STRATEGIC PLAN /SP 2022-2026/

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“ምርምር እና ቴክኖሎጂ ለኢንደስትሪ መስፋፋት”.

በአሁኑ ስዓት የትምርት ተቋማትን የፈተነ ያለው የውድድር አውድ እየሰፋ ሲሆን አድማሱም ውስብስብ እና ተለዋዋጭ የሆነ በመጣው የህብረተሰብ ፍላጎት ምክንያት አይነኬ የሆነ ይመስላል። በእንደዚህ አይነት ጠንካራ የውድድር ዘመን ታዲያ ማሸነፍ ባይቻልም እንኳን ተወዳዳሪ መሆን የግድ ይሆናል። ለዚህ ውድድር ብቁ ለመሆን ታዲያ ተቋማት የታለመ ስትራቴጂ እቅድ መተለም አስፈላጊም ግዴታም ሆኖ ይገኛል። ይህን የተረዳው የባህር ዳር ዩኒቨርስቲ፣ ዩኒቨርስቲውን በ2025 ወደ ምርምር ዩኒቨርስቲ የማሻገር ትልም ነድፎ እየሰራ ይገኛል። ይህንን ትልም በመከተልም የባህር ዳር ቴክኖሎጂ ኢንስትቲውት በ 2025፣ ለሀገራዊ መነቃቃት የኩራት ምንጭ ለመሆን ቴክኖሎጂ ተኮር በሆነ መማር ማስተማር እና ምርምር እንዲሁም ፈጠራ በታገዘ መስራት የሚል ረዥም እቅድ እውን ለማድረግ ተነስቷል። እነዚህን ተዋረዳዊ የተቋም እቅዶች ለማሳካት የዩኒቨርስቲው አሁናዊ መሰረት እና የቴክኖሎጂ ፈጠራ መልህቅ የሆነው የ መካኒካል እና ኢንዱስትሪያል ምህንድስና፤ ከላይ የተጠቀሱትን ትልሞች መሰረት ያደረገ የምርምር ማእከል እና የቴክኖሎጂ መፈለቂያ የሆነ ሀገራዊ የኢንዱስትሪ መስፋፋ ጉዞ ጎህ ቀዳጅ መሆን የሚያስችል መፈክር ይዞ ይህን የፋካሊቲ ስትራቴጂክ እቅድ ከ 2022 -2026 ሊሳካ ታልሟል።

ከላይ የተጠቀሰውን ”የምርምር ማእከል እና የቴክኖሎጂ መፈለቂያ በመሆን ለሀገሪቱ ኢንደስተሪያላዜሽን ጎህ ቀዳጅ መፈክራዊ ትልም ለማኖር በፋካሊቲው ዲን አነሳሽነት አራት መምህራን ተመድበው ሰራ ተጀምሯል። ቀድሞ ተግባር ላይ የዋለ ፋካሊቲ ተኮር የስትራቴጂክ እቅድ አለመኖሩ መነሻ ሃሳቦችን ለማግኘት ቢያዳግትም በ ኮሚቴው አባላት ጥረት ሰፊውን የዩኒቨርስቲ አላማ እና የቴክኖሎጂ እንስቲቲዊቱን ትልም በመከተል በ2026 ፋካሊቲው ሊሳካቸው የሚገባቸውን 17 ግቦች እና 94 መለኪያ ነጥቦችን ሊያዋቅር ችሏል።

የስትራቴጂክ ትልም ኮሚቴውም የተጠቀሱትን ግቦች እና መለኪያዎች ለማዋቀር አስቀድሞ ፋካሊቲው ያለበትን ተግዳሮቶች፤ መልካም ገፅታዎች እና ዝርዝር ተሞክሮዎችን ከ መማር ማስተማር፤ ከ ምርምር እና ፈጠራ፤ ከመልካም አስተዳደር፤ እና ከተቋማዊ መሰረተ ልማቶች አኳያ ገምግሟል። ይህን ግምገማ ለማሳካት ኮሚቴው ዴስክ ሪቪው፤ የመስክ ምልከታ፤ እና ከሚመለከታቸው አካት ጋር የገፅ ለገፅ ምክክር አድርጓል። በሂደቱም ፋካሊቲው ወደ ፊት ከማን ጋር እንዴት በሆነ ሁናቴ መስራት እንደሚገባው ምልከታ የተገኘበት ሲሆን በውጤቱም ፋካሊቲው ከመማር ማስተማር በተጓዳኝ ሀገራዊ ግዴታውን ለመወጣት ወደየት ማተኮር እንዳለበት መልከታ የተገኘበት ሆኗል። በጠቅላላውም ይህ ሰትራቴጂክ እቅድ በአግባቡ ተግባር ላይ ለማዋል አስፈላጊውን ትኩረት ከተሰጠው እና ሁሉም የፋካሊቲው አባላት የግላቸው ጉዳይ አድርገው ከወሰዱት በርግጠኝነት በ2025 ባህር ዳር ዩኒቨርስቲ ያለመውን የምርምር ዩኒቨርስቲ የመሆን እቅድ እና የ ባህር ዳር ቴክኖሌጂ የተለመውን በቴክኖሎጂው ዘርፍ የኩራት እና የመነቃቃት ትልም በማሳካት” የምርምር ማእከል እና የቴክኖሎጂ መፈለቂያ በመሆን ለሀገሪቱ ኢንደስተሪያላዜሽን ጉዞ ጎህ ቀዳጅ ፋኩሊቲ ይሆናል። ለዚህም ተከታይነት ባለው መንገድ ስጋቶችን በመለየት እና ቀጣይነት ያለው የማስተካከያ እርምጃ የታከለበት አስተዳደራዊ ውሳኔ እና ወቅታዊ የሆነ የግምገማ ሪፖርት በተዋረድ ማድረግ መፈክሩን እውን ማድረግ ያስፈልጋል።

