

Business Simulations in Management Pedagogy: Role of Libraries in Enhancing Access to Business Simulations: A Case Study

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Abstract - Looking at the contemporary educational practice, we come across a host of buzzwords such as immersive environments, participatory learning, experiential learning, experimental learning, etc. Due to the drastic development in the information and communication technology areas, various new educational methods have emerged such as e-learning and virtual learning environment. Education, especially, the higher education scenario has witnessed the boom of new pedagogical tools. Among this, 'simulations' is a new mode of teaching and learning in the management pedagogy that is gaining ground and appreciation. Simulations act as an essential educational tool in the virtual learning environment. There has been a significant increase in the use of business simulation games in the area of management education. Business simulations attempt to bring real-life business scenarios to life in the classroom to develop the desired capacities and skills of the students. The most important advantage of a simulation is that they help to establish a new learning relationship with the students and assigning new roles to them and build their capacities regarding participatory learning. This paper highlights the concept of simulation, and it also explores the role of simulation in management education. It discusses various business simulations available in the market. This article also shares the Indian Institute of Management Kozhikode library's experience about the facilitation of simulations with a special reference to Harvard Business School Publishing Simulations, for its academic programmes during the past few years.

Keywords: E-Learning, Management Education; Business Simulations

I. INTRODUCTION

Higher learning education scenario is undergoing rapid changes because of technological development, the method of teaching and learning have been changed drastically in the last decade. Classroom lectures have transformed into more interactive and experimental teaching and learning. The higher education system itself got enhanced with the integration of new pedagogical tools and methods. Online technologies in education provided opportunities to learn from anywhere at any time and by anyone. In the e-learning environment, an instruction is delivered electronically by using the latest information and communication technologies, such as the internet, intranet and also using multimedia platforms. There are a lot of new pedagogical tools that have shown their role in higher education learning and the significant among them are case studies, exercises, core curriculum readings, multimedia cases, and

simulations. Simulation-based e-learning is a powerful tool which gives more interactive, stimulating, experimental and enjoyable experience for the learners. They are also able to provide realistic or real-world scenarios. According to Catalin, "Business simulations are generally designed to allow individuals or members of a team the opportunity to face real-life situations in a protected environment while exposing them to experiences which would normally take years to acquire." They can be used for developing leaders, improving teamwork, building communication skills, honing negotiation techniques and developing functional/technical skills such as marketing, human resource management, and financial management". (Ploae, Catalin, 2014). Use of business simulations in management education has tremendous advantages. They help in knowledge enhancement, learning energization, decision making, and improvement of critical skills and moreover, it gives an experience of working together as a team. They produce strong experiences, by providing a risk-free learning environment and experimentation. It helps students to work in a more complex and realistic learning environment. It also helps the students to get more engaged in their learning, other than any other training method. This study gives a detailed account of Harvard Business School Simulations and their usage at IIM Kozhikode.

II. LITERATURE REVIEW

As for this research article, the primary purpose of the literature review was to grasp comprehensive ideas on the extent of business simulations and their role and implication for higher education concerning management education. Many studies have been published so far on various aspects of business simulation, i.e., the use of simulation tools in management education, the influence of business simulation on students' entrepreneurship, simulation-based e-learning, the effectiveness of management simulation, role of simulation in various management subjects and courses and their implication for higher education.

Wolmarans, H P (2006) in his article sought the impact of business simulation on higher education in financial management. This study also attempted to identify the most critical positive benefits that learners experience from simulation and also explored the possible drawbacks. This study was based on the use of PROSPEX simulation in an

introductory finance course. The study found that learners gained more significant learning experience from simulation rather than a case study and an average classroom lecture, and it helped the students to have a better understanding and integration of concepts. Simulations enabled them to obtain a better holistic financial overview of a company. Better decision-making skills have been developed through teamwork and by learning in groups.

