A Conceptual Model on Fee Perception and Quality of Management Education Using ISM and Fuzzy MICMAC Analysis

* Archana Singh
** Roshan Kazi
*** Rajiv Divekar

Abstract

Purpose : The purpose of this paper was to understand the existing relationship between perceptions of fee appropriateness and quality of management education. Using extant literature, we made an attempt to understand the relationship among variables, which was missing in extant literature and proposed a conceptual framework using ISM (interpretive structural modelling). Further, the variables were also categorized using MICMAC analysis.

Design : The research procedure was methodically framed. It comprised of primary as well as secondary data & information. We used interpretative structural modelling (ISM) as a tool to understand the linkages and relation among the variables. We used systematic literature review (SLR) method to find the variables from the present literature and further used fuzzy MICMAC analysis to understand the composite balance amid the variables.

Findings : The findings using ISM modeling indicated three levels. The output suggested that Fee Appropriateness and Infrastructure were the most significant factors, the second level of the model is Skills Acquired and Career Aspiration, and the third level is Academic Excellence and Institutional Factors. In order to ensure the attainment of high level of management education, the educational institutions may focus their attention on academic excellence, good infrastructure, positively focusing on enhancing institutional features, and skill development of students to fulfill their career aspirations. The fuzzy MICMAC output suggests Fee Appropriateness and Career Aspiration were the dependence variables. Academic Excellence and Institutional Features were the linkage variables and Skills Acquired and Infrastructure were the driving variables.

Research Limitations : The study was based on expert opinion ; hence, the potential to capture unique insights was limited. Limited variables were also considered for the ISM model. The application in a real situation would need some changes.

Originality/Value : It is the first study to propose a conceptual model on Fee Appropriateness for management education using ISM. This research showed the analysis of Fee Appropriateness and its influence on quality of management education.

Keywords : management education, quality, fee, ISM, MICMAC

JEL Classification Codes : M10, M20

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* Assistant Professor, Symbiosis Institute of Management Studies (SIMS) (Constituent of Symbiosis International (Deemed University)), Range Hills Road, Khadki, Pune - 411 020, Maharashtra. (Email : archana.singh@sims.edu)
** Professor, Allana Institute of Management Studies 2390, Azam Campus, K. B. Hidayatullah Road, New Modikhana, Pune - 411 001, Maharashtra. (Email : drroshankazi@gmail.com)
*** Director, Symbiosis Institute of Management Studies (SIMS) (Constituent of Symbiosis International (Deemed University)), Range Hills Road, Khadki, Pune - 411 020, Maharashtra. (Email : director@sims.edu)

Multiple challenges are faced by global management education (Ghoshal, 2005 ; Jeffrey & Fong, 2004 ; Toole, 2005). Students are putting stress on top managements of institutes for enhancing quality of management education. MBA education is going through paradigm shifts in the education sector. Knowledge is very significant for a growing economy (Datar, Garvin, & Cullen, 2010). Along with an increased number of MBA institutes, the quality of education offered in many institutes is particularly being discussed by students (Dayal, 2002 ; Manimala, 2006). Management education is caught in a cost - quality vicious cycle. Burton and Dunn (2005) believed that an increase in the quality of management education has a great potential in the 21st century. Bagga (2017) identified measures to ensure assurance of higher educational quality, with accreditation being a measure. The credibility of AICTE and NBA has also been questioned (Gupta, Gollakota, & Sreekumar, 2003). Pearson and Rao (2006) discussed the following parameters - branding, leadership, global admissions, accreditation, and curriculum.

Theoretical Framework

(1) Fee Appropriateness : Students as stakeholders have stronger influence on purchase intention than service quality (Innerarity, 2013). Palacio, Meneses, and Perez (2002) clarified that for management institutions to stay progressive and effective, students' expectations are to be met. Analyzing the fee angle and its impact on different parameters of quality of management education is inevitable. Many researchers and thinkers believe the same (Bennis & O' Toole, 2005 ; Jeffrey & Fong, 2004). Stakeholders' satisfaction should be the result of service quality (Sahay& Thakur, 2007). Expectations and opinion of students may differ in management institutions (Sahney, Banwet, & Karunes, 2010).

