PATH ANALYTIC APPROACH TOWARDS DEMYSTIFYING THE KEY TRIGGERS BEHIND LIKING DIFFERENT CRICKET FORMATS – A KOLKATA BASED STUDY

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Abstract

Cricket has multiple international formats. This study aims to find out if gender and age have any influences on liking any formats. It delves deep into the outcome quality of a cricket match to build a construct for understanding fans' psyche behind fondness for any formats. The same construct is used to model overall liking for each format. The study uses Chi-square test for independence to investigate the influence of gender and age group on overall liking of a format. It uses Confirmatory Factor Analysis (CFA) to establish the dimensional construct and applies Structural Equation Model (SEM) to model overall liking based on the construct. The study finds no link between gender and liking of a format even though age group appears to influence. It establishes the construct REST comprising of Result, Excitement, Skill, Time and Money to measure overall liking for a format. Result and Skill are found to be insignificant for predicting the liking of Tests and T20 respectively whereas ODI appears to be more balanced. The findings give a clear indication to the regulators that test matches need to be made more unpredictable and result-oriented and T20 matches less restricted and more skilful. The regulators need to strategize making the younger generation interested in test and the older generation in T20. REST can be treated as a pioneering construct that can explain fan's expectation from a game of cricket leading to liking a format.

Keywords: *Cricket formats, Confirmatory Factor Analysis, Structural Equation Model, Hierarchical Cluster Analysis, Chi-Square Test*

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INTRODUCTION

The game of cricket has now multiple 'offerings' e.g. Test, One day international (ODI) and Twenty twenty international (T20) at the international level which are vying for attention. As per ICC's first ever market survey (Media Release, 2018), the fan count had exceeded the billion mark and 70, 88, 92 per cent fans globally are interested in Test, ODI and T20 cricket respectively. The survey findings endorse that there are still healthy number of followers for each format despite length of the game being reduced. However, fans being an important stakeholder for any sport, one must understand their psyche behind liking or disliking a particular format. Only then the regulators (e.g. ICC and country boards) can act upon the reasons for disliking as a counter measure. In order to check representativeness of the sample, χ^2 test for goodness of fit has been conducted with respect to the ICC's survey findings on liking of different formats.

The study has further investigated possible influence of demographic variables like gender and age on liking a particular format using the χ^2 test for independence. The outcome can help regulators targeting their 'customers' for all the three 'services' they have namely, Test, ODI and T20 and also deciding the cricket mix and scheduling international fixtures. In the latter part of this study, it delves deep into the psyche of a fan to understand why does s/he like a particular format? Being an abstract item, it is essential to devise a measurement construct to understand the latent drivers behind liking a particular format. The study uses Confirmatory Factor Analysis (CFA) to establish the dimensional construct REST and applies Structural Equation Model (SEM) to model overall liking based on the construct. The findings can help the regulators in strategizing on laggard drivers for each format to boost.

Overall, the study is based on feedbacks collected from Indian cricket fans using a questionnaire. The questionnaire and the related measurement construct are built based on literature review and are refined through discussions with experts of the game; these are elaborated in the subsequent sections. Thorough review of extant literature revealed a dearth of academic work on understanding the psyche of a cricket fan; the derived construct is thus a significant addition to the current body of knowledge. In the practical realm, the study leaves enough traces for the regulators to work on the 'drawbacks' of each format to make them more popular and decide on proportion of three formats taking into consideration their popularity.

THEORETICAL BACKGROUND

Hunt, Bristol and Bashaw (1999) had defined fan as an enthusiastic follower of a sport in general, or a league or a team or a personality (including player / coach / manager / such individual associated with a team or sport) in particular. The present study aims to find out the reasons why an enthusiast or a fan (an aficionado who stays aware) likes or dislikes certain format(s) of cricket. In other words, it aims to measure overall liking for each cricket format and find out the contributing factors. This necessitates building a measurement construct for overall liking which is an abstract entity. Since sports offerings resemble to service more than a product, it's only natural to start looking for the constructs around fans' expectation from a cricket game within the extant framework of service industry; their adaptation in sports and finally specific to cricket.

Service quality is more difficult to assess than products due to its three features e.g. intangibility, heterogeneity and inseparability between production and consumption (Parasuraman, Zeithaml and Berry, 1985). Parasuraman, Zeithaml and Berry (1988) came up with SERVQUAL for service quality assessment based on 5 parameters viz. **R**eliability, **A**ssurances, **T**angibles, **E**mpathy and **R**esponsiveness (RATER) that describe service encounter characteristics. Cronin and Taylor (1992) modified SERVQUAL with the help of an augmented instrument called SERVPERF. This was modelled on customer's perception about the performance of the service provider rather the gap between perception and expectation. Rust and Oliver (1994) considered service product, service environment and service delivery as the primary dimensions and concluded that customer satisfaction depends on perceived value on these dimensions. Brady and Cronin (2001) decomposed overall service quality into three primary dimensions e.g. interaction quality, physical environment quality and outcome quality each having three sub-dimensions underneath. Smith (1995) described the outcome quality of the service as the fundamental to the consumer's evaluation of a service.

