Correlating Gender Sensitivity and Learning Traits in Higher Education

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Abstract

In this paper we analyse a survey of MBA students for gender sensitivity and its correlation to learning traits in MBA students. We find the survey data from 78 South Karnataka MBA students support the commonly accepted hypothesis that a well adjusted student is also gender sensitive; there are 58 questions in the study which define the notion of *well adjusted student* and 4 questions that define *gender sensitiveness*. We also find the MBA students in South Karnataka are well adjusted and not the typical stereotypes portrayed in the Indian media. We use R to correlate four gender related answers to other learning trait answers and present it with our insights. We also use Welch's t-test to identify differences in opinion between the genders. Although correlation is not causation, it is our best statistical indicator of the student psyche. Using this study as a basis, we suggest ways to improve gender sensitivity in higher education to meet the demand for a well balanced gender sensitive global workforce.

Keywords: gender, higher education, R, statistics, student awareness

INTRODUCTION

As India moves into the 21st century and a global economy, and specifically as Indian women enter the global workforce, we need to make sure our education has inculcated an right background of Gender equality expected of the workforce in the Western multinationals (Sheryl Sandberg TED Talk 2010). In a series of essays on Indian Education system, Albach (2012) presents a depressing view of our education system - it is a relic from the past, in dire need of changes.

We work with this hypothesis: A *well adjusted* student is also *gender sensitive*. Where, a well adjusted student is one who *enjoys studying* for MBA with *pride* in the learning, believes in *empowering* the society, goes beyond the syllabus to be an all rounder; and a *gender sensitive* student is one who, believes in the professional world, there is no place for stereotype bias. We also find that stereotyped gender bias does not hold in South Karnataka, the students we surveyed show less gender bias than is portrayed in the media.

We use the t-test to identify different in opinion between genders, and found: We found 8 questions where male and female differed, viz. the females are more from small town rural area, vernacular background, feel more strongly about gender equality, they write more, but less likely to read online news, and lack of future entrepreneur plans compared to boys.

We take the scientific approach to study Gender in student psyche and its effects on their learning styles. We statistically analyse a survey of student learning habits, break it down into factors, and study correlations using R. Using the correlations, we get insights into gender sensitivity of students, and how an education institute can make its students more sensitive to the global gender issues.

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Literature survey

In the age of statistical machine learning (Domingos 2012), the old adage "*Correlation is not causation*" has been replaced with the new maxim "*Correlation is not causation, but it is a pretty good statistical indicator of reality*" with a wide range of applications in Marketing and predicting consumer behaviour.

In our analysis of the survey in R, we amortize the spread with a large number of questions in order to minimize the distortion effect from Campbell's Law. Campbell's Law states that (Campbell 1976) "*The more any quantitative social indicator (or even some qualitative indicator) is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor."*

Mueller (2004) states that Gender gaps in Entrepreneurship traits were the largest in Advanced Economies, and least in developing countries. In our study, we have two opposing factors affecting the Gender gap correlation with student aspirations: on the negative side, we have India as a developing country and expect a small correlation; on the positive side, MBA students are not a random sampling of the population, but those whose aspirations are aligned with the developed world. Mueller further states that Gender gaps are reversed in higher education institutes in developing world, with more females than males enrolling more for higher education. Mueller compares the Gender gap with GDP across the countries, something we are unable to do with a smaller survey.

THE SURVEY AND COMPUTATION

We use the data from a Google forms survey of MBA students at JKSHIM, NITTE in South Karnataka, India. We received the response from 78 students, which we analyse using R. There were 62 questions, of which 4 were about gender sensitivity (Kavya et al. 2014). We factored the questions into categories based on extensive factor analysis (Kavya 2015), and in concentrate on the Gender category.

We compute the correlations using R's correlation matrix function corr with *pearson*'s method as default. R also has two more methods of computing correlations: *kendall* and *spearman*, which we didn't use as we assume our data to be normally distributed. In the paragraphs below, we don't make any general claims; all statements are qualified with this suffix "*are statistically correlated in our sample*." The R code to analyse the survey is given in the appendix.

T-TESTS AND CORRELATIONS

To find differences in opinions between the genders, we conducted Welch's t-test, looking for difference in means between male and female with p-value < 0.05 at 95% confidence interval. We found 8 questions where male and female differed significantly, the opinions distributions for both 48 male (thin red) and 29 female (thick green) are shown graphically below. The means are shown as vertical lines in the graph.

In summary, females feel strongly about gender equality (graph 1), males have larger dreams Post-MBA (graph 2).