(2) Academic Excellence : Continuous innovation in all aspects is characteristic of the knowledge society. This will enhance lifelong learning and knowledge development. Monaghan (2010) discussed how management education learning can lead to innovation and pedagogy. Mishra and Nargundkar (2015) also emphasized on innovative modes of delivery in the management education system. Consultant learning is an innovative teaching method for course design and for empowering students in control of their own learning process. Bisht and Joshi (2017) found that the level of emotional intelligence and its various factors were found to be significantly higher for the faculty members of higher education who were provided with the provision of development programs for the faculty by the organizations as compared to the faculty members with no such provisions. van Weert (2006) talked about the necessity to understand the demands of this knowledge society on its citizens and knowledge workers. Kajaste, Prades, and Scheuthle (2015) examined the expected impacts of different quality elements on higher - education institutions and assessed the impact of procedures. According to Leiber (2018), the significance of higher education is vital than ever in knowledge societies, therefore, the quality of higher education and its effectiveness needs to be corrected. However, there is still a lack of systematic evaluation.

(3) Career Aspiration : Ramaprasad, Prabhu, Lakshminarayanan, and Pai (2017) provided evidence of a positive association between HRM practices and organizational commitment. Sahay and Thakur (2007) and Noronha (2011) showed skill development as one of the imperative features of graduate education. Encouragement of entrepreneurship is inevitable for a growing economy (Kuratko, 2005). Therefore, the governments of growing economies fund and support entrepreneurship activities and programs (Leitão & Baptista, 2009). Innovation and entrepreneurship can increase productivity (Klandt & Volkmann, 2006). Palacio et al. (2008) emphasized that entrepreneurship programs need to have rigour and quality.

(4) Institutional Features : Branding is a critical factor and important exercise for management institutes.

Ranking narrows down the choice of MBA colleges (Jagadeesh, 2000). Noronha (2011) stated that it would be an irony if a management institute is managed below the required standards. Similarly, Oza and Parab (2012) highlighted the importance of faculty, research, and staff coordination to be a must for capacity and knowledge management for the right organizational beliefs as well as for amenability with rules and regulations. Leadership by researchers is a vacuum that needs to be filled to survive in challenging environment. According to Cappelli, Singh, Singh, and Useem (2010), leaders must make an environment for professional as well as individual success. Mahajan, Agrawal, Sharma, and Nangia (2014) used interpretive structural modelling to understand factors affecting quality of management education and how top management commitment towards branding shows better brand management than other colleges.

(5) Skills Acquired : Curriculum may not be a rich brand in the absence of research in colleges for creation of knowledge (Bush, 2007). It is extremely important to develop research skills (Dayal, 2002). The final aim of MBA is to provide better managers and to create positive impact on human capital (Mihail & Antigoni Elefterie, 2006). The positive gain in human capital can be evaluated by addressing the gap between expectations and perception of students as stakeholders (Flamholtz, Bullen, & Hua, 2003). Leiber (2018) discussed the success factors of quality management through - informed guidance of quality management policies, including assessments of students, teachers, quality managers, and leadership. Sen (2016) highlighted necessity of course fee structure and duration to be considered while designing the course curriculum and faculty skills with respect to the perception of students.

(6) Infrastructure : Infrastructure is the base leading to all aspects of quality in management education. For a management programme, furniture, location, building, and equipment facilitates delivery of quality education as per the required standards. Baruch (2009) discussed how important infrastructure is for choosing a management institute. Douglas and Judge Jr. (2001) and Kaynak (2003) emphasized on upgradation, maintenance, and repair for maintaining quality of infrastructure. Cost - effective instruments should be utilized for quality learning (Kingdon, 2007).

Research Methodology

The study aims at conducting research in three phases - finding factors from systematic literature review, validation of the identified factors, and interpretive structure modelling followed by fuzzy MICMAC analysis. The experts' opinion was derived from top management (dean of universities as well as directors and professors of management institutes) to understand the structural relationship between the identified variables. The opinion was derived from 20 experts consisting of 2 deans, 8 directors, and 10 professors of 10 management institutes. The research study had a tenure of four months (primary data necessary to address the underline research issues were collected through in - depth interviews with 20 experts in the field in 2018). A wide range of databases such as Scopus, Emerald Insight, JSTOR, and EBSCO Host were referred to arrive at the identified variables. The type of research adopted is descriptive. The variables are substantial as they were repeated several times during the development of the literature review. To understand the nature of the relationship among the six variables, the type of linkages and their significant interpretive structural modelling (ISM) as proposed by Warfield is used.
    The following steps are taken :

✤ Identify and note the main factors affecting the fee appropriateness and quality of management education.
✤ Determine related association between factors affecting the fee appropriateness and quality of management education.

