New Media Betting: An Exploratory Study of Motivations, Innovation Attributes & Pathological Gambling on Betting Behaviors

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Abstract

Gambling has increased its popularity among Hong Kong people. The legalization of football betting in 2003 together with the increasing varieties of new media betting technologies stimulated this exploratory study. It attempted to find out the relationships between people's adoption decision and perceived innovation attributes; new media betting usage pattern against gambling motivations and demographics. Potential attributes of pathological gambling were also studied. Results indicated that people would adopt new media betting if they perceive it as trendy and compatible with their lifestyles. Mobile services betting users usually perceive new media betting applications as compatible with their current lifestyles and gamble out of introjected extrinsic motivation; Internet betting users are usually younger male and gamble out of externally regulated extrinsic motivation; PDA betting users are usually better educated and gamble out of intrinsic motivation toward accomplishment. Innovation attributes of new media betting technologies have no significant effect on betting amounts and people bet more only if they find it stimulating and want to get rich. Football and horse racing gamblers are more likely to have pathological gambling problems than those who bet Mark Six.

1. Introduction

Gambling has long been one of the most popular entertainments for the people in Hong Kong. Ever since the authorization to the Hong Kong Jockey Club (HKJC) to operate horse racing betting in 1973, there has been a steady annual increase of betting turnover. Despite the economic downturn of Hong Kong after 1997 leading to a reduction in betting turnover, number of punters was still on the rise. The introduction of new media forms of betting (most notably "Mobile Betting" – betting by means of mobile phones in May 2000 and 'eWin' – Internet Betting in August 2001) attracted different types of adopters, as illustrated by the fact that turnover of telephone betting (a pre-requisite for using Mobile Betting and 'eWin') exceeded that of off-course since 2002. Number of account-based customers exceeded one million, with interactive services¹ users reaching 177,000 during 2002/2003 season (as compared to 148,000 in 2001/2002 season, major increase coming from eWin and Mobile Betting).

The study has become even more interesting upon the legalization of football betting on 18 July 2003. To help government fight illegal football betting by providing the public with convenient and regulated football betting services, HKJC Football Betting Limited became the sole operator of football betting pursuant to the Betting Duty (Amendment) Ordinance 2003, drawing a large number of football fans who previously bet through overseas bookmakers. Much public concerns were aroused as people worried legalized football betting would lead to worsening of pathological gambling, a well-known cause of many family relationship problems; financial difficulties; job problems and a range of emotional disorders. They also feared if more

¹ Interactive Services users refer to those subscribing to either a) mobile betting b) Customer Input Terminal, c) Two Way Messenger or d) Online Betting (eWin)

youngsters would become gamblers as football had been a long-time favorite among teenagers. The advantages of convenient new media betting (e.g. anonymity, instant availability etc.) might intensify the problem further.

In light of these, this study will investigate: (1) what kinds of people would adopt new media betting, (2) what impacts new media betting has brought to their betting behavior, (3) what are their gambling motivations, and (4) what predicts pathological gambling?

2. Literature Review

Various angles were considered in approaching the questions here. Theory of "Diffusion of Innovation" (Rogers, 1995), demographics composition of bettors, internet gambling, pathological gambling, gambling motivation, internet addiction and internet gambling addiction would be briefly discussed.

Diffusion of Innovations

According to the "Diffusion of Innovations" theory, technological innovation is communicated through particular channels, over time, among the members of a social system (Rogers, 1995).

Each innovation passes through the stages from 1) *knowledge* (exposure to its existence, and understanding of its functions); 2) *persuasion* (the forming of a favorable attitude to it); 3) *decision* (commitment to its adoption); 4) *implementation* (putting it to use); and 5) *confirmation* (reinforcement based on positive outcomes from it). The speed and degree of each innovation depends on several characteristics, namely 1) relative advantage – the degree to which an innovation is perceived as

better than the idea it supersedes ; 2) compatibility – the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters; 3) complexity – the degree to which an innovation is perceived as difficult to understand and use; 4) trialability – the degree to which an innovation may be experimented with on a limited basis e.g. trial period ; and 5) observability – the degree to which the results of an innovation are visible to others (Rogers, 1995).

Apart from the above four attributes, the adoption decision was also affected by the need for "Innovativeness", defined as the degree to which an individual is relatively earlier in adopting new ideas than other members of a system (Rogers, 1995). Past researches indicated that the degree of innovativeness was positively related to the adoption likelihood of various new media technologies, such as interactive TVs (Leung & Wei, 1998), personal computers (Lin, 1998) and Internet shopping (Li & Yang, 2000).

New media betting applications being technological innovations, this theory would be applied to see if their diffusion was related to the four innovative attributes and if their adoption would be positively correlated with their innovativeness.

Gambling Motivation

Self-determination theory (Deci & Ryan, 1985, 1991), states that people have a need to feel self-determined and competent when interacting with their environment. Accordingly, Robert J. Vallerand's study with 245 Canadian gamblers on horses in 2001 viewed gambling as a motivational consequence, positing that motivation leads people to become involved in gambling and to invest considerable amounts of time and money in betting. The following seven constructs of gambling motivation scale as developed by a French study were applied in the study (Chantal, Vallerand, & Vallières, 1994).

Specifically, intrinsic motivation refers to the act of participating in an activity for the pleasure and satisfaction afforded by the activity. The seven motivations are:

(1) Intrinsic motivation to experience stimulation is exemplified by gamblers who bet for fun and excitement.

(2) Intrinsic motivation to know is exemplified by gamblers who enjoy learning, exploring, or trying to understand something new (e.g. gathering data about previous horse races)

(3) Intrinsic motivation to accomplish things is exemplified by gamblers who find pleasure and satisfaction in surpassing themselves in the course of their betting activities (e.g., improving one's counting method in blackjack).