In parallel, there had been many instances of using / modifying above constructs to fit in sports and recreations. McDonald, Sutton and Milne (1995) modified the SERVQUAL model to formulate TEAMQUAL specifically for the sports industry. Kim and Kim (1995) considered 12 dimensions of service quality in a study related to Korean Sport Centres, namely ambience, price, exclusivity, ease of mind, convenience, stimulation, social opportunity, employee attitude, reliability, information giving, programming and personal consideration – last 4 can be treated as interaction quality dimensions. Kelly and Turley (2001) considered nine distinct dimensions of service quality for sporting events, namely employee, price, fan comfort, game experience, show time, facility access, concession, convenience and smoking which had 35 attributes underneath. Theodorakis, Kambitsis, Laios and Koustelios (2001) created a tool named SPORTSERV following principles of SERVQUAL (Parasuraman *et al.*, 1988) constructs. Five dimensions, namely Access, Reliability, Responsiveness, Tangibles and Security were used to measure service quality in professional sports. Theodorakis *et al.* (2001) showed that sport marketers can influence the satisfaction of customers by controlling these dimensions. According to Madrigal (1995), a spectator's satisfaction from attending a sporting event is related to emotional connect with the team, the quality of the opponent, expected and actual outcome. However, Brady and Cronin (2001) showed unfavourable outcome of the game can lead to overall poor service experience despite better show in other dimensions. Sacheti, Gregory-Smith and Paton (2014) concluded that short-run uncertainty of outcome has more significant impact on demand for ticket than long-run uncertainty of outcome using data from 380 Test cricket matches played in England, Australia and New Zealand since 1980. Kruger and Saayman (2016) have segmented in-field cricket spectators of a Cricket Sixes tournament held in South Africa into Occasional, Selective and Comprehensive experience seekers based on the kind of experiences they vie for. However, they concluded that motives for spectators differ from sport to sport and even from one format to another format of the same sport. Hyde and Pritchard (2009) highlighted the role of timing and weather for success examining the data on Twenty20 cricket competition launched in England and Wales in 2003.

In present study, it is assumed that following a game does not need attending the game in person; it can include seeing the match on TV or internet or even listening to the running commentary or going through media reports. This simplification enables probing of outcome quality leaving out interaction quality and physical environment quality (Brady and Cronin, 2001) or service product leaving out service environment and service delivery (Rust and Oliver,

1994). Madrigal (1995) reasoned that unpredictability provides the key interest for watching sporting events compared to other predictable forms of recreation. Knowles, Sherony and Haupert (1992) concluded that 'uncertainty of outcome' is a major determinant of attendance in the context of Major League Baseball in the United States. They showed that with more evenly matched teams playing, the outcome becomes more unpredictable which in turn makes the game more exciting for the fans. Madrigal (2003) opined that skill execution is the most important aspect for a team to win; however competitive nature of the sporting event makes it more compelling to watch. Wakefield and Blodgett (1999) found out that closeness of competition is very important as that provides excitement, the end goal of a consumer for watching a sporting event. Pritchard and Kharouf (2016) devised a four-dimensional model to measure cricket spectators' consumption. The study suggested that indirect consumption through TV and Internet is higher than on-field consumption although the latter is more preferred. However, time and format of the match and club membership have roles on watching a game. Smith (1995) suggested that value for money is critical for a consumer's evaluation of a service. Rust and Oliver (1994) found out that, quality and price are two pillars of a consumer's perception; a service can be rated poor despite excellent quality if the price is too high.

Based on this literature review, the high level construct for measuring outcome quality of a sporting event had been designed as follows:

Result: This is related to the outcome of a game (e.g. uncertainty)
Excitement: It measures the thrill a game can provide to a fan
Skill: This dimension is devoted to measuring skills on display
Time and Money: This is a measure for what a fan spends e.g. time, money, as appropriate

The above constitutes a construct called REST; however, it is a challenge to find out constituents for each of these primary dimensions especially in the context of cricket. Collins (2005) considered 11 dimensions namely Security Employees, Food and Beverage, Players, Social Factors, Visuals and Sound, Access, Seats, Cleanliness, Atmosphere, Game Quality, and Entertainment for measuring service quality as perceived by attending spectators in the context of Super 12 rugby games in New Zealand. Ajzen (1991) developed the theory of planned behaviour (TPB) based on the theory of reasoned action. It dealt with three basic components, namely attitude, subjective norm and perceived control that determine customer intention which in turn, determines customer behaviour. Dos Santos (2012) utilized the TPB and the expectation disconfirmation theory to understand spectator satisfaction from a cognitive point of view by studying emotions and motivations in the context of soccer event in Spain. However there is dearth of literature under the rubric of cricket. This necessitated a discussion-oriented approach with an expert panel, elaborated in the following section.

METHODOLOGY AND HYPOTHESES FORMULATION

In order to find out constituent sub-dimensions of REST, a purposive sample of five experts was consulted – the panel included a cricketer, umpire, coach, cricket administrator and sports journalist. Semi-structured interviews were conducted using an interview guide designed on the basis of review of existing research literature. Section 1 of the interview guide outlined the purpose of the study and Section 2 contained open questions like "How important do you

consider result-orientedness of a cricket game in attracting a fan to follow the game?"; similar questions were set for other three dimensions viz. Excitement, Skill, Time and Money. Responses from the interviews were inductively content analysed for preparing the full construct of REST and subsequently the questionnaire was prepared. Some of the excerpts from the interview are quoted below:

Table 1: Select Excerpts from Discussions with Experts

Select Excerpts	Implication
"In 2018, India WI series was flat compared to the India England series".	Predictable result
"A draw can at times be more exciting than a decision if the quality of the game is high and is evenly contested - England vs New Zealand test match (2018) at Christchurch is an example".	Nail biting finish
"When an Indian follows Ashes keenly, there is little emotional drive compared to seeing quality and close encounter".	Uncertainty of outcome Nail biting finish
"With the advent of T20s, lot of innovations in batting (e.g. reverse sweep, 'DilScoop', slog sweep etc.), bowling (e.g. googly, carom ball, slow bouncers, knuckle ball etc.) and even fielding (e.g. relay catch, fielding in the air on boundary etc.) had happened. These skills slowly got into the test arena as well making all forms of cricket more exciting".	Innovative batting/bowling Innovative fielding
"Test matches need more time and money commitment from a fan and if three innings are not completed within 5 days, they become very boring".	Lack of certainty of a result More time consuming Costly Ticket
"Test cricket, having least amount of restriction in terms of fielding or bowling provides maximum level of test for skills, especially batting and bowling".	Restrictions (Fielding, Bowling) Aggressive batting Defensive batting Aggressive bowling Defensive / Negative bowling

After synthesising all the excerpts, a person's overall liking of a particular format of cricket as per REST is depicted as follows:
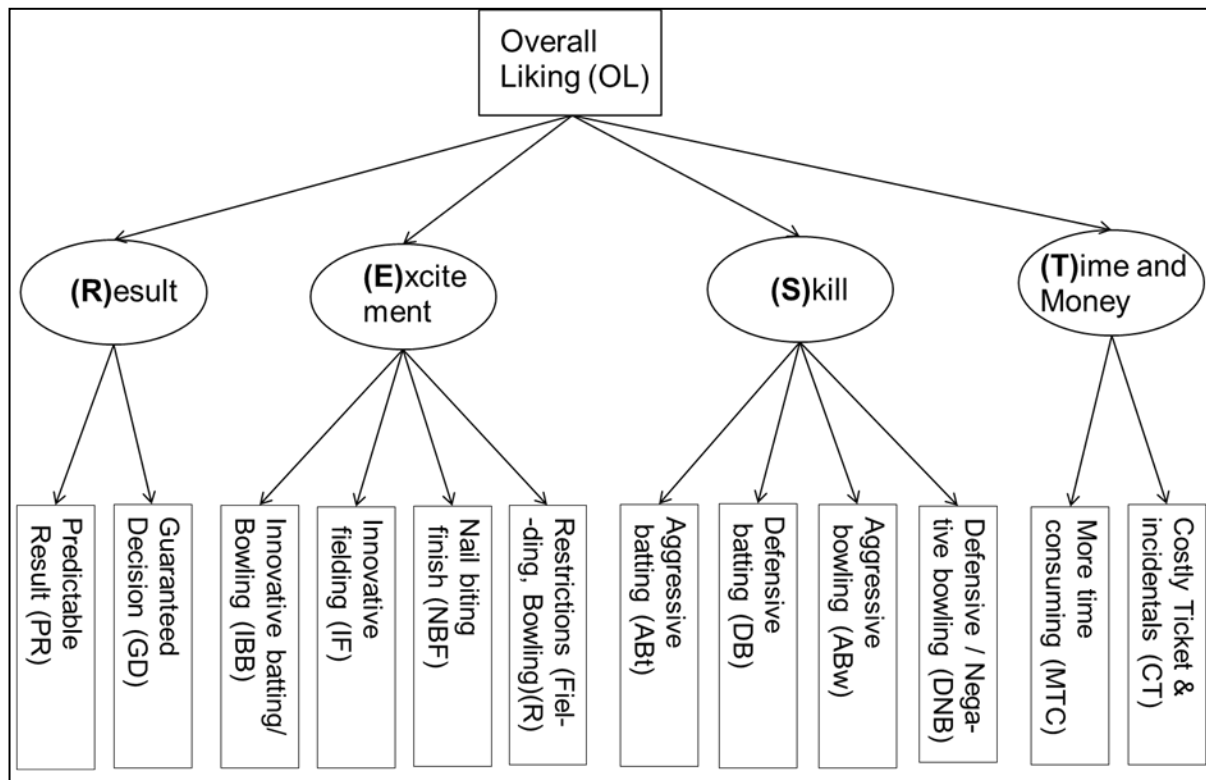
Fig. 1: REST Hierarchy

Based on the above construct, the questionnaire was prepared (Appendix 1). Since the study aims to identify patterns behind liking a particular format, it requires the sample to be well represented by respondents who like Test, ODI and T20I the most. Since anyone interested in any format of the game is valid respondent for the study, a small pilot was first conducted by choosing randomly the respondents from street and household. However, most were found to be either not interested in cricket or not keen to fill up the questionnaire. Because of the dismal response, respondents were selected randomly during the Test (day 2 of the match against Sri Lanka played during November 16-20, 2017), ODI (against Australia played on September 21, 2017) and T20I (against West Indies played on November 4, 2018) match at Eden Gardens in Kolkata keeping in mind the research requirement. Kolkata is well known for its sports loving residents all over the world. Eden Gardens is the oldest cricket stadium in India. A total of 210 questionnaires were circulated on three match days that yielded 184 completed responses.

Aligning with the objectives of the study, the following statistical hypotheses were formed:

H_{01}: *The population pattern on liking three formats of cricket for the current sample is same as ICC's finding*

The percentage figures of liking each format from the above two surveys were compared using χ^2 test for goodness of fit.