Table 1. Descriptive Statistics

Variables Identified	N (Number of Experts)	Minimum	Maximum	Mean	Std. Deviation	Coefficient of Variance
Skills Acquired	20	2.50	5.00	3.6563	.69405	18.9825
Career Aspiration	20	2.25	5.00	3.6875	.74284	20.14478
Academic Excellence	20	2.40	4.60	3.5500	.66451	18.71871
Infrastructure	20	1.33	5.00	3.5167	.86163	24.50119
Institutional Features	20	2.25	5.00	3.5500	.76348	21.50635
Fee Structure	20	2.00	5.00	2.9120	.73236	25.14926
Sustainable Education	20	1.00	5.00	2.8500	.88258	30.96772
Entrepreneurship	20	2.00	4.67	3.0832	.69986	22.69938
Fee Appropriateness	20	2.00	5.00	3.6500	.85224	23.34909
Indian Higher Education	20	2.00	4.67	3.1833	.77592	24.37435
Valid N (Listwise)	20					

Table 2. Identified Factors for ISM Analysis

V1	Fee Appropriateness
V2	Academic Excellence
V3	Career Aspiration
V4	Institutional Features
V5	Skills Acquired
V6	Infrastructure

↳ SSIM development to specify pair - wise connection.

↳ Preparation of final reachability matrix for validation of related association.

↳ Level partitioning to form a hierarchical relationship model.

↳ Relating the MICMAC principle.

Originally, 10 variables were drawn from the literature. Researchers have raised similar problems and concerns in the past with respect to higher education at the global level. The variables are as depicted in the Table 1.

As shown in the Table 1, identification of factors listed was from literature review and a survey was conducted consisting of 10 factors and the reliability was tested by using Cronbach's alpha. Internal consistency was found to be above the threshold. The experts were chosen in such a way that the experts (academicians/top management - deans of universities and directors and professors of management institutes) belonged to a wide spectrum of management institutes and universities. Respondents' rating on 1 to 5 mean score and standard deviation were considered for factor validation. One criterion is mean less than 3 and coefficient of variation less than 33 %. There are six variables that fulfilled the criteria (Table 2). The experts emphasized on these factors to be very significant with respect to quality of management education.

Analysis and Results

ISM is a firm approach for classifying associations among precise items for defining a problem. Researchers have been using this methodology for understanding the interrelation between variables. ISM starts with the

identification of variables, and a mutual relationship to be shown using a structural self interaction matrix (SSIM). Conversion of SSIM into the reachability matrix is done by using binary digits 1 and 0 and level dividing of the variables and abstraction of the model. In this technique, a set of different directly and indirectly related elements are structured into a comprehensive systematic model. Having decided on the element set and the contextual relation, a structural self - interaction matrix (SSIM) is developed based on pairwise comparison of variables. In the next step, the SSIM is converted into a reachability matrix (RM), and its transitivity is checked. Once the transitivity embedding is complete, a matrix model is obtained. Then, the partitioning of the elements and an extraction of the structural model called ISM is derived.

(1) Structural Self Interaction Matrix (SSIM) : SSIM (structural self interaction matrix) (Table 3) depicts the contextual relation between different variables identified. A group of experts comprising of academicians and practitioners were approached for expert opinion. Brain storming and interview schedule were used to arrive at the relation. As shown in the Table 3, there are four symbols *V, A, X, O* ; *i* and *j* are connoting symbols to establish the relationship. By following the rules, the SSIM table is derived. The SSIM gives the contextual relation. Four symbols *V, A, X, O* are used to demonstrate this. The six variables are - Fee Perception (V1), Academic Excellence (V2), Career Aspiration (V3), Institutional Features (V4), Skill Acquired (V5), and Infrastructure (V6).

A shown in the Table 3, the direction of the relationship is shown as follows for the pairwise interrelation (*i* and *j*) :

(i) If direction of relationship is from *i* to *j*, it is denoted as *V*.

(ii) If direction of relationship is from *j* to *i*, it is denoted as *A*.

(iii) If direction of relationship is from *j* to *i* and *i* to *j*, it is denoted as *X*.

(iv) If no relationship is from *j* to *i* and *i* to *j*, it is denoted as *O*.

