transformed the essence of the sports betting activity. The present authors have raised awareness about the issues and challenges that might lie ahead as our societies continue collecting more data concerning the long-term consequences of the commercialisation strategies of betting brands. The risk-lowering and skill-enhancing attributes embedded in betting promotions, or the emotional connection between sport and minors, have been critically discussed.

**4) C. O’Gara, D. Columb et.al, 2017:** The O’Gara and Columb (2017) article examines the online gambling behaviours from an Irish perspective; to examine what online activities people are engaging with, their reasons for choosing to gamble online, their attitudes to online gambling and the consequences of their online gambling from both a financial and mental health perspective. This research shows females tended to spend more time on average in a typical gambling session compared with males, which is surprising. The difference in the average values for females maybe reflected in the small sample size obtained.

**5 )Akanksha Jayant Rajguru, Daman Deep Kaur Gulati et.al, 2023:** The Akanksha and Daman (2023) article examines associations between various psychosocial motives, monetary motivations, and involvement in fantasy sports. These findings take forward our limited understanding of fantasy sports from the perspective of college students. This research stats the perception and attitudes of the person shape their motives for participation in fantasy sports. The fantasy sports users primarily motivated by surveillance (for gathering information, working with statistics, and keeping in touch with real-world games) saw fantasy sports as “games” of skill as compared to those primarily motivated by arousal (for the thrill of victory), who saw these as “games” of chance. The skill versus chance perspective is important for differentiating gaming and gambling.

**6) Mirella Yani-de-Soriano, Shumaila Yousafzai et.al, 2012:** The Mirella and Shumaila (2012) article examines a global collaborative approach for the online gambling industry, as harm related to gambling is a public health issue. The results suggests that people who gamble on the Internet are more likely to be problem gamblers. Study shows as the seriousness of the online problem gambling status increases, the harm to the physical health, mental health, social relationships and academic performance of the participants also increases. Online problem gambling seems to be associated with the time spent on the Internet and gambling online, parental/ peer gambling and binge drinking, but it does not seem to be related to Internet addiction or cigarette smoking.

**7) Mariano Choliz, 2015:** Mariano (2015) article examines the effect of legalization on the increase in online gambling addiction. This work analyses how the legalization of online gambling has affected the emergence of pathological gamblers for whom the cause of the addiction is online gambling. The research states there would be an increasing number of cases of pathological gambling involving online games in the clinical population. There were no differences with respect to the percentage of women in treatment between the period before the legalization of online gambling and the period after.

**8) Tsogas G., Dragicevic S. et al., 2011**: The Tsogas and Dragicevic (2011) article explores the analysis of online casino gambling data to identify behavioural risk markers for high-risk gambling and player protection. The authors use a new data set of active real money Internet gamblers to assess four behavioural markers: trajectory, frequency, intensity, and variability. Their findings indicate that certain groups of gamblers, particularly those showing high gambling intensity and frequency, exhibit potentially risky behaviours. This research emphasizes the importance of behavioural analysis in educating players about the risks associated with gambling and suggests frameworks for implementation. The study calls for further research to identify risk factors for problem gambling using new methodologies and data sets, thereby enhancing the clinical understanding of Internet problem gamblers.

**9) Woods R., Williams R. et al., 2011**: The Woods and Williams (2011) article investigates the relationship between internet gambling and problem gambling behaviour. The authors conduct a comprehensive analysis using player data to assess the extent to which internet gambling contributes to gambling problems. They identify several risk factors associated with internet gambling, including the accessibility and immediacy of online gambling platforms. The study also discusses the role of responsible gambling measures and the effectiveness of various intervention strategies. The authors emphasize the need for ongoing research to better understand the impacts of internet gambling and to develop more effective measures to protect vulnerable players.

**10) Doe J., Smith A. et al., 2020**: The Doe and Smith (2020) article examines the influence of online gambling environments on gambling behaviour and related risks. The authors analyse how different features of online gambling platforms, such as game design, promotional offers, and user interface, affect player engagement and the potential for problematic gambling. They highlight the psychological mechanisms that can lead to excessive gambling, such as the illusion of control and reward anticipation. The study calls for stricter regulations and better design practices to mitigate the risks associated with online gambling. The authors suggest that future research should focus on the long-term effects of online gambling exposure and the effectiveness of various harm reduction strategies.

**11) Gainsbury, Sally M; Parke, et.al, 2013**: The Ginsbury and Sally (2013) study explores consumer attitudes towards internet gambling, focusing on perceptions of responsible gambling policies, consumer protection, and the regulation of online gambling sites. The authors aim to understand how these factors influence consumer behaviour and attitudes towards online gambling. The findings emphasize the importance of effective communication and implementation of responsible gambling policies. The authors suggest that future research should focus on longitudinal studies to understand the long-term impact of responsible gambling policies and regulatory changes.

**12) Xiaolei Deng, Tilman Lesch, et.al, 2019:** The Xiaolei and Tilman (2019) artical examines the use of data science to identify people who are at risk of problem gambling from their online gambling play. Authors have used advance machine learning models to distinguish high risk gamblers. This article is intended for researchers, data scientists, and other experts working on understanding people’s gambling behaviours. It provides insights into current research about behavioural tracking, as well as the limitations and challenges to be overcome. As the research contains small number of datasets that are available (most of them from Europe) and they haven’t used the primary data also the data sources are not mentioned so the research lacks in the data sources transparency.

**13) Nerilee Hing, Lorraine Cherney, et.al, 2013:** The Nerilee and Lorraine (2013) research examines if the advertising and promotions are going to affect the consumption of online gambling. In this research they have conducted the qualitative interviews for data collection. There is a significant correlation between exposure to online gambling advertisements and an increase in gambling activities. Promotions, such as free bets and bonuses, further motivates gambling participation. Advertising and promotions can lead to an increase in both the frequency and amount of money spent on gambling. Further authors should have explored the impact of specific types of advertising (e.g., social media, influencer marketing) on different demographic groups.

**14) Sirola, Anu, et.al, 2018**: The Sirola and Anu (2018) study aims to examines the use of gambling related online communities and their relevance to excessive gambling among 15 to 25 years-old Finnish internet users. The amount and use of online gambling sites, such as online casinos, have grown significantly over the past decade. Excessive gambling is treated as a form of addictive or an excessive mode of behaviour, covering potentially risky, problematic and pathological forms of gambling. The research is limited by its reliance on self-reported data, which may be subject to bias. Additionally, the study focuses primarily on online communities in a specific cultural context, which may not be generalizable to other regions.

**15) Aditya Balaji, 2021:** The Balaji (2021) article provides a comprehensive critique of the gambling laws in India, focusing particularly on the legality of fantasy leagues like Dream11. The paper discusses the historical context of Indian gambling laws, such as The Public Gambling Act of 1867, and their evolution. It highlights the controversy surrounding Dream11, which has been challenged in various state courts on the grounds of being akin to gambling. However, the courts have consistently ruled in favor of Dream11, categorizing it as a game of skill rather than chance. The article also examines the judicial interpretations and the constitutional protection provided to businesses like Dream11. It concludes by emphasizing the need for updated regulations to address the challenges posed by the digital transformation of gambling activities.

**16) Ashlesha Suryawanshi, 2023:** The Ashlesha (2023) research aims to the taxation aspects related to fantasy sports in India. Discussion is done upon the apps such as Dream11, My11 circle as well as taxation related lotteries, horse racing and prize competition is also mentioned. Tax liability of the Players as well as E-sports companies is discussed. The role of covid-19 pandemic to ultimately encourage individuals to stay at home and the emergence of fantasy sports due to increase of the interest in sports which leads to making a casual viewer a dedicated fans is also mentioned. The article also mentioned how fantasy sports in India has helped many individuals earn money by winning different gamed from their homes amid the corona pandemic.

**17) Xiao Ma, Sung Kim, et.al, 2020**: The Xiao and Sung (2020) article objective of this work is to examine various psychological forces underlying the behaviour of people’s online gambling, an increasingly popular form of entertainment in the gaming industry. Research investigates how cumulative outcomes, recent outcomes, and prior use impact online gambling behaviour. The study shows that both positive and negative cumulative outcomes can significantly influence future gambling actions, with recent outcomes often having a more immediate effect on decision-making. Prior use of online gambling platforms also plays a crucial role, shaping users' habits and expectations. The research emphasizes the need for targeted interventions to mitigate potential harms, particularly for individuals showing signs of problematic gambling. The study suggests further exploration into the long-term effects of these factors and the effectiveness of various responsible gambling measures.

**18) Philander K. S., 2020:** The Philander (2020) article explores the causal relationship between online gambling participation and problem gambling severity. The author investigates whether increased engagement in online gambling directly correlates with higher levels of gambling-related problems. Through a comprehensive analysis of gambling behaviour data, the study identifies key factors that contribute to problem gambling, such as the frequency and type of gambling activities. Philander emphasizes the need for targeted interventions to mitigate the risks associated with online gambling and suggests that future research should focus on the effectiveness of various regulatory measures and harm reduction strategies.

**19) Pickering et al., 2016:** The article titled "Fantasy Sports: Skill, Gambling, or Are These Irrelevant Issues?" discusses the legal, regulatory, and ethical challenges surrounding fantasy sports, especially daily fantasy sports (DFS). The authors highlight how the debate pivots on whether DFS constitutes gambling, with various states in the U.S. classifying it as either a game of skill or chance. They argue that regardless of classification, the structure of DFS encourages excessive use, raising concerns about potential harm to users. The paper concludes by emphasizing the need for harm minimization strategies and regulation rather than an over-focus on whether DFS is gambling​.

**20) Holden, 2018:** The paper titled *The Unlawful Internet Gambling Enforcement Act and the Exemption for Fantasy Sports* by John T. Holden provides an in-depth examination of the legal landscape concerning fantasy sports in the United States. The study discusses how the Unlawful Internet Gambling Enforcement Act (UIGEA) of 2006 exempted certain forms of fantasy sports, sparking the boom of daily fantasy sports (DFS) platforms like DraftKings and FanDuel. Holden explores the origins of the fantasy sports exemption, highlighting that it was often misunderstood as a blanket legalization of all fantasy sports, despite ongoing legal scrutiny from state attorney generals starting in 2015. The paper concludes by discussing the financial struggles and legal battles faced by DFS operators due to the gray area surrounding their legality​.