H_{02}: *Gender has no influence on liking of a particular form of cricket* and

H_{03}: *Age has no influence on liking of a particular form of cricket*

Since both Gender and Age group (age was converted into 4 age groups viz. below 30 years, 31 to 40 years, 41 to 50 years and above 50 years as part of data pre-processing) are categorical variables, χ^2 test for independence was employed to check if they have any influence on liking a format.

As evident from Fig. 1, **R**esult, **E**xcitement, **S**kill, **T**ime and Money are the latent variables. Using confirmatory factor analysis (CFA), the study explores how the twelve sub-dimensions (which were grouped based on functional understanding) combine in explaining these latent variables for each of three formats. At the next level, influence analysis is conducted for Overall liking, the endogenous variable based on the latent exogenous factors REST for each of three formats. With the help of a structural equation model (SEM), the study will reflect the cause and effect relationships between the latent constructs of REST and will help test the validity of following statistical hypotheses based on evidence.

H_{04a}: *Result-orientedness is not a determinant of overall liking of a format of cricket*

H_{04b}: *Excitement is not a determinant of overall liking of a format of cricket*

H_{04c}: *Skill is not a determinant of overall liking of a format of cricket*

H_{04d}: *Time and Money is not a determinant of overall liking of a format of cricket*

DATA PRE-PROCESSING

The study is based on 184 responses from as many respondents. Gender-wise the sample is constituted by 82% male and 18% female respondents. Age-wise 63%, 15%, 11% and 11% fall in the age group below 30 years, 31 to 40 years, 41 to 50 years and above 50 years respectively. Personal touch ensured no missing data and minimal chance for misinterpretation. However, the same was tested and verified using hierarchical cluster analysis (HCA). HCA has been adopted here to identify and remove outliers (Barai and Dey, 2017).

As per the design of the questionnaire, an audience during a test match (or ODI and T20I) had the full flexibility of rating any format the highest or joint highest. To count the number of people liking Test, ODI and T20, the study considered the maximum rating a respondent assigned to overall liking for a particular format. For example, if a person assigned a rating of 3, 4 and 5 to Test, ODI and T20 respectively, then the person was considered to be a T20 fan. In case of a tie between formats, the person was considered to actually like those formats e.g. if a person assigned a rating of 3, 5 and 5 to Test, ODI and T20, then the person was considered to be an ODI as well as a T20 fan. This double and triple counting of cases increased the total count to 238 as represented in Fig. 2. Psychographic profiling indicates that 19, 21, 37, 3, 4, 11 and 5 percent of the sample liked only test, only ODI, only T20, both test and ODI, both test and T20, both T20 and ODI and all three formats respectively.
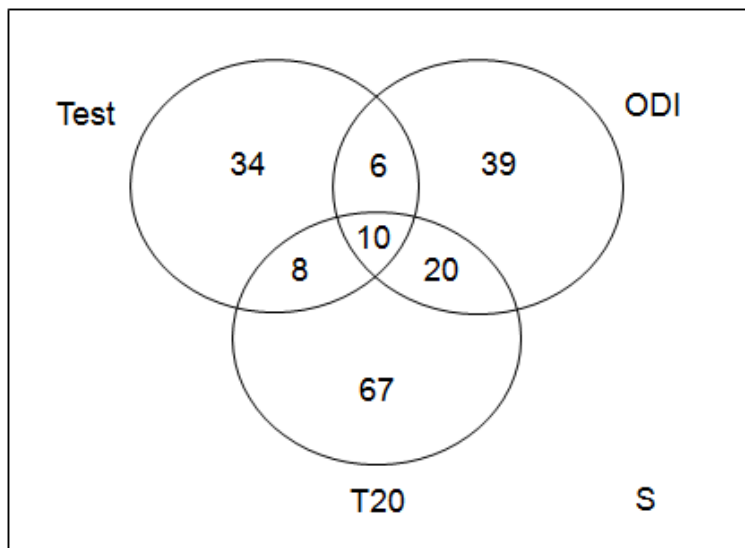
Fig. 2: Venn diagram representing overall liking for 3 different formats of cricket

In order to test representativeness of the sample by χ^2 test for goodness of fit, it was noticed that the ICC survey reported 70, 88, 92 per cent fans globally are interested in Test, ODI and T20I cricket respectively (Media Release, 2018). Since the figures do not add up to 100, this implies that there were many people who were interested in multiple formats like in the present survey. The ICC figures were normalized to 100 and likewise, a person was counted as many times as the number of formats s/he liked.

Table 3: Calculations for χ^2 Test for Goodness of Fit

Category	Present study (f_o)	ICC Survey	Expected frequency as per ICC findings (f_e)	$\dfrac{(f_o - f_e)^2}{f_e}$
Test (T)	58	28	66.64	1.12
ODI (O)	75	35.2	83.776	0.92
T20 (W)	105	36.8	87.584	3.46
Total	**238**	**100**	**238**	**5.50**

Here the data support H_{01} since the observed χ^2 statistic value 5.50 is less than the critical value of χ^2 distribution at 5% level of significance with 2 df (i.e. 5.991). Thus the present sample can be treated as a representative one as it resembles ICC finding.