(2) Reachability Matrix : The reachability matrix was arrived at by converting *V, A, X, O* into binary digits 0 and 1 (as shown in the Table 4). The rules of conversion were followed to derive the reachability matrix.

Table 3. Structural Self Interaction Matrix

↓→	V6	V5	V4	V3	V2	V1
V1	V	V	V	O	A	
V2	A	V	X	A		
V3	V	X	V			
V4	V	V				
V5	A					
V6						

Table 4. Rules for Conversion of *V, A, X, O* Into Binary Digits

Entry in SSIM	(*i*, *j*) Entry in Reachability Matrix	(*j*, *i*) Entry in Reachability Matrix
V	1	0
A	0	1
X	1	1
O	0	0

Table 5. Reachability Matrix

Ij→	V1	V2	V3	V4	V5	V6	Driving Variables
V1	1	0	0	1	1	1	4
V2	1	1	0	1	1	0	4
V3	0	1	1	1	1	1	5
V4	0	1	0	1	1	1	4
V5	0	0	1	0	1	0	2
V6	0	1	0	0	1	1	3
Dependent Variable	2	4	2	4	6	4	

Table 6. Level Partitioning (Level 1)

i↓j →	Reachability Set	Antecedent Set	RS ⌢ AS	Level
V1	(1,4,5,6)	(1,2)	1	
V2	(1,2,4,5,)	(2,3,4,6)	2,4	Level 1
V3	(2,3,4,5,6)	(3,5)	3,5	
V4	(2,4,5,6)	(1,2,3,4)	2,4	Level 1
V5	(3,5,)	(1,2,3,4,5,6)	3,5	
V6	(2,5,6)	(1,3,4,6)	6	

Table 7. Level Partitioning (Level 2)

↓ij→	Reachability Set	Antecedent Set	RS ⌢ AS	Level
V1	(1,5,6)	(1)	1	
V3	(3,5,6)	(3,5)	3,5	Level 2
V5	(3,5,)	(1,3,5,6)	3,5	Level 2
V6	(2,5,6)	(1,3,6)	6	

As depicted in the Table 5, from the final reachability matrix, for each factor, reachability set and antecedent sets are derived. The reachability set consists of the factor itself and the other factor that it may impact ; whereas, the antecedent set consists of the factor itself and the other factor that may impact it. Thereafter, the intersection of these sets is derived for all the factors and levels of different factors are determined. The Table 5 shows the reachability matrix, and the matrix was reached at by changing *V, A, X, O* into binary digits 0 and 1. The driving and dependence powers are derived for the MICMAC Analysis.

(3) Level Partitioning : The reachability and antecedent set was considered from the reachability matrix. A sequence of iterations was completed to classify the levels. Three levels were derived as shown in Table 5 and Table 6. The Table 7 shows all the levels arrived at based on the iterations.

As depicted in the Table 6, V2 (Academic Excellence) and V4 (Institutional Features) are derived as level 1. As depicted in the Table 7, V3 (Career Aspiration) and V5 (Skills Acquired) are derived as level 2. As depicted in the Table 8, V1 (Fee Appropriateness) and V6 (Infrastructure) are derived as level 3.

The relationship between the six variables has been categorized into three levels as shown in Table 9 and their

Table 8. Level Partitioning (Level 3)

↓ *Ij* →	Reachability Set	Antecedent Set	RS ⌢ AS	Level
V1	(1,6)	(1)	1	Level 3
V6	(6)	(1,6)	6	Level 3

Table 9. Level Matrix

Level	Variable
3	Fee Appropriateness (V1)
3	Infrastructure (V6)
2	Career Aspiration (V3)
2	Skills Acquired (V5)
1	Academic Excellence (V2)
1	Institutional Features (V4)

directions are represented by arrows. Single arrows represent a one - way relation, double arrows represent both way relation, and no arrow symbolizes no relation as derived from SSIM (as shown in Table 3 and Figure 1).

(4) ISM Model : The Figure 1 represents the ISM model which has been derived after a descriptive phase (extensive literature review, organization of literature, and establishment of relationships) and a prescriptive phase (including development of iterative matrix and ISM & MICMAC analysis). The model shows that the six factors are classified into three levels, with the third level representing the most important level.

