

Competition in Monopoly: Teaching-Learning Process of Financial Statement Analysis to Information Technology Management Students

Vijayakumar Bharathi S., Symbiosis Centre for Information Technology, Symbiosis International University, India

Mugdha Shailendra Kulkarni, Symbiosis Centre for Information Technology, Symbiosis International University, India

ABSTRACT

This research article investigates the impact of using a Monopoly Board Game (MBG) in the teaching-learning process of financial statement analysis (FSA) to information technology management students, who earlier had little or no finance or accounting prior educational background. The subjects were students (N=159) in an Indian University. The study; first, narrated the process of administering MBG; second, quantitatively analyzed the learning experience through a structured questionnaire to validate the research objectives. The study resulted in the creation of three factor-clusters namely cognizance, collaboration, and enthusiasm which impacted students' MBG learning experience over the traditional teaching-learning methods. Results showed that factors relating to cognizance are more impacting than collaboration and enthusiasm. In the future, this research can be extended to advanced finance courses and can be integrated with relevant educational theories that underpin teaching-learning processes in higher education to other disciplines.

KEYWORDS

Board Games, Cognizance, Collaboration, Enthusiasm, Exploratory Factor Analysis, IT Students, Learning, MBA, Teaching

1. INTRODUCTION

Exploring and executing creative teaching methods have been the excitement for educators since the distant past (Davies et al., 2013). Educators need to seek pedagogies that can engage the students and foster the process of learning and retention (Becker et al., 2017; Cook-Sather, 2018). How effectively the teacher's contact sessions are engaging enough to facilitate students' learning? How can the teacher orchestrate the classroom conduct to bring out the symphony of knowledge? Several research studies have reinforced the need for a radical shift of the classroom from a teacher-centric cellar to the participant-centric arena (Kim and Davies, 2014). Simulations and online game-based learning have also contributed their share in the learning excitement considerably over the recent past (Kapp, 2012; Abdul Jabbar and Felicia, 2015). If one remembers the pre-computer times, hard-board games were one of the favourite indoor activities which contained the required infrastructure and the objects all in a single box. Some of the board games about trade and commerce-enabled players to not only enjoy the game actively but also understand the underlying business concepts. Administration of board games in classroom teaching fosters collaboration among peers, decision-making skills and creates an engaging classroom environment (Aburahma and Mohamed, 2015; Kangas et al., 2017).

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Integrating games into pedagogies is imperative to achieve learning outcomes effectively. Games are an integral part of the human experience since evolution and are independent of culture, race, and times. There are challenges in modern-day education, in particular in information technology management education where students aspire to become techno-managers in the information technology industry. Majority of the students who opt for a techno-managerial MBA (Master of Business Administration) are predominantly engineers of computer science and electronics. One of the critical challenges is how to excite these engineers to learn specific management courses such as accounting, statistics, research methodology, and operations research. Though traditional teaching pedagogies such as chalk-and-talk, case studies, and practices have contributed to the classroom experience on the courses stated above, there is a need to adopt innovative ways of teaching-learning to compliment learning excitement and learning retention.

There is less awareness among academia and the industry about the significance of bringing out the right mix of head and hands-on learning. Research works in the past have addressed the failure to bring in suitable interactive teaching approaches which have resulted in learners' boredom, deterrence, and resource wastages. Board games though accepted to be one of the most popularly played games (Bell, 1979; Wolfe, 1993; Gobet et al., 2004; Ramani and Siegler, 2008), its usefulness has not yet been amplified beyond the realms of in-house/in-door entertainment and as a time-pass fulfillment. Although board games have gained momentum in the educational field, a vast majority of them are still confined only to young children or at the primary to high school levels (Ramani et al., 2012; Laski and Siegler, 2014). Useful teaching-learning experience should motivate, endow, and instigate student engagement, which is evident generally in all realms of education, yet specifically to topics/courses/curriculum, which are technical and complex.

The Monopoly Board Game (MBG) originated during the early 20th century, is one of the most iconic board games of all times. A real estate trading game, it has always consciously been of a favourite pastime activity during a family gathering, and subconsciously the game can also demonstrate us a lot about certain commercial activities such as cash flows, personal finance, and investments.

Hence, the research questions defined are as under:

- What factors impact the students of the MBA (IT Business Management) to accept the monopoly board game (MBG) as an interesting way of learning and retaining Finance knowledge?
- How can board game foster a different learning environment compared to the traditional teaching learning environment?

The objectives of the study are

- To understand the student's perception about learning Financial Statement Analysis through the MBG, achieved by
 - Define critical factors that underpin game-based learning experiences from extant literature.
 - Explain the process administering the MBG Group Project
- Analyze quantitatively, the factors that significantly impact the students' willingness to accept board game-based learning in lieu of the traditional teaching-learning methods.

This paper comprises of six sections. The first section introduces the topic and objective of this research. The second section is about the review of literature, which covers the relevance of this research to its predecessors and enumerates the research gaps. Section three explains the methodology of the study, the research process, selection of appropriate statistical techniques and tools. Section four is about analysis and findings which presents the results of descriptive, reliability, and exploratory factor analysis. Section five is about discusses the theoretical and practical implications of the research. Sixth and last section concludes by summarizing the critical outcomes with the limitations and states future research directions.

2. REVIEW OF LITERATURE

This section is about reviewing the existing literature from two different perspectives; one the relevance of game-based learning and two the appropriateness of using board games in the teaching-learning process. Finally, we explain the research gaps and motivation.