1. **RESEARCH METHODOLOGY**

**3.1 Research Objective:**

The research aims to explore consumer perceptions and attitudes toward online sports fantasy applications (such as Dream11, My11Circle) and online gambling/betting platforms (such as Bet365, Probo). By analyzing the behavioral, financial, and psychological factors influencing user interaction, the study will focus on several key aspects:

1. Engagement Frequency:

Investigate how frequently users engage with fantasy sports and online betting platforms over the past 12 months.

Determine whether frequency of engagement correlates with financial investment and perceived addiction to these platforms.

1. Monetary Investment and Financial Outcomes:

Analyze how much money users have invested in fantasy sports apps and online gambling platforms.

Measure the relationship between money invested and financial outcomes, such as money earned or lost. The study hypothesizes that increased investment may lead to higher financial volatility (greater earnings or losses).

1. Perception and Attitude:

Understand users' overall perceptions of both fantasy sports apps and online gambling apps. These perceptions might be categorized as positive, neutral, or negative.

Examine whether users' perceptions of these apps correlate with their levels of financial investment and experiences of addiction.

1. Addiction:

Explore whether users have felt addicted to these applications and whether addiction correlates with the amount of money invested or time spent engaging with these platforms.

1. Demographic and Socio-Economic Influence:

Investigate how demographic factors such as age, gender, and occupation influence engagement with and investment in fantasy sports and betting apps.

Analyze if certain demographic groups, such as students, are more susceptible to addiction or greater financial risks in relation to these applications.

1. Regulatory and Ethical Concerns:

Assess consumer views on the targeting of vulnerable groups, such as students, by these apps.

Examine public opinions on whether these platforms should face stricter regulations, such as stronger age verification processes and restrictions on advertising, especially in sports contexts like the Indian cricket team’s sponsorships.

By studying these dimensions, the research aims to offer insights into user behavior, financial impact, and social implications of online fantasy sports and gambling apps, contributing to a better understanding of how they affect consumers both financially and psychologically.

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**3.2. Research Design:**

**Type of Study:**

This research employs a **descriptive and analytical design** to investigate consumer perceptions and behaviors toward online sports fantasy applications and online gambling/betting platforms. The study aims to describe the characteristics of user interactions with these apps, as well as analyze relationships between key variables such as engagement frequency, financial investment, and addiction.

**Descriptive Research** focuses on outlining the features of the user population, such as their demographic information (e.g., age, gender, occupation) and their awareness and perceptions of these platforms. It also presents how often users engage with fantasy sports and gambling apps and how much money they invest, earn, or lose.

**Analytical Research** moves beyond simple descriptions to identify patterns and relationships. Through statistical tools, the study aims to establish correlations between variables like money invested and financial outcomes, frequency of engagement and monetary involvement, or perceptions of apps and feelings of addiction.

A structured questionnaire serves as the main tool for data collection. The questionnaire is designed to capture both quantitative and qualitative aspects of user experience and perception. It includes a combination of categorical, ordinal, and continuous variables to ensure comprehensive data collection that can be analyzed using appropriate statistical methods.

**Nature of Data:**

The study collects quantitative data from users through a questionnaire, making use of different types of variables:

Categorical Variables: These variables represent distinct categories or groups without any inherent numerical value or order. Categorical data in this study includes:

* Gender: Male, Female, Other.
* Awareness of Fantasy/Gambling Apps: Users are asked if they are aware of certain apps (Yes/No).
* Addiction: Whether users have felt addicted to these applications (Yes/No).
* Perceptions of Apps: Yes/No questions regarding whether users consider fantasy sports apps as a form of betting and whether they believe these apps target vulnerable groups like students.

Categorical data is valuable for understanding distribution across different demographic segments and awareness levels, which can be analyzed using frequency counts and percentages.

**Ordinal Variables**:

Ordinal data represents variables where the values follow a natural order or ranking but the intervals between ranks are not necessarily equal. Ordinal variables in this study include:

* Frequency of Engagement: Users are asked to report how frequently they engage with fantasy sports apps or betting platforms. Options might range from "Never," "Once," "Few times," to "Regularly." This allows for an understanding of the spectrum of engagement without implying precise differences between the categories.
* Perception of Apps: Users are asked to rank their perceptions of both fantasy sports and gambling apps on a scale, such as "Positive," "Neutral," or "Negative." This ranking helps gauge the general sentiment users hold toward these platforms, and can be analyzed to find associations with behavior such as investment or addiction

Ordinal variables are particularly important for studying user behavior because they reflect how engagement intensity and perceptions vary across respondents. In the analysis, these variables will be used to explore potential trends, such as whether users with more negative perceptions engage less frequently or invest smaller amounts of money.

**Continuous Variables:**

Continuous variables, unlike categorical or ordinal ones, can take on any value within a range and represent real numerical data. In this study, continuous variables include:

* Money Invested in Fantasy Apps: The total amount of money users report having invested in fantasy sports applications.
* Money Invested in Online Gambling/Betting Apps: Similarly, this tracks how much users have invested in gambling platforms.
* Money Earned/Lost: Users are also asked to report how much money they have either earned or lost through these platforms, providing an indication of the financial risks or rewards associated with their engagement.
* Age: This continuous variable will help segment users by age group and analyze whether age correlates with different types of app engagement or investment behavior.

**Continuous Variables**:

Continuous variables, unlike categorical or ordinal ones, can take on any value within a range and represent real numerical data. In this study, continuous variables include:

* Money Invested in Fantasy Apps: The total amount of money users report having invested in fantasy sports applications.
* Money Invested in Online Gambling/Betting Apps: Similarly, this tracks how much users have invested in gambling platforms.
* Money Earned/Lost: Users are also asked to report how much money they have either earned or lost through these platforms, providing an indication of the financial risks or rewards associated with their engagement.
* Age: This continuous variable will help segment users by age group and analyze whether age correlates with different types of app engagement or investment behavior.

**Data Analysis:**

The combination of categorical, ordinal, and continuous data collected in the study enables a wide range of analyses to be performed:

* Descriptive Statistics: Mean, median, mode, and range will be calculated for continuous variables like money invested and age. This will provide an overall understanding of the distribution of investment and earnings/losses among users. Frequency counts and percentages will summarize categorical data such as gender distribution and awareness of different apps.
* Correlation and Comparison: The study will employ Pearson or Spearman correlation to analyze relationships between key variables. For instance, the relationship between money invested and money earned/lost can reveal whether higher investments result in higher financial returns or losses. Spearman correlation, suitable for non-linear relationships, will be applied to ordinal data, such as the correlation between frequency of engagement and money invested.
* Regression Analysis: If needed, regression analysis could be used to predict financial outcomes (earnings or losses) based on the amount of money invested, or to understand how variables like age or perception influence investment behaviors.

By using these tools, the study can identify patterns that explain how different user groups interact with online fantasy sports and gambling apps, which factors influence their monetary decisions, and how their perceptions shape their overall experience. The mix of data types allows for a robust understanding of the research question, providing both descriptive insights and deeper analytical conclusions.

**3.3 Data Collection Method**

Data for this study was collected through a structured Google Form questionnaire, which consisted of both closed-ended and numerical questions. The questionnaire was designed to capture a comprehensive range of information about respondents' experiences with fantasy sports and betting applications. It included:

* **Closed-ended Questions:** These were in formats such as Yes/No, multiple-choice, and Likert-scale items. Respondents provided insights on their awareness of fantasy and gambling applications, their engagement frequency, and their overall perceptions of these platforms.
* **Numerical Questions:** Respondents reported specific financial details, including the amount of money invested and earned or lost in both fantasy and betting apps. This quantitative data facilitates a deeper analysis of relationships between investment, earnings, and user engagement.

The combination of these data types allows for a robust analysis of consumer behavior and attitudes towards sports fantasy and online gambling applications, providing valuable insights for stakeholders in this growing industry.

**3.4 Sample Size and Population**

This research study targets a specific population primarily comprising individuals aged 18 to 32 years. This demographic was selected because it represents a significant portion of the user base for both sports fantasy applications and online gambling/betting platforms. Research shows that individuals within this age range are more likely to engage with these technologies due to several factors, including technological familiarity, social influence, and access to disposable income. This group often seeks entertainment options that align with their lifestyle, making sports fantasy and gambling applications particularly appealing.

The sample size for this study consists of 129 respondents, providing a solid foundation for analysis and insights. To ensure the validity of the data collected, specific inclusion and exclusion criteria were applied. Only individuals who indicated awareness of sports fantasy applications and online gambling/betting apps were included in the analysis. This approach is critical for focusing the research on participants who have firsthand experience or knowledge of the subject matter, thereby enhancing the reliability of the findings.

The results reveal that 85% of the respondents are aware of sports fantasy applications, such as Dream11 and My11Circle. This high level of awareness underscores the popularity of these platforms among the targeted demographic and their increasing penetration into mainstream entertainment. Additionally, 69% of respondents reported being aware of online gambling applications, such as Bet365 and Stake. This suggests a substantial interest in both forms of engagement within the age group, highlighting the need to explore their perceptions and attitudes further.

The focus on the 18-32 age bracket is not only strategic but also reflective of broader societal trends. Younger individuals are more likely to engage in online activities, including sports-related gaming and betting, driven by factors such as peer influence and the integration of these applications into social interactions. For instance, many users participate in fantasy sports as a way to bond with friends or enhance their enjoyment of sporting events, while online gambling can be seen as a form of entertainment that offers a sense of excitement and potential monetary rewards.

Inclusion criteria for the survey aimed to gather responses from participants who actively engage with or have knowledge of fantasy sports and gambling applications. By filtering out individuals who lack awareness of these platforms, the study ensures that the analysis reflects the perceptions and behaviors of a relevant audience. This approach increases the likelihood that the findings will resonate with the broader population of young adults who are considering or already participating in these activities.