Adobor & Daneshfar (2006) in their research study investigated the factors that boost the effective use of simulations in management education. This study is based on data collected from 49 teams of respondents performing a management simulation. The study showed the nature of simulation and team dynamics that affected learning and performance. The findings brought in to the limelight that how the simulations act as a reflective in real life situation and how positively they are associated with the learning. The study also identified the ease of use of the simulation that would be positively affected learning in terms of problem-solving, and this is important as the problem identification is an essential task of a manager. This study also emphasized the team spirit and team performance and pointed out that emotional conflict has a negative impact on individual learning and team performance. The crucial implications of the study for the management educators consider the features of simulation, realism, and user-friendliness of the simulation are the important criteria to be borne in mind before the selection. Critical evaluation of a simulation is mandatory.

Ezz *et al.*, (2012) conducted a study to investigate the importance and use of simulation in education in general, and in the context of management education and training in particular. A simulation tool study was conducted in the School of Information System, Computing and Mathematics, University of Brunel. This study collected the views from 23 participants, about the role of simulation in teaching and training, and it also examined their opinion on how simulations can improve skill development and how it accomplishes the learning objectives. Thirty-six simulation tools related to management education were selected for the study. The findings of the study highlighted the impact of simulation on the employability of the learners. It also showcased how the simulations help the student to face real life situations and also helping them to learn by doing and learn from their mistakes. Through this study, they have elaborated the importance of open educational resources (OER) in the discipline of business education.

Neeli and Tucker (2012) conducted a case study to evaluate business simulation as an authentic e-learning tool. This study explored the research question whether the use of simulations will help the college graduates to attain the skills and competencies for employability in their field of study. This study examined seventeen business simulations of various product providers such as publishers like McGraw Hill, Pearson and also simulations from technology

companies like Go ventures, and Capsim were evaluated using different checklists and criteria. The study found that simulations are significant tools which help students to improve their skill and also help them to master the workplace. The study also found that business simulations, available in the market are not well structured. For nontraditional college students with below average computer skills, completing simulation is a hectic task. Ease of access was an essential element in the evaluation of the simulation. Technology consideration, the ability to integrate the simulation into the university's learning management system were other important criteria for the review.

Tanner *et al.*, (2012) conducted a study to address the research questions regarding student evaluation of business simulation game as a useful learning tool. The study has an intention to know how the marketing and management faculty across the nation perceived simulation as a pedagogical tool. The research team has developed a survey instrument based on the findings of Mitchell. The study has brought out a positive outcome of the simulations. It is quite evident from the survey that faculty feel simulations helped the students to understand previous business course concepts. Simulations helped the students to face real-world experiences in strategic thinking and dealing with competition. These learning tools provided more collaboration in teamwork and also generated more fun. In addition to the above advantages, the faculties do not feel that these new pedagogical tools are superior to other traditional approaches to learning such as classroom discussions, case studies, etc.

Catalin (2014) illustrated the influence of business simulation on student's entrepreneurship. She opined that simulation gaming environments could help the students to solve an unpredictable situation. Computer simulated games enable students to experience business decision making and problem-solving without making huge losses. Involvement of simulation into the subject curriculum altered the teacher-centric classroom into learner-centric, where participants collaborate, make decisions and solve problems. The study claimed that the use of business simulations in training and education help the students to improve their skills in strategic thinking, business improvement and financial understanding.

Their view of the literature reveals that business simulations act as an educational tool which is well received by the academic community including educators and students and trainers. Almost all studies brought out the importance of simulation-based training as an effective management training method, and there is no doubt that it is superior to other traditional teaching methods like classroom-based teaching. Simulations in management education helped the students to improve their skills regarding critical thinking, strategic thinking, problem identification, problem-solving, teamwork, etc. in a realistic learning environment.

III. OBJECTIVES OF THE STUDY

The overall purpose of the study is to highlight the concept of simulation and role of business simulations in management education. This study seeks to identify the usage of business simulations at Indian Institute of Management Kozhikode and also showcase a librarian's role in enhancing the access of simulations to the academic communities. Main objectives of the study are:

1. To map and have an overview of business simulations;
2. To explore the role of business simulations in the management education;
3. To identify various business simulations available in the market and examine the use of different business simulations for the diverse academic programmes at IIM Kozhikode;
4. To understand the Harvard Business Simulations and their features, prerequisites, area-wise distribution, and mode of operands and also their usage at IIM Kozhikode;
5. To identify the role of librarians in enhancing the access facilities of business simulations to bring out their role in academic support or curriculum support.