ሜካኒካል እና ኢንዱስትሪያል ኢንጂነሪንግ ፋኩልቲ ዲን

EXECUTIVE SUMMARY

The quest for academic competition has become a tough job due to ever-increasing dynamic societal needs. In such a tough season, even if it is difficult to win the academic competition, being a part of it is necessary to compel. In order to qualify for this competition, it is imperative that institutions have to develop a strategic plan. Realizing this fact, Bahir Dar University is working on a plan to transfer the university to a research university by 2025. In line with this goal, Bahir Dar Institute of Technology has set a long-term strategy of achieving national aspiration and being a pride vision through technology-based teaching, research, and innovation by 2025. Faculty of Mechanical and Industrial Engineering, the University's current foundation and anchor for technological innovation, has also set this strategic plan to be achieved from 2022-2026 focusing on those hierarchical plans. Doing that, the strategic plan of the faculty has been designed to make faculty of mechanical

and industrial engineering pioneer in the national industrial development through research and technological innovation. Under the auspices of the dean, the strategic plan with a motto of "Research and Technology for Industrialization" has developed. Although it is difficult to get ideas from the previously implemented faculty-based strategic plan, the efforts of the committee members have set 17 goals 94 indicators for the faculty to achieve by 2026. The indicated goals and indicators have been designed to be aligned with the broader objectives of the university and the technology institute. Ahead of formulating the stated goals and objectives, the SPD team has done situational analysis (SA) and identified the challenges facing the faculty and positive teaching-learning aspects in terms of the faculty's experience in research and innovation, good governance, and institutional infrastructure.

In the SA process, the team has done an in-depth literature review, desk review, field visit, and a face-to-face discussion with selected stakeholders. In the process, in addition to excelling in teaching and learning, the vision of the faculty has adjusted to set into the direction of collaboration and community engagement focusing on fulfilling its national responsibilities. In general, if this strategic plan is given the necessary attention to be implemented and all the faculty members take it as a matter of course, it will certainly support the faculty to become a research center and technology hub for Bahir Dar University. In doing so, the journey of industrialization will be a pioneering objective of faculty. To this end, the slogan needs to be realized in a consistent manner by identifying risks and continuously taking corrective administrative decisions and timely review reports.

Dean, Faculty of Mechanical and Industrial Engineering

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BACKGROUND

1.1 Brief Organizational History and Structure of BIT - FMIE

The history of Bahir Dar Institute of Technology (BiT) is related to the historical establishment which is associated with the beginning of Bahir Dar Polytechnic Institute in 1963. BIT is one of the major institutes of Bahir Dar University (BDU) which is located in the beautiful city of Bahir Dar and at the shore of Lake Tana, the largest freshwater body reserved by the UNESCO biosphere. Since 1956 EC., the institute had undergone several program changes in the area of technology (such as Agro-mechanics, Industrial Chemistry, and Textile, Electrical, and Wood Technologies).

