

**An Experimental Study on factors affecting the Multiple Intelligences of MBA students  
with the help of Informational Technology**

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**ABSTRACT**

According to most of the psychologists, the human intelligence can't be count by only one aspect, as it reflects through multiple ways. And that's why the concept of Multiple Intelligences has been come into consideration. But when it comes to students, then how can it be affected by various factors and what are they? - is the question to study. As being the part of this educational system, authors try to explain these factors through an experimental study reflected in this research paper. Along with this, authors also try to describe the role; IT plays to help the academic researches, through the same.

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**Key Words:** Competencies, Demographic Factors, Human Intelligence, Information Technology, Multiple Intelligences etc.

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**Introduction**

*Transition to Multiple Intelligences (MI)*

When it comes to Intelligence, there are various views of different people on this issue. Generally there are two aspects of this term- General and Technical. Psychologists and philosophers put technical aspect. The word Intelligence is derived from the Latin word- Intelle-gere which means 'To pick out'. Psychologists and Philosophers try to explain this complex concept since centuries. Many experts tried to define this concept, some of them are- 'It is what the tests of intelligence tests' (Boring, 1923), 'The aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment' (David Wechsler, 1944), 'It is an innate, genera, cognitive ability of an individual' (Burt, 1955), 'An ability to deal with cognitive complexity' (Linda Gotterfredson, 1997), 'It is an ability to solve problems or to create products that are valued within one or more cultural settings' (H Gardner, 1999) etc.

This journey of the concept of Intelligence started from philosophy first. With the further works of philosophers like Bacon, Hume & Locke, it is moved to the psychology. Here this term shifted as a competency. The psychologists like Stanford Benit, Kaufman, Wechsler &

others developed the concept known as IQ (Intelligence Quotient). Then Psychometric Tests are derived to get the exact intelligence level of a particular person. Later the psychologists like Ryle, H Gardner, Sternberg and others started to realize that there is no single competency in human being which leads to understand the complete intelligence of him. So they explain the concept through Multiple Competencies i.e. Multiple Intelligence. Sternberg derived the Triarchic Theory of Intelligence which consists-Practical, Experiential & Componential (Sternberg 1997) while H Gardner derived the Multiple Intelligence Theory (Gardner 1999). Then Perkins derived theory of intelligence consisting three intelligences namely Neural, Experiential and Reflective etc. (Perkins 1995)

*Thought of Gardner's Multiple Intelligence Theory*

If you ask the H Gardner, how & why he derived this theory- the answer will be- 'I don't know' (H Gardner, 2003). He got this concept in 1979, when a group of researchers from Harvard got a grant from Dutch Foundation and asked to study on the project called- Project on Human Potential. Gardner got interesting assignment in that as to write a book on what had been established on human cognition through biological and behavioral sciences. Since then the concept of Multiple Intelligence started to get its shape and a book 'Frames of Mind' was received in 1983. In this concept he proposed that it is based on studies not only of normal children and adults but also by studies of gifted individuals, of persons who have suffered brain damage, of experts and virtuosos, and of individuals from diverse cultures. In order to consider all the aspects of abilities and talents possessed by humans, he suggests that people don't have only the intellectual capability but different sets of intelligences. . He thinks that the person who has relatively independent existence and particular cognitive arena of knowledge is associated with several kinds of intelligences. In his book Frames of Mind he proposed seven kinds of intelligences which are basic. With further studies, in his next book 'Intelligences Reframed'- he added more. But basically a person can be classified on the eight basic intelligences. Those are:

*Linguistic Intelligence:* as the name suggests, this kind of intelligence refers to language functions of human being i. e. listening, speaking, reading and writing (Gardner 1999). It emphasizes the performance of a person in fluent and efficient use of language to describe various incidents & events, express ideas & thoughts and ability to communicate with others. Persons strong in this intelligence are mostly linguists, authors, teachers, lawyers etc.

*Logical & Mathematical Intelligence:* This kind of intelligence mostly deals with the abilities of person like to compute, to analyze, reasoning, to forecast, to predict and to

conceptualize. It determines the individual's performance in problem-solving, analyzing and conceptualizing. People having hold in this kind are excellent in handling difficult problems, in statistical & mathematical complications etc.

*Interpersonal Intelligence:* This is that kind of intelligence which preferably refers with the ability of a person to understand & realize other human beings, to interact & to deal with other persons in constructive & convincing manner (Gardner 1999). Such people are good (verbally) communicators, proficient non verbal communicators, they understand emotions & feeling of people, so excellent conciliator, mediator and negotiator.

