

Research Article

Systematic Planning of Institutional Development Through Decentralisation and Empowering Distributed Leadership

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1. Independent researcher

Most engineering institutes face many complex problems which can't be solved by a top-down approach. Many tenured senior faculty members don't continue lifelong learning whereas middle-level qualified faculty members who updated their skills and abilities are ready to meet the challenges of disruptive technologies. They need to be updated through various methods of faculty development projects like medium-term content updating, exposure to various industrial development processes, internships in global universities, and training to develop industry-specific curriculum development programs. They are outstanding members and looking for more challenges. They need to be empowered through a distributed leadership process. The usual method of top-down approach will not meet such challenges. In this paper, the advantages of distributed leadership are assessed. This process doesn't eliminate the existing hierarchy or seniority of tenured faculty members. The distributed leadership model when applied to challenging projects and creating knowledge capital, proves its utility and enables the institute to grow and serve society.

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1. Introduction

The chief executive officer like the director/dean/principal needs to master the technical skills of their roles and also be able to tackle complex problems on a large scale in this 21st century. They have more responsibility for strategic planning, capacity development, quality improvement, efficiency improvement, offering outstanding interdisciplinary programs, undertaking competitive projects from transnational organizations, generating revenue, offering diverse global faculty development,

and creating outstanding human and knowledge capital. There are several ways to approaches to tackle every challenge. Many senior faculty members need skills to tackle them from different areas. It is very difficult to generate a solution by a single director. It is well-known that leadership practices are related to different institutional logistics related to four key activities research, teaching, service to the society, industry, diverse global faculty development, and revenue generation. A shared understanding of dynamism is essential to distribute the leadership responsibility to many senior professors responsible for developing their departments to achieve excellence based on the outstanding faculty teams, staff, and learners. Distributing the leadership among the dedicated and balanced senior professors is essential.

Most of the toxic leaders violate and negatively affect the trust and well-being of dedicated faculty teams. They further bring negative consequences to faculties' attitudes toward their leaders and the institute's well-being and work behaviors. Well-performing faculty teams are the less powerful individuals in the leader-employee relationship. They are characterized by a power differential and constrained in what they can do in response to unfavorable treatments they receive from their bosses. Successful universities adopt a strategic plan and work with high-performing faculty teams that enable institutions to respond to disruptive technologies. Increasingly agility requires a shift from reliance on command-and-control leadership to distributed leadership that emphasizes giving well-performing faculty teams autonomy to innovate and using noncoercive means to align them around the vision. Deborah Ancona of MIT Sloan defines distributed leadership as collaborative, autonomous practices managed by a network of formal and informal leaders across an organization.

What is distributed leadership in engineering education? Distributed leadership in engineering education is where leadership responsibilities are shared among various chairpersons, rather than centralized in a single director/dean/principal. This model emphasizes collaboration, shared responsibility, and collective decision-making to address the complexities of a modern educational environment. In engineering education, distributed leadership can foster innovative practices and enhance institutional performance by leveraging the diverse expertise and perspectives of faculty, research scholars/learners, and staff in rapidly developing disruptions. It encourages, which is crucial in the rapidly evolving field of engineering.

2. Literature Survey

Harris, Jones, and Ismail^[1] have assessed distributed leadership and took a retrospective and contemporary view of the evidence base. Case Western University^[2] concluded that engineering managers need to steer their faculty teams through whatever comes through and they introduced needed abilities in their leadership programs. Meredith Somers^[3] stated that the future of work requires nimble leadership. He emphasized cultivating a workforce able to accommodate new technologies and evolving risks. When a middle-level faculty of an institute has ideas on new strategic objectives that have been vetted and tested, let those faculty participate in leading the change process. Give faculty a say in matching themselves with roles. Engage in two-way dialogue with potential faculty members who have the passion, knowledge, networks, and time availability to succeed regardless of the faculty's role or level in the institutional hierarchy. Have an honest conversation with the potential team members about their capacity to implement and what they can commit to the team. Provide needed faculty development and learning opportunities so that faculty members can practice decision-making, entrepreneurial activity, and influencing skills to work in this mode of operation. Provide opportunities for faculty members to meet one another and network across the firm. Treat senior faculty members as architects who facilitate and enable entrepreneurial activity. Ancona, Isacs, and Backman^[4] found that the successes and challenges are based on the following key capabilities: 1). Relating to the environment through others' perspectives, developing supportive relationships, and bringing faculty together; 2). Sensemaking: Creating and updating blueprints of a complex work to act more effectively in it. 3). Visioning: Linking a leader's picture of the future with the institution's vision, 4). Inventing: Creating new structures or processes to bring a vision to fruition. According to Atsushi Akera et al.^[5] common mechanisms through which distributed coordination is frustrated, undermined, and sometimes reversed especially as a consequence of competing agencies that arise out of institutional diversity and other identifiable causes. Sileyman Goksoy^[6] investigated the distributed leadership (DL) approach and found that responsibility for managing various tasks in organizations is distributed among a myriad of individuals with different roles. The basic principle advocated is based on the futility of efforts to ascertain a series of best single-leader characteristics or best single-leader behaviors. According to Gosling et al.^[7] distributed leadership serves to a certain extent ameliorate two contradictions who take on managerial roles or who exert leadership of some sort. According to them, distributed leadership may mask academic