2.1 Game-Based Learning in Classroom

Studies from the area of psychology, sociology, education anthropology often emphasize that learning through games or play is one of the most influential media to enhance student-capabilities (Rieber, 1996; Gros, 2007). Different from a typical classroom environment, an alternate way of teaching through game-based learning makes students participative and also fosters the learning process more efficient. Game-based learning enhances the performance of the students and also helps them to mediate the learning more effectively (Tan et al., 2007; Burguillo, 2010; Wang and Chen, 2010; Hamari et al., 2016). Another advantage of game-based learning is that students understand the concept more than through the traditional lecture through peer and collaborative learning. (Sung and Hwang, 2013).

Game-based learning pedagogy includes more participation and peer involvement, which helps in learning (Pohl et al., 2008; Greenhow et al., 2009; Ramani et al., 2012). Games enhance participants' interactions and is particularly effective in concept-building activities (Connolly et al., 2007; Tang et al., 2009). Games are an informal way of teaching develop an interest in the subject (Pivec et al., 2004; De Freitas, 2006). So rather than using chalk and talk method of lecturing, participation through games based experiential learning engages the learners to a greater extent. Bellotti et al., (2013) stated that subject knowledge retention and applicability improves in game-based assessments. Emin-Martinez and Ney (2013) advise that game-based learning can be successful only if the teacher can choose the right game for the specific topic. Process models are available for the use of games in the classroom with some primary motivators like concentration, enthusiasm, entertainment, fun, interactivity, and easy to learn (Sánchez Mena, and Martí Parreño, (2017). Stieler-Hunt and Jones (2018) studied the constraints by teachers in using the game-based learning pedagogies which included resource scarcity, student's lack of interest or lethargy, lack of subject clarity, and disturbance to classroom decorum.

2.2 Board Game Based Education

The board game-based learning experience comprehensively supports Piaget's theory which is about the evolution of humans in the knowledge acquisition and use process. Piaget's theory is majorly researched and applied during the psychological development of a child, particularly in school education (Piaget, 1976; Fischer, 1980; Wertsh and Tulviste, 1990). It is a sad truth that the retention of this childhood learning experience is not sustained over his/her entire education life cycle. Quite a number of research studies state, board games can inspire learning, enhance team-learning, communication, collaboration and risk-taking and empower students to build upon their self-confidence (Bochennek et al., 2007; Tan et al., 2007; Ramani and Siegler, 2008; Drake and Sung, 2011; Huang and Levinson, 2012; Sardone and Devlin-Scherer, 2016). Well-defined and designed board games foster a fun-filled, competitive, engaging classroom environment that underpins the synergies of concepts and practice (Ravayse et al., 2017). There is a myth that board games are inappropriate for adults, and they cannot objectively evaluate their accrued benefits on learning. Interestingly, on the flipside, board games are essential tools to impart hands and heads-on skill and competency development for students across their education life cycle.

Based on the understanding of the relevance of board games in education through the previous paragraphs, the subsequent sections bring out the literature pertaining to two critical aspects; one, choice of the board game in general to various courses/curriculum and two, board game, in specific relevance to the course/curriculum of finance statement analysis.

2.2.1 Board Games in the Teaching-Learning Process

Israel et al. (1992), researched the efficacy and acceptability of board games to enhance participants' knowledge about the lives of senior citizens. Gerontopoly, a new game devised for the purpose enabled interesting, ease of play and an enjoyable experience, according to the participants. The game also brought about attitudinal changes and increased awareness among the partakers. The popular Snakes and Ladders board game was introduced to review and emphasize research design pitfalls and virtues, in a study by Warburton and Madge (1994). The board game administered to undergraduate students in their second-year research design course found the transition from passive to active learning. The board game enables students to relate concepts to practice. Gray et al., (1998) used the board-game version of the Highway Code to school students of the senior secondary level to impart a better understanding of road safety. The outcomes were interactive learning, ability to retain concepts better than traditional read and memorize methods. Grechus and Brown (2000) tested if board games can reinforce learning and retention of learning. The study experimented with 277 samples for nutrition label knowledge retention using a peer-interactive board game; the study found retention of labels' understanding and recollection was more effective than other reinforcement methods.

Ogershok and Cottrell (2004) developed a Pediatric Board Game to experiment on students' understanding of core pediatric concepts. The four levels of difficulty in answering the questions featured in the game enabled a competitive environment and a sense of achievement among participants. The study found that board game provided a valuable learning experience because it was practical and engaging for learners as well as for educators. To demonstrate a wide variety of concepts in probability in statistics, Cochran, (2005) used Strat-O-Matic® Baseball, a sports board game. The board game provided a learning environment for various probability concepts. The study found enhanced students' ability to grasp and retain statistical concepts through the different facets of the board game. Students felt the board game provided a more straightforward, more comfortable, and exciting environment to learn probability in statistics. Mummalaneni and Sivakumar (2008) used a board game to inculcate relationship coordination among students learning customer relationship management (CRM). They found students' active involvement in learning CRM concepts through the board game. Their research found evidence of enhanced motivation and a sense of achievement among students. An educational board game 'Discovering the Cell' based on problem-solving administered to public and private school students in Brazil found stimulation of reasoning and interactivity among participants (Spiegel et al., 2008).