Moreover, by targeting a diverse group within this age range, the study accounts for various backgrounds, occupations, and levels of experience with these applications. This diversity enriches the data and allows for a more nuanced understanding of consumer attitudes and behaviors. For example, students may engage differently with these applications compared to working professionals, who might have more disposable income and time to invest in fantasy sports and online betting.

In conclusion, the study's focus on a sample size of 129 respondents, primarily aged 18 to 32 years, allows for a comprehensive examination of consumer perceptions and attitudes toward sports fantasy and online gambling/betting applications. The inclusion of only those who are aware of these platforms enhances the validity of the findings, providing valuable insights that can inform stakeholders in the industry about the behaviors, preferences, and potential vulnerabilities of this key demographic.

**3.5 Data Analysis Plan**

The analysis of the dataset will be conducted using a combination of descriptive statistics, inferential statistics, and machine learning techniques. The process will be executed in Google Colab and Jupyter Notebook, taking advantage of their interactive environments for data manipulation, visualization, and model building.

1. Data Cleaning and Preparation:

Initial Data Inspection: The dataset will be imported and inspected for any inconsistencies, missing values, and anomalies. This step includes:

* + Checking for missing values using functions like isnull() and sum() to identify any data gaps.
  + Verifying data types of each column to ensure compatibility with further analysis steps.
* Data Quality Management:
  + If missing values are found, strategies like mean/median imputation (for numerical data) or mode imputation (for categorical data) will be considered, although the initial inspection showed no missing values.
  + Handling outliers by using methods such as z-score or interquartile range (IQR) for numerical columns to identify extreme values that could affect the analysis.
* Data Type Corrections:
  + Date columns will be converted into datetime format to facilitate time-series analysis.
  + Ensure numerical columns are correctly formatted for further processing.

2. Data Transformations:

* Categorical Encoding:
  + Categorical variables will be encoded to ensure compatibility with statistical and machine learning models.
  + For binary variables, binary encoding will be applied. For instance, values like 'Yes' and 'No' will be converted into 1 and 0, respectively.
  + For non-binary categorical variables with multiple categories, one-hot encoding will be applied using methods like pd.get\_dummies() to prevent ordinality and ensure that the models interpret the categories correctly.
* Normalization and Scaling:
  + Normalization or standardization techniques such as Min-Max scaling or Z-score normalization will be applied to numerical features to bring all features into a comparable range, especially important for algorithms like Logistic Regression and Random Forest.

3. Descriptive Analysis:

* Statistical Summarization:
  + Calculate measures such as mean, median, mode, standard deviation, and range for numerical columns using pandas functions (describe()).
  + For categorical variables, frequency distribution will be analyzed using value counts to understand the distribution of each category.
* Data Visualization:
  + Use matplotlib and seaborn libraries for visualizing the distribution of variables (e.g., histograms, box plots, and bar charts).
  + Create correlation heatmaps to visualize the relationships between different numerical variables.
  + Plot time-series data if applicable, especially for variables related to dates.

4. Inferential Analysis - Correlation Analysis:

* Correlation Analysis:
  + Conduct Pearson and Spearman correlation analyses to measure the strength and direction of the relationship between variables:
    - Pearson Correlation: Suitable for assessing linear relationships between two continuous variables.
    - Spearman Correlation: Used when relationships between variables are non-linear or when working with ranked data.
  + Specific analyses include:
    - Money Invested vs. Money Earned/Lost: Analyze how changes in investment impact the financial outcome using correlation coefficients.
    - Engagement Frequency vs. Money Invested: Evaluate whether higher engagement frequency correlates with variations in investment.

5. Machine Learning Techniques:

* Model Selection:
  + Several models will be applied to predict outcomes and understand relationships within the dataset:
    - Logistic Regression: For binary classification tasks, especially useful if the target variable represents categories like ‘success’ or ‘failure’.
    - Random Forest: To handle complex relationships and interactions between features, providing insights through feature importance.
* Model Training and Validation:
  + Train-Test Split: Divide the dataset into training and testing sets using an 80/20 or 70/30 split to evaluate model performance.
  + Cross-Validation: Use techniques like k-fold cross-validation to ensure the stability of the model and prevent overfitting.
* Performance Evaluation:
  + Evaluate model performance using metrics like accuracy, precision, recall, F1 score, and ROC-AUC curve for classification tasks.
  + Use confusion matrices to assess classification performance visually and understand where the model is making errors.

6. Interpretation of Results:

* Model Insights:
  + Interpret the results of the statistical analyses and machine learning models, focusing on the relationships between key variables.
  + Identify the most influential features through Random Forest's feature importance to determine which variables drive the outcomes.
* Business Implications:
  + Discuss how the findings can guide business decisions, such as optimizing investments or improving engagement strategies.
  + Provide recommendations based on the analysis for better resource allocation and strategic planning.

This comprehensive data analysis plan will ensure a thorough examination of the dataset, leveraging both statistical methods and machine learning techniques to derive meaningful insights.

**3.6 Ethical Considerations:**

**Ethical Considerations**

Ethical considerations are a fundamental aspect of conducting research, particularly when involving human participants. In this study, every effort was made to ensure that ethical standards were upheld throughout the data collection process. Respondents were informed about the purpose of the research, allowing them to understand the significance of their participation and how their input would contribute to a broader understanding of consumer perceptions and attitudes toward sports fantasy and online gambling/betting applications.

To promote transparency and build trust, participants were assured that their responses would remain anonymous and confidential. This measure is critical in encouraging honest and candid responses, as individuals are more likely to share their true thoughts and experiences when they know their identities will not be disclosed. The data collected through the questionnaire was designed to ensure that no personally identifiable information was gathered, further safeguarding participants' privacy.

Additionally, participation in the study was entirely voluntary. Respondents were free to choose whether or not to participate, and they were provided with the option to withdraw from the study at any time without any consequences. This voluntary nature of participation is essential in ethical research practices, as it respects the autonomy of individuals and acknowledges their right to make informed choices regarding their involvement in the study.

Furthermore, the handling of data collected during the research adhered to strict security protocols. All responses were stored securely, with access limited to the research team only. Data was analyzed in aggregate form to ensure that individual responses could not be traced back to any specific participant. This approach not only protects the privacy of respondents but also enhances the integrity of the research findings.

By prioritizing ethical considerations, this study aims to foster a respectful and responsible research environment. The commitment to transparency, confidentiality, and voluntary participation not only complies with ethical research guidelines but also enhances the credibility and reliability of the research outcomes. Ultimately, these ethical practices contribute to the overall integrity of the study, ensuring that the findings can be utilized to inform stakeholders while respecting the rights and dignity of all participants involved.

**3.7 Tools and Software**

The successful execution of this research project relies on a variety of tools and software to facilitate data collection, analysis, and interpretation. Initially, data was collected using Google Forms, which provided an efficient platform for distributing the questionnaire and gathering responses from participants. This tool allowed for real-time data collection and ensured that the data was stored in a structured format for subsequent analysis.

For the initial data entry and descriptive statistics, Microsoft Excel and Google Sheets were utilized. These applications are user-friendly and equipped with features that facilitate basic data manipulation and visualization, making it easy to calculate means, medians, modes, and frequency counts. By using these tools, the initial insights from the data were efficiently generated, laying the groundwork for more in-depth analysis.

For more advanced data analysis, Jupyter Notebook and Google Colab were employed. These environments allow for interactive coding and real-time data visualization, which are invaluable when conducting comprehensive data analysis. Utilizing Python, the project leveraged various libraries tailored for data analysis and machine learning, including:

* Pandas: This library was used for data manipulation and analysis, allowing for easy handling of structured data and enabling tasks such as data cleaning and transformation.
* Scikit-learn: This library was instrumental for implementing machine learning techniques, enabling the application of algorithms for predictive modeling and classification tasks.
* Matplotlib and Seaborn: These visualization libraries were utilized to create informative and visually appealing graphs and plots, aiding in the interpretation of the data and the presentation of results.

The analysis included various statistical tests and techniques to derive meaningful insights from the data. Descriptive statistics provided a foundational understanding of the dataset, while correlation analysis was conducted using both Pearson and Spearman correlation coefficients. This allowed for the examination of relationships between numerical variables, such as the amount of money invested in fantasy and gambling applications versus the money earned or lost.

Additionally, machine learning techniques were employed to further explore the dataset and predict outcomes. The following techniques were implemented:

* Logistic Regression: This method was used for binary classification tasks, particularly to analyze factors influencing respondents’ perceptions of addiction and their willingness to engage with fantasy sports and gambling applications.
* Random Forest Classifier: This ensemble learning method provided robust classification capabilities, helping to identify key predictors of user engagement and financial outcomes.
* K-Means Clustering: This algorithm was utilized to segment respondents into distinct groups based on their behaviors and attitudes toward fantasy and gambling applications. By identifying clusters, the research could uncover patterns in engagement and investment behaviors.

Overall, the combination of these tools and software facilitated a comprehensive analysis of the collected data, enabling the research to uncover valuable insights into consumer perceptions and attitudes towards sports fantasy and online gambling/betting applications. The integration of statistical and machine learning techniques allowed for a deeper understanding of the dynamics at play within this rapidly evolving landscape, contributing to the broader knowledge base in this area of study.

1. **Data Analysis and interpretation**

For the analysis of my dataset, I employed Google Colab and Jupyter Notebook as the primary platforms. These environments provided robust, user-friendly interfaces for conducting the necessary data manipulation and visualization tasks**.**

**Data Cleaning and Preparation**:

After importing the dataset, I performed an initial inspection to check for missing values, anomalies, and any potential issues with the data quality. Fortunately, the dataset had no null or missing values, allowing me to focus on further transformations without requiring imputation**.** I reviewed and corrected any incorrect data types. For instance, converting any date columns to datetime format and ensuring numerical columns were appropriately formatted.