leadership's concentration and predominance. This significantly contributes to how leadership is accompanied in sectors such as higher education. Jitse Amejide, et al^[8] have suggested the leadership development process through distributed leadership in higher education institutions. Changsu^[9] conducted a study on distributed leadership. Muhammad Nadeem^[10] focused on distributed leadership as a catalyst for school improvement. The social foundations are social learning theory and communities of practice. The strategies used are shared vision, clear roles and responsibilities, and adaptive leadership. The challenges tackled are resistance to change, ambiguity, role confusion, and trust-building. Khasawneh et al.^[11] explored the presence of toxic leadership in higher education which obstructed the planned growth of research, education, and services in higher education. Shava and Tlou^[12] suggested the need for distributed leadership in African educational institutions in the 21st century. Zereyaikob and Dabi^[13] suggested to provide teachers with benefits. Shava and Tlou^[12] have found that distributed leadership enhances the achievement of organizational goals. Effective principals orchestrate the structural, cultural, and general conditions in which distributive leadership is more or less likely. According to them, contemporary evidence from their study supports a positive relationship between distributed relationships, organizational improvement, and student achievement. Sewerin and Holmberg^[14] contextualized distributed leadership in higher education for improving research and development. Vimbi Petrus Mahlangu^[15] suggested understanding the presence of toxic leadership through the Betrayal Trauma Theory which is recognized as a leader's negative attitude characterized by authoritarian, abusive, and self-serving behaviors. These are detrimental factors in organizational settings and negatively influence the faculty in an institution. Under this environment, faculty resilience is expected to play an active role in linking toxic leadership and faculty performance. Distributed leadership effectively overcomes the negative impact of toxic leadership.

2.1. Synthesis of advantages of distributed leadership in engineering education

- Distributed leadership in engineering education is an approach where leadership responsibilities are shared among various senior faculty members, rather than being centralized in a single individual.
- This model emphasizes collaboration, shared responsibility, and collective decision-making to address the complexities of modern educational environments.

- Distributed leadership can foster innovative practices and enhance institute performance by leveraging the diverse practices of faculty, staff, and students.
- It encourages a culture of continuous improvement and adaptability, which is crucial in the rapidly evolving field of engineering.
- A Top-down approach will not yield any substantial result due to the absence of outstanding skills and motivation.
- Distributed leadership not only protects the faculty but also eradicates the ill effects of toxic leadership.

2.2. Current status of the Institute

- Traditional departments without any outstanding faculty members.
- A few dedicated faculty members who are well-qualified and motivated.
- Empowered to develop new programs based on the emerging demands under an open economy
- Raising opportunities to offer consultancy programs under International Development Agencies
- Almost all the heads of the departments are burned without exposure to the advances in emerging technologies.
- More opportunities for middle-level faculty members to get state-of-the-art training under many international universities

3. Statement of the Problem

“Suggest the most desirable distributed leadership model in an engineering education institute which will provide a substantial advantage in creating many outstanding diverse faculty development programs offer winning consultancy projects under various international development agencies, and create excellent knowledge capital and human capital under existing shortages of limited qualified faculty members.”

3.1. Objectives of Research

The following are the objectives of this research:

- To develop needed interdisciplinary postgraduate and doctoral programs even under limited departments/ and resource persons

- To bid for global consultancy projects under many ongoing International Development Agencies in the country and region
- To develop needed instructional packages to meet the needs of industry-specific graduate programs in engineering education
- To ultimately ensure an institutional model by selectively adapting distributed leadership within the limited faculty members and resources.