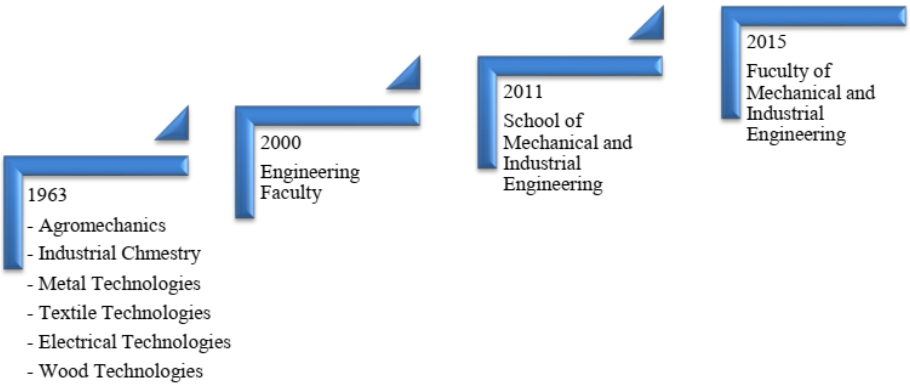

Figure 1: Time line History of FMIE

The faculty of Mechanical & Industrial Engineering is one of the pioneers of an engineering program at Bahir Dar Technology Institute which started its journey with technical and technological training since the establishment of Bahir Dar Polytechnic Institute in 1963. Currently, the faculty is organized with seven chair (department) systems. The faculty is running 4 undergraduate, 8 master, and 5 Ph.D. programs. It has 95 active academic staff (2 full professors, 4 associate professors, 9 assistant professors, and 78 lecturers), and 27 technical assistants staff, and 35, on MSc study leave, 25 on Ph.D. Study leave staff. The faculty is equipped with 29 laboratories and machine shops. The faculty is organized with seven chairs (department) systems as follow.

Manufacturing Engineering Chair: The chair has specialization and scope of studies focused on integration of different facilities and systems for producing quality products (with optimal expenditure) by applying the principles of physics and the results of manufacturing systems studies, such as the following: craft; putting-out system; the advanced joining of ferrous, nonferrous and composite materials; advanced foundry engineering; metrology engineering; mass production; computer integrated manufacturing; computer-aided technologies in manufacturing; flexible manufacturing; mass customization; agile manufacturing; and rapid manufacturing, etc.

Mechanical Design Chair: The chair has focused on the areas of materials development, mechanical systems design; casting and metallurgy die design; biomechanics and rehabilitation; energy; agricultural technologies; additive manufacturing; and computational methods; and design optimization.

Automotive and Electromechanical Engineering Chair: The chair comprises both automotive and electromechanical engineering studies which focus on manufacturing; designing; mechanical mechanisms as well operations of automobiles. It is an introduction to vehicle engineering which deals with motorcycles, cars, buses, trucks, etc. It includes the study of mechanical; electronic; and safety elements. It also includes robotics; computer vision; control; electronics; and embedded systems. The chair also focused on automation; instrumentation and artificial intelligence such as providing the

concepts, procedures, operation, and analysis techniques necessary to design electromechanical elements commonly found in electromechanical devices that are needed for the industrial development of the country.

Agricultural Mechanization Engineering Chair: Agricultural Mechanization embraces design; development; manufacture and evaluation of agricultural tools; application of equipment and machines for agricultural production such as land development (preparation); crop and livestock production; harvesting; post-harvesting and storage; irrigation equipment; agro-processing and rural transportation.

Thermal Engineering Chair: the chair focused to designed and solve various problems in Power generation (Hydro, wind, solar, and Geothermal), refrigeration and air conditioning, energy for Process industries, turbomachine component design industries, textile and agro-based industries, aviation industries, and similar disciplines in mechanical engineering. The chair also focussed on to design and optimization of different thermal equipment like heat exchangers, turbines, aerospace propulsion systems, heating, and ventilation system and refrigeration systems, and equipment and processes that utilize thermal primary energy resources and also on the design, performance analysis of fluid machines.

Production Systems Engineering Chair: This chair focused on production planning, scheduling, and control; materials handling; storage systems design and control; analytical and simulation models; modeling, designing, and performance analysis of manufacturing systems; continuous improvement of material flow; designing of products and processes to make them compatible with manufacturing and assembly processes; and application of computers to control manufacturing systems and robots in flexible assembly and determining optimal product mix and production routes.

Industrial Design and Management Science Chair: The chair focused on industrial management concepts, principles, and practices that enable them to manage and lead professionally and ethically industrial projects, industrial setups, and supportive institutions that increase the competitiveness of business firms both in the national and international market under the dynamic environment.

PURPOSE OF THE STRATEGIC PLAN (SP)

Nowadays, having a strategic plan becomes a competitive shield and a way forward. Without the strategic document organizations in the current time will face difficulties in the waves of international competitions. Especially for

universities, a strategic plan can function to show the clear direction that the university can reach in the future. In addition, the strategic plan also shows the direction where the university is currently going. Most importantly, Faculty of Mechanical and Industrial Engineering the strategic planning is a way to prioritize the right goals at the right time. Moreover, the strategic plan functions as an action plan to create a clear view for the rest of the programs in the faculty.

Thus, now it is required to have a new strategic document that is used to communicate with the organizational goals, the actions needed to achieve those goals, and all of the other critical elements incorporated in the strategic plan. Since the faculty is a structural part of BiT, it also requires binding the faculty's goals and actions with the institute. Beyond that, the strategic plan also reflects the national reforms and international prospects while maintaining the effort to improve and enhance further existing institutional and faculty achievements.