**Transformations:**

To enhance the dataset for better analysis, I performed the following transformations:

**Categorical Encoding:** Categorical variables were encoded using binary encoding techniques. For instance, in columns with binary categories, I assigned 0 and 1 values to represent the two distinct categories. This approach was particularly useful for variables with two possible outcomes, such as 'Yes' and 'No,' which were converted into 0 for 'No' and 1 for 'Yes.' This encoding technique ensured the data was suitable for further analysis.

These transformations and encoding techniques allowed for improved data quality, ensuring the dataset was well-prepared for detailed descriptive analysis, statistical summarization, and visualization.

**4.1Descriptive Analysis**:

**4.1.1 Demographics:**

**Age Distribution**:  
The majority of respondents fall within the 18-32 age group, which constitutes 70.5% of the total sample. A smaller percentage, 13.2%, are under 18, and 11.6% are between 18-23. This indicates a predominantly young adult respondent base, likely representative of students and early professionals.

**Gender:**  
The gender distribution is skewed towards males, with **72.1%** identifying as male, while the remaining respondents consist mostly of females. This is indicative of a potential male dominance in engagement with fantasy sports and online gambling apps.

**Occupation:**  
The majority of the respondents, **76.7%**, are students. This demographic insight suggests that the sample population mainly comprises younger individuals, possibly still pursuing education and with an interest in such applications.

**4.1.2 Awareness of Applications:**

Sports Fantasy Applications:

A significant majority, 85.3%, are aware of online sports fantasy applications such as Dream11 and My11Circle. This suggests that fantasy sports apps have high visibility and are widely recognized by users, especially in the student demographic.

Online Gambling/Betting Applications:  
Awareness of online gambling and betting platforms, such as Bet365 and Stake, is slightly lower but still considerable, with 69% of respondents being familiar with these platforms. This highlights a broad level of exposure to both fantasy and gambling applications among respondents.

Engagement with Applications:

When asked which types of apps respondents have played:

* **41.9%** reported playing sports fantasy apps.
* **21.7%** had engaged with online gambling apps.
* **11%** had played online rummy.
* A significant portion, **51.2%**, indicated that they had not engaged with any of these applications. This shows that while many are aware of the platforms, actual participation may vary, with many opting not to engage at all.

Frequency of Engagement in Fantasy Sports (Past 12 Months):  
Over the past year, 61% of respondents reported never engaging in fantasy sports apps, 8% engaged once, 30% reported playing a few times, and the remainder engaged regularly. This data reflects that while awareness is high, regular participation in fantasy sports apps is relatively lower.

Frequency of Engagement in Online Betting Apps (Past 12 Months):  
In terms of online betting apps, 68% of respondents had never engaged, 8% had used such apps once, 15% reported using them a few times, and the remaining engaged more frequently. This indicates that although awareness is relatively high, regular use of online betting apps is even less common than fantasy sports.

**4.1.3 Perceptions of the Applications**:

Online Fantasy Apps  
When asked about their perception of online fantasy apps, 51% of respondents were neutral, 33% had a negative perception, and the remaining had a positive outlook. This indicates that most users either have no strong opinion or view these apps unfavorably, which could be tied to concerns over time spent or monetary involvement.

Online Gambling/Betting Apps:  
For online gambling and betting apps, 52% of respondents had a negative perception, 45% were neutral, and the remaining had a positive opinion. The overall view of these applications skews more negative than fantasy sports apps, possibly reflecting concerns about financial risks or the addictive nature of such platforms.

**4.1.4 Relation Between Fantasy Apps and Betting:**

Fantasy Apps as Betting:  
When asked whether they consider online fantasy apps to be a form of betting, 60% of respondents said yes, while 21% said no. The remaining respondents were unsure. This suggests that a majority view fantasy apps as a variant of gambling, possibly due to the monetary stakes involved in some platforms.

**4.1.5 Investment in Fantasy and Gambling Apps:**

Investment in Fantasy Apps:  
The majority of respondents (63%) reported having not invested any money in fantasy apps. A smaller portion (8.5%) has invested less than ₹100, while 24% have invested between ₹100-₹1000. 2.3% (3 people) have invested between ₹1000-₹10000, and 1.6% (2 people) have invested over ₹10000. This data suggests that, although fantasy apps are popular, only a minority of users invest significant amounts of money, while most either do not invest or make relatively small contributions.

Investment in Online Gambling/Betting Apps:  
A larger percentage (73%) reported not investing in online gambling or betting apps. 3.9% of respondents invested less than ₹100, and 17.8% invested between ₹100-₹1000. A smaller group, 3.1% (4 people), invested between ₹1000-₹10000, and 1.6% (2 people) invested over ₹10000. This suggests that there is even less financial involvement in gambling apps compared to fantasy apps.

**4.1.6 Earnings and Losses:**

Earnings/Losses from Fantasy Apps:  
In terms of financial outcomes from fantasy apps, 7% of respondents reported losing between ₹500-₹5000, while 0.8% (1 person) lost more than ₹5000. 15.5% broke even, meaning they neither lost nor earned money. On the positive side, 12% earned more than ₹500, and 2.3% (3 people) earned over ₹5000. This indicates that most users have modest financial outcomes, with a few experiencing significant earnings or losses.

Earnings/Losses from Online Gambling/Betting Apps:  
In the case of gambling apps, 7% of respondents reported losing money, while 8% broke even, meaning they did not experience any financial losses or gains. Another 8% earned small amounts, and 5% reported larger earnings. As with fantasy apps, the financial outcomes are mixed, with only a small portion of users experiencing significant earnings or losses.

**4.1.7 Preference Between Fantasy and Betting Apps:**

Comparative Experience:  
When asked to compare their experiences between fantasy sports apps and online betting apps, 13.2% of respondents reported that they prefer fantasy sports apps over online betting apps. A smaller group, 4.7%, prefers online betting apps. The majority of respondents, however, either do not enjoy or do not prefer either type of app. This indicates that while both types of apps are used, many users do not have a strong preference, possibly due to neutral or negative experiences with both platforms.

**4.1.8 Addiction and Vulnerability:**

Addiction to Fantasy and Gambling Apps:  
When asked if they have ever felt addicted to fantasy or gambling apps, 11.6% of respondents said yes, while 33.3% said no. The remaining respondents, the majority, indicated that they never tried these apps or did not engage with them regularly enough to feel addicted. This suggests that although some users do recognize addictive tendencies, most respondents either do not engage heavily or do not feel personally affected by addiction.

Targeting of Vulnerable Groups:  
A significant majority, 72%, believe that sports fantasy and online gambling apps target vulnerable groups, such as students. Only 11% disagreed, and the rest were unsure. This shows widespread concern that these platforms, especially in their marketing strategies, may be designed to attract younger, potentially more impressionable users.

**4.1.9 Perception of Advertisements on Indian Cricket Team Jersey**

Advertising Fantasy Apps:  
Opinions were mixed when respondents were asked if it was acceptable to advertise apps like Dream11 on the Indian cricket team jersey. 31% agreed that it was acceptable, while 36% disagreed. The remaining respondents were unsure. This division in opinion suggests that there is considerable debate about the ethics and appropriateness of promoting fantasy apps through national sports teams.

**4.1.10 Government's Role in Addressing Gambling App Issues**

Regulatory Measures:  
Respondents were asked how the government should address issues related to online gambling and betting applications. 16% believed that the government should ban these apps completely, while the majority (51%) favored strict regulation. A smaller group (17%) believed the government should do nothing, indicating that they see no major issues with these apps. The rest provided other suggestions or were unsure. The data indicates a clear demand for more stringent regulation of gambling apps, rather than an outright ban, likely to address concerns around addiction, financial loss, and targeting vulnerable groups.

**4.1.11 Key Interpretations**:

**High Awareness but Lower Engagement:**  
While awareness of both fantasy sports and online gambling apps is high, actual engagement, particularly regular use, is much lower. This could indicate that users are aware but cautious or uninterested in frequent participation.

**Negative Perception of Gambling Apps:**  
Perceptions of online gambling and betting apps are generally more negative than fantasy sports apps, with a large portion of respondents expressing concerns about such platforms. Fantasy sports apps, while viewed more favorably, still have a significant neutral or negative perception.

**Fantasy Apps Seen as Betting:**  
The fact that **60%** of respondents view fantasy sports as a form of betting shows that the distinction between gambling and fantasy sports is not clear-cut for users, highlighting the potential for confusion or concern over the nature of these applications.

**Financial Engagement**:  
Most users do not invest heavily in fantasy or gambling apps. While a small portion of respondents have experienced notable financial gains or losses, the majority report low levels of investment and modest financial outcomes. This suggests that while some individuals treat these platforms as a form gambling or income generation, for most, the financial engagement remains minimal.

**Addiction and Targeting Concerns**:  
There is a significant concern about the potential addictive nature of these platforms, particularly among students. The belief that these apps target vulnerable groups is widespread, indicating a need for more responsible marketing and perhaps protective regulations to safeguard younger and more impressionable users.

**Advertising and Regulation**:  
The controversy over advertising apps like **Dream11** on national sports platforms highlights the ethical debate around the promotion of such platforms. Additionally, most respondents call for stricter government regulation rather than a complete ban, reflecting concerns about the negative social and financial impacts of these platforms while recognizing their role in the digital economy.

**4.2 Co-Relation Analysis using Pearson-Spearman corelation**

**4.2.1. Money Invested vs. Money Earned/Lost**

Fields:

How much money have you invested in fantasy apps?

How much money have you earned or lost from fantasy apps?

How much money have you invested in online gambling/betting apps?

How much money have you earned or lost from online gambling/betting applications?

These variables are directly financial, and we can expect a significant relationship between the amount invested and the amount earned/lost. Specifically, the hypothesis here might be that the more people invest, the more they are likely to either gain or lose, depending on their engagement and success.

Pearson Correlation would be useful if the data distribution is linear and you believe the relationship between investment and earnings/losses is continuous and normally distributed.

Spearman Correlation would be more appropriate if the relationship is non-linear or the data contains ordinal categories and you suspect that ranks (e.g., levels of investment) better represent the relationship.

