

## CHAPTER 6

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# QUALITY ASSURANCE AND BEST PRACTICES AT YASHWANTRAO CHAVAN MAHARASHTRA OPEN UNIVERSITY (YCMOU): A CASE STUDY

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### ABSTRACT

*Today there are 12 open universities in India, each contributing distinctly to the open and distance learning system in the country. This study summarises some of the major initiatives taken by the Yashwantrao Chavan Maharashtra Open University (YCMOU)—those that have contributed to its success and the international accolade received as a consequence.*

*Maharashtra, the state in which this university is located, has contributed extensively to social and educational reform in India as well as to the industrial and agricultural sectors. Though best practices have a contextual relevance, there is a consensus regarding the areas that call for quality assurance and enhancement in the DE systems. The case of YCMOU has been presented here using a generally accepted quality perspective consisting of the following components:*

- *Institutional commitment and support*
- *Curricular flexibility*
- *Flexibility in learning strategies*
- *Learner support*
- *Assessment and Evaluation*

*An attempt has also been made to share institutional concerns and constraints and assess the impact of the quality-oriented initiatives taken by the university with regard to its functions. A major lesson learnt is that quality is a matter of continuous improvement and that each good practice offers a direction for further, more concerted action for the future.*

## 1. BACKGROUND

Established in July 1989, the Yashwantrao Chavan Maharashtra Open University (YCMOU) was the fifth open university in India, a country that has 12 open universities today apart from a large number of distance education institutions. Maharashtra, the second most populated state in India, has a rich tradition of social and educational reform. The literacy levels of the state, although not the highest in the country, are still higher than the national averages in terms of total literacy as well as gender distribution. While, as per the 2001 census, the national literacy figures are at 65.38 percent for those at and above the age of seven years, with males at 75.85 and females at 54.16 percent respectively, the figures for Maharashtra read at 76.9 percent, males being at 86 and females at 67. Furthermore, while India's share in the world population is 16.7 percent, Maharashtra contributes 9.42 percent to India's population.

Spread over a terrain of 308,000 square kilometres and with a population of over 96.8 million, more than 57 percent of whom are rural inhabitants engaged primarily in farming, the state also has some unique features. Simultaneous with its agricultural progress has been its contribution to the industrial sector, catering even to the most sophisticated high-tech industrial needs. Despite its strong rural base, education as a sector has received its rightful attention from the earliest times, mainly due to the visionary direction provided by its social reformers and political leaders. In spite of the existence of many agricultural and non-agricultural universities, a technological university, a health science university and an increasing number of deemed universities and private education providers in the state today, the establishment of a separate state-level open university for catering to the specific educational needs of the masses in Maharashtra has proved to be both a challenge and an opportunity.

Registering approximately 125,000 learners annually for a wide variety of academic programmes spanning the full range from certificate to post-graduate and the research level, YCMOU already has a cumulative enrolment of 932,500 learners. These learners are catered to by an extensive network of eight Regional Centres, some District Centres, and over 2,000 Study Centres. The self-instructional material, developed for the 685 courses included in the 82 academic programmes on offer, runs into 1,271 course books, 342 videos, 311 audios and a large number of CD-ROM modules. The learner profile reflects a large number of employed persons from diverse vocations, housewives, persons from rural and tribal areas and also from the disadvantaged sections of society apart from some senior citizens, a few of them in their seventies. While catering to the needs of the common man, the university has also kept pace with the latest technological advances, especially those in information and communication technology. Today, with an experience of just about 16 years, the university has already established a name for itself, not only at the state and national levels, but also at the international level through the receipt of the COL Award for Institutional Excellence in Distance Education in the year 2002.

## 2. QUALITY ASSURANCE INITIATIVES

It is comparatively easy to describe factual developments in an ODL institution. It is much more difficult to make judgements about their quality. Besides, *quality* being a rather subjective, contextual matter, it may be examined from different analytical perspectives (Trindade et al. 2000), varying as per the needs of the different stakeholders in the system (Prasad 2003). Thus, for the learner as the primary stakeholder, *quality*

covers the entire gamut of a university's functions; for the government, the terms *quality* and *best practice* probably refer to the most cost-effective operations/products; for the academic community, it may be viewed in terms of knowledge gains; from the employer's point of view, the suitability of the product for commercial gains may be the yardstick and for the education providers, it may mean something that attracts learners and ensures social acceptability for what they offer.

