Evaluating significance of Day-3, Day-4 in rejuvenating Test-Match Cricket.

Hitesh Mangtani*

* Master of Business Administration (MBA) - Sports Management, Symbiosis School of Sport Sciences (SSSS).

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Abstract- A Test Match is like a new novel, an autobiography, or a fictional book we just bought, or about to buy. There is a lot of excitement, a lot of planning, a pinch of emotions, and a jiffy attitude attached to it (in a positive way). The more we read, the deeper we go, it gets even more exciting to a point where we feel so attached and think like we are that player in that very moment, dealing with that situation of the match. Cricket enthusiasts have this belief that test-match cricket has often made them jump from the seats and scream, to be able to feel the joy in that moment, or may even feel the pain as if they had lost by the end of Day 3, 4, or Day 5 of a test match. We are evaluating data for the past 30 years, i.e., b/w 1990-2019, where test match cricket has come a long way into shaping what we call, “modern-day cricket” and yet, we are discussing, thinking and, innovating to be able to save, allegedly the most exciting format of cricket. Alarmings questions have been raised over the sustainability of test-match cricket, not just based on on-ground performance of test-match playing nations, but also by billions+ fans. With this detailed study of International Test Matches, shedding some light on overall performances of respective test-match playing nations, it is investigative to measure the significance of 3rd and 4th day of the Test Match to be able to play a helping hand in rejuvenating the traditional format, in this T20Is era.

Index Terms- Cricket, Test Matches, Rejuvenation, T20.

I. INTRODUCTION

Test-match match cricket has been the oldest format of the sport (Swartz T, 2016). There has been this pre-conceived notion amongst the cricket lovers that, if any team who wishes to be known as a complete team or an overall champion, they need to perform well and win test-matches consistently, both home & overseas matches. Over the years, there have been consistent development(s) in terms of increasing the awareness and importance of the game of cricket amongst the people in different parts of the world, which led to the conceptualization of varied formats, i.e., One-Day International (Izadi M, 2016) and Twenty20 International.

Hence, cricket playing nations have been playing more T20 Internationals in a year (Edgar A, 2020), as compared to test matches which was supposed to be the ultimate “test” for international teams. In a very peculiar yet general sense, a cricket fanatic, would always want their national team to win the test-series either home or away scheduled for that year. Be it Australia, India, England, South Africa, New Zealand, Bangladesh, Sri Lanka, Pakistan, West Indies, or the usual test playing nations. But, now the momentum has shifted from being known as a test-match playing nation to a T20 winning nation or a T20 World-Cup winning nation (Silva, Perera, Davis & Swartz, 2020). It has now raised a lot of questions for the International governing body and the respective management group(s) over the sustainability factor of the format.

II. IDENTIFY, RESEARCH AND COLLECT IDEA

A. The Idea

Giving test-match cricket, as expressive reference by calling it autobiography or a fictional book we are reading (or we wish to read), the data for the past 30 years, i.e., b/w 1990-2019, tells us a lot about how this traditional format, which has been playing a pivotal role in the current generation, or as we call it the “modern-day cricket” (Bagchi A, Raizada S, 2020). Hence, the governing body and respective management group(s) have been working on meeting the demands of the game of cricket, but the followers, enthusiasts, fans & super-fans too (Mangtani H, 2020), in fact by over 1.2 billion fans (ICCA Media, 2018).

Born in 1992 in central India, and being a super-fan since the age of 8-9 years, it becomes even more fascinating because of 1996 World Cup Semi-Finals (Pringle, 1996), 2001 players banned for allegedly appealing excessively, and ball-tampering (Ananth, 2017) and 2003 World Cup Final loss against Australia (Punter, 2017). Interestingly, Australia was occupied maintaining the necessity (Bhattacharya & Smyth, 2003) and their dominance in the International circuit be it the ICC World Cups or any bilateral series (Ramakrishnan, 2011). South Africa was battling the 1999 Match-Fixing Scandal (Ramchand M, 2000). New Zealand (aka Black Caps) were busy working out the team combination in 1992 (Vishwanath G, 2019), and almost a decade later in CWC 2003 met a forfeit (TheGuardian, 2003).