3.2. *SWOT Analysis*

The SWOT analysis has been carried out to know the strengths of the middle-level faculty members comparing those of tenured senior faculty members. Further, existing and upcoming opportunities have been assessed. Under an open economy, any outstanding foreign institutions can also participate in the competitive development process. If the appropriate development transformations are not taken, the existing institutes will lose their reputation.

Strength of the Middle-Level Faculty Members	Weaknesses of Tenured Senior Faculty Members
<p>Outstanding performance</p> <p>Motivated to undertake challenges</p> <p>Looking for empowerment</p> <p>Ready to bid on complex projects under many International Development Agencies</p> <p>Can develop interdisciplinary postgraduate programs</p> <p>Need scaffolding when they meet complex situations</p>	<p>Most of them didn't undergo industry-focused faculty development programs</p> <p>Not willing to offer any interdisciplinary graduate programs</p> <p>Not interested in multidisciplinary research and development programs</p> <p>Not interested in bidding for complex consultancy projects</p>
Opportunities	Threats
<p>Many International Development Agencies are looking for institutions that can offer project-specific faculty development programs.</p> <p>They are ready to offer curriculum development, faculty development, and continuing education programs for working professionals.</p> <p>They are ready to offer project-specific community development programs</p>	<p>Many international organizations are interested in undertaking consultancy projects</p> <p>Ready to develop the faculty on modern production processes</p> <p>Have shown their interest in offering new curricula and their implementation</p> <p>They offer more in-service faculty development programs</p>

Table 1 SWOT Analysis

3.3. Research Questions

- Can we offer needed faculty development programs exclusively for tenured faculty members?
- Can we study the needs of middle-level faculty members who performed very well in the last five years?
- Can we empower middle-level faculty members to undertake consultancy projects?

- Can we introduce a distributed leadership model to scaffold the middle-level faculty members?
- Can we introduce a bottom-up approach to various challenging opportunities without disturbing the existing hierarchy in the institute?
- Can the middle-level faculty members occupy senior-level positions after five years?
- How can we develop skills, abilities, and resources in the institute to utilize the new opportunities?
- Can we adapt the distributed leadership model to elevate the middle-level faculty so that they can take up all challenges?

3.4. Research Methodology

Action Research using the following eight stages

1. Empowering qualified and dedicated middle-level faculty members to plan interdisciplinary postgraduate programs under academic autonomy through distributed leadership
2. Offering outstanding middle-level faculty development programs for qualified faculty members under the bilateral agreement with various developed countries
3. Empowering them to develop technical and financial proposals for bidding consultancy projects under various International Development Agencies through distributed leadership
4. Encouraging them to offer various diverse global faculty development programs under various funding ministries like the Ministry of External Affairs and the Ministry of Finance
5. Approve the establishment of interdisciplinary doctoral programs and offer them under the fellowship scheme of the Ministry of Education.
6. Develop the reputation of the institute through research, teaching, and services not only to the states but also to other developing countries in Asia, Africa, Central and South America, and Oceania.
7. Establish a publication center to develop outstanding learning packages and publish print materials through reputed global publishers.
8. Develop leadership and assist other institutes to acquire needed skills and expertise through various development programs under International Development Agencies.

3.5. Art of Implementation

1. Exposing them to undertake consultancy projects for Auto Ancillary Component Manufacturers in Chennai. This project exposed them to study the difficulties of the employees in improving productivity, reducing energy consumption, and taking steps to maintain the quality.
2. Permit them to conduct short-term senior engineer development programs under various state governments. Most of the State Engineering Projects received short-term loans from the World Bank Under this project these departments have to train their engineers to acquire needed managerial skills in the projects.
3. Empower them to collaborate under a USAID-sponsored project to improve irrigation management in the Southern states. In this project, a set of faculty members have undertaken subcomponents of the project.
4. Approve their participation in the UNESCO-Asia-Pacific Educational Innovation for Development. In this project, the faculty members have conducted technical working group meetings in various Asian Countries on curriculum development, faculty orientation, and offering participative training courses.
5. Permit them to plan and implement short-term Diverse Asian faculty Development under UNESCO's APEID Project. This project assisted them in planning innovations in technical and vocational education. In due course, the faculty team has mastered the art of institutional development.
6. Permit the middle-level faculty members to undergo medium-term development programs under UNDP in various well-established universities in the USA. This project gave the middle-level faculty team sufficient opportunity to develop planning skills based on self-directed learning.
7. Assist the middle-level faculty members in developing a series of faculty development programs for Nepal under the Asian Development Program. This project enabled them to conduct training needs analysis to meet the medium-term growth of vocational instructors in Asia.
8. Encourage them to assess the faculty needs of technical teachers of Royal Bhutan Polytechnic and Royal Technical Institute under the UNDP sponsorship.
9. Facilitate them to plan a series of diverse global faculty development programs under various bilateral agreements with the Government of India. The Ministry of External Affairs, and the