Apart from the stakeholders' perspectives, more analytical views consider the parameters to define *best practices* in terms of the intrinsic value of the content of learning materials, soundness of learning strategies, efficiency of organisation and procedures, adequate use of advanced technologies and reliability of student support mechanisms (Trindade et al. 2000). Alternatively, as the Eight Regional Accrediting Commissions (2000) suggest, *best practices* are conceived as divided into five separate components, viz. institutional context and commitment, curriculum and instruction, faculty support, student support and evaluation and assessment. Yet other ways of looking at *best practices* in terms of guiding principles have been outlined by various international bodies like the American Distance Education Consortium (ADEC), or in terms of "standards" in the distance education setting as they relate to "active learning, a sense of community, flexibility, timely feedback, reliable technology, course development timelines, complex legal issues like copyright and intellectual property and new forms of leadership and technology infrastructure" (Bruce 2003). Tulloch & Sneed (2000) make a very detailed list of benchmarks to assess *quality*-enhancing practices in distance education with respect to key areas like "learning goals, content presentation and learning activities; learner interactions; assessment/measurement; tools and media; faculty and faculty support." A group of academics and researchers from the University of Guelph (2000) focus on the quality parameters for distance education courses while Chickering & Ehrmann (1996) elaborate what good practice achieves in the distance education setting through their "Seven Principles for Implementation." Several other theorists and practitioners (Powar et al. 2003; Takwale 2003) as well as international accrediting agencies including India's NAAC (Pillai 2003) and NIEPA (2002) have given their own contextually determined views regarding what constitutes quality and *best practices* in the distance education setting.

Despite the different perspectives and orientations regarding the subject, there are a number of commonalities seen, albeit with differing emphases. Although YCMOU has not spelt out specific quality parameters, experience rather than theorisation has dominated the scene. The term *best practice* in the context of YCMOU refers to an initiative that is taken after considerable deliberation, is off the beaten track, has been introduced because of an emerging social need, has stood the test of time for a wide spectrum of learners and even though perhaps not systematically documented, has meant a value addition. It is in this light that the *best practices* of the university are considered here. For purposes of convenience, they have been grouped as follows:

- Institutional commitment and support
- Curricular flexibility
- Flexibility in learning strategies
- Learner support
- Assessment and evaluation

## 2.1 *Institutional commitment and support*

Institutional commitment has been witnessed from different points of view: sensitivity to the needs of the learners, sustained efforts at developing relevant academic programmes, a concern for creating a trained and qualified workforce, a focus on upgrading resources to cope with advances in technology, a strong orientation towards systemic research and an openness towards objective appraisal of institutional practices—all this with the affirmed purpose of becoming a “mass varsity.”

*Sensitivity to the needs of learners* has been shown in a variety of ways, especially through an insistence on prompt and accurate communication regarding relevant matters. Furthermore, all-round personality development of the learners has been supported through actively helping students to participate in the inter-university sports events and youth festivals generally organised for university students. Special concern has also been shown for the visually challenged through specially designed courses in computer science. A very unique initiative conveying an institutional commitment to a neglected section of society has been the provision of free education facilities to inmates of prisons at two places in Maharashtra. Many of these learners have now completed studies up to the first-degree level.

Programme development has been undertaken with due *attention to the need for and relevance of a particular programme*. The overriding concern at all times has been the needs of potential learners as well as consonance with the needs of the state and indirectly of the nation as a whole. Besides, the vocational potential of the programme from the viewpoint of the learners has also been emphasised.

*Training* of the entire staff—administrative, technical, professional and academic—in computer skills has been achieved with the result that almost every employee of the university is well versed in basic computer skills. Opportunities for professional development of the faculty and technical staff through externally conducted training programmes are also provided regularly.

*Upgrading of infrastructure* has been undertaken periodically through procuring the latest computer hardware and software, in-house development of various types of application software as well as the outsourced development of comprehensive software on the latest **dotnet** platform for systematising all the university’s academic and administrative operations, right from registration to final certification. This software, though presently in its pilot-testing phase, offers an integrated view of the university functions while at the same time allowing for parametric control in the design of each academic programme. The **dotnet** platform, with its inbuilt security features, permits general and Web-based access to authorised functionaries only. Augmentation of infrastructure in terms of buildings, equipment, etc., to keep pace with the developmental plans of the university, is also a regular feature. The lush green and beautiful university campus houses separate buildings for important university functions like examinations, general administration, academic programme development, audio-visual production, etc. The university personnel, an important component of the overall resource base, are recruited through a comprehensive procedure to ensure that the most capable and qualified hands are employed. A regularly adopted employee performance appraisal system further ensures steady performance.