An exploratory case study used a board game for learning intangible cross-border social interaction to graduate students of innovation and business program in Denmark (Bogers and Sproedt, 2012). The study had identified the implications and challenges of administering appropriate board games at the graduate level. A survey by Swiderska and Thomason (2013), investigated the application of an educational board game for enhancing the learning experience among medical students in the neonatology specialization. The study recommended that board games in education should be examined further in the delivery of higher education, particularly to undergraduate teaching-learning. An educational board game was used to teach Earned Value Management concepts in Software Project Management for undergraduate students by von Wangenheim et al. (2012). Students' ability to remember, understand, and apply were the primary motives of the study. The study had a positive effect on social interaction, engagement, and relevance to the purpose of the course. A study by Paris and Yussof (2013) applied a board game to master complicated grammar structures (error correction, questioning, responding, and sentence formation). The study found that respondents experienced a challenging and fearless environment to learn complicated grammar formations. Struwig et al. (2014) experimented with board games to teach microbiology as part of medical education. They used a board game called Med Micro Fun With Facts (MMFWF) based on the principles of Trivial Pursuit™. They found that the board game stimulated the students' interest in the course through healthy competition and fostered positive group dynamics. The game fostered innovative teaching-learning practices in medical education. Bridge (2014) demonstrated the use of Battleship, a board

game to model a political system to teach students of political science. He found that off-the-shelf board games make the teaching process more involving and creative. McGuire (2014) experimented with a seventeenth-century board game of Buddhists. Called the Selection of Buddhas, the administration of the game's primary goal was to learn religious practices and entertainment actively. The Logo board game facilitated undergraduate business students' learning about branding concepts, according to Khan and Pearce (2015). Higher motivation, enjoyment, and absorption of underlying concepts resulted from the study. Thompson (2015) highlighted the possibilities and benefits of using board game in teaching mathematics to college students. He used a board game named The Resistance to teach a discrete mathematics course through which the students enhanced the validity and soundness of arguments. The study recommended reinforced the history and rationale of using board games in classrooms to better engage the students in the learning process. McBride (2017) introduced a two-phase study involved children and parents' groups to collaborate to impart a better learning experience. The studies found potential benefits to increase competencies and interest in math. The number board game 100 House was tested among children to develop mathematical competencies by Skillen et al. (2018). Based on the approach given by the American cognitive alignment framework, the game assessed the counting competencies among participants and provided steady improvements in the results. Chen (2018) applied an innovative board game called Cochess, which is a mix of traditional chess and the Chinese chess game Xianggi to facilitate learning about the cross-cultural exchange. The study found that Cochess cultivated conceptual clarity and enhanced thinking abilities. Schmuck and Arvin (2018) administered a board game to teach inter-professional learning in healthcare education. The study tested how students understand team-members' role and responsibilities, and found positive perception, ready acceptance of the board-game learning among students for teamwork and group dynamics.

2.2.2 Board Games in Finance and Accounting Teaching-Learning Process

Tanner and Lindquist (1998) found positive results about students' attitudes toward financial accounting, collaboration and collective learning with fellow students and perceived achievement by applying Monopoly as a teaching resource for 36 students who were accounting majors. Monopoly, one of the most popular board games, has been in existence for over a century. It is a real-estate trading game fun-filled and abundantly information about wealth creation. A seasoned Monopoly gamer is sure to have much financial wisdom and should be able to apply the game learning to the practical world of investment and finance. Mladenovic (2000) called for a radical shift in the non-traditional accounting teaching methods by carefully studying and reconciling the realistic and unrealistic students' perception of learning to account. Mladenovic's study adopted Ramsden (1992) model of student learning in context, and Briggs (1996) constructive alignment model to suggest alternative ways of amending students' perception about accountancy. The changed perception provided positive results in identifying right accounting careers.

Moncada and Moncada (2014) studied the relevance of gamification of learning in the accountancy course. They suggested that faculty members need to capitalize on the application of board games to overcome students' challenge of understanding accountancy concepts and cases. They recommended that gamification through board games can unleash the creativity and inventiveness of students in applying accountancy knowledge to practice. Board gamification enables faculty members to experiment with a winning teaching strategy. Their study identified a set of board games used to learning accountancy, is presented in Table 1 below.

Wells (2015) identified a pressing need to introduce creative learning approaches to the accounting course. Wells' study found that though there were several attempts to change the student's negative perceptions for accounting, which did not produce the desired results. His research called for intervention strategies to build pedagogies that can foster positive learning attitude for the accounting course and enhance the skills for employability in the accountants' profession/career.

Table 1. Application of board games in accounting

| G a m e | Topic covered by the game | Significant Works |
|-----------------|--|---|
| B i n g o | Business reporting in a professional and ethical manner | Haywood et al. (2004); Gaa and Thorne (2004) |
| J e o p a r d y | Revenue reconciliation, Financial Accounting and Taxation, Accounting Information Systems, Governmental Accounting, Accounting systems and Accounting principles | Cook (1997), Nitkin (2012); Bee and Hayes (2011); Murphy (2005); Moncada and Seda (2010). |
| M o n o p o l y | Principles of Financial Accounting, Financial accounting practice set, Financial accounting and investment | Tanner and Lindquist (1998); Layman (2003); Albrecht (1995) |

Shanklin and Ehlen (2017), extended the application of the Monopoly board game as an economic simulation exercise. The objective was to reinforce the impact of the accounting cycle in financial statements to evaluate management performance. They added certain crucial financial concepts like debt for conducting ratio analysis in the introductory course on financial accounting. The study found a higher level of competitive energy among participants, better and faster understanding of financial accounting concepts when compared with other traditional pedagogical methods.

2.2.3 Research Gap and Motivation

The previous paragraphs identified from the literature, brought out different perspectives to the application of games in education, board games in the teaching-learning process, notably Financial Statement Analysis (FSA) course, which is the context of this research work. Majority of the studies have addressed the implications of games and board games from kindergarten to high school levels of education. Comparatively, we find, less literature discussed higher education (collegiate education) and hardly any from a post-graduate management education perspective. Interestingly studies have also recommended the need to extend the application of board games from a pedagogical level to andragogical level or adult-learning (Tanner and Lindquist, 1998; Bogers and Sproedt, 2012; Swiderska and Thomason, 2013). The role of simulation and games in MBA education is widely researched in the past and has reiterated the need for game-based exercises in the curriculum to foster participant-centric learning (Azriel et al., 2005; Lean et al., 2006; Salas et al., 2009; Pasin and Giroux, 2011). However, comparatively very less literature is found in the application of board games in MBA education, though its implications are far-reaching in enabling personal and professional enrichment. Hence this research attempted to explore and apply a board-game in MBA education, specifically to a scenario wherein students learn a course to which they had no or very little prior exposure. Studies also reiterated board games could be an effective enabler to reduce students' anxieties and fear about understanding and retaining concepts of a course to which they are not familiar with or getting introduced to (Paris and Yussof, 2013).