Ministry of Finance sponsored all faculty development programs under bilateral agreements. The faculty members have gained the expertise needed in human resource development.

10. Scaffold them to undertake many sponsored research and development programs under the World Bank-assisted projects in technician education. The Institute successfully utilized its expertise and undertook research and development projects in the program.

3.6. Distributed Leadership Model

Most of the middle-level faculty members are empowered through carefully prepared distributed leadership and empowered. The faculty members mastered problem-solving skills and methods of collaboration with the client system. The project team leader effectively coordinated multiple direct reports like curriculum, training modules, assessment reports, research studies, and impact studies. They were diligent about deadlines, project milestones, and quality standards- while also staying on top of them as they evolved. The distributed leaders kept an eye on their team's long-term success and strived to develop smarter approaches.

Aypay and Akyurek^[16] reviewed distributed leadership from 2000-2020. Sandra and Marina^[17] explored the distributed leadership change process model for higher education. Young Howard^[18] critically explored collaborative and distributed leadership in higher education. Stephen Hundley^[19] assessed distributed leadership which enables a collaborative framework for academics, executives, and professionals in higher education. Mcbrayes, Chance, and Wells^[20] explored a systemwide, collaborative, purposeful, and sustainable distributed leadership. Richard Bolden^[21] explored the accomplishment of distributed leadership. Ethan Emerson^[22] explored the leadership dynamics in distributed leadership.

3.7. Comparison of Three Leadership Models

Three leadership models, viz, toxic leadership, collaborative leadership, and distributed leadership are compared based on fifty years of observation on 20 engineering institutions.

Parameters	Toxic Leadership	Collaborative Leadership	Distributed Leadership
Focus of leadership	A negative attitude characterized by authoritarian, abusive, and self-centered behaviors	The most positive focus is on research, education, and services.	Bottom-up approach. Scaffolds the faculty when needed.
Influence on the faculty members	Negatively influence the faculty members' behavior likewise morale, motivation, commitment, and performance.	The faculty team gets counseling, coaching, and effective mentorship.	Leadership is encouraged to improve the performance of faculty and outcomes.
Ultimate Impact	A detrimental factor in institutional settings.	An important factor for faster growth of the institution.	Continuous institutional growth.
Crime	This leads to white-collar crimes.	No crime in any academic or administrative activities.	No place for crime.
Informal organization	Grows at a faster rate due to the encouragement of toxic leaders.	No place for informal organization.	Only formal organization grows.
Faculty Growth	This destroys the growth of high-performing faculty teams.	Improves the institute's effectiveness.	Highly encouraged
Faculty Sufferings	High-performing faculty suffer a lot in accomplishment.	High-performing faculty is always encouraged and motivated.	No room for any suffering.
Research	Never encourages but coteries are rewarded.	Fosters interdisciplinary research and development.	Encourages multi-disciplinary research.
Services to industry	Minimum but focuses on project gains and never shares with the contributors.	Sufficient services	Encourages consultancy projects and sponsored research.
Innovation	Curbed	Encourages	Motivates to innovate
Desired Changes	May be dismissed due to the investigation or Court Judgement.	Management may encourage the growth of	Management may offer leadership to the best-

Parameters	Toxic Leadership	Collaborative Leadership	Distributed Leadership
	May resign and leave the organization safely with all financial benefits.	collaborative leadership.	accomplished faculty after the tenure of the encumberment.
Status after the completion of tenure.	May try to extend another period or maybe ousted if there is no room for extension.	May be given another term based on the assessment of the contribution and outcome.	Normally another well-performing senior will be offered to take over.