A major challenge to an educational system geared primarily towards mass education, is the development of a *strong research base* (Pradhan & Deshmukh 2001). YCMOU was the first open university in the country to offer academic programmes at the post-graduate and research level. “Communication” has been identified as the core research area and

an emphasis has been placed on systemic research. A rather novel practice is that the research students are required to make three mandatory research presentations before a “research panel” prior to submitting their dissertations.

*Openness towards objective appraisal of institutional practices* has been evidenced through the assessment and accreditation voluntarily sought from the National Assessment and Accreditation Council (NAAC). Behind this step has been YCMOU’s strong commitment to quality.

## 2.2 Curricular flexibility

Flexibility in curricular offerings has been introduced both in order to maintain the spirit of “openness” as well as to provide for “cultural contextualisation” so that the learning materials become appealing to diverse users. Modularity as recommended in “Course Development Best Practices” (2002–2004) has been introduced in all the academic offerings so as to maintain coherence in course content within a given module and allow for learner mobility.

While due attention has been paid to elaborate procedures of instructional design and material development, a very distinctive feature of this university has been the wide range of curricula being handled. The spectrum covers the lowest level of skill-based, certificate programmes for those who have had very few years of formal education (e.g. agricultural labourers, farmers, “helpers” in small factories, etc.) all the way up to the highest level of research-based programmes leading ultimately to an M.Phil. or a Ph.D. degree. Agricultural education has been an important focus for this university in view of the large rural population of the state. Apart from the mass education programmes dealing with agriculture, computer literacy, development of self-help groups for teaching pre-primary level children, etc., there are a number of professional programmes in the field of teacher education, library science, management science, journalism and the like; programmes of a technological nature (e.g., the Bachelor’s Degree in Information Technology, B.Tech. in Electronics and Mechanical Engineering, Marine Engineering, etc.); and various Continuing Education programmes involving technical or vocational skills like lathe operation, masonry, interior designing, fashion designing, beauty parlour management, etc. Now, in response to some important social needs, programmes are being developed in the areas of health science, human rights and co-operative management too. Another rather unique contribution that addresses the needs of distance learners has been the programme on self-learning skills.

In addition to developing programmes that are relevant, *periodic enrichment and updating* is undertaken through new additional modules. Major programme re-structuring exercises have also been completed. For instance, the inclusion of courses and units like “General Knowledge and Social Awareness,” “Marital Adjustment,” “Rural Sociology,” “Environment and Pollution,” “Consumer Protection,” “Office Services,” “Personality Development,” etc., under the Bachelor’s Degree programme have made the programme both multi-disciplinary as well as applied in nature. Similar initiatives have been seen for programmes in Agriculture, Management Science and also the Teacher Education programmes through the “diagnostic approach to micro-teaching” introduced here.

## 2.3 Flexibility in learning strategies

The real issues with respect to appropriate learning strategies are not technical but curriculum-driven and pedagogical. It is well recognised that distance education courses

should be able to accommodate a variety of learning styles and strategies—visual, auditory and kinesthetic. There is, therefore, the responsibility for providing a variety of learning resources (print, video, CD-ROM, WWW, etc.). The learning strategies selected by learners are probably based on their cognitive profiles. These cognitive profiles, as explained by Kolb in 1984 and reiterated by Trindade et al. (2000), “can range from intellectual-minded persons, at ease with theorisation and abstractions, to the pragmatic and application-driven students, who prefer to deal with concrete situations. Thus some learners may be naturally more autonomous and creative so that they feel at ease with innovative approaches, with alternative options, and even with the challenge of trying to construct knowledge themselves. Others may prefer a solid and sure approach and a clear and straight content.” Fortunately, with the current developments in ICT and particularly Web technology, offering a variety of options to the learners has become relatively easy. Despite this, with an increasing number of courses offered online and degrees offered through the Internet, quality concerns with respect to online education are coming to the forefront (Yang & Cormelious 2005).