STRATEGIC PLANNING METHODOLOGY

As it is described above, nowadays, understanding the current turmoil in educational competitions is becoming a must to have a strategic plan for educational institutions. FMIE has foreseen the situation and has planned to prepare a strategic plan document (SPD) for the coming 5 years. The strategic plan preparation process started with a designed action plan. Thus, based on the action plan a situational analysis has been performed to understand the current practices done under the faculty. The situational analysis is designed to map internal and external factors faced by the faculty. By the specified steps of the indicated action plan, faculty facilities have been visited by the team. Following sample visits, the team has prepared a check sheet and questionnaire to investigate the actual situations that existed in the teaching-learning environment of the faculty.

In order to widen the assessments of a situation analysis and to designate proposed future directions of the faculty, the team has identified strengths, weaknesses, opportunities, and threats (SWOT) of the faculty using the SWOT analysis method. The SWOT analysis has been supported by the benchmark visit up on selected universities, institutes, and targeted manufacturing industries. Those selected benchmark visit sites have been identified after desk reviews. The SWOT analysis method has employed two basic approaches. The first approach supported the evaluation of the internal matters of the faculty. The internal factors are based on the strength and weakness which has been evaluated following McKinsey 7s approach (McKinsey, 2021). In addition, the opportunities and threats - OT are external elements for the faculty. Thus,

PESTLE[1] has been used in this strategic model preparation process (PESTIL, 2021). Those parameters have been evaluated using teams' benchmark visits and the situation of the faculty itself.

The SPD team has also reviewed different strategic plans such as BDU's five-year strategic plan 2020 – 2025 "Transforming BDU into a Research-Intensive University"; BIT's Five strategic year plan 2021-2025 "Aspire to be a source of pride for the nation through excellence in technological education, research, and innovation!"; and College of Agriculture and Environmental Sciences ten-year Strategic Plan 2020/21-2029/30; "Transforming CAES into a Research-Intensive College". Moreover, relevant policies from other sectors such as Agriculture and Rural Development Strategy, Health Policy (MoH, 1993), and Industry Development Strategy (MoI, 2002) were made part of the desk review (BDU SP, 2020).

In addition, the SPD team has done field visits to selected institutes, colleges, and industries. In this process, the team has reviewed relevant documents, made focal group discussions with representatives, and execute actual observations in the process. Hence, the team has taken lessons on the future requirements of local industries and institutes from our faculty. Consequently, the team has guided wisdom that has been observed from those industries and institutes such as Adiss Ababa Science and technology, Adama Science and technology, and Ethiopian Engineering Group (EEG) Corporation headquarter and industries to the faculty strategic plan. The field visit has targeted discussions with senior and more experienced staff on the selected institutes. The expertise has given me the chance to comment on the performance of the faculty and give suggestions as input for the strategic plan.

Beyond that, the team has done extensive desk review and taken practical lessons on academic strategic plan goals and indicator preparation from local and abroad universities. The local universities Haramaya University, Addis Ababa University, Jimma University, and Defence University have been taken as the best benchmark for academic performance and used as a guideline

1 PESTLE

to prepare FMIE's strategic plan. From universities abroad, the team has set a criterion to review accredited universities and visit their strategy to take lessons for FMIE. Among those universities, Makerere University, and Faculty of Agri-Sciences, Stellenbosch University, South Africa are the few to mention.

ASSESSMENT OF EXISTING SITUATION AND SWOT ANALYSIS

FMIE's strategic plan is aimed at achieving the six Strategic Themes of Bahir Dar University, which are Competitiveness in Education, Academic Staff Development, and Competitiveness in Research & Community service, Competitiveness in governance and Management, Infrastructure Provision, and Communication and Partnership.

4.1 Assessment of Existing Situation

4.1.1 Teaching and learning and Staff Development

FMIE as a faculty endures enhancing the quality of education in every aspect by measuring the input, process, and achievements. The faculty expands the programs and enrollment capacity for students and the number of staff from each year. Currently, FMIE has 2 full professors, 4 associate professors, 9 assistant professors, and 78 lecturers. There are also 27 technical assistants with diplomas and different levels. Moreover, FMIE has 66 staff members who are studying different programs. The involvement of the female staff is improved from time to time, almost 12%. The teacher-to-student ratio with the current status is about 1:20. Since BiT has been nominated as a research institute, the previous ratio of teacher-to students will be expected to be minimized and the faculty will increase activities on research and postgraduate educational activities. According to the quarterly report of BiT in 2013 E.C, to minimize the ratio of teacher to student and to improve the quality of education, almost 60 staff are on studying their postgraduate programs (35 MSc. and 25 Ph.D.) in local and

abroad institutions. Because of such kind of faculty efforts, the number of staff who will improve their academic status becomes enormous from time to time. Currently, FMIE has 116 active staff and 66 attending their studies in different programs. Among the active staff, 13.5% of the staff are Ph.D. holders, and 74% are MSc holders and the rest of the staff are BSc holders. In addition, the HDP training program is given for the staff to improve the quality of education by enriching the teachers in teaching methodology and motivating them to study further on the subject matters.