IV. METHODOLOGY

The present study is focused on the role of business simulations in management education. Hence it systematically assesses the various business simulations available in the market. A thorough study on the HBSP simulation website has been carried out to know different aspects of HBS simulations, their area-wise distribution, technical specifications, prerequisites, etc. The study also collected data available with the acquisition department of IIMK library concerning various academic programmes. Discipline wise and programme wise usage analysis have been done.

V. USE OF SIMULATIONS IN MANAGEMENT EDUCATION

Simulations act as a prominent learning tool in higher management education and they have become an essential pedagogical tool. Their usage in business schools has increased significantly over the last few years. Literature reviews show the advantages of simulations over traditional learning methods. They can offer an engaging and innovative learning experience to students and can realize positive learning results. Schwartzman (1997) has pointed out that simulations cultivate learning environments. Moratis *et al.*, (2006) argued that the usefulness of simulations to management education is par excellent. She listed the prominent topics of simulations in the context of management education are to be found in the field of marketing, change management, strategy development production and operations management and logistics. Hall (1996) noted that: "Management knowledge is not black

and white. It is not even grey. Rather it is speckled and shaded with the different patterns depending on the current situation and the perspective of the individual. So for managers, learning must be concerned with developing understanding rather than just gaining knowledge and remembering facts." Management as a particular field of knowledge is characterized by its relatively ill-structured, interdisciplinary, and complex knowledge domain. Curry and Moutinho, (1992) argued that the most popular forms of business simulation used in management education are business games. Business games are a form of simulation in which the software is pre-programmed. Business simulation has some unique problems of access and usage as compared to traditional teaching tools. They include infrastructure, acceptability, access, cost, training, skills, etc. But still the advantages are more, and therefore the importance of business simulations have been recognized by the business schools in the world. Top B-Schools in India have indeed identified the potential of computer-stimulated learning tools as a method of real-life business teaching method. Computer simulations such as Markstrat, People Express, Harvard simulations, and Capsim have become part of the curriculum at many Business Schools in India. Some of the earliest adopters of business simulation in India were IIMs.

Other leading B-Schools that are leveraging business simulations include IMT Ghaziabad, NMIMS Mumbai, SPJIMR Mumbai, ISB Hyderabad, XLRI Jamshedpur, IMI Delhi, etc. Market players in the business simulations are ready to customize the simulations as per the needs of management schools, but there are still not many takers. Regarding the many benefits of business simulation, the relative number of B-Schools leveraging business simulations in Indian management education is still not satisfactory. It is essential to know about the stumbling blocks which are stopping B-Schools to adopt business simulations. There is a need for training/coaching to the Indian faculty to handle these simulation games effectively. There is a dire need to make aware of management faculty about the simulation tool to effectively blend simulation games in their teaching plan along with case study method and lecture method to enhance the learning levels of their pupils. Cost of simulations is another hindrance which pulls back the management schools to successfully adopt the business simulations.

VI. SIMULATION AS A PEDAGOGICAL TOOL AT IIMKOZHICODE

Indian Institute of Management Kozhikode (IIMK) is the fifth IIM, established in the year 1996, and it is a premier management institute of national importance. IIMK was established by the Government of India in collaboration with Kerala State. The main motto of IIMK is to offer world-class programmes in management education. The Institute endeavors to develop the necessary environment through the synergy of faculty, students, business and the industry. The first programme started at IIMK is a

Postgraduate Programme in Management (PGP) which is a flagship programme of two years duration. IIMK also offers the Fellow Programme in Management (FPM) which is a full-time residential programme. Next, it introduced Management Development Programs (MDP) for industry professionals which is a short duration programme; then it began to conduct the Faculty Development Programme (FDP). Fellow Programme in Management (FPM) is a doctoral research programme which offers a specialized area of research in management related subjects, and this programme commenced from the year 2007, and the main aim of FPM is to develop top quality researches who can contribute a large extent to research and development of management education in the country. Executive education (EPGP) currently offers different executive education programmes.

At IIMK, the method of education is a combination of lecture method and experimental learning methods such as case discussions, role plays, simulations, group discussions, and projects. The pedagogy adopted for Management Development Programme is participatory. The aim is to bring in the rich experience of participants into the classroom through discussions and blend them with inputs from faculty on the latest trends in the field.