Table 2. Comparison of three Leadership Models

The entry of toxic leadership is due to unfair recruitment practices. Collaborative leadership is due to the outstanding qualities of leaders who always develop the performance of the institute by encouraging promising followers. Many managements fix tenure for elected leaders and once the incumbent completes the tenure, the management will choose a successor.

3.8. Limitations of Centralized Single Leadership in Engineering Institutions

- Hierarchical and top-down decision-making will not yield the best results
- Limited professional opportunities to outstanding senior faculty members for institutional growth
- Potential for micro-management in many complex projects in institutional development due to lack of autonomy for other well-performing experts
- Inhibits dynamic collaboration in planning consultancy projects, developing interdisciplinary postgraduate and research projects
- Stops the outstanding performance of motivated faculty teams
- Loses reputation and fails to enroll motivated candidates in various interdisciplinary programs
- Reliance on a single leader for all critical decisions will not bring a reputation

3.9. Need for Distributed Leadership in Engineering Institutions

- Promote autonomy for outstanding and intrinsically motivated faculty teams for active contribution to institutional development

- Implement strategies that foster trust and active collaboration between global institutions and fast-growing companies in the region
- Decentralized leadership scaffolds the senior faculty members who have to develop innovation in research and development programs
- Incorporate synergistic interactions and decision-making at multiple levels

Provide more opportunities for faculty engagement

3.9. Feedback from the Faculty Members on Leadership Performance

It is essential to get feedback from the faculty at the end of each semester on the leadership performance in the following areas:

- Planning for new courses, and programs, expanding the resources, and planning for consultancy projects.
- Establishing continuing education courses for executives of various companies
- Planning dual courses through various companies
- Planning in-house faculty development programs
- Policy issues like revenue generation and utilization
- Offering diverse global faculty development
- Globalization of engineering programs
- Creating consortiums for undertaking complex consultancy projects under various international development agencies
- Establishing satellite centers in industrial corridors and hubs
- Quality improvement programs under International Development Agencies
- Planning international conferences, seminars, and peripatetic workshops.
- Undertaking industry-sponsored graduate programs
- Leadership development programs

These are a few suggestions. However, one can invite new proposals from the faculty members.

3.10. Discussion

Empowering the outstanding faculty teams through distributed leadership, permitting them to prepare bid documents, negotiate with clients, follow the standards, and complete the projects within

deadlines. The hidden successes are:

- Identifying the outstanding middle-level faculty team members
- Exposing them to various ongoing projects
- Training through various bilateral projects
- Permitting them to offer desired consultancy projects
- Completing the projects based on the terms of reference (TOR)
- Team leaders can resolve conflicts amicably among the team members.

Collaborative leadership focuses on the high-performing faculty members and shares their vision for continuous growth. However, toxic leadership should not be extended beyond tenure.

All the above successes provide evidence proof of the distributed leadership model.

4. Conclusion

Distributed leadership model is very effective if it is preceded by various enabling factors. Without this model, it is impossible to improve the performance of an engineering institute. A top-down approach cannot be successful in a complex situation. Outstanding faculty teams have to be empowered, supported, and scaffolded at every stage. There are many obstacles in implementing the distributed leadership model due to authorizing the authority which is based on the skills, abilities, and expertise. The senior faculty can't be bypassed. Their position has to be maintained in other routine activities. Empowered project faculty utilize their distributed leadership only for their projects.

The top-down practices of toxic leaders can't assist the fast growth of engineering institutions. If the outstanding faculty are not empowered, their contribution to the knowledge capital will be retarded. Collaborative leadership will accelerate the innovations in curriculum development, and improve the collaboration of the institute with various companies in the region. In this globally competitive economy, outstanding engineering faculty teams need empowerment, scaffolding, and empowered distributed leadership. The whole process can be classified under human resource dynamics.

4.1. Shortcomings

Empowered leadership in this paper is due to the needs of the ongoing projects only. Many senior faculty members wanted to be included in the projects as leaders which was rejected. Ultimately a new culture was created to empower the project leaders as a designated leader for the project and they also

accepted it as a temporary measure. In the absence of such development projects, the existing senior leaders will not be disturbed. In very large institutions, this research study will not provide any direct methodology.

4.2. Suggestion for Further Research

It is required to replicate this research study in large institutions to evaluate the advantages of distributed leadership. This has to be compared with other models like servant leadership.

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