The rest is history we all have witnessed some way or the other, including the introduction of T20 World Cup & its effect on expansion strategies of ICC Members & Associate Members. However, performances of test playing nations significantly impacted the way cricket was being understood and, accepted in various regions of different countries back in those days & now with ICC Future Tour Program 2018-2023. Remarkably, the frequency of test-matches ending early has increased too in the past three decades via draws, or marginally winning by an innings, and maybe largely by runs too (Lenten L, 2008).
Purely from the numbers point of view, the world has witnessed 1250 test-matches b/w 1990-2019 (N=30), an average of 42 matches per year. In comparison to other formats (in this case T20), or we refer to it as the Pre-T20 Era (1990-2004) & Post-T20 Era (2005-2019), a total of 602 test matches were played, an average of 40 test-matches in the Pre-T20 era. However, in the Post-T20 era, 648 test-matches have been played, with an average of 43 test-matches per year.

In a test-match format, results have various versions. First, a test-match ends up in a draw, and the other is when teams win the match by an innings & runs (MWIR). Batsman might like the sound of this one (Christie C, 2012). In the Pre-T20 Era, 114 matches were won by an innings & runs, an average of approx. 8 matches per year. In the Post-T20 Era is 117 matches were won by an innings & runs, with an average of 8 matches per year. A total of 231 matches were won by an innings & runs in 30 years.

Speaking from the results standpoint, in the Pre-T20 Era (1990-2004), 179 matches resulted in a draw, i.e., an average of 11 matches per year. In the Post-T20 Era (2005-2019) 142 matches resulted in a draw, an average of 9 matches per year. In 30-years, 321 matches have resulted in a draw (Lenten L, 2008).

Bowlers will celebrate a bit here (Christie C, 2012). In the Pre-T20 Era (1990-2004), 167 matches were won by wickets, i.e., an average of 11 matches per year. Post-T20 Era (2005-2019), 148 matches were won by wickets, an average of 10 matches per year. Total of 315 matches were won by wickets b/w 1990-2019.
Out of the 1250 tests, 375 matches were won by runs (MWR), an average of 12 matches per year. In the Pre-T20 Era (1990-2004), 137 matches were won by runs with an average of 9 matches per year, and in the Post-T20 Era (2005-2019), 238 matches were won by runs, an average of 16 matches per year.

Approaching Day-4, in the Pre-T20 Era (1990-2004) 162 test-matches ended on Day-4 (MED4), an average of 11 matches per year. In the Post-T20 Era (2005-2019) are significantly higher, i.e., 208 matches ended on Day-4, an average of 14 matches per year. In 30-years, 370 matches (29.6%) ended on Day-4.

Vince Lombardi - “Winning isn’t everything, but wanting to win is”. The teams can win on any given day of the test-match. Speaking of days, in the Pre-T20 Era (1990-2004), a total of 59 matches ended on Day-3 (MED3) of the test-match, an average of 4 matches per year. Interestingly, in the Post-T20 Era (2005-2019), 88 matches ended on Day-3, an average of 6 matches per year. Therefore, in 30-years 147 matches (11.8%) ended on Day-3.

Coming to the last day of a test-match, i.e., Day-5, in the Pre-T20 Era (1990-2004) 366 test-matches ended on Day-5 (MED5) with an average of 24 matches per year. Surprisingly, in Post-T20 Era (2005-2019) 339 test-matches ended on Day-5 with an average of 22 matches per year. In the past three decades (1990-2019), 705 test-matches (56.4%), ended on Day-5 of the match.
III. STATISTICAL STUDIES AND FINDINGS

B. Selection of variables.
For this precise statistical evaluation, a sample of 30-years of International Test-Matches has been taken into consideration, i.e., from 1990 till 2019. The sample has been further divided into two dependent groups to analyze the evolution of International Test-Match cricket in the era before the T20 format was introduced, i.e., Pre-T20 Era (representing 15-years, 48.16% TTM), and the era after the T20 was introduced, i.e., Post-T20 Era (representing 15-years, 51.84% TTM). Matches Ending on Day-3 (MED3), Matches Ending on Day-4 (MED5), and Matches Ending on Day-5 (MED5) are independent variables.