(4) Extrinsic motivation types pertain to viewing a given activity as a means to an end. *External regulation* does not involve self-determination (e.g., people who gamble in hopes of becoming rich). However, the reasons for extrinsically motivated behavior may become internalized.

(5) Introjected regulation limits this process of internalization to past external contingencies when controlling beliefs, such as pressure and guilt, modify behaviors (e.g., some gamblers pressure themselves to use the same lottery ticket numbers because they would feel guilty if they did not).

(6) Identified regulation, which involves self-determination, is operant when a person has come to value certain behaviors (e.g., people who gamble for the purpose of socializing with friends value this activity and choose to participate in it).

(7) Amotivation pertains to activities that are neither intrinsically nor extrinsically motivated. It is operant when people do not perceive contingencies

between an outcome and their own actions.

These seven motivation types were ordered along a self-determination continuum that ranges from amotivation (corresponding to the absence of any choice) to intrinsic types of motivation (corresponding to higher degrees of self-determination). Vallerand (2001) discovered that participants with higher degrees of self-determination (i.e., engage in gambling for fun and have a sense of choice) reported a higher degree of gambling involvement. Male participants also involved more than female

Internet Gambling

Internet gambling was frequently considered together with gambling addiction and pathological gambling. Young (1998) noted anonymity, convenience and escape help make internet alluring as compared with traditional forms of gambling. The American Psychiatric Association (APA) also warned that Internet gambling could be more hazardous than other forms of gambling due to a lack of regulations and the solitary nature of the activity ("APA Issues Advisory on Internet Gambling", 2001). When online bettors are alone in front of their screen, they can bet and get out of control quickly. This was supported by another report revealing the fact that the majority of those with internet gambling experience had the most serious levels of gambling behaviors, known as level 2 (problematic) and level 3 (pathological) ("Study: Internet Gambling may indicate more serious problem", 2002). Now being able to access and participate in an activity that comes into home via computers, Griffiths (1999a) located possible factors causing the increase in gambling behavior by new media betting: 1) vulnerable individuals could now gamble because of little gate-keeping; 2) gambling in the workplace was made possible for employees who were given internet access, and could take place without arousing suspicion; 3) the psychological value of e-cash was perceived to be less than "real" cash, a phenomenon known as "suspension of judgment", temporarily disrupting gamblers' financial value system and potentially stimulating further gambling, possibly suggesting that people would gamble more using e-cash than would with real cash; and 4) internet gambling was perceived to be safer, less intimidating, more anonymous, more fun and more tempting (Griffiths, 2001).

On the other hand, several barriers to internet gambling were also reported by Parke and Griffiths (2001), including (1) the inability to obtain valid credit / debit cards, (2) lack of physical transaction of collection winnings that can be highly rewarding, and (3) social reinforcement being unavailable in internet gambling.

On prevalence of Internet gambling, Griffiths (2001) found that among the 2,098 people in United Kingdom surveyed (918 men and 1,180 women), only 495 of them (24%) were Internet users. The results showed that not a single person gambled regularly on the Internet (i.e., once a week or more) and that only 1% of the Internet users were occasional Internet gamblers (i.e., less than once a week). Results also showed that a further 4% had never gambled but would like to do so, whereas the remaining 95% had never gambled on the Internet and said they were unlikely to do so. Participants age 15 to 19 years (n = 119) were also asked about whether they had ever gambled on the Internet, and if they had whether they had used parents' credit card. No one in the sample had done so, although 4% said they would like to. Female participants (n = 1,180) were also asked about their attitudes toward gambling online as compared to gambling in a betting shop. Of those surveyed, 73% said they would never gamble on the Internet. Given that the study was carried out at a time when Internet user was an irregular activity in the United

Kingdom (i.e. traditionally most people have to pay by the minute for Internet access in U.K., which most likely inhibits use), the research results should be interpreted with great caution.

In yet another study by lalomiteanu and Adlaf (2001) among adults in Ontario, Canada, 5.3% had gambled on the Internet during the past 12 months. Only marital status was significantly related to Internet gambling. Previously married (widowed, divorced) people were significantly more likely to report on-line gambling compared to those who were married or single(10.9% vs. 4.9% and 3.5% respectively). Women were more likely to gamble online than men (6.3% vs. 4.3%). Neither age, regional, educational nor income differences were related to internet gambling likelihood.

Pathological Gambling

The 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994) describes pathological gambling as a disorder that involves preoccupation with, tolerance of, and loss of control relating to gambling behaviors. The definition includes 10 diagnostic criteria² that represent three dimensions, namely, damage or disruption, loss of control and dependence. As

² Diagnostic criteria for 312.31 Pathological Gambling.

Persistent and recurrent maladaptive gambling behavior as indicated by five (or more) of the following:

⁽¹⁾ is preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)

⁽²⁾ needs to gamble with increasing amounts of money in order to achieve the desired excitement

⁽³⁾ has repeated unsuccessful efforts to control, cut back, or stop gambling

⁽⁴⁾ is restless or irritable when attempting to cut down or stop gambling(5) gambles as a way of escaping from problems or of relieving a dysphonic mood (e.g., feelings of helplessness, guilt, anxiety, depression)

⁽⁶⁾ after losing money gambling, often returns another day to get even ("chasing" one's losses)

⁽⁷⁾ lies to family members, therapist, or others to conceal the extent of involvement with gambling

⁽⁸⁾ has committed illegal acts such as forgery, fraud, theft, or embezzlement to finance gambling

⁽⁹⁾ has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling

⁽¹⁰⁾ relies on others to provide money to relieve a desperate financial situation caused by gambling

it would be extremely difficult to draw an universally acceptable dividing line, the Committee on the Social and Economic Impact of Pathological Gambling – the one Committee that had carried out the most recent national wide study on the issues in the United States – adopts a continuum of gambling behaviors and classifies gambling behavior within a topography from Level 0 to Level 3, with Level 0 referring to no gambling problem at all; Level 1 (score 1 or 2) denoting social/recreational gambling with no obvious harmful consequences; Level 2 (score 3 or 4) being synonymous with problem gambling, while Level 3 denoting 'pathological gambling' defined by the DSM-IV when the attained score equals five or above. The DSM-IV criteria have since been used as a basis for constructing instrument or questionnaires to assess prevalence of problem and pathological gambling in the general population.