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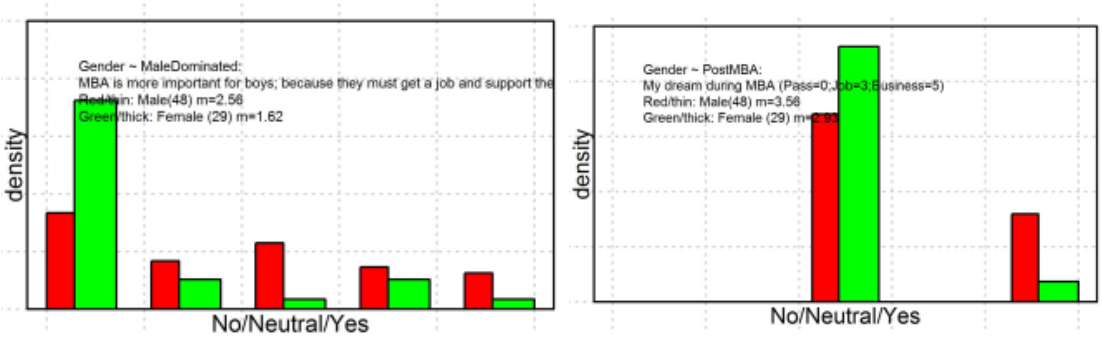
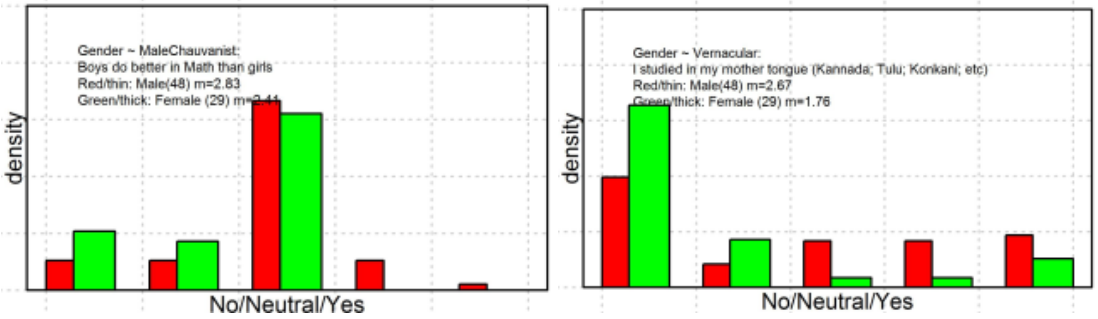
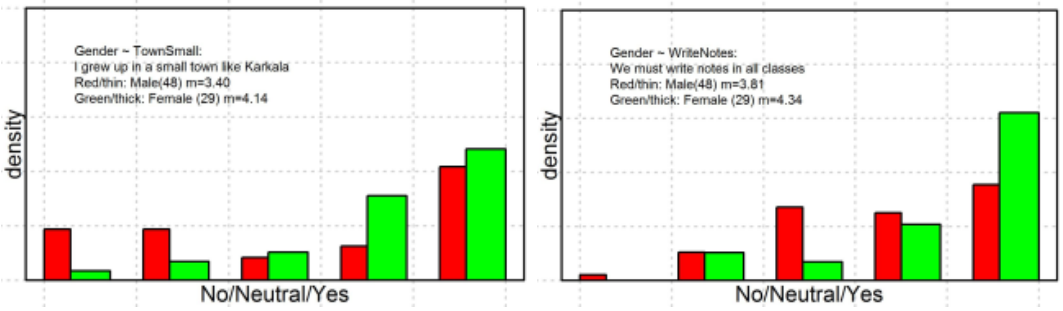


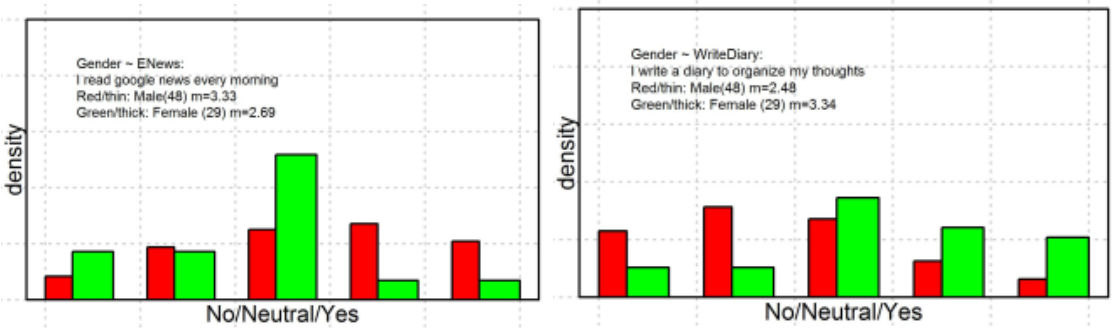
More females feel boys and girls are equal in math (graph 3), and more males are from vernacular background (graph 4).