The case method of study is another major tool. It is supplemented by group exercises, role plays, computer games, simulations, lectures, and presentations by participants. Hence we can say that simulations act as a major pedagogical tool at IIMK. Some of the significant business simulations used by IIMK faculties include Mark strat Simulation, People Express, Harvard Business Simulation, Go Venture Simulations, Cesim Simulations, Capstone Simulations, BOSS (Blue Ocean Strategy Simulation), etc.

VII. HARVARD BUSINESS SIMULATIONS, ACCESS, AND USAGE- LIBRARY'S ROLE

Harvard business simulations are available online. These simulation tools act as the most potent catalysts for experiential learning in the field of management education. HBSP simulations provide risk-free realistic learning student learning. They are remarkably teachable, with simple but powerful administration tools. Fifty-six simulations are available on their website. Out of these 36 simulations are produced by Harvard Business School and Harvard Business Publishing. Different Publishers produce remaining 20 simulations. Table I shows the distribution of simulation via different publishers.

IIMK purchases licenses for the simulation from Harvard Business School Publishing. These simulations belong to different management disciplines like Accounting, Economics, Entrepreneurship, Finance, General Management, Information Technology, Marketing,

Negotiation, Operations Management, Organizational Behavior and Strategy. Table II shows the discipline-wise distribution of these simulations.

TABLE I PUBLISHER-WISE LIST OF HBS DISTRIBUTED SIMULATIONS

| Simulation Publisher wise | Number |
|-------------------------------------------------|--------|
| Cesim | 4 |
| Harvard Business School | 3 |
| Harvard Business Publishing | 33 |
| Market Place Simulations | 5 |
| Motolab | 7 |
| The Wharton School University of Pennsylvania | 3 |
| University of Virginia Darden School Foundation | 1 |
| Total | 56 |

TABLE II DISCIPLINE-WISE LIST OF SIMULATIONS AVAILABLE WITH HBSP

| Discipline | HBS Simulation | Non-HBS Simulation | Total |
|-------------------------|----------------|--------------------|-------|
| Accounting | 1 | - | 1 |
| Economics | 1 | 7 | 8 |
| Entrepreneurship | 2 | 1 | 3 |
| Finance | 3 | - | 3 |
| General Management | - | 2 | 2 |
| Information Technology | 1 | - | 1 |
| Marketing | 6 | 7 | 13 |
| Negotiation | 0 | 1 | 1 |
| Operations Management | 11 | - | 11 |
| Organizational Behavior | 5 | - | 5 |
| Strategy | 6 | 2 | 8 |
| Total | 36 | 20 | 56 |

A. Technical Specifications/Requirements of HBS Simulation

Like all other simulation games, HBS simulation also has to have particular technical specifications/requirements. High-speed internet connection and a modern web browser are the prerequisites of running HBS Simulations. The users have to check and confirm the technical specifications before running each simulation. Harvard Business School Press simulation page help the user to verify whether the setting of current browsers and plugins meet minimum requirements to run these listed simulations. This facility also helps the user to examine the compatibility online for each simulation, operating system and version, flash player, browser and version, screen resolution (minimum 1024x768), javascript, and cookies enabled. Table III. Shows the technical specification of selected few of the simulation distributed by HBSP. (<https://hbsp.harvard.edu/simulations>).

TABLE III TECHNICAL SPECIFICATION OF SELECTED HBS SIMULATIONS

| Simulation | Operating system | Web browser |
|------------------------------------------------------|------------------------------------------|---------------------------------------------------------|
| Change Management Simulation: Power and Influence V2 | Windows 2000, XP, Vista, 7 / Mac OS 10.x | Chrome, Firefox, Safari, Edge, and Internet Explorer 11 |
| Data Analytics Simulation: Strategic Decision-Making | Windows, OS X | Chrome, Firefox, Safari, Edge, and Internet Explorer 11 |
| Entrepreneurship Simulation: The Start-up Game | Windows 7 / Mac OS X | Chrome, Firefox, Safari, Edge, and Internet Explorer 11 |
| Finance: Blackstone/Celanese | Windows 2000, XP, Vista, 7 / Mac OS 10.x | Internet Explorer 11+ / Firefox 3.6+ / Safari 4+ |
| Finance: Capital Budgeting | Windows 2000, XP, Vista, 7 / Mac OS 10.x | Internet Explorer 11+ / Firefox 3.6+ / Safari 4+ |
| Financial Analysis Simulation: Data Detective | Windows, Mac OS X | Chrome, Firefox, Safari, Edge |