The motivation for this study is to explore how the Monopoly Board Game (MBG) can augment better understanding of FSA to the first-year MBA (IT Business Management) students.

3. METHODS

The methodology section enumerates the research roadmap in three broad segments. The first segment narrates the Monopoly Board Game (MBG) administration process. The questionnaire developed for the quantitative analysis of the students' learning-feedback is given in the second segment. Third and final segment enumerates the statistical analysis technique used to validate the objectives of the study.

3.1 MBG Administration Process

This segment has three distinct phases; preparation, development of MBG group project and the evaluation parameters.

3.1.1. Phase I- Preparation

- First, critical parameters such as student size in each class, faculty and students' willingness, the degree of flexibility for game-based pedagogies, and sync with the Bloom's taxonomy levels, are accepted for the Financial Statement Analysis course.
- The Financial Statement Analysis course syllabus and the session plan formed the reference for goal setting and learning outcomes, and to align with the MBG group project.
- The course is offered in the first semester of the MBA-ITBM program worth two credits (30 contact hours) and had level four (analyze) of Bloom's taxonomy. The objective of the course is two-fold. One, to understand the financial accounting concepts underlying financial statements and two, to appraise the financial health of the firm.
- The curriculum comprised of two major parts. The first part is about Generally Accepted Accounting Principles (GAAP), the accounting cycle (journal entries to final accounts). The second part comprised of the understanding of Annual Report of companies, Analysis of Income Statement, Balance Sheet, Cash Flow Statement, and Ratio Analysis.
- The course is worth 100 marks, of which 60 marks is an internal/continuous evaluation, and 40 marks are a semester-end written-examination.
- The teaching plan was first reviewed (as-is pedagogy) at both the session and content level to decide upon the appropriate session to introduce the game. It was decided to launch the game after the students have learned the Generally Accepted Accounting Principles (GAAP), accounting cycle, and finalization of accounts.

3.1.2. Phase II – Development of the MBG Group Project

- One hundred eighty-four students participated in the MBG group project (sample size of this research). After explaining the genesis of the game the students were divided into groups of five each.
- The students' groups familiarized with the various components that form part of the game kit; currencies denominations, dice, community cards, chance cards, the printed contents of the board.
- The student groups received a copy of the MBG instructions manual to read and internalize the teachings regarding the commencement and progress of the game, rules relating to buying and selling, guidelines relating to chance and community, etc.
- Each group had four players and one banker. The four players role-played as real estate merchants, the lone banker role-played the responsibility of lending, accepting funds and monitored the inflow and outflow of funds.
- Each student received seed money (M) with a similar denomination of currencies to commence the game.
- The rules of the students groups are
 - Ten rounds of game per team
 - Each player should buy a minimum of three assets
 - Each player should do a minimum of one sale
 - Book-keep (Record) each and every transaction relating to personal accounts (receiver and giver), real accounts (inflow and outflow of money and money's worth) and nominal accounts (incomes, gains, expenses and losses).
 - Tabulate, Summarize and Report the financial transactions.
 - Duration of the game is 180 minutes (2 sessions / 3 hours)

3.1.3 Phase III –Evaluation Parameters

- The MBG group project is evaluated for 40 marks and comprised of two equally distributed components; a group-evaluation and an individual evaluation.
- Twenty marks for group evaluation, the deliverable being Income Statement, Balance Sheet and Cash Flow Statement, prepared out of the MBG transaction conducted by each group.
- The student groups competed on highest Net Profit, Cash Profit and Business Size (Balance Sheet size).
- The individual evaluation (for each student) is through a written examination. Students wrote a written test for 20 marks comprising of 20 multiple choice questions (MCQs). The MCQs comprised of question blending the accounting knowledge and the monopoly game experience. Sample questions include:
 - If You purchased Bow Street at M 180. Then the transaction is
 - Operating Expense
 - Capital Expense
 - Paying fine and penalties for getting out of jail is
 - Operating Recurring Expense
 - Non-Operating Recurring Expense
 - Operating Non-Recurring Expense
 - Non-Operating Non-Recurring Expense
- Faculty members of the accounting and finance domain monitored the end-to-end MBG administration process.

3.2 MBG Questionnaire

The questionnaire comprised of two sections; section I contained questions relating to respondents' characteristics (gender, prior awareness about MBG and prior accounting education) and section II had 20 questions to capture the students' perception on their MBG learning experience. All the questions drawn are from existing literature to reiterate the implications (expectations/perceptions and learning outcomes) of board-game learning; the summary is in Table 2.

A 5-point Likert Scale comprising of options ranging from Strongly Agree to Strongly Disagree formed the basis of the questionnaire. Extensively drawn from the above table, a survey contained 20 variables to record the financial accounting learning experiences of the students using the MBG. The questionnaire variables are in Table 3.

Out of the total of 184 questionnaires sent, 25 surveys rejected are due to the incompleteness of data (missing data, partially filled, multiple options marked, outliers, disinterested responding, etc.) 159 fully completed questionnaires fully completed and formed the sample size for statistical analysis purpose. The authors applied exploratory factor analysis to rotate the most impactful factors reflecting the students' learning experience. The next section explains in detail the analysis and findings.

4. ANALYSIS AND FINDINGS

The subsequent paragraphs explain first, the descriptive analysis of the respondents' characteristic features, descriptives of questions and reliability statistics (Cronbach Alpha). Second, the exploratory factor analysis to derive the most impactful factor driving students' MBG learning experience.