YCMOU has moved ahead steadily but cautiously with regard to learning strategies. The nature of course content and the technological readiness of the learner groups have largely determined the teaching–learning strategy adopted. While *face-to-face counselling, enriched by differing proportions of the audio and video components*, has been used in the theoretically oriented liberal education courses, *hands-on practical experience* has been provided in field and lab-based courses as in agricultural science, electronics engineering and the like. A rather innovative peer-learning approach called *Prayog Pariwar* has been introduced in agricultural courses. This involves the formation of self-help groups of practising farmers, each having a leader who is a student of this university and who is the direct agent for transmission of knowledge. Another paired peer-learning approach is seen through the operation of the *coaching teams* in the teacher education programme for effecting transfer of teaching skills among learners. Extensive use of the latest *Web-based communication technologies* is seen in the engineering and computer programmes through the establishment of course-wise discussion forums, on-line counselling and feedback centres and the development of several virtual classroom modules (VCMs) “to create the supportive and cognitively stimulating environment so critical to effective learning” (Campbell et al. 2003). Besides, in order to get the feel of the real, the development of *video-based animations and simulated digital practicals* for the electronics courses are well underway.

## 2.4 Learner support

In order to provide the resources and necessary support for the academic success of learners, YCMOU has established an *extensive network of conveniently located Study Centres* that are served by appropriately qualified and trained staff. The accompanying issues of equity and access have also been dealt with by adopting a sound rationale. A distinction has been made between the higher-end, professional programmes and the ones designed for mass education. By and large, for professional programmes the university has established one Study Centre for each district in the state, whereas for the mass education programmes, the university has gone down to grass roots level at remote locations. The establishment of these remote location Study Centres for the low-end programmes has ensured that students are not required to travel a distance of more than 10 kilometres to access learning.

Special care has been taken to *disseminate accurate and timely information* about the institution, its programmes, courses, costs, related policies and requirements, etc., through the programme-wise prospectuses as well as a number of publications. Publicity through TV,

radio and the mass media has helped potential learners to discover the curricular offerings, and pre-admission counselling on a one-to-one basis has helped them in making appropriate choices. Focused attention has been given to providing accurate and timely information to students opting for online registration, as in the case of the B.Tech. or Engineering programmes. These and similar programmes offering web-based support also handle the *help-desk function* and provide information *about redressing grievances*, if required.

Learner-friendly features are included in the course material before bulk production, but care is taken to see that the material reaches the student in time through an *elaborately worked-out material despatch procedure*. Although admittedly, the first despatch cannot take care of all the individual problems that surface later, backup arrangements for a second and occasionally a third round of despatches are in place.

Considering that “many students experience financial difficulties in accessing learning through distance learning systems and that a caring university must put financial aid packages in place” (Dhanarajan 2003), the university has made *provision for fee concessions and partial freeships* for deserving students from the underprivileged sector. A recent illustration is the South Asia Foundation (SAF) Madanjeet Singh Scholarship extended to 1197 students of YCMOU for pursuing post-graduate and vocational studies.

Realizing that merely attracting learners to the system is not enough, the university has undertaken initiatives for providing sustained academic as well as administrative support *to retain them in the system*. The use of a TV channel during a given time-slot, the conduct of an interactive radio-counselling session once every month, the programme-wise academic inputs and administrative information given through the house journal called *Samvad* (“dialogue”) and the recent use of the satellite-based communication system (EduSat) with technical support from the Indian Space Research Organisation are concrete initiatives taken in this direction. Under the EduSat facility, several Virtual Learning Centres have been commissioned in remote locations within the state, and the special type of interactive learning environment provided to the learners enables them to learn from the “best experts” in the field.

## 2.5 *Assessment and evaluation*

In the context of *learner evaluation*, the YCMOU has developed a systematic approach for ensuring objective and reliable assessment of student learning.

The *continuous assessment component*, that is normally viewed as necessary but difficult to implement in a distance learning set-up, has been implemented successfully in a number of academic programmes. With the accumulation of experience, however, periodic changes have been introduced to this component, mostly in terms of the weight assigned to it in the overall assessment of students as well as in the nature of evaluation tools that are being used currently.

The use of scientifically developed *question banks as resource material* for test construction has ensured reliable and valid tools of assessment. The question-wise synoptic answers and marking schemes supplied to examiners in a Central Assessment Programme have resulted in considerable objectivity in the assessment of student answer scripts and the mechanised process used for objective type questions involving hand-scoring stencils or the ICR technology has ensured both speed as well accuracy in assessment. The voluminous task of result processing has been handled effectively through a well-functioning computerised system that assists in giving quick and timely feedback to the learners.