In February 2001, a study was commissioned by the Home Affairs Bureau (HAB) of the HKSAR Government to gauge the perception of gambling among the general population, prevalence of pathological gambling, characteristics of pathological gamblers and the impact gambling has on pathological gamblers and their families. ("Report on A Study of Hong Kong People's Participation in Gambling Activities", 2002) The study adopted a modified and translated version of DSM-IV on pathological gambling.

Survey results indicated that 1.85% (c.f. 37) of the 2,004 respondents could be classified as "probable pathological gamblers" (DSM-IV scoring 5 or above). They named horse racing (48.6%), social gambling (27.0%) and Macao casinos (18.9%) as the major forms of gambling causing problems. These "probable problem gamblers" (DSM-IV scoring 3 or 4) or "probable pathological gamblers" (DSM-IV scoring 3 or 4) or "probable pathological gamblers" (DSM-IV scoring 5 or above) were more likely to be male, less educated (Form 3 or below) with a personal monthly income of \$10,000 or above. They were more likely to be involved in horse

racing gambling, soccer matches betting or casino gambling.

Respondents being classified as probable pathological gamblers were found to have very different perception about gambling, as compared to those who had not gambled in the past twelve months. The former tended to understate the nature of gambling and put more emphasis upon other attributes of the activities like entertainment and excitement. Besides, the underage probable pathological gamblers were found to more likely come from a gambling environment (i.e. where family members or friends were involved in some forms of gambling).

Similar demographic characteristics of pathological gamblers were found in another study by G. T. Ladd (2002). He found that among the 389 patients surveyed at the UCHC medical and dental clinics, problematic gamblers were more likely to be younger, of non-Caucasian ethnicity, not married, and have lower levels of education and income.

Internet addiction and internet gambling addiction

Young (1999) defined internet addiction as covering a wide variety of behaviors and impulse control problems. It is further categorized in five specific subtypes:

• *Cyber-sexual addiction*: compulsive use of adult websites for cyber-sex and cyber-porn.

• Cyber-relationship addiction: over-involvement in online relationships.

• *Net compulsions*: obsessive online gambling, shopping, or day trading.

• Information overload: compulsive web surfing or database searches.

 Computer addiction: obsessive computer game playing (for example, Doom, Myst, or Solitaire). Since gambling has been perceived to be potentially addictive, the combination of gambling with internet seems to lead people to think that internet gambling would be doubly addictive. Using the Internet as a means of gambling may be a more serious problem than when people gamble in other ways. Additionally, the explosive growth of the Internet can lead to more online gambling opportunities, resulting in more of the health and emotional difficulties that accompany gambling disorders. These difficulties include substance abuse, depression, and risky sexual behavior (Soule, Shell, & Kleen, 2003).

However, Griffiths (1999b, 2000b) argued that many of these addictive users are not Internet addicts. Rather, they just use the internet excessively as a medium to fuel other addictions. That says a gambling addict who gambles on the internet is not addicted to the internet itself. Internet is just a place on which they engage in their chosen behavior.

L.C. Soule's study in 2002 using a publicly available US database of Internet users indicated that 10% of respondents reported 40 or more hours of weekly online activity – an amount labeling an important signal of addictive behavior. Younger and better educated people were found to spend more time online.

Demographic Composition

Past adoption literature shows that adopters of new technologies are usually educated, young and affluent because (1) educated people are more sensitive to the benefits that technologies bring along, (2) higher income lower the relative cost of adoption of new technologies, and (3) young people are often more adventuresome (Atkin, 1993; Ryan, 1943). Sarrina Li (2000)'s study on the adoption of electronic newspaper supported this notion further in that people who were younger, better

educated, and had higher personal income were more likely to adopt electronic newspapers.

3. Research Hypotheses and Questions

Based on the above literature reviews, the following research questions and hypotheses are proposed:

- H.1.1 People tend to adopt new media betting if they perceive advantage over traditional forms of betting.
- H.1.2 People tend to adopt new media betting if they perceive it as compatible with their lifestyles, values and traditional behavior.
- H.1.3 People tend to adopt new media betting if they perceive it as simple to apply and easy to use.
- H.1.4 People tend to adopt new media betting if they perceive that it has observable results e.g. perceived trendiness and anonymity
- H2.1 New media bettors tend to be male.
- H2.2 New media bettors tend to be young.
- H2.3 New media bettors tend to be educated.
- H2.4 New media bettors tend to have higher monthly salary.
- RQ3: What predicts new media betting usage?
- **RQ4:** What predicts betting amounts?
- **RQ5:** What predicts pathological gambling?

4. Methodology

4.1 Sampling

This exploratory study made use of the snowball convenience sampling due to resource limitations. A web-survey was created on My3q.com inviting participants' online completion together with the paper questionnaire offline passing among another group of people without internet access. A total of 416 valid responses were collected.