4.1 Descriptive Analysis

The distribution of the sample based on gender, respondents' awareness about MBG and whether respondents studied financial accounting course before joining the MBA program is presented in Table 4.

Table 2. Learning experience from board games

| W o r k s | Learning Experiences from Board Games |
|--|---|
| Israel et al. (1992); Cochran, (2005); Khan and Pearce (2015) | Created interest, Enjoyed the learning, Easy to understand, Change in attitude and Increased awareness, Fast to grasp concepts |
| Warburton and Madge (1994); Tanner and Lindquist (1998); Sproedt (2012); Swiderska and Thomason (2013); Bridge (2014) | Enabled active learning, Able to relate concepts to practice, Involving and creative, Collaborative learning |
| Gray et al. (1998); Grechus and Brown (2000); Bridge (2014); Skillen et al. (2018) | Can learn by interaction, Able to understand and retain concepts better; |
| Ogershok and Cottrell (2004); Cochran, (2005); Spiegel et al., (2008); Wangenheim et al., (2012); Struwig et al., (2014); Thompson (2015); Schmuck and Arvin (2018); | Enabled a competitive environment, Sense of Achievement, Felt engaged with the course, Feeling motivated, Felt more engaged, Interactive and relevant to the course, Enabled better teamwork |
| Mladenovic (2000); Paris and Yussof (2013); Wells (2015); Cheung and McBride (2017); Chen (2018); | Reduced fear of the subject/course, Challenged to learn better; Enhanced subject competency and interest; Improved conceptual clarity and thinking abilities; Reduced negative perceptions, Enriched career options |

Table 3. Variables for questionnaire

| Variables | Variable Code |
|--|---------------|
| I can apply MBG to understand Accounting concepts | MBG-01 |
| MBG enables understanding from business perspective | MBG-02 |
| MBG excited me to explore accounting domain further. | MBG-03 |
| MBG enabled deeper understanding about accounting process | MBG-04 |
| MBG enabled me to experiment accounting impact in a business | MBG-05 |
| MBG enabled me to work with diverse teams | MBG-06 |
| MBG enhances my engagement with users | MBG-07 |
| I intend to appropriately adopt MBG in my professional endeavours | MBG-08 |
| MBG enables to see a bigger picture of the problem | MBG-09 |
| I will recommend MBG approach to a wider segment of the MBA program | MBG-10 |
| MBG enabled me to interact and learn from experts | MBG-11 |
| MBG enables to me to approach financial decisions from multiple dimensions | MBG-12 |
| MBG enables multi-disciplinary approach | MBG-13 |
| I think MBG focuses not only on accounting function but also with its connected sub domains like banking, finance etc. | MBG-14 |
| It is an innovative way of learning financial accounting | MBG-15 |
| MBG reduced the fear and anxiety of financial Accounting | MBG-16 |
| MBG enables deeper understanding of GAAP and Accounting standards | MBG-17 |
| It is fun filled way of learning accounting | MBG-18 |
| Compared to traditional evaluation methods, I can perform better in MBG evaluation | MBG-19 |
| My ability to retain financial accounting knowledge is much better through MBG way of learning | MBG-20 |

Table 4. Descriptive statistics

| Characteristics | Items | N | % | Cumulative % |
|---|------------------|-----|----|--------------|
| Gender | Male | 90 | 57 | 100 |
| | Female | 69 | 43 | |
| Awareness about Monopoly Board Game | Not at all aware | 20 | 13 | 100 |
| | Slightly Aware | 41 | 26 | |
| | Somewhat aware | 31 | 20 | |
| | Moderately Aware | 48 | 30 | |
| | Fully aware | 19 | 11 | |
| Studied Financial Accounting course earlier | Yes | 27 | 17 | 100 |
| | No | 132 | 83 | |

A vast majority of the students did not study Financial accounting course in their previous education, which is a good indicator of the fact it is befitting to adopt game-based learning to encourage and excite participation. The mean and standard deviation of the 159 responses are summarized below in Table 5.

Table 5. Mean and standard deviation of responses

| Variable Code | N | Mean | Standard Deviation |
|---------------|-----|------|--------------------|
| MBG-01 | 159 | 4.19 | 0.648 |
| MBG-02 | 159 | 4.3 | 0.682 |
| MBG-03 | 159 | 4.07 | 0.804 |
| MBG-04 | 159 | 4.04 | 0.669 |
| MBG-05 | 159 | 4.03 | 0.791 |
| MBG-06 | 159 | 4.3 | 0.725 |
| MBG-07 | 159 | 4.18 | 0.767 |
| MBG-08 | 159 | 3.9 | 0.789 |
| MBG-09 | 159 | 3.93 | 0.789 |
| MBG-10 | 159 | 4.35 | 0.704 |
| MBG-11 | 159 | 3.94 | 0.851 |
| MBG-12 | 159 | 4.04 | 0.762 |
| MBG-13 | 159 | 4.18 | 0.68 |
| MBG-14 | 159 | 4.32 | 0.706 |
| MBG-15 | 159 | 4.58 | 0.567 |
| MBG-16 | 159 | 4.1 | 0.887 |
| MBG-17 | 159 | 3.74 | 0.887 |
| MBG-18 | 159 | 4.63 | 0.522 |
| MBG-19 | 159 | 4.42 | 0.679 |
| MBG-20 | 159 | 4.33 | 0.691 |

4.2 Reliability Statistics

Cronbach Alpha is a popular and widely accepted measure of reliability. The internal consistency quantitatively explains the closeness of relationship of a set of items or variables which represent a group. It can also be understood that the alpha score represents the reliability measure of responses or data. The eligibility of the collected data for further analysis depends on the alpha value. In other words, higher the alpha value, more excellent the reliability. It can also be termed as the coefficient of data consistency or reliability. In this research, the alpha score is 0.912 which signifies an adequate reliability score and hence the data is eligible for further analysis (Cronbach, 1951; Cortina, 1993; Bland and Altman, 1997; Gliem, and Gliem, 2003).