FMIE has expanded the programs with regular, evening, summer, and distance programs modes of delivery. The faculty encompasses Mechanical, Industrial, Electro-mechanical, and automotive engineering undergraduate programs. The faculty has 24 curricula and among these 7 (chair/departments) in the first degree (4 streams), 8 in the second degree, and 5 in third degrees. The post-graduate enrollment capacity in the faculty is increased from time to time. For instance, in 2020/2021 the MSc programs in the faculty involve 97 regular and 71 extension students. The Ph.D. programs in the faculty also involve 22 students. The annual intake capacity of the first degree was 240, 120, 60, 120, and 60 students in mechanical, industrial, automotive, bachelor of education in engineering drawing and design respectively.

To support the teaching-learning practices, the faculty has worked to expand the laboratory and workshop facilities. Currently, there are 29 laboratory facilities and workshops in the faculty. However, the laboratory facilities are not fit to the expectations of the advanced teaching-learning process because the lab equipment is obsolete and has not done scheduled maintenance. However, there are some newly organized and established laboratories that are equipped with the latest technology, so the students and the staff have an opportunity to conduct different research activities.

To create a good relationship between the faculty and the industries and to satisfy the demand of industries by teaching and training, the faculty has invited the industry managers to different workshops. Moreover, for university-industry linkage improvement, the faculty has participated in sending students and staff for internship and externship programs respectively. Mainly, due to frequent exposure of staff members to the industry's practical work, they have been

able to improve their skills and theoretical knowledge. So that, the faculty has a chance to identify the current technology and different problems that face in the industries through university-industry linkage.

During the process of internship programs, the academic advisors and the company supervisor for internship students will ensure the quality trainers work by frequent mentoring. In the same way, the staff will present their externship training skills and share the research ideas for the rest of the faculty members to organize themselves and work on those ideas. Moreover, there is a quality assurance committee at the faculty level, which will pave the way to monitor and improve the quality of education. Though the faculty quality assurance checks and controls the quality of the assessments, there is still a gap in giving the assessment feedback to the students (as depicted in Figure. 2).

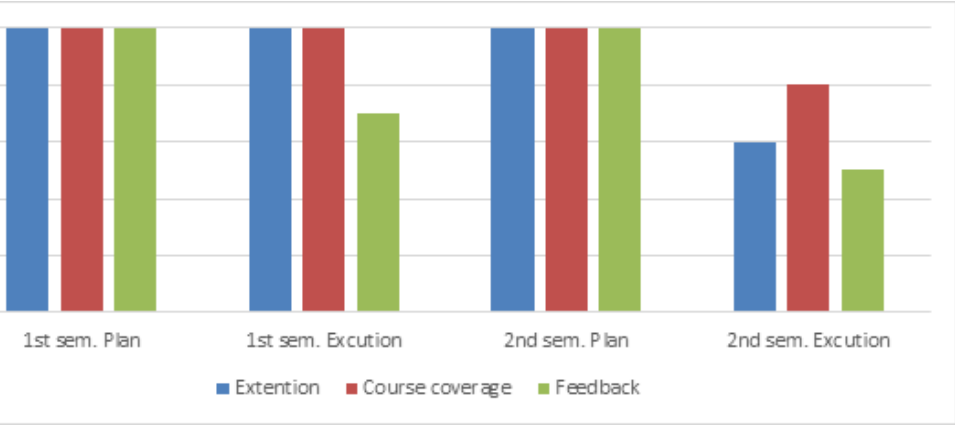

Figure 2: Feedback performance 2013 EC

4.1.2 Competitiveness in Research and Innovation

Since the university has given priority to research and innovation, FMIE has highly participated by encouraging multidisciplinary projects and research activities. Consequently, FMIE has engaged in research and innovation and used ICAST conferences as an opportunity to disseminate knowledge. Hence, the faculty has published 10 conference papers at ICAST 2019. Extending the previous trend, the faculty has increased its contribution to the 2020 ICAST

conference and has published 11 papers. In 2021, the practice has improved which the FMIE staff has published 21 papers in 15 international journals and 6 conference proceedings. (BiT SP, 2020)

Results discussed in Section 4.1.3, used as an indication of the faculty's strong attention and effort to convert research and innovation activities to the objectives of technology transfer and community engagement.

4.1.3 Technology transfer and community engagement

The faculty have considered technology transfer and community engagement as a core academic value since its establishment. Thus, FMIE has worked in tight with the relevant offices of different city administrations in the region. Consequently, the faculty has been able to identify gaps and solve problems of the manufacturing companies and able to provide the necessary support /follow-ups. Currently, the faculty has also worked to tighten technology transfer and community engagements beyond the region. FMIE has highly participated in technology transfer and community engagement by encouraging multidisciplinary projects and research activities.