B. HBS Simulation Access Work Flow

There is extensive use of HBS simulations at IIMK. The library is playing a significant role in sourcing, enhancing and facilitating the access of these simulations. The first step begins with the sourcing of the simulation. Based on the query from the academic department, the library sends the pricing details to the concerned department for getting financial approval from the higher authority. Upon the receipt of approvals, the library sends the supply order in a prescribed format to the HBS. Once the supply order for the simulation has reached HBS, they will set up for access through their educator’s website. A course URL will be created, and it will be sent to the instructor as well as the course administrator. The course URL will look like <https://hbsp.harvard.edu/import/562716>, the number at the end is the specific identifier for the unique course, which is known as unique Course ID.

To access the simulation, the instructor has to login with their username and password allotted for premium access at www.hbsp.harvard.edu. The Instructor will click on “My Courses” on the right-hand side of the screen and then click on the course title with course name. There will be a course URL activated for sending to the students for them to register for the simulation (this Course URL is also available on the course page).

If the Simulation is multi-scenario, before running the simulation, the instructor must assign each student to a scenario. Students appear in the simulation roster, ready for scenario assignment after they visit the course pack link and acquire the course materials. The Instructor will click on the “Manage Simulation” link on the course page to administer the simulation and to assign scenarios.

C. How to Access the Course Pack As a Student

Once the student receives the course links to the respective HBS Coursepack, they will navigate to the following screen. If the student has never registered in HBSP educator’s site, they can do this by clicking on “Register now.” If they have already registered as a student previously for accessing

prior courses, they can login with their credentials at “Login now.”



Fig. 1 Harvard Simulations Access Page

After clicking “Register now,” the following screen will navigate to begin their short registration process. There they can create a User ID and Password and fill the other required information

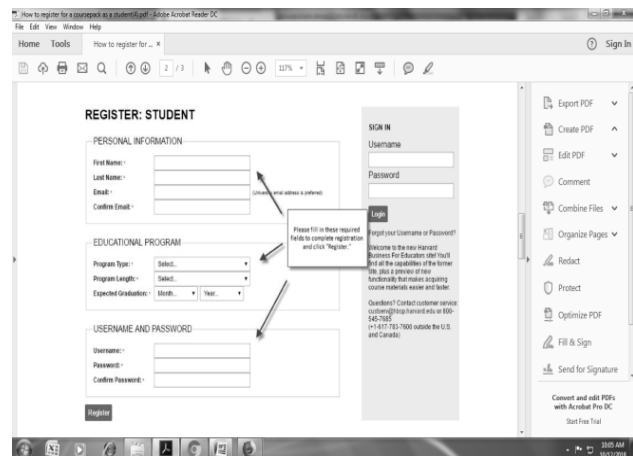


Fig. 2 Harvard simulations Registration as a New User

Once the registration as a student is over, they will receive an e-mail confirmation. They will have to click on login link to log in to the course with newly created Username and Password. After entering the login credentials, they will be brought in to the course page through the course link. The course material will be imported into their web user library. From this course page, they will be able to open their contents.

D. Usage of HBS Simulations for PGP Courses at IIM Kozhikode

Usage data for the HBS simulations by the flagship programme PGP for the past seven years (2012-13 to 2018-19) were taken for analysis Table IV and fig 4 shows academic year-wise usage of HBS simulations in various disciplines.