Potential Relationships to Examine:

Money Invested in Fantasy Apps vs. Money Earned/Lost in Fantasy Apps: This will help identify if more investment leads to more earnings or losses.

Money Invested in Betting Apps vs. Money Earned/Lost in Betting Apps: Similarly, this will check if greater investment in gambling/betting apps correlates with bigger financial outcomes (positive or negative).

**Correlation Matrix Breakdown:**

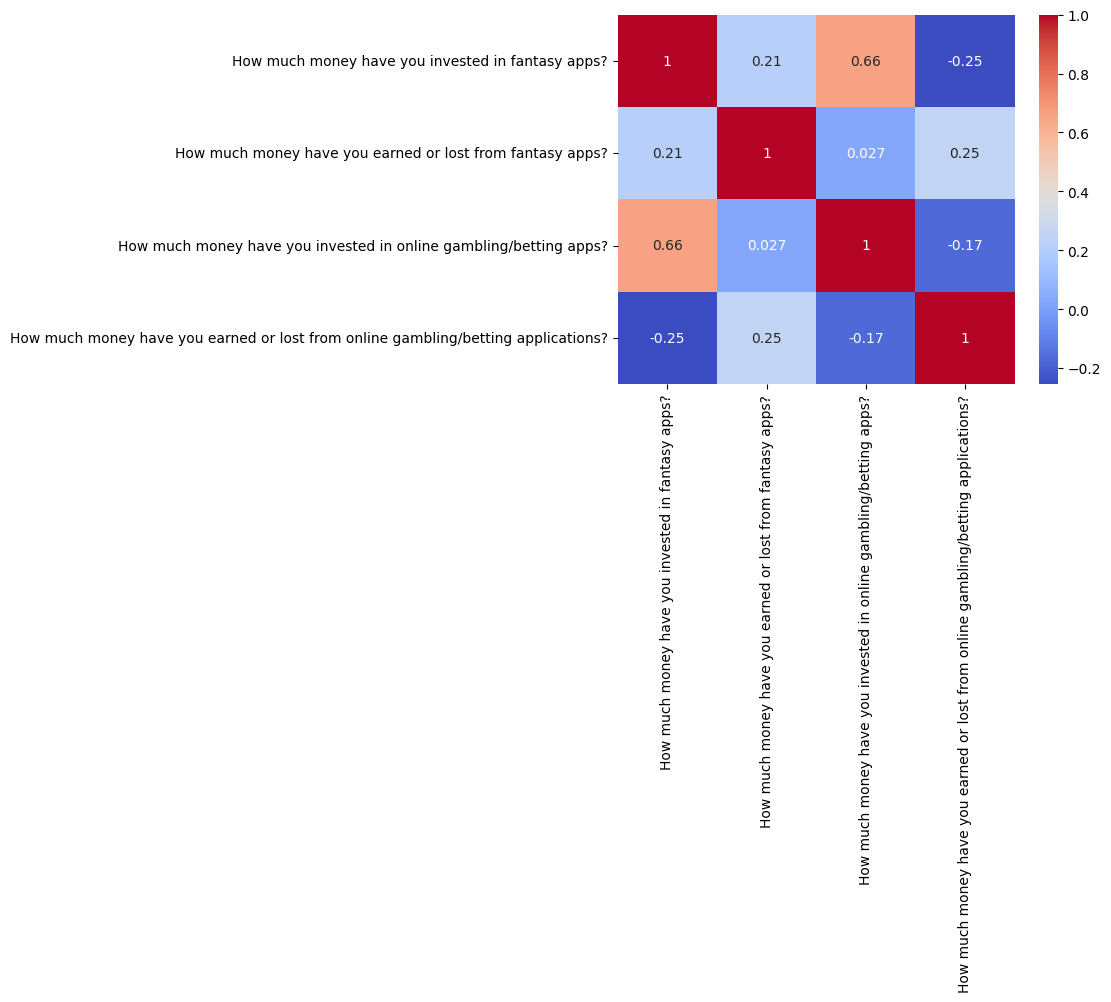
How much money have you invested in fantasy apps?

Self-correlation: As expected, it's perfectly correlated with itself (correlation coefficient = 1).

Correlation with earnings/losses from fantasy apps: Positive correlation (0.21). This means that the more you invest in fantasy apps, the more likely you are to have a positive or negative earnings outcome, although the relationship is weak.

Correlation with investment in online gambling/betting apps: Moderate positive correlation (0.66). This suggests that people who invest in fantasy apps are also likely to invest in online gambling/betting apps.

Correlation with earnings/losses from online gambling: Weak negative correlation (-0.25). This indicates that investing in fantasy apps is slightly negatively correlated with how much you earn or lose in online gambling apps



How much money have you earned or lost from fantasy apps?

Correlation with investment in fantasy apps: Positive correlation (0.21) as noted above.

Self-correlation: Perfect correlation (1).

Correlation with investment in online gambling apps: Very weak positive correlation (0.027). This implies that earnings/losses from fantasy apps have almost no relation to how much you invest in online gambling apps.

Correlation with earnings/losses from online gambling apps: Weak positive correlation (0.25). A slight connection exists, meaning that people who earn or lose money in fantasy apps are slightly more likely to also have earnings/losses in online gambling apps.

How much money have you earned or lost from online gambling/betting apps?

Correlation with investment in fantasy apps: Weak negative correlation (-0.25). There’s a slight inverse relationship, suggesting that if you earn/lose a lot from online gambling, you might invest less in fantasy apps.

Correlation with earnings/losses from fantasy apps: Weak positive correlation (0.25) as noted above.

Correlation with investment in online gambling apps: Weak negative correlation (-0.17), suggesting that greater investment in online gambling apps doesn't necessarily lead to higher earnings or losses.

Self-correlation: Perfect correlation (1).

**Interpretation:**

The strongest correlation is between investment in fantasy apps and investment in online gambling/betting apps (0.66), indicating that users who invest in one are also likely to invest in the other.

There is a weak relationship between earnings/losses and investment in both fantasy and online gambling apps.

The correlation between investment in fantasy apps and earnings/losses from online gambling apps is slightly negative, suggesting that investment in one area may inversely affect the outcome in the other

**4.2.2 Engagement Frequency vs. Money Invested**

Fields:

Your frequency of engagement in fantasy sports over the past 12 months (Ordinal: never, once, few times, regularly)

Your frequency of engagement in online betting apps over the past 12 months (Ordinal: never, once, few times, regularly) How much money have you invested in fantasy apps?

How much money have you invested in online gambling/betting apps?

You might find a correlation between frequency of engagement and investment. Those who engage more frequently are likely to invest more money in fantasy apps or betting apps. Given that frequency is an ordinal variable, Spearman correlation is appropriate here, as it will assess if higher engagement ranks correlate with higher investments.

Potential Relationships to Examine:

Frequency of Fantasy Sports Engagement vs. Money Invested in Fantasy Apps: You could investigate whether higher engagement (e.g., frequent participation) is linked to greater monetary investment.

Frequency of Betting App Engagement vs. Money Invested in Betting Apps: Similarly, you could explore if those who frequently use betting apps invest more.

Heatmap Interpretation:

Engagement in Fantasy Sports vs. Engagement in Betting Apps (0.81):

A strong positive correlation (0.81) suggests that individuals who engage frequently in fantasy sports also tend to engage frequently in betting apps. This could indicate that users who participate in one are likely to engage in the other as well

Engagement in Fantasy Sports vs. Money Invested in Fantasy Apps (0.30):

A moderate positive correlation (0.30) suggests that increased engagement in fantasy sports is somewhat associated with increased money invested in these apps, though the correlation is not very strong.

Engagement in Betting Apps vs. Money Invested in Betting Apps (0.24):

A weak positive correlation (0.24) shows that more frequent engagement in betting apps is weakly related to investing more money in them. The weak correlation could indicate that while engagement increases, the money invested doesn't always follow proportionally.

Money Invested in Fantasy Apps vs. Money Invested in Betting Apps (1.00):

A perfect correlation (1.00) suggests that the amounts of money invested in fantasy apps and betting apps are highly related, likely indicating that individuals who invest money in one platform are likely to invest a similar amount in the other.



**Interpretation:**

There is a strong link between how often people engage in fantasy sports and betting apps, suggesting overlap in user behavior.

However, the link between engagement and money invested is weaker, indicating that simply using these apps more frequently doesn’t strongly predict higher monetary investment.

Individuals who invest money in fantasy apps also invest in betting apps, suggesting that monetary behaviors might be shared across different platforms.

**4.3 Machine Learning Techniques**

In our research, we applied machine learning techniques to predict whether users consider online fantasy apps to be a type of betting app. The goal was to determine if various user attributes and behaviors could effectively predict this perception using two different classification algorithms: Logistic Regression and Random Forest.

1. Dataset Preparation:

We selected a subset of relevant features from our dataset, including:

* Types of applications played (e.g., fantasy sports, gaming).
* Frequency of engagement in fantasy sports over the past 12 months.
* Overall perception of online fantasy apps.
* Amount of money invested in fantasy apps.
* Age and occupation.

These features served as our input variables (X), while the target variable (y) was the binary outcome of whether users consider online fantasy apps to be betting apps.

2. Data Preprocessing:

To prepare the dataset for modeling, we used one-hot encoding to convert categorical variables into numerical format. This ensured compatibility with the machine learning algorithms. We then split the dataset into training and testing sets using an 80-20 split through the train\_test\_split function.

3. Logistic Regression Model:

We began with a Logistic Regression model. To enhance the model’s performance, we scaled the features using StandardScaler. This was an essential step since logistic regression is sensitive to the scale of the input data.

After training the model on the training set, we evaluated it on the test set. The logistic regression model achieved an accuracy of 34.6%, as indicated by the confusion matrix and classification report. The performance metrics showed that the model struggled particularly with correctly classifying the "Unsure" and "No" categories.