Due attention has been paid to exercising controls at the stage of conducting examinations through careful selection and orientation of exam personnel. Problems or unfair practices brought to attention are promptly sorted through well-defined procedures. Some innovative steps in student evaluation have also been initiated. For instance, the Online Self Test Centre introduced for the Electronics Engineering Programmes provides unlimited Web-based opportunities for self-testing with immediate feedback on performance.

A practice being introduced in the teacher education programmes involves giving students *assignments based on the audios and videos* prepared for them so that they may view their instructional material in an integrated manner. *Application-oriented questions* rather than those involving mere recall of facts and also principles have been introduced in some of the curricular offerings in an attempt to move gradually but certainly towards open-book type examinations. Considerable pilot work for offering on-demand and online examinations on a sustained basis is also well underway.

### **3. EXPERIENCE GAINED FROM THE QUALITY ASSURANCE INITIATIVES**

#### ***3.1 Impact of quality assurance initiatives***

Quality assurance has been viewed by this university as an ongoing endeavour with possibilities always available for improvement. It is this basic premise that has led the university to keep on experimenting, trying out new solutions to old problems and later reviewing these. The practices of the university stated here are, therefore, those that have had a long-term positive impact on the organisation. Below is a summary of the gains experienced both at the individual as well as the institutional level:

1. An overall sensitivity to the needs of the learner has been created at all levels in the organisation primarily because of the institutional thrust toward providing prompt services, especially considering the diverse backgrounds of the learners. Viewing the learner as a “whole person” is also an allied outcome resulting from an institutional concern for catering to overall personality development.
2. The focus on the development of needs-based academic programmes with flexibility to revise and add newer, more relevant course modules has sensitised the university faculty to the dynamic role expected of them.
3. The impetus given to staff training and professional development has resulted in improved efficiency at work, despite a small workforce.
4. The heavy use of computerisation in regular working has added both accuracy as well as speed to day-to-day operations.
5. The efforts at carrying education to prison inmates have given even the hard-core criminals, sentenced to life imprisonment, a constructive approach to life. As an important service rendered to those abandoned by society, this has won much social accolade at the institutional level.
6. The peer-learning models evolved, the virtual classroom modules developed as learning resources and the use of TV and radio counselling as well as Web/satellite based communication technologies have provided considerable exposure to the staff and faculty for becoming multi-skilled professionals.
7. The importance given to research and the mandatory research presentations expected of research students, apart from having a motivating influence on the students, have also helped in developing appreciable sensitivity to rigour in scientific research among the YCMOU faculty.

8. The initiatives taken with respect to the development of course-wise question banks have helped the institution in creating a credible system of learner assessment.

### 3.2 *Constraints experienced*

It would be unrealistic to believe that the quality-assurance initiatives taken by the university have occurred without their share of difficulties. By and large, however, it appears that the constraints experienced by this university are shared across the globe.

As reviewed by Covington et al. (2005), lack of administrative support and lack of adequate training have often resulted in faculty hesitance and occasional resistance to the integration of online components into the existing programmes and the use of satellite-based communication channels for programme delivery. The issue of faculty workload and the amount of preparation required in developing Web-based learning materials, along with the lack of merit pay or financial incentives for faculty who develop or teach online courses, are also constraints that have operated here, as in other places. The lack of technical support—adequate hardware, maintenance services and adequate infrastructure—has often been voiced by the faculty as important deterrents. “The Information and Communication Technologies provide challenging opportunities to access the *best practices*. But, are we prepared to use them, is the daunting question...,” is a very apt remark in the given context (Prasad 2003). As Maguire (2005) reports, it is also likely that some faculty and staff “worry about their career and the changes within the field and what those changes may do to their jobs.”

At the institutional level, the issue of competition from private and public institutions is a matter of increasing concern, especially in view of the current global trends. Doubts regarding the credibility of some competing institutions further aggravate this concern and help to keep us from initiating collaborative ventures.

Finally, the lack of grants or financial assistance for procurement of materials and equipment and meeting the expenses for software, design, development and delivery of courses, undertaking projects, etc., is also a disabling constraint experienced by the faculty and the institution as a whole.