Among the 416 respondents, 72.8% (303) had placed bets (Mark Six, Horse racing or Football matches) during the past year. 18.3% (76) had ever used new media betting (Mobile Services, Internet or PDA). With regards demographics, 42.3% (176) were female and 57.7% (240) were male; 40.1% (167) were in the 25-34 age-groups, 22.1% (92), 19.5% (81), 13.2% (55), 2.6% (11), 1.7% (7), and .7% (3) were in 35-44, 45-54, 18-24, 55-64, below 18 and above 64 age-group respectively; 57% (237) were single; 47.9% (199), 45% (187) and 5% (21), attained "tertiary or higher", "secondary" and "primary or lower" education respectively.

4.2 Questionnaires and measures

A Chinese questionnaire (Annex I) was prepared with questions focusing on the following aspects: 1) New media betting adoption; 2) four innovation attributes (relative advantage, compatibility, complexity and observability) of new media technologies; 3) pathological gambling; 4) gambling motivation, 5) betting behaviour, 6) need for innovation, and 7) demographics.

New Media Betting: Existing interactive betting devices offered by the HKJC include Customer Input Terminal (CIT), Online Betting (eWin), Mobile Betting (MBS), CIT-PDA, Two Way Messenger (TWM), and MangoSports. In view of the

overwhelming number of users adopting eWin, MBS and CIT-PDA ("HKJC Annual Report 2002-2003", p. 104), and the prevalence of PC and mobile phone ownership as compared to other devices, this study primarily focused on the adoption of eWin, MBS and CIT-PDA.

Adoption status: A single question was used to determine the adoption status of new media betting. Respondents were asked if they had ever used MBS, eWin or CIT-PDA during the past year. Respondents with positive response to that question would be asked how frequent they used each of the new media betting applications on a 6-point scale, with "1" being "never use"; to "6" being "use frequently".

Attitudes toward new media betting: Questions were designed to tap the respondents' perceptions of new media betting in terms of the four innovation attributes, namely: "relative advantage", "compatibility", "complexity" and "observability."

Relative advantage was measured by asking respondents if they agreed new media betting would bring convenience to daily activities, save time, simplify way to obtain betting information, save money, be secure and reliable.

Compatibility was measured by asking respondents if they agreed new media betting would fit the hustle and bustle way of life, let them bet at the last minute and bet under a comfortable environment.

Complexity was measured by asking if respondents agreed new media betting would be easy and simple to use.

Observability was measured by asking respondents if new media betting would let them keep abreast of the latest IT developments.

Need for Innovativeness: This variable was measured by the scale developed by Lin (1998) in which respondents were asked whether they would be willing to learn new ideas, take risks, keep track with technological developments and try out new technologies. The scale was 1 to 5, with "1" being "disagree strongly"; to "5" being "agree strongly".

Bet frequency: This variable was measured by questioning adopters their betting frequency via various betting tools during the past year. The scale was 1 to 6, with "1" being "never use"; to "6" being "use frequently".

Bet amount: This variable was measured by questioning adopters their betting amounts during the past year.

Pathological gambling: The modified DSM-IV Gambling-Behavior Index adopted by the PolyU's study in 2002 was used in which respondents were asked 11 questions related to their gambling perceptions and behaviors. Total scores ranged from 0 to 11. The cutoff for problem and pathological gambling was a score of 3 or 4 and a score of 5, respectively.

Gambling Motivation: Gambling Motivation Scale (GMS; Chantal, Vallerand, & Vallieres, 1994), comprising of 28 items representing potential answers to the question: "Why do you gamble?' were used to measure respondents' inherent motivations to their gambling behavior. The GMS comprises seven subscales that correspond to the seven types of motivation (intrinsic motivation to know, intrinsic motivation toward accomplishment, intrinsic motivation to experience stimulation, extrinsic motivation - identified, extrinsic motivation - introjected, extrinsic motivation - external regulation and amotivation) described previously, with each one based on a 7-point Likert-type scale anchored by the endpoints "does not correspond at all (1)" and "corresponds exactly (7)", with a midpoint of being "corresponds moderately (4)". There were four items for each motivation subscales. For example, items such as "for the pleasure I feel when my knowledge of the game improves" and "because it is the

best way I know of for meeting friends" compose the Intrinsic Motivation to Know scale and the Identified Regulation scale, respectively. The External Regulation and Amotivation subscales were composed of items such as "to buy something I have been dreaming of and "I gamble but at times I wonder if it's worth it," respectively.

Socio-economic status: Age, gender, monthly income, occupation and educational attainment would be considered.

4.3 Analytical Procedures

2-tailed t-tests were used to compare the mean difference between the adoption decision of people of different genders, age groups and socio-economic statuses. Correlation and simple regression analyses will be used to determine the predictors of new media gambling adoption, bet frequency, bet amount and pathological gambling.

5. Findings

5.1 Hypotheses Testing

An exploratory factor analysis was conducted on the 14 characteristics of new media betting to categorize the dimensions into the four innovation attributes. The resulting four-factor solution out of the principal factor analysis with Varimax rotation explained 78.9% of the total variance (Table 1, Annex II).

Factor 1, Relative advantage (eigenvalue = 7.59, variance = 54.22%, Cronbach's alpha=.89) comprises 6 items including convenience, the ability to trace previous betting record, place bets at the last minute and under a comfortable environment, time saved and the ease at getting betting information; Factor 2,

Non-complexity (eigenvalue = 1.59, variance = 11.33%, Cronbach's alpha=.83) comprises 3 items as reliability, simplicity and anonymity; Factor 3, Observability (eigenvalue = 1.03, variance = 7.35%, Cronbach's alpha=.87) comprises 3 items as freshness, attractiveness and fun; Factor 4, Compatibility (eigenvalue = 0.84, variance = 5.98%, Cronbach's alpha=.73) comprises 2 items as trendiness and life-style matching.

Independent samples t-tests were then run between the innovation attributes of new media betting and new media betting adoption. Only compatibility (t = 2.263, p=.026) was significantly related to new media betting adoption (Table 2). Thus hypothesis H1.2 was supported whereas hypotheses H1.1, H1.3 and H1.4 were rejected.