More females write notes in class (Graph 5), and more females grew up in small town (Graph 6).



Less females read E-news (graphs 7), but more females write diary (Graph 8).



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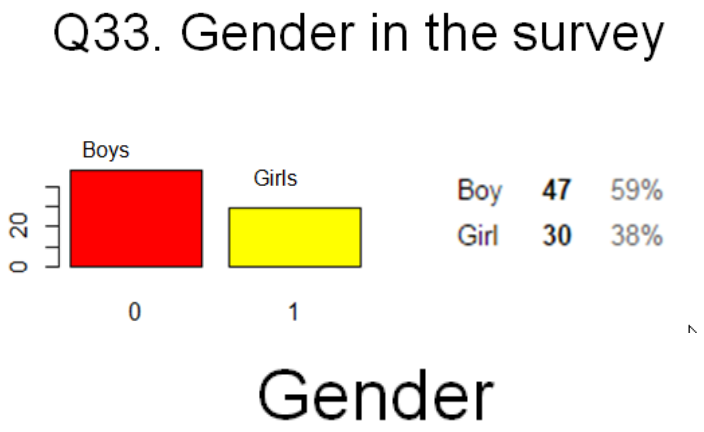
Correlations

1. [Gender] Girls write diaries, grew up in small towns, write notes in classes, prefer external exams to internal exams, don't think MBA is more important for boys (only), don't have entrepreneurship dreams after MBA, studied in English, don't read E-News in the morning, don't believe boys do better in math than the girls.



X = Gender: (Girl=1,Boy=0)

Positive +

+0.336 WriteDiary - I write a diary to organize my thoughts
+0.244 TownSmall - I grew up in a small town like Karkala
+0.237 WriteNotes - We must write notes in all classes
+0.219 ExamExt - External exams are better than internal exams?

Negative -

-0.328 MaleDominated - MBA is more important for boys ..
-0.288 PostMBA - My dream during MBA (1=pass mba, 3=good job, 5=start business)
-0.285 Vernacular - I studied in my mother tongue (Kannada; Tulu; Konkani; etc)
-0.258 ENews - I read google news every morning
-0.241 MaleChauvanist - Boys do better in Math than girls

2. Chivalrous students: Students who treat girls with care, listen more than speak English, read E-News in the morning, read comics to improve their comprehension, like big classes, don't like to be more liberal, prefer to study on weekends also, are unhappy with MBA, don't have true friends in college, and don't read late into the night.

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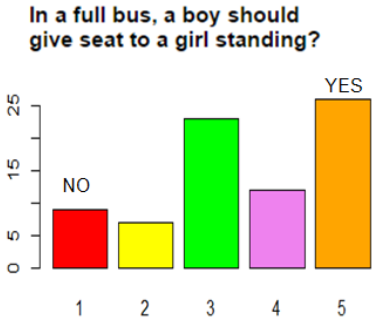
Q04. Chivalry



1	9	11%
2	7	9%
3	23	29%
4	12	15%
5	27	34%

Chivalry

X = Chivalry: In a full bus; a boy should give seat to a girl standing?

Positive +

+0.317 Listening - Listening is more important than speaking English
+0.267 ENews - I read google news every morning
+0.248 ReadComics - Reading comics helps in MBA comprehension
+0.234 ClassBig - I like big classes

Negative -

-0.1959 Conservative - Our college needs to be more liberal
-0.1957 BigWeekend - Saturdays should be holiday so we can go home
-0.1420 MBAHappy - MBA classes give me joy and hope
-0.0989 FriendsTrue - College friends are true friends
-0.0902 SleepRead - I sleep late and read at night

3. [Male Dominated] Students who believe MBA is more important for boys, also studied in vernacular languages, expect the college to get them a job, prefer bigger classes, and believe boys are better at Math than girls, don't like to learn English Literature, mostly boys, who don't like to ask questions in class, dress in old fashion, don't like to debate after seminars.

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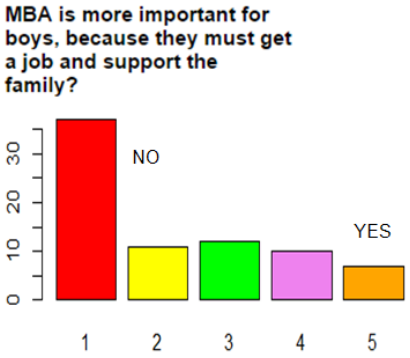
Q05. MaleDominated



1	37	47%
2	12	15%
3	12	15%
4	10	13%
5	7	9%

MaleDominated

X= MaleDominated: MBA is more important for boys;
because they must get a job and support the family?