C. Data Collection.
To be able to enjoy cricket recreationally, and live a super-fan’s life (Mangtani H, 2020), it gives a bit of diagnostic help & makes it reasonably easier for data collection, as well as judge the reliability of the data (Swart T, 2016). The primary source of the collected data has been www.howstat.com and Microsoft Excel Professional Plus 2016, has been the primary analytical tool for collecting, collating & preparing graphical representation(s) used in this study for evaluating the significance of Day-3, Day-4 on the rejuvenation process of Test-Match format of the sport.

Lenten L (2008), discussions rigorously evaluate the “influence over the regularity of draws” which may also be the reason, “why too many test-matches are ending relatively early”. Figure 11, and figure 12, exhibit the trend of Matches Ending on Day-3 (MED3) in the Pre-T20 & Post-T20 Era. Furthermore, figure 13, and figure 14, reveal the trend of Matches Ending on Day-4 (MED4) in the Pre-T20 & Post-T20 Era. Lastly, figure 15, and figure 16, express the trend of Matches Ending on Day-5 (MED5) in the Pre-T20 and Post-T20 Era.

D. Statistical Analysis.
Descriptive statistics like Mean, Standard Deviation, Skewness, and Kurtosis were measured to narrate the essence of data. MED3: An Independent Samples t-Test has been conducted using a non-directional testing approach, to evaluate if the Matches ending on Day-3 (MED3) of a test-match are not-significantly different from the Matches ending on Day-5 (MED5) of a test match, considering both Pre-T20 and Post-T20 Era of International cricket, or if the Matches ending on Day-3 (MED3) of a test-match are significantly different from the Matches ending on Day-5 (MED5) of a test match, considering both Pre-T20 and Post-T20 Era of International cricket. Level of significance 95%.

MED4: Simultaneously, Independent Samples t-Test has been directed to further evaluate and statistically analyze if the Matches ending on Day-4 (MED4) of a test-match are not-significantly different from the Matches ending on Day-5 (MED5) of a test match, considering both Pre-T20 and Post-T20 Era of International cricket, or if the Matches ending on Day-3 (MED4) of a test-match are significantly different from the Matches ending on Day-5 (MED5) of a test match, considering both Pre-T20 and Post-T20 Era of International cricket. Level of significance 95%.

E. Results
In advance, Shapiro-Wilk’s test (Shapiro & Wilk, 1965; Razali & Wah, 2011) and a visual inspection of their histograms, normal Q-Q plots, and box plots showed that the test-matches were approximately normally distributed for MED3, MED4 & MED5. None of the assumptions were violated for MED5 with skewness of -0.270 (SE=0.427) and kurtosis of -0.166 (SE=0.833), for MED4 with skewness of -0.354 (SE=0.427) and kurtosis of -0.284 (SE=0.833), and MED3 with skewness of 0.136 (SE=0.427) and kurtosis of -0.146 (SE=0.833) (Cramer, 1998; Cramer & Howitt, 2004; Doane & Seward, 2011).

On further investigating the data sets with MED5 and MED3 in consideration, it was evident that Matches ending on Day-3 (MED3) \( M=4.90, SD=2.69 \) are significantly different from the Matches ending on Day-5 (MED5) \( M=23.50, SD=4.69 \) considering the Pre-T20 Era and Post-T20 Era of International cricket (Refer Table 1.). Based on our \( t(58)=18.81, p=0.00 \), this is a statistically significant test. Hence, we have rejected our null hypothesis \( H_0(MED3): \mu_1 = \mu_2 \).