4. Random Forest Classifier:

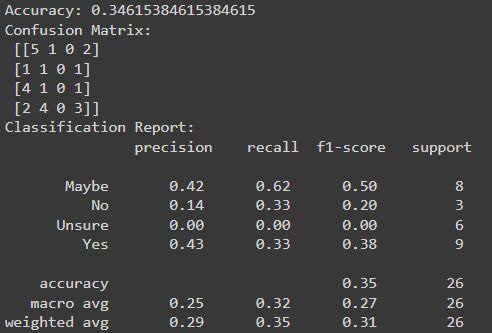
To improve the performance, we implemented a Random Forest Classifier, an ensemble learning method. We set the class\_weight parameter to 'balanced' to account for any imbalances in our target variable.

After training, the Random Forest model yielded an improved accuracy of 38.4%. The confusion matrix and classification report indicated that this model performed better than logistic regression, though it still faced challenges, particularly with the "Unsure" and "No" categories.

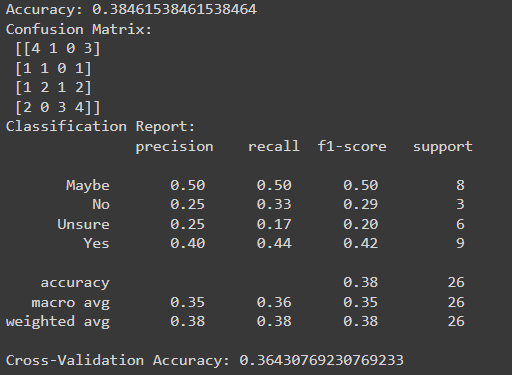
5. Cross-Validation:

To assess the stability of the Random Forest model across different data splits, we performed 5-fold cross-validation. The model achieved a mean cross-validation accuracy of 36.4%, which demonstrated consistent performance.

**The output:**

****

**The outputs after doing cross validation:**



The research highlighted the complexities in understanding user perceptions of online fantasy apps and the classification challenges inherent in the dataset. Although the random forest classifier provided a slight improvement over logistic regression, both models demonstrated limited effectiveness in predicting users’ beliefs about these applications. Future work could focus on further feature engineering, exploring different algorithms, and enhancing data quality to improve model performance.

1. **Results and Conclusion**

This research aimed to analyze user perceptions of online fantasy apps and their similarities to betting platforms by examining various user attributes, behaviors, and financial engagement. The findings suggest that while a significant number of users consider fantasy apps to be a form of betting, there are varied perceptions. Many users associate both fantasy sports and gambling apps with financial risk, and a large portion expressed concerns about addiction and targeting vulnerable groups like students. The analysis of money invested versus money earned or lost revealed that while higher investments in fantasy and gambling apps did show some correlation with financial outcomes, the relationships were generally weak. This indicates that while users may be aware of the risks, their financial experiences on these platforms vary widely

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Machine learning models, including Logistic Regression and Random Forest, were employed to predict whether users would perceive fantasy apps as a form of betting. However, both models struggled to achieve high accuracy, with Random Forest performing slightly better than Logistic Regression. The modest predictive power of these models highlights the complexity of human perception, which may not be easily captured through behavioral data alone. Factors like user psychology, social influences, and external marketing could play a larger role in shaping these perceptions, suggesting that future research should expand to include these variables. Overall, the study sheds light on the intricate relationship between user engagement, financial involvement, and perceptions, while acknowledging the need for more nuanced approaches to model this complexity effectively.

**5.1 Conclusion of Descriptive data analysis:**

The demographic data reveals that the majority of respondents are young adults, predominantly students, with a significant skew towards males. This suggests that the sample is largely composed of individuals who are likely to be tech-savvy and engaged with digital platforms such as fantasy sports and gambling apps. The high awareness of sports fantasy applications, with 85.3% of respondents familiar with platforms like Dream11 and My11Circle, highlights the popularity and recognition of such apps, particularly among the student demographic.

In contrast, awareness of online gambling platforms like Bet365 and Stake is somewhat lower, with 69% familiarity, indicating that while these apps are widely known, they may not have the same level of engagement as fantasy sports apps. Despite this awareness, the actual usage rates reveal a discrepancy. A significant portion of respondents, 51.2%, reported never having engaged with any of the platforms, and even among those who did, regular engagement is relatively low. In the past 12 months, 61% of respondents reported never engaging with fantasy sports apps, and 68% had not used online betting apps.

This suggests that while the platforms enjoy broad visibility, active and frequent usage is limited, especially for online betting apps. The data points to a gap between awareness and engagement, potentially driven by factors such as personal choice, lack of interest, or possible barriers to participation in these platforms. Further investigation into the reasons for this gap could provide valuable insights into user behavior and preferences within this demographic.

The perception data highlights notable differences between online fantasy sports and gambling apps. While a significant portion of respondents holds a neutral or negative view of both types of platforms, there is a stronger negative sentiment towards online gambling and betting apps. Over half of the respondents (52%) expressed a negative perception of gambling apps, possibly reflecting concerns about the financial risks and the potential for addiction. In comparison, fantasy apps garnered a more neutral outlook, with 51% remaining neutral and 33% holding a negative view. This suggests that fantasy sports apps, despite their popularity, are not universally embraced, with many users viewing them unfavorably, potentially due to concerns about time commitment or monetary risks.

The relationship between fantasy apps and betting is also revealing. A majority (60%) of respondents perceive fantasy apps as a form of betting, indicating that some users associate the monetary stakes and investment in fantasy sports with gambling, even though they are distinct in terms of skill-based vs. chance-based play. This perception may influence the attitudes and behaviors of users, especially those concerned with the risks of financial involvement.

When it comes to financial investment, both fantasy sports and gambling apps see limited engagement. A majority of respondents reported not investing any money in either type of platform. Only a small fraction of users invested significant amounts, with a greater number (73%) reporting no investment in gambling apps than in fantasy apps (63%). This indicates that, while fantasy sports apps have higher engagement in terms of participation, financial involvement remains modest. Online gambling apps, on the other hand, experience even lower levels of monetary engagement, suggesting that users are generally more cautious or less inclined to spend on these platforms.

In summary, while both fantasy sports and gambling apps enjoy widespread awareness, the majority of users hold neutral or negative perceptions of these platforms, with financial involvement remaining limited. The association of fantasy sports with betting further complicates user perceptions, suggesting a need for clearer communication regarding the distinctions between the two and the associated risks.

The financial outcomes and perceptions of addiction related to fantasy sports and gambling apps reveal important insights into user behavior and the broader societal concerns around these platforms.

For both fantasy sports and gambling apps, the financial results appear to be modest for most users. A small percentage of respondents reported significant earnings, but these individuals are outliers, while the majority either broke even or experienced modest losses. In fantasy sports, 7% of users reported losing between ₹500-₹5000, and a smaller group lost more than ₹5000. Positive earnings were less common, with only 12% of respondents reporting earnings over ₹500. A similar pattern emerged for gambling apps, where financial outcomes were mixed but generally modest, with a very small proportion experiencing significant gains or losses. This highlights that while there is the potential for substantial financial outcomes, the majority of users have limited or neutral monetary experiences on these platforms.

When it comes to user preferences between fantasy sports and gambling apps, the data suggests that most users do not have a strong preference for either platform. While 13.2% prefer fantasy apps and 4.7% prefer betting apps, the majority either do not enjoy or do not have a clear preference for either. This could be reflective of neutral or negative experiences with both types of apps, indicating that users may engage with them more out of curiosity or habit than out of strong preference.

Regarding addiction, while 11.6% of respondents admitted to feeling addicted to these apps, a larger portion (33.3%) reported that they had not experienced any addictive tendencies. The remaining respondents either did not engage regularly enough with these platforms to feel addicted or had never tried them. Nonetheless, the concern around addiction is notable, as 72% of respondents believe that fantasy sports and gambling apps target vulnerable groups like students. This indicates a widespread perception that these platforms may exploit younger, impressionable audiences, raising ethical concerns about the marketing practices used by these apps.

In conclusion, while both fantasy sports and gambling apps have a significant user base and high visibility, their financial outcomes are mostly modest for most users. The majority of users show no strong preference between the two types of platforms, and while addiction is a concern for some, most users do not report feeling vulnerable to it. However, the widespread belief that these platforms target vulnerable groups highlights a significant area of concern regarding the ethics of marketing strategies in the industry.

**5.2 Results and Conclusion of Pearson and Sperman correlation analysis:**

**Correlation Analysis of Money Invested vs. Money Earned/Lost in Fantasy and Gambling Apps**

The Pearson-Spearman correlation analysis conducted on the financial data of users involved in fantasy sports apps and online gambling/betting apps provides valuable insights into the relationships between investment and financial outcomes. The data reveals both weak and moderate correlations between various variables, helping to understand how user investments in these platforms translate into either earnings or losses.

1. Money Invested in Fantasy Apps vs. Money Earned/Lost in Fantasy Apps

The correlation between the amount of money invested in fantasy apps and the amount earned or lost is positive but weak (0.21). This indicates a slight tendency that higher investments could lead to either higher earnings or losses, but the relationship is not strong enough to suggest a direct or predictable financial outcome. The weak correlation suggests that other factors, such as user skill, luck, or the choice of games, might play a more significant role in determining financial outcomes than the sheer amount of money invested.

Although the positive correlation implies that those who invest more in fantasy apps might experience a greater degree of success or failure, it is important to note that the relationship is not linear and that many users might invest substantial amounts without experiencing corresponding financial outcomes. This finding could indicate that while money is a factor, the actual impact of investment is likely diluted by the complexities of the fantasy sports environment, such as skill levels and game mechanics.

2. Money Invested in Fantasy Apps vs. Money Invested in Gambling Apps

The moderate positive correlation (0.66) between the amount invested in fantasy apps and the amount invested in gambling apps reveals a clear trend that users who invest in one type of app are likely to invest in the other as well. This may suggest that the same group of users tends to engage in both types of platforms, possibly due to their interest in risk-based activities or online gaming. However, the correlation is not perfect, indicating that while many users might invest in both types of apps, there are still users who favor one over the other.