4.3 Exploratory Factor Analysis (EFA)

SPSS software (Version 25) is used to conduct EFA (Kim and Mueller, 1978; Costello and Osborne, 2005; Williams et al., 2010). In this section, the authors present the analysis and interpretation of the results of exploratory factor analysis results. EFA consists of five segments namely (a) the choice of rotation method, (b) Test of sampling adequacy and Test of Sphericity, (c) Table of communalities values, (d) Table of Total Variance Explained (TVE) and (e) Pattern Matrix. The subsequent paragraphs contain the tables and the explanation of the results of factor analysis.

4.3.1. Choice of Rotation Method

The first step in factor analysis is the decision about the choice of the rotation analysis. The term *rotation* in Exploratory Factor Analysis and Principal Component Analysis literature is defined by select seminal works, which is presented in Table 6.

Table 6. Definition of rotation

| Author | Definition |
|-------------------------|--|
| McDonald, (2014) | Performing arithmetic to obtain a new set of factor loadings (v-f regression weights) from a given set |
| Yaremko, et al., (2013) | In factor or principal-components analysis, rotation of the factor axes (dimensions) identified in the initial extraction of factors, in order to obtain simple and interpretable factors. |
| Vogt and Johnson (2011) | Any of several methods in factor analysis by which the researcher attempts to relate the calculated factors to theoretical entities. This is done differently depending upon whether the factors are believed to be correlated (oblique) or uncorrelated (orthogonal). |

According to Tabachnick and Fidell (2007, p. 646) it is wise to first apply oblique rotation method (either direct oblimin or promax) in the SPSS tool with the desired number of factors. First analyze the component correlation matrix arrived out of the factor analysis. If the correlation values between the components are greater than 0.32 it implies that the factor variance is subject to a 10% or greater overlap, hence the oblique rotation method is recommended for factor analysis. Contrarily, if the correlation is lower than 0.32 orthogonal rotation method is suitable.

Accordingly, component correlation values based on the oblique rotation method (direct Oblimin with Kaiser Normalization) is presented in the Table 7 given below.

The authors find that except for the correlation between factors two and three (highlighted in the table above), all other components have correlation values greater than 0.32 between them. Hence, explained the analysis obtained through oblique rotation method and discussed the results.

Table 7. Component correlation matrix to decide choice of rotation

| Component Correlation Matrix | | | |
|---|-------|--------------|--------------|
| Component | 1 | 2 | 3 |
| 1 | 1 | 0.327 | 0.462 |
| 2 | 0.327 | 1 | 0.189 |
| 3 | 0.462 | 0.189 | 1 |
| Extraction Method: Principal Component Analysis. | | | |
| Rotation Method: Oblimin with Kaiser Normalization. | | | |

4.3.2. Test of Sampling Adequacy and Test of Sphericity

There are two test results (Table 7) that indicate the aptness of the collected data for structure detection. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy represents the variance proportion in the variables that can be caused by critical factors. The nearness of KMO value to 1.0 decides whether or not to apply factor analysis (Williams et al., 2010). Studies also indicate that values less than 0.50 denote weaker usability factor analysis. In the current study the KMO value 0.901 which denotes high relevance to the use of factor analysis.

The hypothesis that the correlation matrix is an identity matrix is tested by means of Bartlett's Test of Sphericity. The statistical significance (less than 0.05) of this test is also an indicator of the appropriateness of factor analysis to a set of collected data (Tobias and Carlson, 1969). In this study, it is found that the result of Bartlett's test is statistically significant (Table 8). Hence the report is that the inter-correlation matrix of the sample does not belong to a population in which the inter-correlation pattern is an identity matrix.

Table 8. Sampling adequacy and test of sphericity

| | | |
|--|--------------------|---------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | 0.901 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 978.294 |
| | Df | 120 |
| | Sig. | .000 |

4.3.3. Communalities Test

The higher the communalities values, higher is the representation of variables in the extracted components (Fabrigar et al., 1999; Williams et al., 2010). Values less than 0.5 are not considered for analysis, because they do not fit well with the factor solution. Table 9 shows 16 out of the 20 variables extraction communalities values of more than 0.5 and hence accepted to fit adequately with the factor solution.

4.3.4 Total Variance Explained and Factor Rotation

There are three segments to the 'total variance explained' segment of factor analysis and displays the variance explicated by the initial solution, extracted components, and rotated components. Only Eigenvalues greater than one extracted, are considered as a factor for further analysis (Fabrigar et al., 1999; Hayton et al., 2004; Williams et al., 2010; Kline, 2014). Eigenvalues measure the degree of

Table 9. Communalities

| Variable Code | Extraction |
|---------------|------------|
| MBG-02 | 0.591 |
| MBG-03 | 0.523 |
| MBG-04 | 0.552 |
| MBG-05 | 0.528 |
| MBG-06 | 0.642 |
| MBG-07 | 0.709 |
| MBG-08 | 0.581 |
| MBG-09 | 0.548 |
| MBG-10 | 0.568 |
| MBG-11 | 0.497 |
| MBG-15 | 0.585 |
| MBG-16 | 0.524 |
| MBG-17 | 0.512 |
| MBG-18 | 0.544 |
| MBG-19 | 0.515 |
| MBG-20 | 0.565 |

Extraction Method: Principal Component Analysis.

variance in the observed variables of a factor. If the value is greater-than-or-equal-to one, it means, the factor explains more variance than a single observed variable (≥ 1 implies 'greater than average'). According to Rietveld and Van Hout (1993), "the number of positive Eigenvalues determines the number of dimensions needed to represent a set of scores without any loss of information." It decides the number of factors (components) to be extracted. In Table 10, the first component constitutes 40.189% of the variance, which means the other factors totally explain the rest of the variance. Based on the Eigenvalues greater than 1, three components explain 56.144% of the total variance.