To explore the relationship between new media betting innovation attributes and demographics, cross-tabs were applied between new media betting adoption and sex (Table 3) and then independent samples t-tests between new media betting adoption and age, income and education were used (Table 4). None of the demographics attributes were related to the new media betting adoption decision. Therefore, hypotheses H2.1 through H2.4 were rejected.

5.2 Predictors of New Media Betting Usage

Regressions were run to determine predictors for the usage of three new media betting types, namely Mobile Service betting (MBS), internet betting (eWin), and PDA (CIT-PDA) against independent variable including the need for innovativeness, diffusion of innovation attributes, gambling motivation, total DSIV score and demographics. Different predictors turn out for the three new media betting types (Table 5). People who perceive new media betting applications as compatible with their current lifestyles (beta =.189, p<.05) and gamble out of introjected extrinsic motivation (beta =.488, p<.001) use mobile service betting (bet_mbs) more frequently; Younger (beta =-.348, p<.001), male (beta =.207, p<.05) who gamble out of externally regulated extrinsic motivation (beta =.253, p<.01) adopt internet betting more frequently; whereas better educated (beta =.197, p<.05) people who gamble out of intrinsic motivation toward accomplishment (beta =.346, p<.05) use PDA betting more frequently than others. Of the four diffusion of innovation attributes (relative advantages, compatibility, complexity and observability), only compatibility appears to be a significant factor for people's adoption decision of new media betting.

5.3 Predictors of Betting Amount

To find what attribute(s) affect(s) gamblers' betting amount, regression was run again using the same independent variables as 5.2 (Last column of Table 5) Similar to the new media betting frequency, none of the diffusion of innovation attributes appear as significant to the betting amount. Instead, people's betting amount was vastly related to their gambling motivations, of which intrinsic motivation to experience stimulation (beta =.385, p<.01) and amotivation (beta =.259, p<.05) turn out as significant.

5.4 Predictors of Pathological Gambling

Regression was also run to find out possible determinants of pathological gambling. Total DSIV scores were treated as the dependent variable against the three gambling types (Mark Six, Horse Racing and Football), innovation attributes, gambling motivations, need for innovativeness and demographics (Table 6). Significant predictors include the followings: extrinsic motivation – introjected (beta =.323, p<.001), intrinsic motivation to experience stimulation (beta =.360, p<.001),

amotivation (beta =.160, p<.01), extrinsic motivation – identified (beta =-.257, p<.01), horse (beta =.124, p<.05), football (beta =.172, p<.001) and age (beta =.137, p<.01). The summarized inter-correlations were shown in Table 7

6. Discussion and Conclusion

This exploratory study indicated that people's new media betting adoption decision was not significantly related to their perception of the technologies adopted. Among the four innovation attributes (relative advantages, complexity, compatibility and observability), only compatibility stands out as a probable predictor. That says people would adopt new media betting if they perceive it as trendy and compatible with their lifestyles. Relative advantages, complexity and observability were not recognized as important factors. Instead of saying new media betting applications have no relative advantages, no observable benefits or unsafe, it was speculated that the fast pace of life among Hong Kong people made it extremely difficult for them to squeeze even a bit of their precious time to explore these new technologies. After all, gambling was mostly regarded as a pastime and thus most people would not spend significant time to learn related applications, when they have already got used to the traditional gambling means. Just why bother to learn when they can comfortably bet by communicating with the telephone operators or going to one of the 116 Off-Course Betting Branches which had been so easily accessible?

Besides, different demographics attributes were related to different new media betting applications. Whereas none of the demographics attributes affected the decision to gamble using mobile phones, younger male tend to bet on internet while better-educated people tend to bet on PDA. This might be explained by the relatively wide-spread application of mobile phones among Hong Kong people as compared with internet access and PDA. These demographic statistics also matched Sarrina's study (2000) on electronic newspapers adoption in which younger and better-educated people have a higher tendency for new media application adoption. HKSAR government's emphasis on IT education resulting in the relatively high internet penetration rate (60.0%) among households in Hong Kong also helps explain the results ("Hong Kong in Figures", 2004).

On the contrary, both the new media betting adoption decision and the betting amount were more significantly related to the gambling motivation than the innovation attributes. People gambling out of introjected extrinsic motivation use mobile service betting more matched the compatibility attributes in that they perceive betting using mobile phones had perceived trendiness and as enviable by others. People gambling out of external regulated extrinsic motivation (e.g. gamble to get rich) use internet betting more may be related to the anonymity internet gambling provides. Thus, they have to be truly interested in the underlying activity (in this case gambling) should they decide to engage in it. For those who bet using PDA, they are likely to gamble out of an intrinsic motivation toward accomplishment, having satisfaction in surpassing themselves in the course of their betting activities.

Betting Amount and Gambling Motivation

Technology only has a secondary effect towards people's betting amount. People will bet more if they have a higher desire towards becoming rich and getting stimulation. In general, participants reporting high scores in intrinsic motivation attributes bet in greater amounts than those with high scores in extrinsic motivations. This supports Vallerand's 2001 study of horse racing among Canadian gamblers in that people reporting higher self-determined motivations gambled more. Still, it is interesting to note that a significant amount of respondents "gambled in order to get rich", indicating the importance on money that Hong Kong people perceived.

Pathological Gambling

Football and horse racing betting frequency have a positive relation to the total DSIV score, a measure of pathological gambling, indicating that football and horse racing are potentially addictive when compared to Mark Six. The results matched PolyU's study in 2002 in which pathological gamblers were more likely to involve in horse racing, soccer or casino gambling. Age was found positively correlated with total DSIV score, as contrasted with previous studies that younger people were more likely to be pathological gamblers. This contradiction might be explained by the fact that the older respondents surveyed this time received less education in general when compared to the younger ones. Since "receiving less education" is another pathological gambling might outweigh the negative effect that older age has on the attribute. The newly introduced football betting being addictive also warrant close Government monitoring to prevent a potential worsening of social problems due to this new gambling form.