Currently, the faculty continuously increases its strength in participating in technology transfer and community engagement activities. As an indicator, the faculty staff and students have engaged to re-launch new laboratories and refurbish existing facilities. For instance, FMIE has established new laboratories such as ergonomics labs and rehabilitated obsolete machines and laboratory equipment through regular and scheduled reconditioning activities. As part of improving the performance of the laboratory equipment, FMIE had used summer activities as a way of rehabilitation.

As a result of all the above efforts made by the faculty, walking tractors and water pumps, products for the response of COVID 19 calls such as hand-washing machines which costs more than 400,000 birrs, tested 2 mechanical ventilators, laboratory machines recovered by cannibalization, and an increased number of funded grant projects (design and fabrication of plastic crusher machine, machine-building which converts fish waste into animal feed, baller machine) are becoming indicators for the faculty had shown good performance on technology transfer and community engagement activities. The faculty has also immensely

participated in kaizen implementation and training for different organizations and had built machinery (such as mixer for sanitizer production; automatic filling system for sanitizer; water supply billing & utilization management system; and plastic shredder machine) to satisfy technology transfer and community engagement responsibilities by the university and institute.

1.4.4 Governance and leadership activities

The faculty has taken seriously that achieving objectives of teaching-learning; research and innovation; and technology transfer without good governance and leadership activities would not be possible. Though, through powers endorsed by the university and by the institute, FMIE has strongly worked to maximize its effort and has created a conducive working environment using legal forms of academic commission (AC). As a part of good governance and leadership, the faculty has accomplished a vast amount of capacity-building acts. For instance, the faculty has shown a leading role in the institute by constantly permitting staff to take short and long-term academic training and postgraduate study leaves to the process of maximizing its exertions to the main goals of the university. (BiT SP, 2020)

The faculty has also worked filling staff number limitations by hiring newly recruited staff employing AC's problem-solving competencies. Associated with assigning staff for the faculty's vacant positions, there is still a visible gap which the faculty is working on to make it competition and merit-based.

The faculty has also used HDP training as an opportunity to increase the capacity of teaching-learning to amplify course management and execution skills of the staff. Moreover, the newly formed chair management system in 2020/21 shall contribute to the dissemination and decentralization of responsibilities and empower the chairs (departments). The structural administrative functions of the faculty have also supported the faculty in ensuring good governance and the quality of education through measures of effective and efficient resource utilization. Currently, on average more than 3, staff members of the faculty have also served as higher officials and contributed to the good governance and leadership role at the university and the institute.

4.1.5 Competitiveness in Infrastructure Development; Communication and Partnership

In parallel to the teaching-learning activities, the faculty has refurbished the seminar room to the smart room level. The newly built feedback electronic system and the resource management systems are also indications of the enabling environments for the staff and students around and in the faculty. For the long-term partnership especially for the conducive university-industry linkage activities, the faculty has also worked to create long-term partnerships with potential industries like the Ethiopia Engineering group and other industries under Amhara regional state.

4.1.6 Cross-cutting issues

In the efforts of enriching services for those in need, the faculty has also worked in increasing the proportion of female academic staff. There is also a tutorial program supporting academic low performers. In general, the faculty has worked to have female participatory systems in research and innovation, technology transfer, and community engagement activities. The faculty provide awareness training and organized conductive workshops concerning research proposal writing and entrepreneurship training for graduating class students.

4.2 SWOT Analysis

Today with universities focused on the bottom line, they have begun to aggressively promote themselves to maintain and/or enhance their competitive position. It is contended that with the uproar, tumult, and dynamism in the present environment, the universities cannot rely primarily on student recruitment efforts for success. Their mechanisms will need to be more proactive and innovative and, it is argued, research into what the students expect, how they select their university, and their experiences whilst there.

Studying and evaluating the FMIE's strengths and weaknesses concerning the opportunities and threats that are very essential to develop a rock strategic plan for the faculty. This SWOT analysis has been conducted with an extensive discussion of the SPD team and the stakeholders. The SWOT of the faculty

has been studied based on four operational pillars, these are teaching-learning, research and community services, resources and infrastructures, and leadership and governance. In addition, the SWOT of the FMIE has considered the internal and external factors. The internal factor consists of the strength and weaknesses of the faculty while the external factor will have measured based on the opportunities and threats of the faculty.