In HCA, each subject is characterized by certain attributes. It then uses the distance measure to build clusters in such a manner that subjects within a cluster are as close as possible and subjects across clusters are as far as possible. In this analysis each respondent was characterized by the ratings on twelve sub-dimensions. Since the overall rating is nothing but a culmination of these individual ratings, it was pertinent to check consistency among the ratings for 3 formats of the game. On a closer look, it was seen that MTC (**M**ore **T**ime **c**onsuming) and CT (**C**ostly **T**icket & incidentals) lacked any variation i.e. for almost all responses, Test » ODI » T20 for MTC rating and Test « ODI « T20 for CT rating (where a « b / a » b indicate rating for a is less / more than rating for b respectively). Hence these two sub-dimensions under Time and Money dimension (MTC and CT) were dropped in all further analyses here as they showed little discriminatory power. Consequently, H_{04d} was dropped as well. However, this finding warrants a more careful handling of time and money which has

been proposed as a future study. To check the data consistency, 3-means cluster was formed based on 238 responses on 10 sub-dimensions which had the following centroids:

Table 2: Cluster Centroids for 3 Formats of Cricket.

	Clusters		
	T20 (1)	ODI (2)	Test (3)
GD	4.59	3.86	2.04
PR	2.28	3.31	4.30
IBB	4.80	3.51	1.61
IF	4.43	3.40	2.83
NBF	4.80	3.51	2.61
R	4.18	3.77	1.57
ABt	4.89	3.69	1.96
DB	1.52	3.23	4.61
ABw	3.92	3.34	4.43
DNB	3.16	3.31	2.35

By closely looking at the mean value on 10 dimensions, it seemed clusters 1, 2 and 3 are representing T20, ODI and Test respectively. The same characterization was used for classifying the entire data set. Comparing predicted liking with actual liking, only 24 records were found to be misclassified (6 classified to ODI in place of Test, 8 classified to T20 in place of ODI and 10 classified to ODI in place of T20). This possibly shows that ambiguity crept in as respondents could not distinguish between formats while giving their ratings.

These 24 records were not considered while carrying out the influence analysis leaving 160 records for analysis. With 11 measured variables, the sample size seems to be just tolerable (Bentler and Chou (1987); Stevens (1996)) for using the Path Analysis. To measure the internal consistency of this construct, Cronbach Alpha test was conducted for all three formats. All of them showed the consistency measure to be more than 0.7 (viz. 0.72, 0.79 and 0.82 for test, ODI and T20 respectively) which allows carrying out the influence analysis.

RESULTS AND DISCUSSION

To check whether gender influences the liking of a format, χ^2 test for independence was employed using a (m=3) x (n=2) contingency table:

Table 4: Calculations for Testing Independence between Gender and Cricket Format

Gender Vs Cricket format	M Observed freq - f_o (Estimated freq – f_e)	F Observed freq - f_o (Estimated freq – f_e)	Total
Test (T)	42 (47.7647)	16 (10.2353)	58
ODI (O)	63 (61.7647)	12 (13.2353)	75
T20 (W)	91 (86.4706)	14 (18.5294)	105
Total	**196**	**42**	**238**

Using the formula, χ^2 statistic $= \sum_{i=1}^{mn} \frac{(f_o - f_e)^2}{fe}$, where m=3 and n=2, the value came out to be 5.427 which is less than the tabulated χ^2 value at 5% level of significance with 2 df (i.e. 5.991). Hence H_{02} is accepted indicating the liking of a format to be independent of gender.

Similarly, to check whether age influences the liking of a format, χ^2 test for independence was employed using a (m=4) x (n=3) contingency table:

Table: Calculations for Testing Independence between Age Groups and Cricket Format

Cricket format Vs Age group (in Years)	Test (T) Observed freq - f_o (Estimated freq – f_e)	ODI (O) Observed freq - f_o (Estimated freq – f_e)	T20 (W) Observed freq - f_o (Estimated freq – f_e)	Total
≤ 30	25 (36.3109)	46 (46.9538)	78 (65.7353)	149
31-40	10 (8.7732)	12 (11.3445)	14 (15.8823)	36
41-50	10 (6.3361)	9 (8.1933)	7 (11.4706)	26
≥ 51	13 (6.5798)	8 (8.5084)	6 (11.9118)	27
Total	**58**	**75**	**105**	**238**

Here the value of χ^2 statistic came out to be 19.433 which is significant at 5% level of significance (the corresponding tabulated value of χ^2 at 6 df is 12.592). Hence H_{03} is rejected and it can be concluded that the liking of a format seems to be dependent on age. The younger and the older generation appear to like the T20 and test formats more respectively.