7. Limitations and Suggestions for Further Research

Given the resource constraints, only convenience sampling was adopted which affected the representativeness of the sample. The relatively short history of new media betting introduction since 2000 might explain the small number of respondents reported as having new media betting experience (only around 18.3% (76) out of the sample). A focused research on existing new media betting adopters in collaboration with the Hong Kong Jockey Club should reveal more interesting findings concerning the adoption decision and the impact new media technologies have on their gambling behavior and lifestyle.

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	Factors				
	1	2	3	4	
Relative Advantage					
New Media Betting provides convenience.	.812				
New Media Betting allows me to bet at the last minute.	.792				
New Media Betting allows me to trace previous betting records.	.714				
New Media Betting saves time.	.637				
New Media Betting allows me to bet under a comfortable environment.	.610				
New Media Betting allows me to get betting information easily.	.552				
Non-complexity					
New Media Betting is safe and reliable.		.822			
New Media Betting is easy to use.		.791			
New Media Betting allows me to bet anonymously.		.464			
Observability					
New Media Betting is fresh.			.843		
New Media Betting is attractive.			.826		
New Media Betting is funny.			.812		
Compatibility					
New Media Betting is trendy.				.827	
New Media Betting matches the lifestyle of Hong Kong people.				.667	
Eigenvalues	7.59	1.59	1.03	.84	
Variance explained	54.22%	11.33%	7.35%	5.98%	
Cronbach's Alpha	.89	.83	.87	.73	

Table 1 : Factor Analysis of (principal components, Varimax rotation)14 Innovation attributes (N=416)

Note: The scale used: 1=strongly disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly agree

Table 2: Independent Samples Test between Innovation Attributes of New Media Betting and its Adoption

Group Statistics

	Adopter Groups	Ν	Mean	Std. Deviation	Std. Error Mean
Comptability	Have tried	76	.1462844	1.04662669	.12166788
	Never tried	221	3092870	.82430391	.13933279

Independent Samples Test

		Levene' for Equa Varian	s Test llity of nces	t-test for Equality of Means						
		F	Sig.	t df Sig. (2-taile Mean Std. Error 95% Confidence Interva Difference Of the Difference					ence Interval ifference	
Comptability	Equal variances	1.082	.301	2.263	107	.026	.4555714	.20134196	.05643448	.85470838
	Equal variances not assumed			2.463 83.1 12 .016 .4555714 .18497757 .08766584 .82					.82347702	

BET_NEWM * SEX Crosstabulation Count										
		SE	EX							
		女	男	Total						
Adopter Groups	Never tried	85	136	221						
	Have tried	21	55	76						
Tota	1	106	191	297						

Table 3 : Cross-tabulation between new media betting adoption and sex

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.890(b)	1	.089		
Continuity Correction(a)	2.437	1	.118		
Likelihood Ratio	2.969	1	.085		
Fisher's Exact Test				.097	.058
Linear-by-Linear Association	2.880	1	.090		
N of Valid Cases	297				

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 27.12.

Table 4: Independent Samples Test between New Media Betting Adoption and Income, Education and Age Group Statistics

	Adopter Groups	N	Mean	Std Deviation	Std Error Mean
INCOME	Heve tried	76	2 22	1 427	165
INCOME	Trave trieu	70	2.55	1.437	.105
	Never tried	221	2.68	1.561	.105
EDU	Have tried	76	3.92	1.197	.137
	Never tried	221	4.18	1.207	.081
AGE	Have tried	76	3.61	1.144	.131
	Never tried	221	3.61	1.101	.074

Independent Samples Test

		Leve Tes Equal Varia	ene's t for lity of ances	t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Differenc e	95% Con Interval Differ Lower	fidence of the ence Upper
INCOME	Equal variances assumed	1.96 8	.162	-1.741	295	.083	35	.203	755	.046
	Equal variances not assumed	Ť		-1.813	140.352	.072	35	.195	741	.032
EDU	Equal variances assumed	.115	.734	-1.622	295	.106	26	.160	575	.055
	Equal variances not assumed			-1.629	131.163	.106	26	.160	576	.056
AGE	Equal variances assumed	.267	.606	038	295	.970	01	.148	297	.285
	Equal variances not assumed			037	125.998	.970	01	.151	304	.293

		Туре		Betting Amount				
Predictors	Mobile	Services	Inte	rnet	P	DA	Detting F	Amount
	r	β	r	β	r	β	r	β
New Media Betting								
Innovation Attributes								
Relative Advantage	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Complexity	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Compatibility	.372**	.189*	.206**	n.s.	n.s.	n.s.	n.s.	n.s.
Observability	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Gambling Motivations								
Intrinsic motivation to know	.435**	n.s.	n.s.	n.s.	.229*	n.s.	.499**	n.s.
Intrinsic motivation toward accomplishment	.352**	n.s.	n.s.	n.s.	.279**	.346***	.506**	n.s.
Intrinsic motivation to experience stimulation	.351**	n.s.	n.s.	n.s.	.195*	n.s.	.514**	.385**
Extrinsic motivation - identified	.328**	n.s.	n.s.	n.s.	n.s.	n.s.	.443**	n.s.
Extrinsic motivation – introjected	.516**	.488**	n.s.	n.s.	.279**	n.s.	.504**	n.s.
Extrinsic motivation - external regulation	.345**	n.s.	.225*	.253**	.233*	n.s.	.365**	n.s.
Amotivation	.340**	n.s.	n.s.	n.s.	.207*	n.s.	.439**	.259*
Total DSIV Scores	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.532**	n.s.
Need for Innovativeness	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Demographics								
Age	n.s.	n.s.	354**	348***	n.s.	n.s.	.184**	n.s.
Sex (male=1)	n.s.	n.s.	n.s.	.207*	n.s.	n.s.	.349**	n.s.
Income	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Education	188*	n.s.	.197*	n.s.	n.s.	.197*	265**	n.s.
Marriage	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.215**	n.s.
R^2		.335		.212		.127		.350