Internal Factors		
Internal	**Strength**	**Weakness**
Organization structure	Decentralized chair system Establishment of new chair management system/Chair councils Presence of quality assurance at the faculty level Establishment of unique programs like agro mechanization Explicit lines of communication in the faculty	Overlapped multidisciplinary courses Course ownership and management The unclear practice of accountability and responsibility in the chair system Less cross chair coordination Limited attachment with UIL in the faculty

Strategy	A wide range of academic programs with a process of ABET accreditation Defined vision and mission Positive initiation to have MOU with different institutions Conduct program/curriculum evaluation Consistent relevance and need assessment including tracer study for most of the programs. Expanded undergraduate and graduate programs. Strong commitment for capacity building through training packages such as ICT, externship, and HDP Initiatives for enhancing consultancy service	Absence of proper strategy for community engagement Lack of a brand and strategic marketing and communications strategy Absence of previous strategy plan with comprehensive themes Immeasurable indicators for vision and mission Limited reputation of the faculty, and absence of strong international connections and partnerships Limitation on subscribing to reputed journals Absence of evaluating and assessing metrics for community engagement achievements Less practice on identifying the key intervention areas for community engagement Absence of identifying and promoting laboratories and workshops for income generation

Systems or Working Principles	Availability of resource management system Availability of new launched course feedback management system Good working environment Motivation for academic quality	Limited practices on exam standardization: establish structure and exam center Lack of performance-based reward system Weak alumni involvement Stringent procurement process The system is not robust Weak communication system Practical limitation on Merit-based appointment Absence of thesis documentation database and plagiarism checker system Limited financial autonomy Limited practice of intellectual property right guidelines

Leadership Style	Committed management Positive attitude Readiness for change Academic freedom	Limited willingness to distribute the tasks for all staff Limitation on motivating young staff to engage in different activities Less transparency and accountability Absence of guidelines to recovery mechanism for accidents on duty
Staff/Human Resource	Growth of academic staff profile Majority of young staff Optimum staff to student ratio Increasing number of female academic staff	Limited Cooperative spirit of the staff Delay response Resistance for change Less integration between administrative and academic staff High turn over Limited initiatives for continuous assessment and peer-led learning Limitation on Attracting, recruiting, and retaining highly qualified staff Lack of interest in participating in extra-curricular activities

Skills	Initiatives in Implementing E-learning Strong initiatives for the monthly seminar Conducting annual workshop Involvement of staff in short and long term training Active participation of Students and academic staff in national innovation competitions. Initiatives for disseminating skills obtained from externship practice	Limited research projects inspired by multi-disciplinary programs Absence of career development center Absence of integrating technologies with indigenous knowledge Limited practice on developing entrepreneurial and job creation capability Limited attitude for waste management system
Shared/ Common Values	Consistent participation in ICAST Availability of faculty website Staff community engagement activities like annual sports competition and social gathering Involvement of staff association and student union in the decision-making process	Absence of reputable journals at the faculty level Lack of ownership and communication Absence of center of excellence for research Limited interaction of incubation center with the faculty Lack of timely updated faculty website

Infrastructure and Facilities	Establishing new laboratory facilities Initiatives for procurements of lab setups	Inadequate resources for facilities, equipment, and recruitment, and retention of quality staff Absence of faculty owned budget for research and community engagement activities Lack of standard textbooks and laboratory manuals Limited utilization of laboratories/workshop facilities Poor preventive maintenance system for laboratory facilities Limitation on enhancing inclusive resource sharing Limited spaces for the physical infrastructure of the faculty Limited number of smart classrooms and offices

External Factors		
External Factors	**Opportunities**	**Threats**
Political	Progressive support for the expansion of higher education Technology oriented direction Quality-oriented direction Existence of university-industry linkage New federal educational roadmap	Political instability Less integration with the city and regional administration Absence of operational autonomy Government intervention on internal affairs
Economical	External funding opportunities Establishment of industry parks Micro and small scale enterprises Increasing energy generation	High inflations Shortage of hard currency High unemployment rate The slow growth rate of industrialization Lack of appropriate budget allocation for the faculty Stagnant state investment in higher education Decreased family buying power and high rate of unmet financial need

Social	Expanding partnerships and engagement opportunities within the communities Positive attitude towards technology Social pride of poly Increasing alumni interest	Increased tendency to brain drain Lack of respect for knowledge Violating rule of law Rent-seeking behavior Increased tendency for employee turnover Decreased demand for education Less interest and awareness on locally developed technologies Lack of trust in the capacity and capability of new graduates by the society Higher education's current role in society is less valued while expectations are rising Poor educational background of students and poor readiness

Technological	Emerging tools, technologies, and educational platforms Ever-increasing needs of the market for new technology Easy transfer of knowledge New ways of communicating media with target markets	High technology adoption cost Focus on buying end-products Shortage of technological knowledge and creativity Technological products dynamic change Inappropriate usage of technological products Regional and online (e-learning) competition for students Poor culture of technology utilization
Ecological	Located at the region capital Source of water High potential for agriculture and tourism City of education and innovation	Minimum number of industries Far from the capital city of Ethiopia Climate change Risks and uncertainties being caused by the COVID-19 pandemic