*Intrapersonal Intelligence:* Inversely to the interpersonal intelligence, this kind of intelligence deals with the ability of an individual to realize his own feelings, emotions, to precise with self-reflections. These people are having excellent self-awareness, clearly understand the basis for feelings and motivations also they are good to analyze own strengths and weaknesses.

*Visual-spatial Intelligence:* This kind of intelligence deals with abilities of a person to identify, to memorize the shapes, designs, structures and various graphically sensitive models (Gardner 1999). People who are strong in this intelligence are good designers, architects, animators.

*Bodily Kinesthetic Intelligence:* This intelligence type mainly relates with the body control, physical balance & movements, physical abilities (Gardner 1999). People with these strengths are building their career as dancers, gymnast, athletes, fire-fighters, fishers, drivers where the co-ordination of body parts & movements.

*Musical Intelligence:* The ability to realize the depth of music, to recognize & mumbling the music tones easily, to understand the tonal & rhythmic patterns are the qualities belong to this type of intelligence (Gardner 1999). People with such abilities generally found as composers, singers, music directors, music analysts or experts, voice coaches & advisors etc.

*Naturalistic Intelligence:* It is the earliest addition by the Gardner with the above seven intelligences and face the more resistance than others. This type deals with the abilities of people to understand the nature & its minor reforms, no interest in subjects which doesn't deal with nature also high awareness, sensitivity about nature & environment, better understanding of various species in environment. People with these qualities generally found as biologists, biotechnologists, bird watchers or related works, may be in animal channels, forest & jungle experts etc.

*Existential Intelligence:* Gardner extended intelligence to existential in 1994-95 (Gardner 2003). It is related to philosophical views of life. It possesses the analytical abilities. People possessing this intelligence are generally found authors, poets and especially thinkers or philosophers.

In light of the findings of the last two decades, the biological basis of MI theory needs urgently to be brought up to date (H Gardner, 2003). Besides these, the intelligences like Spiritual and Emotional are also added by Gardner with time (Gardner 1999). We can become more intelligent through study and practice, through access to appropriate tools, and through learning to make effective use of these tools (Perkins, 1995)

### **Factors Affecting Mi**

In Perkins Intelligence Theory (Perkins, 1995) he says that Neural Intelligence of a person get affected by the mother's conditions at the time of pregnancy and those conditions affect the intelligence level. So related to this in country like India where the awareness regarding vitamins, availability of proper and adequate facilities at the time of pregnancy as well as for nutrition of a child after birth is diverse. This leads to conclusion that factors like Native Area i.e. Rural or Urban, the education level, occupation and income of parents affects the intelligence level.

According to Sternberg's Triarchic Theory (Sternberg, 1997) Practical Intelligence get affected due to educational and environmental settings of an individual student. It leads to factors like Educational Background or Gender can affect the intelligence level of a person. Garner also agrees over it as he says that the curriculum and instructions can play vital role in enhancing the intelligence level of a student (Gardner, 1999).

The above logic leads us to propose that there can be some demographic factors which affect the multiple intelligence level of students. So we consider seven factors viz. Age, Gender, Native Area, Father's Occupation, Graduation Stream, Parent's Educational level (Father & Mother Separately ) etc. which may affect the Multiple Intelligence level of MBA Students.

### **Research Methodology**

#### *Research Process-*

*Research Statement-* This research led through an attempt to find out the answers of research questions like- which factors affect Multiple Intelligence of MBA students? How much impact they create over the MI level of MBA Students?

*Research Approach-* The research approach used for the study is combination to Experimental, Analytical, Qualitative and Descriptive. Through this combination authors came to make this study fruitful.

*Research Tool used for Data Collection-* A questionnaire used for this purpose is based on the theory of H Gardner and a standard questionnaire from the internet is then modified as per the objectives of this study. With the help of IT expert by using Google Docs, a questionnaire prepared online which gave results in MS Excel form and then again through the effective utilization of MS Excel (Pivot Tables) the data has been analyzed.

*Measurement & Scaling-* Questionnaire contains 40 questions for 8 types of Intelligences arranged by random mix. Each intelligence type accommodates 5 questions. Likert-type scale is used for the scaling purpose which carries score from 1- least liked to 5- most liked basis. Then the score for each intelligence type is calculated out of 25 (5\*5- Maximum weight).

*Sampling Design-* The online questionnaire got filled by 30 MBA students (Respondents). The consensus sampling technique used for this purpose, as all available students from MBA II year filled the questionnaire. Out of 30, one questionnaire was incomplete which was not of use for this study. Due to which the study shows results for 29 respondents.