Table 5: Regression of New Media Betting Innovation Attributes, Gambling Motivations, Internet Use, and Demographics on New Media Betting Adoption and Betting Amount (N=76)

Notes: $\#p \le .1$; $*p \le .05$; $**p \le .01$; $***p \le .001$

Predictors	Total I	OSIV scores
	r	β
New Media Betting Innovation Attributes		
Relative Advantage	n.s.	n.s.
Complexity	n.s.	n.s.
Compatibility	n.s.	n.s.
Observability	n.s.	n.s.
Bet Types		
Horses	.546**	.124*
Football	.510**	.172***
Mark Six	.240**	n.s.
Gambling Motivations		
Intrinsic motivation to know	.632**	n.s.
Intrinsic motivation toward accomplishment	.657**	n.s.
Intrinsic motivation to experience stimulation	.667**	.360***
Extrinsic motivation – identified	.547**	257**
Extrinsic motivation – introjected	.672**	.323***
Extrinsic motivation - external regulation	.511**	n.s.
Amotivation	.599**	.160**
Need for Innovativeness	n.s.	n.s.
Demographics		
Age	.204**	.137**
Sex	.229**	n.s.
Income	137*	n.s.
Education	317**	n.s.
Marriage	.301**	n.s.
R^2		.603

Table 6: Regression of Bet Types, Gambling Motivations and Demographics on Total DSIV Scores (N=76)

Notes: $\#p \le .1$; $*p \le .05$; $**p \le .01$; $***p \le .001$

	Betting Amount	Mark6	Horse	Football	Total DSIV Score	Relative Advantage	Non- complexity	Compatibili ty	Observabili ty	Mobile Services	Internet	PDA
Betting Amount												
Mark6	.367**											
Horse	.652**	.270**										
Football	.498**	.190**	.496**									
Total DSIV Score	.532**	.240**	.546**	.510**								
Relative Advantage	n.s.	n.s.	n.s.	n.s.	n.s.							
Non-complexity	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.						
Compatibility	n.s.	n.s.	n.s.	n.s.	.232*	n.s.	n.s.					
Observability	n.s.	n.s.	243**	n.s.	n.s.	n.s.	n.s.	n.s.				
Mobile Services	.360**	n.s.	.214*	.338**	.291**	n.s.	n.s.	.372**	n.s.			
Internet	.361**	n.s.	.310**	.329**	n.s.	n.s.	n.s.	.206*	n.s.	n.s.		
PDA	.262**	n.s.	.217*	n.s.	.216*	n.s.	n.s.	n.s.	n.s.	n.s.	.189*	

Table 7: Inter-correlation of Betting Amount and Betting Frequency

**. Correlation is significant at the 0.01 level (2-tailed).*. Correlation is significant at the 0.05 level (2-tailed).

你好!本人為香港中文大學新聞與傳播學院之研究生,現正就香港人參與「互聯網/手機短訊 SMS/電子手帳 PDA」投注作一專題研究。現誠邀閣下花數分鐘時間完成以下問卷。一切資料只供學術用途。感謝你的支持!

第一部份:

1) 在過去一年內,你曾否參與以下由香港賽馬會營辦的投注活動(例如六合彩、賽馬或足球)?

□曾經 □沒有(全卷完,多謝你!)

2) 請以1至6形容閣下過去一年的投注頻率。(1表示不曾投注,6表示經常投注)

		「曽 22注					經常
		又任	1			-	1又任
		1	2	3	4	5	6
2.1	六合彩						
2.2	賽馬						
2.3	足球賽果						

3) 請問你認為投注活動的性質是屬於:【可選多項】

□ 賭博

□ 娛樂

□ 找尋刺激

□ 消磨時間

□ 社交活動

□ 其他 (請註明:_____)

4) 在過去一年內,你平均每月用在馬會投注活動的開支

□ \$50 或以下

□ \$51 至 \$100

- □\$101 至\$200
- □ \$201 至 \$500
- □ \$501 至 \$1,000
- □ \$1,000 以上

		有	沒有
5.1	試過個腦成日都唸住賭博,例如唸番以前賭o既情形、計		
	劃下次賭博、或點樣去搵賭本問題		
5.2	試過爲想要刺激需要不斷加大賭注		
5.3	試過想賭少、或者停止賭博但都唔成功		
5.4	當嘗試賭少或停止賭博時候會覺得煩躁不安		
5.5	試過用賭逃避個人煩惱或者舒解不快情緒,例如內咎、		
	無助、焦慮或沮喪		
5.6	試過輸錢後,好快又再賭過以求翻本		
5.7	試過向其他人隱瞞自己賭得幾大或自己賭博行為		
5.8	試過為搵錢去賭而做過唔合法,例如偷、私用公款、詐		
	騙或僞造文件		
5.9	試過因賭而傷害甚至失去你珍惜人際關係		
5.10	試過因賭而損害或者失去受教育、工作或者晉升o既機會		
5.11	試過因賭而陷入財政困難而要靠其他人提供金錢援助		

5) 過去一年內,下列各項情形有沒有在閣下身上發生呢?閣下只須回答有或者沒有。

6) 以下各項描述人們參與賭博的各種理由。請以1至7分形容該項對閣下的適用程度。(若該理由對閣下完全 不適用,請給1分;若有點適用,請給4分;完全適用,請給7分。)