### 3.3 *Lessons worth sharing*

With the rapid advances in communication technologies, the exponential growth of higher education institutes and the drastically reduced public financing of higher education, quality issues will always be at the forefront, especially in the context of GATS. A very important lesson for all those engaged in imparting higher education, particularly distance education, is to continually examine our so-called *best practices* with the firm conviction that the *best practice* of today can perhaps become even better tomorrow. For this, prior extensive documentation may not be as important as the dictates of first-hand experience. This is the approach that YCMOU has followed and also gained from.

While technologies are expanding at a very rapid rate, it is also important that one does not follow them blindly. As very rightly observed by Sherry (1996), “Too often, instructional designers and curriculum developers have become enamoured of the latest technologies without dealing with the underlying issues of learner characteristics and needs, the influence of media upon the instructional process, equity of access to interactive delivery systems, and the new roles of teacher, site facilitator, and student in the distance learning process.” Hence, rather than following a one-size-fits-all approach with respect to instructional strategies, it would be worthwhile to adopt a mixture of strategies as is the practice at YCMOU.

Certain other lessons worth sharing pertain to the need for (i) concentrating on selecting the right persons to do a certain job because even the most exciting technology might prove to be a miserable failure due to the man behind its use, (ii) undertaking initiatives that would sensitise the workforce to the needs of the learners as “whole” persons, (iii) embarking on new initiatives only after the required minimum infrastructure—human and material—is in place and (iv) moving towards institutionalisation of processes and good practices so that what has been locally possible may also be achieved in a broader context through collaborative arrangements.

#### 4. TOWARDS A CULTURE OF QUALITY

Ideally, an institution may be considered to possess a quality culture when the need to achieve better outputs becomes an internalised passion for each and every employee. This need must be so deeply ingrained in every individual that it should guide further activity regardless of the external setting—favourable or unfavourable. Creation of this kind of need to improve continually on past performance or to contribute in a more effective manner is, to my mind, the key ingredient in developing a culture of quality in an institution. The following focused institutional efforts may contribute to creating this need:

- **Long-term policy formulation**

While each institution has its own mission and goals, it is necessary that comprehensive, long-term policy guidelines and perspective plans are put in place and communicated to all concerned. This will help retain the main focus of the institution’s activities.

- **Strategic planning, goal-setting and performance mapping**

In addition to long-term policy formulation, it is also necessary that each institution works out annual, quarterly and monthly plans and targets for all types and levels of work and periodically assesses the distances travelled and the milestones yet to be reached, with appropriate feedback to all concerned.

- **Proactive management**

The top management must initiate steps proactively so as to be perceived as sensitive and empathic to the needs of employees while at the same time retaining its commitment to the overall interests of the organisation.

- **Decentralised decision-making**

The distance learning system, with its inherent potential for operating on a massive scale, involves continuous monitoring and decision-making, necessitating, therefore, a decentralised approach characterised by responsible commitment of several people working at several levels of the organisation.

- **Training and sensitisation of workforce**

Considering that the functionaries of the DE system need to be multi-skilled professionals, their training and skills upgrading are a recurring requirement that must be appropriately addressed. Continuous on-the-job technology training can, in fact, help achieve much even with a relatively small workforce.

- **Appropriate deployment of human and other resources**

Quality of output may be ensured through planned deployment of human resources and adequate allocation of other resources, taking into account both the needs of the organisation as well as the capacity, skills and interests of the employees.

- **Role importance and clarification of responsibility**

A very important need in the context of developing a quality culture is that each and every employee has a set of well-defined responsibilities and is made to feel that his/her contribution is very important to the overall performance and image of the university. Periodic, open dialogue between the top management and the lowest level employees might help to boost employee motivation.

- **Output-linked incentive system**

A carefully developed and properly implemented performance appraisal system coupled with a well-defined incentive system may go a long way in motivating employees to give their best, without becoming complacent. Occasionally, there may also arise a need to apply disincentives within the framework of what is legally acceptable. This, though necessary, is a matter not yet adequately addressed by any higher-learning organisation in the country. In this regard, inviting inputs and suggestions from the private/industrial sector may prove useful.

- **Collaborative tie-ups and competitive endeavours**

Recognising that it is gradually becoming increasingly difficult for an institution to work in isolation, undertaking joint projects as well as collaborative ventures with other institutions will help in increasing accountability among the collaborating partners for discharging their share of responsibilities. Likewise, encouraging competitive endeavours among employees will also foster the need to upgrade knowledge and skills and improve performance, thereby helping them in building the much-required institutional quality culture.

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