Path analytic approach was adopted to carry out the influence analysis for each of the 3 formats (i.e. Test, ODI and T20) where Overall Liking (OL) is modelled against 3 constructs e.g. Result, Excitement and Skill. The observed variables Predictable result (PR) and Guaranteed decision (GD) are functionally clubbed with Result; Innovative batting/bowling (IBB), Innovative fielding (IF), Nail biting finish (NBF) and Restrictions (Fielding, Bowling) (R) are functionally clubbed with Excitement; and Aggressive batting (ABt), Defensive batting (DB), Aggressive bowling (ABw) and Defensive / Negative bowling (DNB) are functionally clubbed with Skill. The measurement model is given below which was analyzed using Amos 18.0 separately for 3 different formats of cricket.
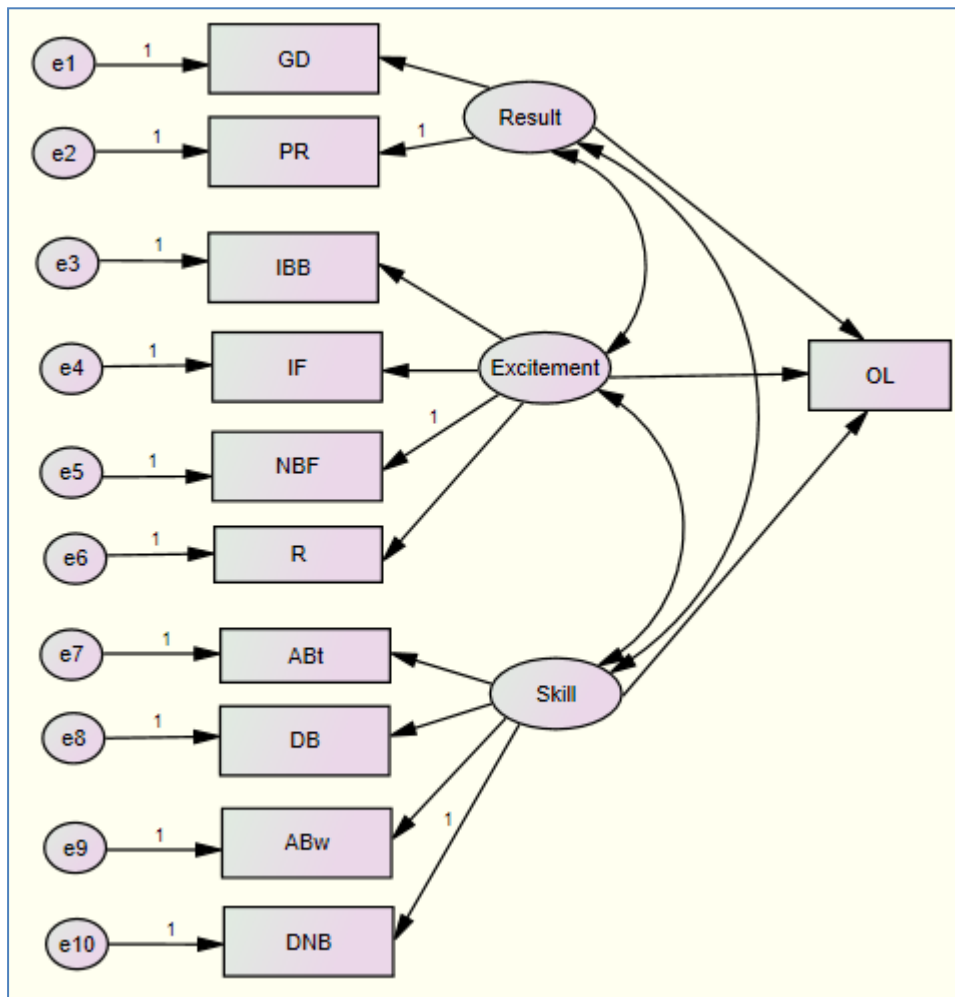
Fig. 3: Path Diagram

Performance Analysis for test matches:

The measurement model indicated an acceptable fit for the data collected. Relevant fit indices are discussed below:

According to Hair, Anderson, Tatham, Babin and Black (2007), the desirable range for root mean square error of approximation (RMSEA) is between 0.05 and 0.08. Additionally, the model is deemed to fit the data well if the parameters - goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normed fit index (NFI) and comparative fit index (CFI) have a value of 0.9 or more. The value of χ^2 model-fit statistics relative to its degrees of freedom should not exceed 2.5 for the model to be usable.

$\chi^2 = 94.24$, df = 40, $\chi^2/df = 2.36 < 2.5$, goodness of fit index (GFI) = 0.91, adjusted goodness of fit index (AGFI) = 0.89, normed fit index (NFI) = 0.9, comparative fit index (CFI) = 0.91 (all are around 0.9) and the root mean square error of approximation (RMSEA) = 0.078 (lying between 0.05 and 0.08). Composite reliability (CR), convergent validity (CV) and discriminant validity (DV) are also investigated to confirm that the constructs are formed reliably. CR is the total amount of true score variance with respect to the total score variance including the measurement error and a score of 0.7 or higher is considered good (Malhotra and

Dash, 2011). In the present case the values of CR are higher than 0.70 in all cases but one (i.e.0.67); however the value is very close to 0.70. Also the average variance extracted (AVE) for each construct are greater than 0.50 as suggested by Fornell and Larcker (1981) (Table 6). CV examines whether the constituent items are measuring the constructs. Hair *et al.* (2007) suggested that standardized factor loadings (λ) should be statistically significant with values 0.5 or higher. The study shows that the indicators had significant factor loadings onto their respective constructs with values ranging between 0.58 and 0.88 and $p < 0.05$ (Table 6), which supports the CV of the construct.

Table 6: Results of the Measurement Model for Test Matches

Construct Items	λ	AVE	CR
Result		0.5045	0.6704
Guaranteed decision (GD)	-0.69		
Predictable result (PR)	0.73		
Excitement		0.5389	0.8231
Innovative batting/bowling (IBB)	0.81		
Innovative fielding (IF)	0.73		
Nail biting finish (NBF)	0.68		
Restrictions (Fielding, Bowling) (R)	0.71		
Skill		0.5479	0.8260
Defensive / Negative bowling (DNB)	0.58		
Aggressive bowling (ABw)	0.75		
Defensive batting (DB)	0.88		
Aggressive batting (ABt)	-0.72		

According to Fornell and Larcker (1981), DV can be assessed by comparing square root of the AVE with the corresponding inter construct squared correlation estimates. From Table 7 it can be concluded that √(AVE) values of all the constructs (the diagonal elements) are greater than the inter construct squared correlations (the off-diagonal elements). So the measurement model demonstrates discriminant validity.