Table 1. Descriptive Statistics for MED3, MED4 and MED5

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Std. Error Mean</th>
<th>Skewness</th>
<th>Std. Error Skewness</th>
<th>Kurtosis</th>
<th>Std. Error Kurtosis</th>
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<tr>
<td>MED3</td>
<td>4.90</td>
<td>2.69</td>
<td>.492</td>
<td>.136</td>
<td>.427</td>
<td>-.146</td>
<td>.833</td>
</tr>
<tr>
<td>MED4</td>
<td>12.33</td>
<td>4.31</td>
<td>.788</td>
<td>-.354</td>
<td>.427</td>
<td>-.284</td>
<td>.833</td>
</tr>
<tr>
<td>MED5</td>
<td>23.50</td>
<td>4.69</td>
<td>.857</td>
<td>-.270</td>
<td>.427</td>
<td>-.166</td>
<td>.833</td>
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Table 2. MED3 t-Test Results

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<th>( \alpha )</th>
<th>df</th>
<th>( t )</th>
<th>( p )</th>
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<tbody>
<tr>
<td>MED3</td>
<td>0.05</td>
<td>58</td>
<td>18.81</td>
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Table 3. MED4 t-Test Results

<table>
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<th>( \alpha )</th>
<th>df</th>
<th>( t )</th>
<th>( p )</th>
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<tbody>
<tr>
<td>MED4</td>
<td>0.05</td>
<td>58</td>
<td>9.58</td>
<td>0.00</td>
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</tbody>
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F. Discussion
In the quest of analyzing data sets IBM SPSS Statistics (V. 21) predictive analytics software was used.

The statistical evaluation [MED5 and MED3 data sets] supports the idea that, Matches ending on Day-3 of a test-match are not exceedingly valued in rejuvenating Test-Match Cricket, as significantly as the Matches Ending on Day-5.

Likewise, the statistical evaluation [MED5 and MED4 data sets] supports the idea that, Matches ending on Day-4 of a test-match are not exceedingly valued in rejuvenating Test-Match Cricket if weighed against Matches Ending on Day-5.
Emotions of Peter Lalor, “Test Match Cricket has so many stories, so many little narrative lines that run through each athlete’s innings, where they are in life, where they are in their career, and where they are in the contest” (The Test: A New Era for Australia’s Team, 2020).

Sentiments of Harsha Bhogle “I like many things about Test Match Cricket. The fact that you play time. We go through difficult phases in life, but you ride these difficult times in search of better times thereafter. Test Match Cricket is exactly like that” (The Test: A New Era for Australia’s Team, 2020).

Finding from the study conducted by Lenten L, (2008) conclude from %age point of view that the increasing rate of recurrence of MED4 & MED3 is precisely noticeable over the period of 26 years, i.e., 1981–2007 with a growth rate noticeable up to 40% (MED4) and in-case of MED3 it is close to 15%. In addition to the findings of Lenten L, (2008), the growth rate of MED3 and MED4 b/w 2005-2019 are 7.04% and 16.64%, compared to 4.72% and 12.96% b/w 1990-2004 respectively. Therefore, in 30 years, i.e., 1990-2019 MED3 and MED4 combined have shown a growth of 41.4%.

While surveying on an individual level employing an explicit questionnaire: “Public Sentiments on International Cricket” using Google Forms for data collection, asking the following questions to better understand and get a glimpse of the popularity of Cricket in the people’s mind. The findings of this questionnaire would further benefit in potentially determining the global money-making and diplomacy aspect of The Business of Cricket (Balasubramanian and Santhanam, 2014).

1. On a scale of 1 to 5, how often do they follow or watch Twenty-20 Internationals (T20Is)?
2. On a scale of 1 to 5, how often do you follow or watch One-Day Internationals (ODIs)?
3. On a scale of 1 to 5, how often do you follow or watch test matches?
4. Would they prefer T20I matches over ODI’s or Test Matches?
5. On a scale of 1 to 5, how often do they prefer watching T20Is over ODI’s or Test matches?
6. Would they prefer One-Day International matches over T20I’s or Test Matches?
7. On a scale of 1 to 5, how often do they prefer watching ODI’s over T20I’s or Test matches?
8. Would they prefer International Test Matches over T20I’s or ODI’s?
9. On a scale of 1 to 5, how often do they prefer watching International Test Matches over T20I’s or ODI’s?
10. On a scale of 1 to 5, how often do they prefer watching following ‘days’ of Test Matches?
11. Do they wish, if a test-match ends or finishes on following ‘days’?
12. On a scale of 1 to 5, would they like it or not if a test match ends/finishes on following ‘days’?
13. On a scale of 1 to 5, how likely are you to spend on T20Is, ODI or Test Matches via stadium tickets, or TV subscriptions, or OTT subscriptions for live matches/highlights?