*Data Analysis Details-* From the preliminary information regarding 7 demographic factors- Age, Gender, Native Area, Graduation Stream, Father's Occupation, Father's Education & Mother's Education are considered for study. Then with the help of Pivot Table in MS Excel the comparative relationship between each factor and each Intelligence Type is shown in this paper.

*Objectives-*

Nothing happens without purpose. Researches take place through well designed objectives. Through this research paper authors try to explain the concept of MI and factors affecting the MI of MBA students. Objectives which led this study up to this stage are framed as follows-

1. To understand the intelligence level of MBA students
2. To find out the factors affecting MI of MBA students
3. To study the impact of these factors affecting MI of MBA students
4. To explain the role of IT in research

*Limitations-*

1. This study is limited to specific size of sample population, so results cannot be generalized universally.
2. Occupation of Respondent's Mother is not considered in the study.
3. Computer Literacy among some students found weak to fill online questionnaire.

*Future Scope-*

1. Some of the factors like Occupation of Respondent’s Father can also be categorized. In this paper authors considered Service only which can be categorized as private, government. Also the occupation of mother can be considered.
2. Some factors like Family Income, Job Experience can also be considered

**Data Analysis & Interpretation**

As described in the Research Methodology, researchers analyzed the data collected through online questionnaire. For this they used the Pivot Tables in MS Excel. The abbreviations used for this purpose are-

- |                                      |  |
|--------------------------------------|--|
| MI-Multiple Intelligences            | AL- Average of Linguistic Intelligence |
| ALM- Average of Logical/Mathematical | ABK-Average of Bodily Kinesthetic      |
| AIP-Average of Interpersonal         | AI- Average of Intrapersonal           |
| AVS- Average of Visual/ Spatial      | AM- Average of Musical                 |
| AN- Average of Naturalistic          |  |

**Table - 1:** Impact of Age on the Multiple Intelligence level of respondents

Age	Count	AL	ALM	ABK	AIP	AI	AVS	AM	AN
20	4	16.00	16.50	15.50	16.75	15.50	15.25	20.75	12.50
21	15	16.20	17.27	16.67	17.40	15.07	17.07	18.00	16.40
22	5	17.00	16.80	16.80	17.40	18.20	15.80	16.60	16.00
23	3	19.33	18.33	19.67	20.00	19.67	19.67	16.00	18.33
24	1	21.00	22.00	20.00	21.00	22.00	16.00	20.00	19.00
25	1	17.00	16.00	17.00	14.00	18.00	16.00	21.00	14.00
<b>Grand Total</b>	<b>29</b>	<b>16.83</b>	<b>17.31</b>	<b>16.97</b>	<b>17.59</b>	<b>16.48</b>	<b>16.79</b>	<b>18.10</b>	<b>16.00</b>

The above Statistics shows that, there are 4 respondents of age 20; 15 of 21, 5 of 22, 3 of 23 and 1 each of 24 & 25. Amongst them respondents of age 20 are ahead in musical, of 23 are in bodily kinesthetic, visual, of the age 24 is in all except visual while of 25 is in musical.

**Table-2:** Impact of Gender on the Multiple Intelligence level of respondents

Gender	Count	AL	ALM	ABK	AIP	AI	AVS	AM	AN
Female	17	16.00	17.06	15.88	17.24	15.94	16.24	18.12	15.18
Male	12	18.00	17.67	18.50	18.08	17.25	17.58	18.08	17.17
<b>Grand Total</b>	<b>29</b>	<b>16.83</b>	<b>17.31</b>	<b>16.97</b>	<b>17.59</b>	<b>16.48</b>	<b>16.79</b>	<b>18.10</b>	<b>16.00</b>

Above statistics shows that there are 17 female respondents while 12 are male respondents. Also female respondents are ahead in Musical intelligence only while male respondents are ahead in all except musical.

**Table- 3:** Impact of Native Area on the Multiple Intelligence level of respondents

Native Area	Count	AL	ALM	ABK	AIP	AI	AVS	AM	AN
Rural	5	17.40	17.40	19.20	18.00	17.60	16.40	18.00	16.60
Urban	24	16.71	17.29	16.50	17.50	16.25	16.88	18.13	15.88
<b>Grand Total</b>	<b>29</b>	<b>16.83</b>	<b>17.31</b>	<b>16.97</b>	<b>17.59</b>	<b>16.48</b>	<b>16.79</b>	<b>18.10</b>	<b>16.00</b>

Above statistics shows that there are 5 respondents belong to rural area while 24 are to urban area. Also respondents from rural area are ahead in all except musical and visual-spatial intelligence while respondents from urban are ahead only in musical and visual-spatial.