4.3.5 Pattern Matrix

The result of the pattern matrix presented in Table 11, shows 14 variables grouped into three components (latent variables). Component 1 clustered 8 variables, two variables in component 2, four variables in component 3.

The pattern matrix shows three components extracted with a total of 14 variables/items out of the first 20 variables in the questionnaire. The 14 variables constitute 56.144% of the total variance explained to indicate a good representation of the impact of MBG in the teaching-learning process of financial accounting among MBA (ITBM) students.

The first component of the pattern matrix comprises of eight variables and account for 40.189% of the total variance explained. Seven out of the eight variables in component 1 prove that MBG is an impactful tool for teaching-learning financial accounting. The authors named the element as Cognizance. Students perceived that the MBG experience enabled conceptual understanding, ability to experiment accounting concepts into a business setting, in-depth knowledge about the accounting process and more importantly longer retention of learning. The students also perceived that playing MBG enabled a big-picture view of the business problem under consideration. MBA students need to radically develop the ability to see the given problem more holistically by resisting their myopic

Table 10. Total variance explained

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings ^a |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|--|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 6.43 | 40.189 | 40.189 | 6.43 | 40.189 | 40.189 | 5.635 |
| 2 | 1.335 | 8.347 | 48.535 | 1.335 | 8.347 | 48.535 | 2.781 |
| 3 | 1.217 | 7.608 | 56.144 | 1.217 | 7.608 | 56.144 | 3.816 |
| 4 | 0.889 | 5.556 | 61.7 | | | | |
| 5 | 0.842 | 5.262 | 66.961 | | | | |
| 6 | 0.741 | 4.629 | 71.59 | | | | |
| 7 | 0.665 | 4.155 | 75.746 | | | | |
| 8 | 0.61 | 3.814 | 79.56 | | | | |
| 9 | 0.541 | 3.384 | 82.944 | | | | |
| 10 | 0.478 | 2.99 | 85.933 | | | | |
| 11 | 0.46 | 2.876 | 88.809 | | | | |
| 12 | 0.418 | 2.614 | 91.424 | | | | |
| 13 | 0.395 | 2.47 | 93.893 | | | | |
| 14 | 0.348 | 2.173 | 96.066 | | | | |
| 15 | 0.329 | 2.055 | 98.121 | | | | |
| 16 | 0.301 | 1.879 | 100 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

temptation for hasty problem-solving. The students also perceived that playing MBG reduced their fear and anxiety about the financial statement analysis course, given their non-accounting background. As stated earlier, several students in their first encounter with the financial accounting course, experience fear and anxiety for not only gaining knowledge but also to pass the course.

The second component of the pattern matrix contains two variables and constitutes 8.347% of the total variance explained. The component is Collaboration because the students' perceived MBG fostered user engagement, teamwork, and also created an opportunity to work with diverse teams.

The third and final component of the pattern matrix, named enthusiasm, which is by four variables, explains 7.608% of the total variance. The component comprises of students' perception of the enthusiasm experienced with the MBG game. The students accepted that MBG game as an innovative and fun-filled way of learning financial statements and analysis. The students perceived that they could perform better in game-based evaluation in comparison with other traditional evaluation methods like written-test, multiple-choice tests, and case-presentations. The students recommended MBG experience to a broader segment of the course offering in the MBA (ITBM) program. It is heartening to find students expect board-game based learning to be explored in several other courses/ subjects/curriculums.

The total variance explained for component 1, named as Cognizance, is overwhelming. In other words, Cognizance, which translates to understanding and knowledge constitute nearly 72% of variance explained in the three rotating components (40.189 / 56.144). The other two components namely Collaboration (2 out of 14 variables; around 15% of variance explained in the three rotating components (8.347 / 56.144)) enthusiasm (4 out of 14 variables; about 13% of variance explained in the

Table 11. Pattern matrix and latent variable

| Variable Code | Variables / Factors | Factor Loading | TVE | Component / Latent Variable |
|---------------|--|----------------|--------|-----------------------------|
| MBG-02 | MBG enables understanding from business perspective | 0.755 | 40.189 | 1 <i>Cognizance</i> |
| MBG-17 | MBG enables deeper understanding of GAAP and Accounting standards | 0.738 | | |
| MBG-05 | MBG enabled me to experiment accounting impact in a business | 0.712 | | |
| MBG-04 | MBG enabled deeper understanding about accounting process | 0.691 | | |
| MBG-03 | MBG excited me to explore accounting domain further. | 0.689 | | |
| MBG-16 | MBG reduced the fear and anxiety of financial Accounting | 0.641 | | |
| MBG-20 | My ability to retain financial accounting knowledge is much better through MBG way of learning | 0.592 | | |
| MBG-09 | MBG enables to see a bigger picture of the problem | 0.516 | 8.347 | 2 <i>Collaboration</i> |
| MBG-07 | MBG enhances my engagement with users | 0.803 | | |
| MBG-06 | MBG enabled me to work with diverse teams | 0.737 | | |
| MBG-15 | It is an innovative way of learning financial accounting | 0.765 | 7.608 | 3 <i>Enthusiasm</i> |
| MBG-18 | It is fun filled way of learning accounting | 0.708 | | |
| MBG-19 | Compared to traditional evaluation methods, I can perform better in MBG evaluation | 0.653 | | |
| MBG-10 | I will recommend MBG approach to a wider segment of the MBA program | 0.558 | | |

three rotating components (8.347 / 56.144)) has much lower impact than Cognizance. The reasoning is significant because the students perceived MBG game experience is impactful to the facilitating Cognizance (subject knowledge/understand) of financial accounting than fostering Collaboration and Enthusiasm. The findings also uphold the widely known fact that the MBA program is already filled with several avenues/activities/initiatives fostering Collaboration and Enthusiasm.