		完全 不 適 用			有點 適用			完全 適用
		1	2	3	4	5	6	7
你爲	何參與賭博活動?							
6.1	因爲賭博十分刺激							
6.2	因爲賭博令我感到自己十分重要							
6.3	因爲賭博令我感到充實							
6.4	因爲賭博能使我完全放鬆							
6.5	我為錢而賭,但有時也會自問究竟應否繼 續賭下去							
6.6	因爲賭錢能考驗我的自制力							
6.7	我為錢而賭,但有時也會自問從中我究竟 能得到什麼							
6.8	因爲賭可以致富							
6.9	爲了向別人表示我是一個充滿活力的人							
6.10	隨著我增進自己的賭博技巧,我感到快樂							
6.11	爲了買到我夢寐已求的東西							
6.12	因爲我盡情享受賭博的樂趣							
6.13	因爲賭博能消除壓力							
6.14	因爲賭博令我感到十分刺激							
6.15	爲了當學到更新的賭博技巧所帶來的滿足 感							
6.16	因爲賭博讓人羨慕							
6.17	因爲賭博能令我頭腦清晰							
6.18	當我了解自己的賭博才能時,我感到快樂							
6.19	我爲自己能掌握整個賭博過程感到滿足							
6.20	因為我對賭博活動所存在的各種可能性有好奇心							
6.21	我為錢而賭,但有時也會覺得自己從中得 益並不多							
6.22	爲了很快和容易地贏取金錢							
6.23	因爲賭博是我與朋友聚會的最好方法							
6.24	因爲賭博使我感到自己能掌握一切							
6.25	我為錢而賭,但有時也會自問究竟賭錢對 我有否好處							
6.26	因爲當我賭贏時,我自覺十分重要							
6.27	爲了贏很多錢							
6.28	因爲賭博十分刺激							

7) 在過去一年內,你曾否使用新媒體 (包括「互聯網/手機短訊 SMS/電子手帳 PDA」)投注馬會彩池?

□曾經

□沒有(請跳至第10題)

8) 請以1至6形容閣下使用「**互聯網/手機短訊 SMS/電子手帳 PDA」投注服務**的頻率。(1表示不曾使用, 6表示經常使用)

		不曽 使用	經常 使用				
		1	2	3	4	5	6
8.1	手機短訊投注服務						
8.2	網上投注服務						
8.3	電子手帳投注服務						

9) 以下為一些形容「**互聯網/手機短訊 SMS/電子手帳 PDA」投注服務的句子**。請以1至5分 (1-「非常不同 意」,3-「普通」,5-「非常同意」)為各項評分。

		非常 不同意				非常 同意	不知道
		1	2	3	4	5	9
「網	上/手機短訊SMS/電子手帳PDA」投注服務 —						
9.1	可提供方便						
9.2	可節省時間						
9.3	安全,可靠						
9.4	切合香港人的生活節奏						
9.5	令我覺得自己很追得上科技的發展						
9.6	容易使用						
9.7	使我更容易取得投注資訊						
9.8	能使我在別人不知情的情況下投注						
9.9	讓我在最後一刻才下注						
9.10	讓我更容易翻查投注記錄						
9.11	讓我在更舒適的環境下投注						
9.12	有新鮮感						
9.13	有吸引力						
9.14	有趣味性						

(請跳至第二部份)

		非常不 同意				非常 同意	不知 道
		1	2	3	4	5	9
不使	用「互聯網/手機短訊SMS/電子手帳PDA」是因為:						
10.1	沒興趣參與博彩活動						
10.2	博彩活動彩池不吸引						
10.3	博彩活動種類少、單調						
10.4	怕網絡保安不安全						
10.5	需要先申請電子證書						
10.6	需要先申請投注戶口						
10.7	使用複雜						
10.8	不習慣透過互聯網/手機短訊投注/電子手帳投						
	注,喜歡與人傾談						
10.9	不熟悉該項服務的詳情						
10.10	其他 (請註明:)						

¹⁰⁾ 以下各項是一些**不使用「互聯網/手機短訊 SMS/電子手帳 PDA」的可能原因**。請以1至5分9(1-「非常不同意」3-「普通」5-「非常同意」)為各項評分。

第二部份:

11) 請以1至5分(1-「非常不同意」,3-「普通」,5-「非常同意」)形容閣下對以下各句的意見。

		非常 不同意	Ĵ.			非常 同意
		1	2	3	4	5
1.1	我願意學習新事物。					
1.2	我願意冒險。					
1.3	我認為自己是一個經常跟上最新科技潮流的人。					
1.4	我喜歡跟上新科技。					
1.5	我願意嘗試新科技。					

12) 請問(先生/小姐)你個人現時平均每月收入大概多少?

□10,000元或以下 □10,001-20,000 元 □20,001-30,000 元 □30,001-40,000 元 □40,001或以上 □拒絕回答/唔知道

13) 請問(先生/小姐)你婚姻狀況係乜呢?

□未婚
 □已婚
 □分居/離婚
 □鰥寡
 □同居
 □拒絕回答

14) 請問(先生/小姐)你教育程度去到邊度呢?

□無受過正規教育

□小學或幼稚園

□中學程度

□預科程度(中六至中七/(IVE)香港專業教育學院/其他職業訓練機構)

□大專:學士學位

□大專:學士學位以上(包括碩士/博士等)

□拒絕回答/唔知道

15) 請問你的性別:

□男

□女

16) 請問你的年齡:

□18歲以下 □18 - 24歲 □25 - 34歲 □35 - 44歲 □45 - 54歲 □55 - 64歲

□64歲以上

謝謝你的參與!!