Table 7: Discriminant Validity for Test Matches

	Result	Excitement	Skill
Result	0.71		
Excitement	0.68	0.73	
Skill	0.54	0.64	0.74

According to Teo (2011), the adequacy of the measurement model permits tests of the structural relationships using structural equation model (SEM). The test of the structural model indicated that Excitement (c = 0.62, $p < 0.05$) and Skill (c = 0.68, $p < 0.05$) are significant determinants of overall liking for test matches (Table 8). Result (c = 0.34, $p > 0.05$) is not a statistically significant determinant of overall liking for test matches. The structural model suggests that Skill is the most dominant factor followed up by Excitement.

Table 8: Results of Hypotheses Testing for Test Matches

Hypotheses	Path	Standardized path coefficient	p-value	Result
H_{04a}	Result →Overall liking	0.34	0.370	Accepted
H_{04b}	Excitement → Overall liking	0.62	0.034	Rejected
H_{04c}	Skill → Overall liking	0.68	0.025	Rejected

Performance Analysis for ODI matches:

The measurement model indicated an acceptable fit for the data collected. Relevant fit indices are discussed below:

χ^2 = 98.48, df = 40, χ^2/df = 2.46 < 2.5, goodness of fit index (GFI) = 0.9, adjusted goodness of fit index (AGFI) = 0.86, normed fit index (NFI) = 0.92, comparative fit index (CFI) = 0.93 (all are around 0.9) and the root mean square error of approximation (RMSEA) = 0.068 (lying between 0.05 and 0.08). In the present case (Table 9) the CR values are higher than 0.70. Also the average variance extracted (AVE) for Result and Excitement are greater than 0.50 and Skill is marginally less than 0.5. The study shows that the indicators had significant factor loadings onto their respective constructs with values ranging between 0.62 and 0.84 and $p < 0.05$, which supports the CV of the construct.

Table 9: Results of the Measurement Model for ODI Matches

Construct Items	Λ	AVE	CR
Result		0.5634	0.7204
Guaranteed decision (GD)	0.78		
Predictable result (PR)	0.72		
Excitement		0.5987	0.8561
Innovative batting/bowling (IBB)	0.84		
Innovative fielding (IF)	0.78		
Nail biting finish (NBF)	0.72		
Restrictions (Fielding, Bowling) (R)	0.75		
Skill		0.4713	0.7802
Defensive / Negative bowling (DNB)	0.71		
Aggressive bowling (ABw)	0.62		
Defensive batting (DB)	0.67		
Aggressive batting (ABt)	0.74		

From Table 10, it can be concluded that √(AVE) values of all the constructs are greater than the inter construct squared correlations. So the measurement model demonstrates DV.

Table 10: Discriminant Validity for ODI Matches

	Result	Excitement	Skill
Result	0.75		
Excitement	0.58	0.77	
Skill	0.44	0.54	0.68

Hence, the adequacy of the measurement model permits tests of the structural relationships in the model. The test of the structural model indicated that Result (c = 0.64, $p < 0.05$), Excitement (c = 0.72, $p < 0.05$) and Skill (c = 0.48, $p < 0.05$) are all significant determinants of overall liking for ODI matches (Table 11). The structural model suggests that Excitement is the most dominant factor followed up by Result and Skill.

Table 11. Results of Hypotheses Testing for ODI Matches

Hypotheses	Path	Standardized path coefficient	p-value	Result
H_{04a}	Result → Overall liking	0.64	0.03	Rejected
H_{04b}	Excitement → Overall liking	0.72	0.024	Rejected
H_{04c}	Skill → Overall liking	0.48	0.05	Rejected

Performance Analysis for T20 Matches:

The measurement model indicated an acceptable fit for the data collected. Relevant fit indices are discussed below:

$\chi^2 = 72.32$, df = 40, $\chi^2/df = 1.808 < 2.5$, goodness of fit index (GFI) = 0.93, adjusted goodness of fit index (AGFI) = 0.9, normed fit index (NFI) = 0.94, comparative fit index (CFI) = 0.95 (all are more than 0.9) and the root mean square error of approximation (RMSEA) = 0.055 (lying between 0.05 and 0.08). In this case (Table 12), the CR values are higher than 0.70. Also the average variance extracted (AVE) for Result, Excitement and Skill are all greater than 0.50. The study shows that the indicators had significant factor loadings onto their respective constructs with values ranging between 0.61 and 0.88 and $p < 0.05$, which supports the CV of the construct.

Table 12: Results of the Measurement Model for T20 Matches

Construct Items	λ	AVE	CR
Result		0.5794	0.7278
Guaranteed decision (GD)	0.88		
Predictable result (PR)	-0.62		
Excitement		0.6747	0.8921
Innovative batting/bowling (IBB)	0.84		
Innovative fielding (IF)	0.81		
Nail biting finish (NBF)	0.88		
Restrictions (Fielding, Bowling) (R)	0.75		
Skill		0.5056	0.8009
Defensive / Negative bowling (DNB)	-0.64		
Aggressive bowling (ABw)	0.72		
Defensive batting (DB)	-0.61		
Aggressive batting (ABt)	0.85		

From Table 13, it can be concluded that √(AVE) values of all the constructs are greater than the inter construct squared correlations. So the measurement model demonstrates DV.