5. DISCUSSION

This section discusses the results in light of the theoretical and practical implications. Through the board game teaching-learning process, the students' learning happens in many phases. Students tend to record, retain the instructions and have conversation with peers, corroborating to earlier works of Warburton and Madge (1994); Tanner and Lindquist (1998); Sproedt (2012); Ogershok and Cottrell (2004); Cochran (2005); Spiegel et al. (2008); Wangenheim et al. (2012); Struwig et al. (2014); Thompson (2015); Schmuck and Arvin (2018). This participative learning usually is less in case of lecturing, or traditional learning process and our research substantiate the works of Tan et al. (2007); Burguillo (2010); Wang and Chen (2010) and Hamari et al. (2016). Each player goes through an unique personalized experience. Monopoly game-based learning enabled students to understand things from a business perspective. The art of negotiation with other teammates to increase the cash flow, understanding some of the business concepts such as cash management, mortgage, depreciation, book value, and market price are learned. This simulation helped them to have a deeper understanding of the statutory compliances in accounting like GAAP, Accounting standards, concepts, and convections. This experiment allows students to know the accounting impact in business. The Accounting function and process is more easily understood as students had

hands on the same. Example: If players have no money, the player has to start selling or mortgage properties with the bank. In the game, players were allowed to bid or auction the properties. Buying with a planned way of investing with available financial resources is the key to be ahead in the game. Buying every property that one crossed through and then later, running out of money is a wrong strategic business decision. So, patience and disciplined way of buying is another valuable lesson taught. Games bring about a positive change in attitude and personality of the students, the studies reiterated earlier by Tanner and Lindquist (1998) and Wells (2015). Students learn to strike a balance between return on investment and cost of maintenance of the property. It also helped the students to explore the accounting domain further, the finding corroborating with the previous works of Tanner and Lindquist (1998) and Mladenovic (2000). The fear and anxiety of numbers which engineering students have was reduced because of the game experience. Participative learning through monopoly enhanced the ability to retain financial accounting knowledge. Education enabled them to see a bigger picture of the financial problem. They can later use it in the professional and practical endeavour, which allows students to strengthen their employability; the results sync with Mladenovic (2000) and Wells, (2015). The user engagement helps the student to work in a diverse team during the simulation game. The innovative way of learning finance was fun filled compared to traditional evaluation, and students performed better in these activities. Hence this approach of teaching-learning should be to a broader segment of the MBA Programme.

The results helped to identify the factors behind game-based teaching-learning. The game-based learning is, and not an only innovative process but also enhances teamwork, empathy and optimum use of financial resources. This superior learning experience compliments the traditional learning process with blended and participative learning. In management schools, the pedagogy needs more focus on the functional areas rather than theoretical aspects.

6. CONCLUSION AND FUTURE DIRECTION

The study reinforced several other reviews about the application of Board Game in the teaching-learning process to foster an enriched and enjoyable learning setting. Experimenting MBG in the financial statement analysis (financial accounting curriculum) at the post-graduate IT management level is a unique contribution of this research and is a rare find in the current body of knowledge. The study finds that while actively drawing themselves to the games; the students' concurrently recap the conceptual understanding of financial accounting. It is welcoming to see that MBG armoured their theoretical knowledge, practically from three critical perspectives, namely cognizance (72%), collaboration (15%), and enthusiasm (13%).

However, this study is not without limitations. With the current agility and flexibility of educational technologies, online and software games can easily pull down the excitement of the offline board games. The study needs further substantiation regarding variety in context, geographies, and curriculums to validate the generalization. The exploratory research can be improvised by aligning and testing appropriate theories which underpin higher education, psychology, and sociology, to name a few. The study will be an adequate source of reference to introduce a curriculum to which students are not familiar with and can facilitate to minimize the initial inertia, fear, and anxiety. Going ahead, the study can be extended to higher levels of finance courses, mainly working capital management, investment management, mortgage, and other related areas.

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Vijayakumar Bharathi S. is a Post-Graduate in Commerce and in Management. He earned his PhD in Computer Studies from the Symbiosis International (Deemed University) (SIU), Pune in the area of ERP Risk Assessment for SMEs. He is an ICWA (Inter) Qualified. He has over 26 years of experience including 5 plus years in the Industry at an Indo-Swiss JV manufacturing textile machinery. He is a PhD guide for the Faculty of Management and Faculty of Computer Studies at SIU and PhD thesis reviewer and examiner at MDI, Gurgaon. He has over 90 publications in the form of research papers, conference proceedings and case studies. The case studies are published in the Case Centre (formerly ECCH) and PMI. He is a reviewer of journals in Springer, Emerald and IGI Global. He has also worked/working on six funded projects, one from European Union (Erasmus+), one from PMI, two from SIU, two from industry. He is the recipient of the Outstanding Academic Award, 2013 for SAARC Region from SAP University Alliances, APJ at Shanghai China, during March 2014. He also received performance awards for teaching, research and consultancy at the Institute level.

Mugdha Kulkarni is a finance and accounting professional. Dr. Kulkarni is an Assistant Professor in the area of accounting at the Symbiosis Centre for Information Technology, a constituent of the Symbiosis International (Deemed University), Pune INDIA. Her Ph.D. is in the area of Intangible Asset Management. Her research interests are the content analysis of financial reporting, disclosure analysis, financial fraud detection, intellectual capital valuation, and mutual funds,