**Table- 4:** Impact of Graduation on the Multiple Intelligence level of respondents-

Graduation	Count	AL	ALM	ABK	AIP	AI	AVS	AM	AN
BA	3	15.67	17.67	17.67	20.33	16.67	17.67	18.33	18.33
BBA	2	15.50	17.00	15.50	15.50	16.00	14.50	20.50	13.50
BBM	8	15.13	16.25	15.38	17.38	15.63	16.13	18.88	14.38
BCOM	10	18.10	17.10	16.60	17.10	16.20	16.90	17.20	15.30
BSC	6	18.00	19.00	19.83	18.00	18.17	17.83	17.67	19.00
<b>Grand Total</b>	<b>29</b>	<b>16.83</b>	<b>17.31</b>	<b>16.97</b>	<b>17.59</b>	<b>16.48</b>	<b>16.79</b>	<b>18.10</b>	<b>16.00</b>

The above statistics shows that there are 3 respondents having graduation in arts, 2 in BBA, 8 in BBM, 10 in Commerce, 6 in Science. The respondents having graduation in Arts are ahead in Interpersonal, Visual-Spatial and Naturalistic, in BBA are ahead in Musical, in BBM are nearly equal in musical, in Commerce are ahead in Linguistic only, in Science are ahead in all except musical, Interpersonal.

**Table-5:** Impact of Father's Occupation on the Multiple Intelligence level of respondents

Father's Occupation	Count	AL	ALM	ABK	AIP	AI	AVS	AM	AN
BUSI	11	17.00	17.45	16.18	17.27	16.18	16.91	17.00	14.73
FARMG	4	17.50	16.75	19.25	17.25	18.00	16.00	19.00	17.00
SER	14	16.50	17.36	16.93	17.93	16.29	16.93	18.71	16.71
<b>Grand Total</b>	<b>29</b>	<b>16.83</b>	<b>17.31</b>	<b>16.97</b>	<b>17.59</b>	<b>16.48</b>	<b>16.79</b>	<b>18.10</b>	<b>16.00</b>



The above statistics shows that there are 11 respondents whose father is Businessman, 4 is Farmer & 14 is doing Service. It further shows, respondents whose father is Businessman & whose father is doing Service are near about equal or ahead in Linguistic, Logical-Mathematical, Intrapersonal, and Visual-spatial while respondents whose father is farmer are ahead in all except Interpersonal, Visual-spatial.

**Table- 6:** Impact of Father’s Education on the Multiple Intelligence level of respondents

<b>Father's Education</b>	<b>Count</b>	<b>AL</b>	<b>ALM</b>	<b>ABK</b>	<b>AIP</b>	<b>AI</b>	<b>AVS</b>	<b>AM</b>	<b>AN</b>
Graduate	10	15.90	17.60	16.20	17.40	16.10	16.20	18.00	15.60
HSC	13	16.77	16.69	16.62	17.08	16.54	16.46	17.54	15.69
PG	4	19.25	20.00	19.25	20.25	18.50	19.00	19.00	19.75
Secondary	1	18.00	16.00	22.00	18.00	14.00	19.00	21.00	14.00
SSC	1	16.00	13.00	15.00	15.00	14.00	16.00	20.00	11.00
<b>Grand Total</b>	<b>29</b>	<b>16.83</b>	<b>17.31</b>	<b>16.97</b>	<b>17.59</b>	<b>16.48</b>	<b>16.79</b>	<b>18.10</b>	<b>16.00</b>

The above statistics shows that there are 10 respondents whose father is passed Graduate, 13 is HSC, 4 is PG and 1 each is Secondary and SSC. It further shows that the respondents whose father is passed PG are ahead in all except Musical, Bodily Kinesthetic. Respondents whose father is passed Secondary school are ahead in Bodily Kinesthetic only while whose father is passed SSC is good in just Musical.

**Table-7:** Impact of Mother’s Education on the Multiple Intelligence level of respondents

<b>Mother's Education</b>	<b>Count</b>	<b>AL</b>	<b>ALM</b>	<b>ABK</b>	<b>AIP</b>	<b>AI</b>	<b>AVS</b>	<b>AM</b>	<b>AN</b>
Graduate	5	17.00	19.00	17.00	18.00	15.40	17.00	17.80	16.40
HSC	2	14.50	17.00	17.50	19.00	15.50	16.00	21.50	14.00
PG	2	18.50	19.50	19.50	22.00	17.50	18.50	19.00	22.00
Primary	2	18.00	16.50	16.50	15.50	17.00	18.00	19.50	16.00
Secondary	2	17.50	16.00	17.50	19.00	16.00	18.50	18.00	15.00
SSC	16	16.63	16.81	16.56	16.81	16.81	16.25	17.50	15.50
<b>Grand Total</b>	<b>29</b>	<b>16.83</b>	<b>17.31</b>	<b>16.97</b>	<b>17.59</b>	<b>16.48</b>	<b>16.79</b>	<b>18.10</b>	<b>16.00</b>

The above statistics shows that there are 5 respondents whose mother is passed Graduate, 2 each is passed HSC, PG, Primary and Secondary exam while of 16 is passed SSC. Also respondents whose mother is PG are ahead in all except Musical intelligence, whose mother is HSC are ahead in Musical only.