Table 13: Discriminant Validity for T20 Matches

	Result	Excitement	Skill
Result	0.76		
Excitement	0.88	0.82	
Skill	0.52	0.44	0.71

Hence, the adequacy of the measurement model permits tests of the structural relationships in the model. The test of the structural model indicated that Result (c = 0.64, p < 0.05) and Excitement (c = 0.82, p < 0.05) are significant determinants of overall liking for T20 matches whereas Skill (c = 0.44, p > 0.05) misses out (Table 14). The structural model suggests that Excitement is the most dominant factor followed up by Result.

Table 14: Results of Hypotheses Testing for T20 Matches

Hypotheses	Path	Standardized path coefficient	p-value	Result
H04a	Result →Overall liking	0.64	0.03	Rejected
H04b	Excitement → Overall liking	0.82	0.014	Rejected
H04c	Skill → Overall liking	0.44	0.12	Accepted

CONCLUSION AND MANAGERIAL IMPLICATIONS

The study does not find any significant link between gender and cricket format which augurs well for cricket. However, the analysis on age versus liking indicates that the younger generation likes the shorter formats more whereas the older generation prefers the test format. So this poses the challenge to ICC in how to make the young and aged fans interested in test and limited over cricket respectively. The second part of this study can aid ICC to deal with this challenge as it identifies the drivers for liking or disliking a particular format. The study establishes the construct REST using CFA for determining overall liking for a cricket format.

SEM for test cricket suggested that Result (constituted by Guaranteed decision and Predictable result) is not a significant indicator of overall liking. In order to make the younger generation interested in cricket, ICC may need to work on these parameters. While ICC World Test Championship is a forward step towards making the game more result oriented, a tiered approach in the championship may infuse more competition. Ray (2018) suggested having three tiers of test cricket each consisting of 4 teams according to their ranking along with promotion and relegation.

SEM for ODI shows that Result, Excitement and Skill are all significantly contributing to its overall liking proving this format to be more balanced with respect to this construct. SEM for T20 reveals that Skill (comprising of Defensive / Negative bowling, Aggressive bowling, Defensive batting and Aggressive batting) is insignificant in explaining this format's overall liking. Older generation may be finding dearth of test of skills where a batsman can bat for 20 overs but a bowler is restricted to 4 overs only with many other fielding and bowling restrictions. ICC may consider relaxing certain restrictions like 4 overs per bowler to facilitate fairer battle between bat and ball.

Even in the context of college basketball in the United States Kelly and Turley (2001) identified quality of the game and outcome of the game as the two most important attributes of service quality. But both these critical service quality attributes are not under the control of marketers or regulators. In the present scenario country specific cricket boards under the tutelage of ICC may vie for achieving higher quality irrespective of formats and leave the outcome of the game to performance on that day. Finally, it can be concluded that genesis of this model (REST) is an important contribution to improve the management and research for games, cricket in particular.

LIMITATIONS AND DIRECTION FOR FUTURE RESEARCH

The current study is based in India which constitutes majority of the billion fan base for the game. The logistic constraints restricted reaching out to more than 184 cricket fans around Kolkata. The same model can be tested on a pan India basis and also on other countries to check its generality. The study rejected the Time and money construct because of their constituents' flat nature. A more pertinent formulation can be to gauge the entertainment value obtained per unit time and money spent. Also, during data collection it was found out that time is a major deterrent especially for test matches. This warrants a more careful handling of this parameter (e.g. session wise ticket or packaging a day's play in an hour's highlight to make more people interested) which is proposed as a future study. Finally, the study dealt with the outcome quality since the fan base can be increased by making more and more people interested in the game. To bring them to the ground, one may need to analyze interaction quality and physical environment quality as per Brady and Cronin (2001).

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Appendix

Questionnaire

Introduction

This is a self-volunteered survey amongst cricket followers with the following objectives:

- Understand how you associate a number of parameters with 3 formats of the game i.e. Test, ODI and T20I
- Assess rating of overall liking for Test, ODI and T20I

Personal Details

Name: _____

Age (in Years): _____

Occupation: _____

Gender: _____

Phone Number: _____

Questions

For each of the following parameters (under **REST**) rate Test, ODI and T20I on a scale of 1 to 5 (1 for less applicability and 5 for more applicability).

Also rate your overall liking for Test, ODI and T20I on a scale of 1 to 5 (1 for least and 5 for most).

Parameters	Test	ODI	T20I
Result			
Guaranteed Decision **(GD)**			
Predictable Result **(PR)**			
Excitement			
Innovative batting/bowling **(IBB)**			
Innovative fielding **(IF)**			
Nail biting finish **(NBF)**			
Restrictions (Fielding, Bowling) **(R)**			
Skill			
Aggressive batting **(ABt)**			
Defensive batting **(DB)**			
Aggressive bowling **(ABw)**			
Defensive / Negative bowling **(DNB)**			
Time & Money			
More time consuming **(MTC)**			
Costly Ticket & incidentals **(CT)**			
Overall liking **(OL)**			

Thank you very much for your precious time and volunteering to provide your inputs to further enrich this beautiful game of cricket.

Note: 1) Innovative: Creating new methods for batting (e.g. reverse sweep), bowling (e.g. slow bouncer) and fielding (e.g. combination catching in the boundary)2) Nail biting: All possible results remain feasible till the very end of the match. 3) Restrictions: Constraints set by the regulation of the game (Example for fielding - number of fielders to be stationed within 30 yard circle and Example for bowling – number of overs a bowler can bowl in an innings)