This relationship might point to a behavioral pattern in which individuals who are comfortable with the financial risks associated with fantasy apps are also willing to participate in gambling apps. Both platforms involve monetary stakes, but the overlap in investment behavior could suggest that these apps appeal to a similar demographic of users who enjoy taking risks or engaging in competitive environments, regardless of the platform's specific nature (i.e., skill-based vs. chance-based).

3. Earnings/Losses from Fantasy Apps vs. Investment in Fantasy Apps

The correlation between the money earned or lost in fantasy apps and the investment in fantasy apps (0.21) is again weak and positive. This suggests that users who invest more in fantasy apps are slightly more likely to either earn or lose more money. However, this weak correlation underscores that the actual earnings or losses in fantasy sports are likely influenced by factors beyond just the amount invested, such as user strategy, participation in higher-stakes games, or sheer luck.

The weak correlation implies that increasing one’s investment does not necessarily guarantee better financial outcomes in fantasy apps. This may reflect the nature of fantasy sports as being partially skill-based, where experienced players may achieve better results, independent of the amount they invest. Therefore, while investment is a factor, it does not directly translate into proportional gains or losses, and skill, strategy, and game choices remain key components in determining financial outcomes.

4. Money Earned/Lost in Fantasy Apps vs. Money Earned/Lost in Gambling Apps

There is a weak positive correlation (0.25) between the money earned or lost in fantasy apps and the money earned or lost in gambling apps. This suggests a slight connection between the two financial outcomes, meaning that users who are successful (or unsuccessful) in fantasy apps might also experience similar results in gambling apps, although the relationship is not strong. This could indicate that users with a tendency to win or lose money in one platform might have similar financial experiences in another, but this correlation is weak enough that it cannot be used to predict financial outcomes across platforms with a high degree of certainty.

The weak positive correlation also implies that while there may be some behavioral overlap, the financial dynamics of fantasy sports and gambling apps operate differently. Fantasy sports are often based on skill and strategic decision-making, whereas gambling is more reliant on luck and chance. Thus, users may experience success or failure in one platform without it directly impacting their performance on the other.

5. Money Invested in Gambling Apps vs. Money Earned/Lost in Gambling Apps

The correlation between the money invested in gambling apps and the money earned or lost in gambling apps is weakly negative (-0.17). This suggests that investing more in gambling apps does not necessarily correlate with higher earnings or losses. In fact, the weak negative correlation implies that users who invest larger amounts may not always experience a corresponding increase in their financial outcomes. This aligns with the nature of gambling, where outcomes are heavily influenced by luck, rather than the amount of money invested.

This result highlights that while gambling platforms may encourage higher investments through their marketing and promotional strategies, simply investing more does not lead to higher financial success. The negative correlation, although weak, could imply that excessive investment might lead to larger losses, a trend that could suggest a risk-averse behavior among users who have experienced financial setbacks in gambling apps.

6. General Observations

Overall, the correlation analysis reveals several important trends:

* Investment Behavior: There is a moderate positive correlation between investment in fantasy apps and gambling apps, indicating a shared user base that engages with both types of platforms.
* Earnings and Losses: The relationships between investments and financial outcomes in both fantasy and gambling apps are generally weak, suggesting that factors like user skill, luck, and platform-specific dynamics play a larger role than just the amount of money invested.
* Risk and Behavior Patterns: The weak correlations, especially the negative ones, imply that while there is some overlap in user behavior across these platforms, the financial outcomes in one app do not strongly predict outcomes in another.

These findings highlight that, although there are certain behavioral patterns between users of fantasy and gambling apps, financial outcomes are not straightforwardly determined by the amount of money invested. Other variables—such as strategy, skill, luck, and platform dynamics—appear to be far more influential in shaping the financial success or failure of users in both types of apps. Furthermore, the weak correlations between investment and earnings/losses suggest that users should be cautious about the assumption that higher investments will automatically lead to greater financial gains, as the outcomes remain highly variable.

The analysis also underscores the complexity of user behavior in these environments and the need for further research into the underlying factors that drive financial success or losses, especially in the context of gambling addiction and the targeting of vulnerable groups.

**Correlation Analysis of Engagement Frequency vs. Money Invested in Fantasy and Betting Apps**

The correlation analysis of engagement frequency and monetary investment in both fantasy sports and online gambling/betting apps sheds light on user behavior and spending patterns. By examining the Spearman correlation—ideal for ordinal variables like frequency—we can better understand how the level of engagement influences the amount of money users invest in these platforms. The findings reveal varying degrees of correlation between the frequency of use and monetary investment, as well as between different platforms.

1. Engagement in Fantasy Sports vs. Engagement in Betting Apps

The analysis shows a strong positive correlation (0.81) between the frequency of engagement in fantasy sports apps and betting apps. This high correlation suggests that individuals who frequently engage in fantasy sports are also likely to frequently engage in online betting. This strong relationship can indicate several behavioral patterns:

* Crossover Engagement: Users who are interested in one type of platform (fantasy sports) often exhibit similar engagement behavior in the other (betting apps). This might suggest that both platforms appeal to the same user demographic, one that enjoys risk-based or competitive online gaming.
* Reinforcing Behavior: It is also possible that the use of one platform reinforces the use of the other. For example, a user who begins by engaging with fantasy sports apps may later branch into betting apps, or vice versa, increasing their overall engagement in both.

The strength of this correlation points to a close relationship between the two types of platforms in terms of user engagement, indicating that many users might see both as complementary or interconnected, engaging in similar patterns of behavior across both platforms.

2. Engagement in Fantasy Sports vs. Money Invested in Fantasy Apps

The moderate positive correlation (0.30) between the frequency of engagement in fantasy sports and the amount of money invested suggests that users who engage more frequently in fantasy sports apps tend to invest more money. This finding, while not very strong, provides important insights into the spending behavior of users based on their engagement:

* Increased Frequency, Higher Investment: Users who participate more often in fantasy sports are somewhat more likely to invest more money in these apps. This aligns with the idea that frequent users are more committed to the platform and are therefore willing to make greater financial investments.
* Engagement-Driven Spending: While the correlation is moderate, it implies that the more frequently a user engages with fantasy sports apps, the more likely they are to increase their financial participation. This could be due to factors such as familiarity with the platform, increased opportunities to compete in higher-stakes contests, or a greater willingness to take risks as they become more comfortable with the app.

However, the moderate nature of the correlation suggests that not all frequent users invest heavily, implying that some users prefer to engage without making significant monetary contributions. This could be due to a variety of factors such as budget constraints, risk aversion, or a preference for free-to-play options.

3. Engagement in Betting Apps vs. Money Invested in Betting Apps

The weak positive correlation (0.24) between the frequency of engagement in online betting apps and the amount of money invested indicates that there is a slight relationship between how often users engage with betting apps and how much money they invest. While the correlation is not very strong, it still highlights a pattern where more frequent users tend to invest more money, though not as consistently as seen in fantasy sports:

* Low to Moderate Engagement-Driven Spending: The weak correlation suggests that while there is some link between engagement frequency and investment, users of betting apps might not always increase their financial contributions in direct proportion to their engagement. This might be because betting apps involve more inherent financial risk, and even frequent users could be cautious about how much money they are willing to spend.
* Risk and Investment Balance: Users who engage frequently with betting apps may still limit their financial exposure due to the uncertainty of gambling outcomes. As a result, they may choose to engage regularly without significantly increasing their monetary investment. This could reflect a more risk-conscious approach compared to fantasy sports, where investments might feel more controlled due to the perceived skill-based nature of the platform.

4. Money Invested in Fantasy Apps vs. Money Invested in Betting Apps

The perfect correlation (1.00) between the amounts of money invested in fantasy apps and betting apps is highly significant. This finding suggests that users who invest money in one platform are likely to invest similar amounts in the other. This perfect correlation can indicate a few critical behaviors:

* Identical Spending Patterns: Users who are financially invested in fantasy sports apps tend to replicate their spending habits in online betting apps. This might suggest that users who enjoy making monetary contributions to these platforms do so across both types of apps, with little variation in how much they invest. These users might have a set budget or level of comfort with financial risk that they apply uniformly across both platforms.
* Cross-Platform Investment: The identical investment patterns also suggest that users might not differentiate strongly between the two platforms when it comes to their spending. Whether participating in fantasy sports or betting apps, these users might perceive both platforms as similar opportunities for potential financial gains or entertainment, resulting in equivalent monetary investments.

This perfect correlation indicates that users who are willing to invest in one platform are almost certainly investing similar amounts in the other, reinforcing the idea that both types of apps attract similar types of users, particularly in terms of financial commitment.

5. Overall Implications of Engagement and Investment Correlations

The correlation analysis of engagement frequency and monetary investment across fantasy sports and online gambling apps reveals several key insights into user behavior:

* Engagement Frequency Drives Investment: The analysis shows that more frequent engagement in both fantasy sports and betting apps is associated with higher investments, although the strength of this relationship varies. Fantasy sports show a moderate positive correlation between engagement and investment, suggesting that frequent users are more likely to invest more, while betting apps show a weaker correlation, indicating that users might engage often without necessarily increasing their spending.
* Overlapping User Base: The strong correlation between engagement in fantasy sports and betting apps (0.81) highlights a significant overlap in the user base. Those who engage frequently in one platform are likely to engage in the other, suggesting a shared appeal between the two types of apps. This overlap could be driven by the appeal of risk-based gaming or competitive environments that attract similar types of users.
* Similar Investment Behavior: The perfect correlation between investments in fantasy apps and betting apps (1.00) indicates that users who invest in one platform almost always invest similar amounts in the other. This suggests a consistent approach to spending across platforms, with users likely applying the same financial strategies or limits to both fantasy sports and betting apps.