Positive +

+0.284 Vernacular - I studied in my mother tongue (Kannada; Tulu; Konkani; etc)
+0.263 JobByCollege - It is the college's responsibility to do placements.
+0.258 ClassBig - I like big classes
+0.246 MaleChauvanist - Boys do better in Math than girls

Negative -

-0.331 EngLit - English Literature should be taught in MBA
-0.328 Gender - My gender (Girl=1,Boy=0)
-0.273 Inquisitive - We should ask more questions in class
-0.237 OldDrs - Dress code in college is old fashioned
-0.235 Debate - Seminars must include debate at the end

4. [Male Chauvinism] We notice that students, who believe boys do better in math, have things to do outside of college, believe MBA is more important to boys, don't speak English as much as listen, and stay up late; don't study in a group, don't meditate, whose parents are not proud of them, and lack true friends in college.

Q06. MaleChauvinist

1	12	15%
2	10	13%
3	51	65%
4	5	6%
5	1	1%

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Male Chauvinism

X= MaleChauvanist: Boys do better in Math than girls

Positive +

+0.278 Hobbies - I have hobbies outside of studies to keep me busy
+0.246 Listening - Listening is more important than speaking English
+0.246 MaleDominated - MBA is more important for boys;..
+0.209 SleepRead - I sleep late and read at night

Negative -

-0.241 Gender - My gender (Boy=0,Girl=1)
-0.179 ProudParent - My parents are more proud of my MBA than me.
-0.165 Meditate - I meditate to calm my mind and focus attention
-0.141 GrpStudy - I study in a group after college hours
-0.136 FriendsTrue - College friends are true friends

CONCLUSION

The survey shows that a well adjusted student is also gender sensitive. We have identified several traits that are correlated to gender bias and gender sensitivity in students. We suggest colleges adopt the following techniques which are in use by the gender sensitive students who are ready to join multi-national workforce right after graduation.

That all students learn to write a diary and meditate on their thoughts, read after college, read comics and English Literature to find out about other cultures, write notes in class. They must read E-news every morning. They must take up English speaking classes so everyone is able to communicate effectively.

The college make efforts to make the student feel happy about their MBA. The students try to find good friends in college that they can trust. They not depend on college to get them a job. They should be encouraged to talk in class and ask questions and come out of their closed minded shell. They must participate in debates and learn to accept other points of views in seminar.

From the t-tests, we find: girls must be encouraged to be entrepreneurs and read online news like the boys, while the boys must be encouraged to write more like the girls.

FUTURE WORK

For future work, we need to expand the survey to more students, cover more diversity, identify spurious factors to reword question to remove surveyor bias (if any), correlate academic performance, placements with gender sensitivity.

Our questions need to be more carefully worded to separate some of the traits which seem to occur both positively and negatively. We will also try to cross probe and find out the causes of gender bias, admittedly this task is more difficult for people to answer than for us to infer.

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References

Albach, "*A Half-Century of Indian Higher Education: Essays by Philip G Altbach*", Ed. Pawan Agarwal, SAGE publications, 2012.

Sheryl Sandberg, *Why we have too few women leaders*, TED Talk 2010. Retrieved from http://www.ted.com/talks/sheryl_sandberg_why_we_have_too_few_women_leaders

Campbell, Donald T., *Assessing the Impact of Planned Social Change*, The Public Affairs Center, Dartmouth College, Hanover New Hampshire, USA. December, 1976.

Mueller, Stephen L. "*Gender Gaps in Potential for Entrepreneurship Across Countries and Cultures*" Journal of Developmental Entrepreneurship 9.3 (Dec 2004): 199-220. Retrieved from http://search.proquest.com/business/docview/208440340/D99FC37D0FC14BD7PQ/7?accountid=nn

Kavya M N, Nishita Rai, Jovita M, Nikitha F, Laxmi N, Meet A, "*R for MBA*", Techbugs workshop, JKSHIM, NITTE, India 8/2014.

Shreyashree, Vaishali Kadri, Kavya M N, "*A Statistical Approach to Modernize the Indian Higher Education System* "NITTE International Management Conference, JKSHIM, NITTE, India 12/2014.

"*The R Project for Statistical Computing*", Retrieved from http://www.r-project.org/, Nov 2014.

Google Survey Form and CSV data, Retrieved Nov 12, 2014, https://docs.google.com/forms/d/13XpuahZIFhi9Ik4ZJeDX-tBAe5lTJPhyKlGAb8qoctc/viewanalytics

Pedro Domingos, "A Few Useful Things to Know about Machine Learning", Communications of the ACM, Volume 55 Issue 10, October 2012, Pages 78-87, ACM New York, NY, USA, Retrieved from http://www.astro.caltech.edu/~george/ay122/cacm12.pdf and http://dl.acm.org/citation.cfm?id=2347755