According to the model, we can conclude that Fee Perception and Infrastructure are the most significant factors. Fee Perception influences both Skills Acquired and Infrastructure. Infrastructure, which is inclusive of physical and IT infrastructure for any management institute, is the foundation for Skills Acquired leading to Career Aspiration. The second level of the model is Skills Acquired and Career Aspiration. Input being Infrastructure, Career Aspiration mediates to Skills Acquired as output. Focus on academic excellence and good

Figure 1. ISM Based Fee Perception Quality Model for Management Education
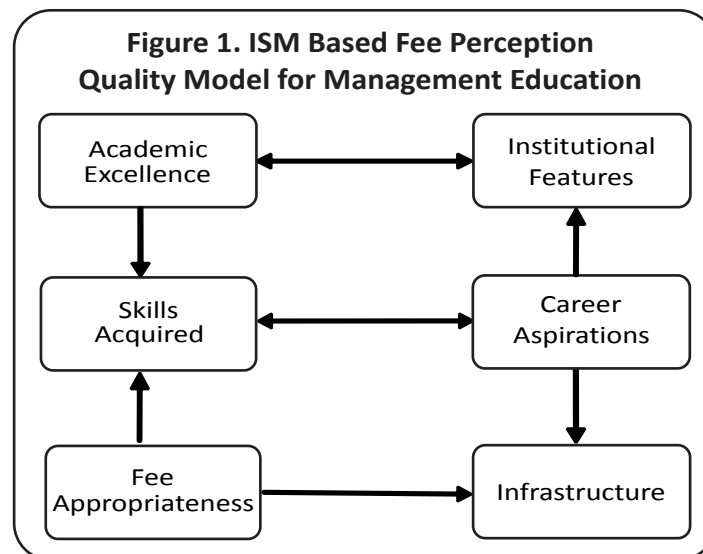
infrastructure will have a positive impact on institutional features and skill development of MBA students to fulfill their career aspirations. Management institutes, for their internal development, can prioritize the needs for quality education and try to satisfy those of the students as stakeholders. First level variables being Academic Excellence and Institutional Features mutually impact each other. Internal processes or learning strategies as per the needs of their students should be designed by educational institutions for enhancing the quality of management education in India.

(5) MICMAC Analysis : MICMAC analysis (Matrice d'impacts croises - multiplication appliqué aun classement) (cross-impact matrix multiplication applied to classification) is abbreviated as MICMAC. It analyzes the driving and dependence power of variables on the basis of what is classified as autonomous variables, linkage variables, dependent variables, and independent variables. The objective of MICMAC analysis is to classify the variables according to their driving power (Bolaños, Fontela, Nenclares, & Pastor, 2005 ; Singh & Khamba, 2011) into four clusters.

The Table 10 and Figure 2 show that the driving power of variables in fuzzy MICMAC is derived by summing the entries of the possibilities of interactions in the rows, and the dependence of the variables is determined by summing the entries of possibilities of interactions in the columns from Table 5. The analysis is to assess the power of the variables, which is plotted on a graph as shown in the Figure 2.

Table 10. Driving Power and Dependence Power

Variable	Driving Power	Dependence Power
Fee Appropriateness (V1)	2	4
Academic Excellence (V2)	4	4
Career Aspiration (V3)	2	5
Institutional Features (V4)	4	4
Skills Acquired (V5)	6	2
Infrastructure (V6)	4	3

Figure 2. MICMAC Analysis
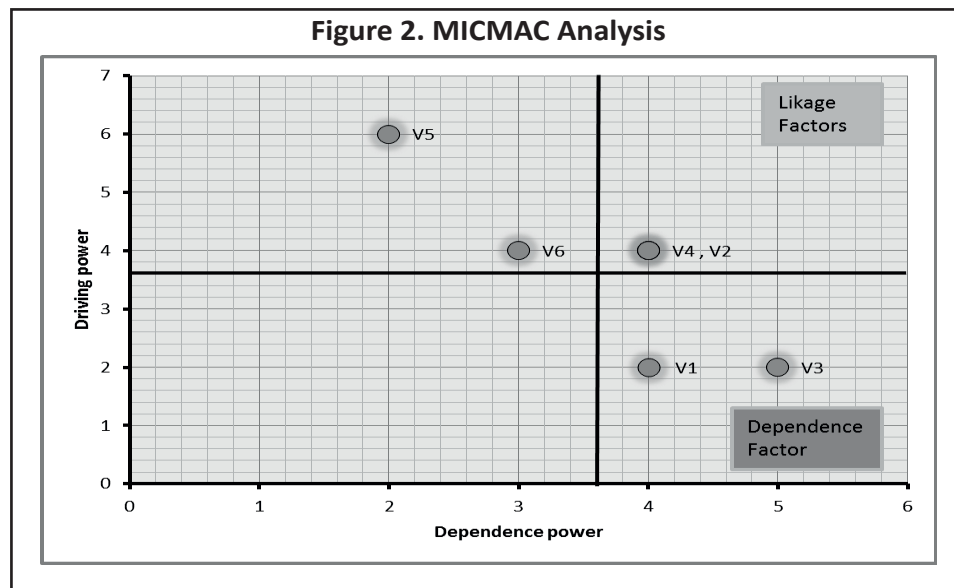
From the Figure 2, we can see that the variables are categorized into four categories as:

⤷ **Autonomous Variables :** These are the variables having weak driving and dependence power and are known as autonomous variables. In our study, we find no variables as autonomous variables.

⤷ **Dependence Variables :** These are the variables having high dependence power and weak driving power and are known as dependence variables. We find Fee Appropriateness (V1) and Career Aspiration (V3) to be the dependence variables.

⤷ **Linkage Variables :** These are the variables having moderate driving and dependence power and are known as linkage variables. We find Academic Excellence (V2) and Institutional Features (V4) to be the linkage variables.

⤷ **Driving Variables :** These are the variables which have strong driving and weak dependence power and are known as driving variables. In our study, we find Skills Acquired (V5) and Infrastructure (V6) to be the driving variables.

Implications

(1) For Academicians (Top Management) / Policy Makers : Quality of management education currently is a concern for all management institutes in India. They need to adopt a student centric approach. From organizational and managerial point of view, the study determines the importance of continuously measuring the expectations of students in order to design, implement, measure, and improve the overall quality of management education in our country. NAAC needs to consider fee appropriateness as an important criterion for the accreditation process. The study also provides a detailed insight into fee appropriateness and its impact on quality of management education. The results of the study will strongly influence policies of management institutions. The institutions can be more qualitative, service oriented, and can understand quality perspectives in a better manner as perceived by management students.

(2) For the Education Industry : The following are the best practices that the education industry should follow for sustaining quality in education. Emphasis should be on high quality, service delivery, and students should be treated as the most significant stakeholders. Education processes should be standardized, innovative, and at a low cost.

The originality and uniqueness of the research lies in :

First, the study proposes a conceptual model - the fee perception quality model for management education using ISM. The proposed framework highlights the importance of quality of management education. The research confirms the mutual relationship between fee appropriateness and quality parameters.

Limitations of the Study and Scope for Further Research

The study is based on experts' opinions ; hence, the potential to capture unique insights is limited. Limited variables are considered for the ISM model. The application in a real situation potency necessitates some alterations.

For future research, the framework of investigation can be expanded, that is, research can be conducted in different regions. This model can be tested using new investigation methods such as structural equation modeling for large samples and examining the applicability of the model in management institutes. Total interpretive structural modelling - a further advanced technique can also be used for elaboration.

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About the Authors

Dr. Archana Singh is a distinguished academician cum researcher. She is a faculty of Accounts and Finance with Symbiosis Institute of Management Studies. She is a recognized Ph.D. guide in Symbiosis International (Deemed University). She has a number of research papers to her credit, which are based on sustainability, accounting, and higher education. She has also published in journals of high repute, that is, journals indexed in Scopus and Australian Business Deans Council (ABDC) listed journals.

Dr. Roshan Kazi is Professor and Head, MBA Programme, at Allana Institute of Management Sciences, Pune. He specializes in applied statistics and is a sought - after trainer in the statistical software - SPSS. He has a passion for research and has a keen interest in advanced quantitative techniques. He has also published in journals of high repute (indexed in Scopus).

Brig (Dr.) Rajiv Divekar is the Director of SIMS. He completed his Ph.D. from Symbiosis International University. He was the Head of Faculty - Strategic and Operational Studies at Army War College as well as faculty member in Defence Strategic Studies at Defence Services Staff College, Wellington. He is an expert in construction of military bridges, demolitions, mine warfare, and bunkers and fortifications. He has also published in journals of high repute (indexed in Scopus) and journals listed in the Australian Business Deans Council (ABDC).