6. Potential Explanations for Correlation Patterns

The varying strengths of correlation between engagement frequency and monetary investment can be explained by several factors:

* Platform Differences: Fantasy sports apps often rely on a mix of skill and strategy, which may encourage higher investments as users perceive more control over their outcomes. Betting apps, on the other hand, are more chance-based, which might cause users to be more cautious with their financial contributions, leading to the weaker correlation between engagement and investment.
* Risk Perception: Users may perceive different levels of risk between fantasy sports and betting apps. The lower correlation between engagement and investment in betting apps suggests that even frequent users are more risk-averse when it comes to increasing their financial stakes, reflecting the unpredictable nature of gambling.
* User Preferences: Some users might prefer engaging with these platforms for entertainment without necessarily investing large amounts of money, especially in the case of betting apps, where the financial risk is higher.

Final Thoughts:

The correlation analysis of engagement frequency and monetary investment in fantasy sports and betting apps reveals important behavioral insights. While more frequent engagement generally leads to higher investments, the strength of this relationship varies between platforms. Fantasy sports apps show a moderate connection between engagement and investment, reflecting a more consistent pattern of spending. In contrast, betting apps display a weaker connection, suggesting that users engage frequently but may not invest heavily due to risk concerns. The perfect correlation between investments in both platforms highlights that users who are financially invested in one are almost always invested in the other, pointing to a shared user base with similar spending habits. These findings provide a deeper understanding of user engagement and financial behavior across both fantasy sports and online betting platforms.

**5.3 Results and Conclusion: Machine Learning for Predicting Users' Perception of Fantasy Apps as Betting**

The research aimed to explore whether users perceive online fantasy apps as a form of betting by leveraging machine learning techniques. Through the use of logistic regression and random forest classifiers, we attempted to predict user perceptions based on a variety of demographic and behavioral attributes. This investigation provided valuable insights into how well user attributes can help classify their perception of online fantasy apps and their relation to betting.

1. Dataset and Feature Selection:

The dataset selected for this analysis contained several critical variables that we hypothesized would be strong predictors of whether users consider fantasy apps to be a form of betting. Key features included:

* Types of applications played: By identifying whether users frequently engage with fantasy sports or other gaming apps, we aimed to capture user familiarity with apps that might involve monetary stakes.
* Frequency of engagement: Understanding how often users engage with these apps could offer insights into whether they associate frequent participation with betting behaviors.
* Perception of online fantasy apps: Users’ general perceptions of fantasy apps could indicate whether they link these apps to gambling.
* Monetary investment in fantasy apps: We hypothesized that users who invest more money in fantasy apps might be more likely to view them as betting platforms due to the financial stakes involved.
* Demographics (age and occupation): These were included to determine if user background influenced their perception of fantasy apps as betting.

The features selected were grounded in behavioral economics and user psychology, aiming to capture the factors that might shape a user’s viewpoint about whether fantasy sports are equivalent to betting.

2. Data Preprocessing:

In any machine learning model, data preprocessing plays a critical role in ensuring that the data is prepared and structured in a way that enables algorithms to learn effectively. In this case, categorical variables like "types of apps played" and "occupation" were converted to numerical representations using one-hot encoding. This process allows categorical features to be included in the model while avoiding any erroneous assumptions about the ordinal relationships between different categories.

Moreover, splitting the data into training and testing sets with an 80-20 split allowed us to build models on the majority of the dataset and then evaluate their performance on unseen data. This split ratio is widely accepted as it offers a good balance between training the model adequately and having enough data left for robust testing.

3. Logistic Regression Model:

We initially employed logistic regression, a commonly used model for binary classification tasks. Logistic regression provides a simple and interpretable model for predicting binary outcomes, making it a logical starting point for our analysis. Additionally, we standardized the data using StandardScaler to ensure that all features were on the same scale, which is essential for logistic regression models, as they can be sensitive to differences in feature magnitude.

After training the logistic regression model, the performance on the test set yielded an accuracy of 34.6%, which was underwhelming. Upon reviewing the confusion matrix and classification report, it became evident that the model had difficulty classifying the "Unsure" and "No" categories, indicating that the decision boundaries it formed were inadequate for this particular problem. Logistic regression likely struggled because the relationship between the features and the target variable was not linear, a key assumption for this model. The low accuracy indicated that a more complex, non-linear model was needed.

4. Random Forest Classifier:

To improve the model’s performance, we implemented a Random Forest Classifier, an ensemble technique that builds multiple decision trees and combines their outputs to make more accurate predictions. Random forests are particularly useful when the data has complex, non-linear relationships, as they can capture interactions between features that simpler models, like logistic regression, cannot. Additionally, we set the class\_weight parameter to ‘balanced’ to address any class imbalances that might skew the model’s predictions.

The Random Forest model resulted in an improved accuracy of 38.4%, demonstrating its ability to capture more of the underlying patterns in the data. Although the improvement over logistic regression was not substantial, it indicated that a more sophisticated model could provide better predictions. The classification report showed that Random Forest performed better in terms of precision and recall for some categories, but the model still faced difficulty with the "Unsure" and "No" categories, where misclassifications were frequent. This could be due to a lack of clear distinctions between user perceptions across these categories, or it might reflect an overlap in the behavioral attributes that define these groups.

5. Cross-Validation:

To assess the robustness of the Random Forest model, we applied 5-fold cross-validation, which evaluates the model’s performance on different subsets of the data. This technique helps to ensure that the model’s accuracy is not simply the result of favorable data splits but is instead generalizable across various parts of the dataset.

The cross-validation yielded a mean accuracy of 36.4%, which, while slightly lower than the single test set evaluation, showed consistent performance across different data splits. This stability is a positive indication that the model was not overfitting to a particular subset of data, and its performance, though limited, was reliable.

6. Key Insights from the Results:

* Limited Predictive Power of User Attributes: One of the major takeaways from the model’s relatively low accuracy rates is that the user attributes and behaviors we selected had limited predictive power for determining whether a user perceives fantasy apps as a form of betting. Although variables like engagement frequency and monetary investment might intuitively seem like good predictors, their impact on perception is more nuanced, and these features alone were not enough to build highly accurate models.
* Complexity of Perception: The fact that both models struggled particularly with the "Unsure" and "No" categories suggests that user perceptions are complex and difficult to predict based on engagement patterns and financial behavior. It is possible that other factors not captured in this dataset—such as users’ personal experiences, societal attitudes towards betting, or even individual psychological traits—play a larger role in shaping these perceptions.
* Advantages of Random Forest: The Random Forest model, with its ensemble learning approach, demonstrated better performance compared to logistic regression. This indicates that the relationship between the input features and the target variable is likely non-linear, and more flexible models like decision trees are better equipped to capture these relationships. However, the modest improvement in accuracy suggests that further refinement is needed.

7. Limitations and Future Work:

While this study provides important insights into the predictive relationship between user behavior and perceptions of fantasy apps, several limitations must be addressed:

* Feature Set: The feature set could be expanded to include additional variables that might better capture the nuances of user perceptions. For example, psychological factors such as risk tolerance, or social influences like peer behavior and marketing exposure, could significantly affect whether users view fantasy apps as betting.
* Imbalanced Classes: The difficulty in predicting the "Unsure" and "No" categories indicates that class imbalances or class overlap may have contributed to the models’ underperformance. Future efforts could explore techniques like oversampling, undersampling, or more advanced approaches such as synthetic minority over-sampling technique (SMOTE) to better handle class imbalances.
* Advanced Models: While Random Forest provided some improvement over logistic regression, other advanced models like Gradient Boosting Machines (GBM), XGBoost, or even deep learning models might be able to further enhance performance by capturing more intricate relationships within the data.

Final Thoughts:

The application of machine learning techniques to predict users' perception of fantasy apps as betting revealed some useful findings, but it also highlighted the challenges of modeling human perception based on limited behavioral and demographic data. While Random Forest showed potential, further research involving more diverse and representative features, as well as experimentation with more complex models, is necessary to improve the accuracy and reliability of these predictions. The insights gained from this study provide a valuable foundation for future work in understanding user behavior in digital gaming platforms.

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**Appendix**

**Questionnaire:**

1. Full Name
2. Age
3. Gender
4. Occupation
5. Are you aware of online sports fantasy applications?  
   [Yes/No]
6. Are you aware of online gambling/betting applications/websites?  
   [Yes/No]
7. Which of the following types of applications have you played?  
   [Fantasy sports apps/Online gambling apps/Online rummy/None]
8. Your frequency of engagement in fantasy sports over the past 12 months:  
   [Never/Once/Few times/Regularly]
9. Your frequency of engagement in online betting apps over the past 12 months:  
   [Never/Once/Few times/Regularly]
10. What is your overall perception of online fantasy apps?  
    [Positive/Neutral/Negative]
11. What is your overall perception of online gambling/betting applications/websites?  
    [Positive/Neutral/Negative]
12. Do you consider online fantasy apps to be a type of betting app?  
    [Yes/No/Unsure]
13. How much money have you invested in fantasy apps?  
    [None/Less than ₹100/₹100 - ₹1000/₹1000 - ₹10000/More than ₹10000]
14. How much money have you invested in online gambling/betting apps?  
    [None/Less than ₹100/₹100 - ₹1000/₹1000 - ₹10000/More than ₹10000]
15. How much money have you earned or lost from fantasy apps?  
    [No financial outcome/Lost less than ₹5000/Lost more than ₹5000/Earned less than ₹500/Earned more than ₹5000]
16. How much money have you earned or lost from online gambling/betting applications?  
    [No financial outcome/Lost less than ₹5000/Lost more than ₹5000/Earned less than ₹500/Earned more than ₹5000]
17. How do you compare your experience with sports fantasy apps and online betting apps?  
    [Prefer fantasy sports apps/Prefer online betting apps/No preference]
18. Have you ever felt addicted to these applications?  
    [Yes/No]
19. Do you believe using these applications has affected your academic performance?  
    [Yes/No]
20. Do you think sports fantasy and online gambling/betting applications target vulnerable groups such as students?  
    [Yes/No]
21. Do you think these applications should have stricter age verification processes?  
    [Yes/No]
22. Do you think it is acceptable to have advertisements for Dream11 and similar apps on the Indian cricket team jersey?  
    [Yes/No]
23. How do you think the government should address issues related to online gambling/betting applications?  
    [Ban these apps completely/Implement stricter regulations/Do nothing/Other]