Measurement Scale:
1-Not at all likely, 2-Less Likely, 3-Sometimes, 4-Most Likely and 5-Extremely Likely.

- 43% respondents ‘most likely’ watch/follow T20Is, and 34.3% would watch it ‘sometimes’.
- 38.8% partakers ‘most likely’ watch/follow ODI’s, and 28.4% would watch it ‘sometimes’.
- 22.4% contributors ‘most likely’ watch/follow Test-Matches, and 19.4% are ‘extremely likely’ to watch/follow.
- 43.3% respondents would ‘not prefer’ watching T20Is over ODI’s or Test Matches & 35.8% would ‘prefer’ it.
35.8% respondents ‘sometimes’ prefer T20Is over ODIs or Test-Matches & 25.4% would ‘most likely’ prefer T20Is.

25.4% contributors are ‘extremely likely’ to prefer Test-Matches over T20Is or ODIs, & 29.9% would ‘sometimes’.

41.8% partakers ‘prefer’ watching ODIs over T20Is or Test Matches & 26.9% ‘do not’.

19.4% contributors are ‘extremely likely’ to watch Day-1 of Test-Matches & 46.3% would ‘most likely’ the 1st day. Whereas, 35.8% contributors would ‘sometimes’ to watch Day-2 of Test-Matches & 19.4% will ‘most likely or less likely’ watch Day-2 respectively.

29.9% partakers ‘sometimes’ prefer ODIs over T20Is or Test Matches & 26.9% would ‘most likely’ prefer ODIs.

26.9% contributors are ‘most likely’ to watch Day-3 of Test-Matches & 23.9% would ‘sometimes’ watch Day-3. Additionally, 31.3% contributors would ‘most likely’ watch Day-4 of Test-Matches & 19.4% ‘sometimes’ watch Day-4.

46.3% contributors ‘prefer’ Test-Matches over T20Is or ODIs, and 31.3% ‘do not’.

23.9% contributors are ‘extremely likely’ to watch Day-5 of Test-Matches & 37.3% are ‘most likely’ to watch the Day-5.
77.6% contributors wish Test-Matches should ‘not end’ on Day-1, as well as 79.1% feel Test-Matches should ‘not end’ on Day-2 as well.

67.2% contributors wish Test-Matches ‘should end’ on Day-5, whereas 17.9% aren’t sure if Test-Matches ‘should end or not’ on Day-5.

59.7% contributors wish Test-Matches should ‘not end’ on Day-3, whereas 35.8% feel Test-Matches ‘should end’ on Day-4, and additionally 14.9% are in favor of Matches ending on Day-3.

Now if we add a cost factor to this evaluation, the tale of progression of Test-Match Cricket (Chatterjee, Raizada 2020) can get a bit more interesting. 86.6% of the partakers believe that cost is a critical factor to run business operations in Cricket.

29.9% contributors are ‘extremely likely to pay’ to watch T20Is via Stadium Ticket, or TV Subscriptions or OTT Subscriptions, and additionally 35.8% contributors are ‘very likely to pay’ for T20Is via multiple mediums.
I would also thank all 67 participants of the questionnaire, *Public Sentiments on International Cricket*, who have helped in sharing the observations of the people who are dynamically associated with all formats of the sport, not just on & off the field of play but are also critical for further enhancement and futuristic development of the business and administration aspect of Sports.

VI. REFERENCES


AUTHORS

First Author: Hitesh Mangtani, MBA-Sports Management, hiteshmangtani04@gmail.com.

Correspondence Author: Hitesh Mangtani, MBA-Sports Management, hiteshmangtani04@gmail.com.