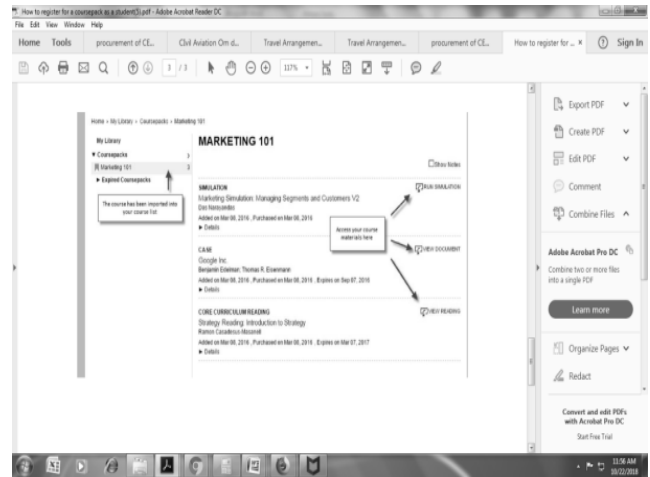


Fig. 3 Harvard simulations course page

TABLE IV YEAR-WISE USAGE OF HBS SIMULATIONS

| Year | Strategy | Marketing | Operation Management | Organizational Behavior | Finance |
|---------|----------|-----------|----------------------|-------------------------|---------|
| 2012-13 | | 2 | 1 | 6 | 2 |
| 2013-14 | 1 | 1 | 1 | 2 | 1 |
| 2014-15 | 2 | 1 | 2 | 3 | |
| 2015-16 | 2 | 1 | 1 | 1 | |
| 2016-17 | 2 | 3 | 1 | | |
| 2017-18 | 3 | 2 | 1 | | |
| 2018-19 | 2 | 4 | 2 | 1 | |
| Total | 12 | 14 | 9 | 13 | 3 |

TABLE V DISCIPLINE-WISE USAGE OF HBS SIMULATIONS

| Simulations: Discipline-wise | Number | Percentage |
|------------------------------|--------|------------|
| Strategy | 12 | 23.52 |
| Marketing | 14 | 27.45 |
| Operation management | 9 | 17.65 |
| Organizational Behaviour | 13 | 25.49 |
| Finance | 3 | 5.89 |
| Total | 51 | 100 |

The data presented in tables IV, V and fig. 4 and 5 show that out of 51 HBSP simulations, 14 (27.45%) simulations are from the discipline of Marketing, 13(25.49%) are from the area organizational behaviour, 12 (23.52%) are from Strategy, 9 (17.65%) are from Operations Management and 3 (5.89%) are from the discipline of Finance. The study reveals that marketing simulations are highly used simulation and finance simulations are the least used simulations.

E. Programme-Wise Usage

IIM Kozhikode offers different programs with various capacities. This study identified three of its major

programmes such as PGP, MDP and EPGP. Table VI and fig. 6 show the usage of different simulations from HBSP. Last two years' usage data was collected from the library. As it could be seen from table VI, out of the total 45 simulations, 53.34% (24) simulations were bought for MDP. 33.33% (15) simulations were purchased for PGP, and 13.33% (6) was used for Executive PGP.

TABLE VI PROGRAMME-WISE USAGE OF HBS SIMULATIONS

| Academic Programs | Number of Simulations used | Percentage |
|-------------------|----------------------------|------------|
| PGP | 15 | 33.33 |
| MDP | 24 | 53.34 |
| EPGP | 6 | 13.33 |
| Total | 45 | 100 |

The study, therefore, reveals that the use of business simulations was high for Management Development Programmes (MDP), which is a programme designed to provide more management practices to the working executives. The curriculum is such that participants gain an overall perspective for decision making, problem-solving and more practical oriented sessions.

VIII. CONCLUSION

Advancements in Information and Communication Technology have paved a way of entry of a variety of sophisticated simulations to academic institutions, especially higher learning institutions. Simulation-based learning has many advantages over conventional classroom lectures. Simulation-based learning is particularly useful in the development of decision-making skills. This paper discussed simulations as popularly used tools in today's business management education, with special emphasis on HBS/HBSP Simulations that are being used at IIMK. Simulations can be implemented in many ways in the management curriculum in Indian business schools and universities. But it is always essential to restructure the course in ways that enable the experiential learning processes which ensure participatory learning and it is also imperative to provide sufficient briefing sessions to maximize participants' understanding of the system and to choose suitable simulation programmes to achieve the most desirable learning outcomes. Various simulation products and services can be found on the market and are being used by businesses today.

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