### **Hypothesis Reengineering**

According to Grounded Theory which is derived by Glaser & Strauss, the hypothesis can be reengineered when it seems to be qualitative or experimental. And such type of research is not Hypothesis Testing but Hypothesis Generating research (Glaser & Strauss 1967). It can be used for both types of data like qualitative or quantitative. Anything is data that helps the researcher generating concepts for the emerging theory (Glaser & Strauss, 1967). So in this research paper authors used the same term 'hypothesis reengineering' which is a conceptualization of qualitative hypothesis using data in tabular or quantitative form. After comparing (which is one of the ways in Grounded Theory) and finding the relevance among all types of data which is analyzed as above in the tabular forms; authors have come to make a statement that-

'There is relation between factors and Multiple Intelligence of respondents. Also the level of Multiple Intelligence is to be found different among individuals as factors change.'

### **Conclusion**

Through this research paper, authors found the relevance between seven factors and the level of Multiple Intelligence among MBA Students. The age creates no significant difference in MI level of students. While male found ahead than female students in majority of intelligences. Students from rural area are found ahead of urban area students. But unexpectedly the students whose father does farming are found lacking in majority of intelligences than students whose father is businessman or doing service. Also students with science graduation are found ahead of students with others. Students whose parents are educated up to PG or Graduation are found ahead in majority of the intelligences of those whose are not. The information technology helps researchers by many ways in making their research work fruitful as in this paper for data collection, data analysis, designing the paper IT played a vital role.

So to conclude- we can say that except age all other factors create impact on the Multiple Intelligence level among MBA Students.

### **References**

- Boring, E.G., (1923), Intelligence- As the tests test it, New Republic, 35-37.
- Burt, C., (1955) The Evidence for the concept of Intelligences, in Wiseman, S., Intelligence Ability, Harmondsworth : Penguin.
- Damirchi, Q., Rahini, G., Seyyedi, H.,(2011), The Role of Worker's MI on their Productivity in Cultural Institutes of Moghan, *Australian journal of Business & Management Research*,1(7),42-50.

- Gardner, H., (1999), *Frames of Mind-Theory of Multiple Intelligences*, New York, Basic Books.
- Gardner, H., (2003) *Multiple Intelligence- The Theory in Practice*, New York: Basic Books.
- Glaser, Strauss,(1967),*The Discovery of Grounded Theory-Strategies for Qualitative Research*, Chicago: Aldine publishing Company.
- Gotterfredson, L.S., (1997), *Foreword to Intelligence & Social Policy-Intelligence*,24(1), Brazil: Artmed Publishers.
- Gulap, S., Ghazi, S., Khan, H., Iqbal, S.,(2011),*Self Perceived MI of Male & Females, Mediterranean Journal of Social Sciences*, ISSN:2039-2117,2(1),176-187.
- Perkins, D.,(1995), *Outsmarting IQ: The emerging science of learnable intelligence*, New York: Free Press.
- Ryle, G., (1949), *The concept of Mind*, Harmondsworth ,New York, Penguin.
- Sternberg, R. J., (1997), *Beyond IQ- Trierchic Theory of Human Intelligence*, Cambridge, Cambridge University Press.
- Ulrich, N., (1995), *Selected Portions of Intelligence-Knows & Unknowns*, Report of Task Forces,BSA of American Psychology Association.
- Wechsler, D., (1944), *The Measurement of Adult Intelligence*, Baltimore ,Williams & Wilkins Publications.
- <http://analytichtech.com/mb870/introtoGT.htm>, Accessed on 12<sup>th</sup> Aug 2013.
- <http://groundedtheory.com/what-is-gt.aspx>, Accessed on 12<sup>th</sup> Aug 2013.
- [http://en.wikipedia.org/wiki/Grounded\\_theory\\_nomenclature](http://en.wikipedia.org/wiki/Grounded_theory_nomenclature), Accessed on 12<sup>th</sup> Aug 2013.