Legal	Flexible university legislations Opportunities for free staff health and safety assurance Being a part of an autonomous institute	Restrictive regulations (finance, human resource, purchasing, job evaluation and placement, salary scale, use of internal revenue, ...) that inhibit the internal operations of the faculty Rigid procurement Inconvenient administrative staff transfer and promotion rules Inconvenient staff employment rules: academic staff career development
Globalization	Easy access to resources and knowledge Opportunities for partnership Help to enhance faculty capacity Create job opportunities	Challenge in competitions Brain drain Less attention to indigenous knowledge Effects on culture
Competitiveness	Awareness for continuous improvement Increased attractiveness	

4.3 Summary of Situational Analysis

To scan the environment that surrounds FMiE and has a direct or indirect impact on the overall success of the faculty, a desk review was done to analyze existing reports, policies, plans, strategies, and practices. Next, a SWOT analysis was conducted by collecting data from staff and students. Field visits were conducted to capture the insights of stakeholders about the faculty in terms of its core missions and values and assess the gaps and expectations. Moreover, a benchmark desk review was held to capture international experience (like PennState Colleague of engineering, university of Nebraska-Lincoln, St Cloud State University of Delaware, and others) and it served as a tool or reference point.

From the previous situational analysis study, it has been observed that the faculty has identified strengths to be sustained, weaknesses to be improved, opportunities to be used, and threats to be avoided. Concerning strength, the faculty has to sustain good practices of the establishment of unique programs with need assessment, working for ABET accreditation, launched course feedback management system, management readiness to change, availability of young staff, conducting seminars and annual workshops, and consistent participation on international conferences. Furthermore, the faculty has to work on improving practices of identified weaknesses such as attachments with UIL, proper strategy for community engagement, exam standardization, motivating young staffs on different faculty activities, avoiding resistance to change, practice on developing entrepreneurial and job creation, ownership and communication, and own budget for research and community engagement activity.

In addition, the faculty has to use external opportunities related to technologically oriented direction, the establishment of industrial parks, positive attitudes towards technology, increasing needs of the market for new technology, being the city of education and innovation, flexible university legislation, and opportunities for partnerships. In line with the influence of external practices, the faculty has to consider the risks of threats such as political instability, unemployment, lack of trust in capable graduates, high technology adoption cost, and a minimum number of industries, rigid procurements process, and challenge in the competition.

In general, the situational analysis serves as an input to scale up the best practices of the faculty. Moreover, the situational analysis will help to maintain the good ones, set improvements on existing limitations on the functionality and structure of FMIE. The formulation of emerging strategic themes, goals, and indicators, which are presented in the following sections that will hopefully, increase the visibility of the faculty according to its vision in numerous ways. The following sections focused on identifying and formulating the strategic initiatives

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ORGANIZATIONAL VISION, MISSION, AND CORE VALUES

3.1. Vision of FMIE

To become the source of pride for the nation through competitiveness in technological education, research, and innovation.

3.2. Mission of FMIE

- To produce competent professionals in various fields of technology and engineering through undergraduate and graduate studies.
- To conduct research and innovation that contributes to industrial and national development needs.
- To expand and conduct technology transfer, consultancy service, community engagement that impacts the lives of people and enhances income generation.

3.3. Core Values of FMIE

- **Academic freedom:** a strong commitment to a free and democratic academic environment whereby all the institute communities exercise the right to free expression of ideas, inquire, investigate and engage in relevant academic practices, and development to pursuit freedom of truth.

- **Learning for excellence:** BiT recognizes the importance of different tools for continuous improvement and believes in the principle of systematically seeking to achieve incremental changes to excel in its operation by improving the efficiency and quality of doing things and strive to develop lifelong learners which help for reputability based on the successful execution of the mission.

- **Quality:** the institute upholds quality as the ruling standard in teaching, research, and community engagement, and commits to attainnig the highest standards.

- **Innovation:** develop or excel a culture for generating new ideas, processes, services, technologies, and entrepreneurial skills through competitiveness and cooperation into new knowledge, operations, and novel solutions to existing challenges.

- **Social responsibility:** BiT recognizes the obligation to act and behave ethically with sensitivity towards social, cultural, environmental, and economic issues of the nation. All endeavors of the institute should be environmentally friendly to benefit society at large and maintain the health and integrity of the ecosystem.

- **Recognition of merit:** BiT has a strong belief in the importance of giving public and institutional recognition to the person who makes a significant contribution to socio-economic development and environmental sustainability.

- **Diversity & Internationalization:** BiT recognizes the need to prepare students and staff to engage in a national and global environment that needs students and staff to have diverse perspectives and enable them to interact meaningfully with those very different from themselves.

STRATEGIC THEMES

Following the SWOT analysis, 7 strategic themes/issues, 17 strategic objectives are identified and 94 indicators have been developed to guide the reconstruction of FMIE's strategy plan (2022 to 2026). Strategic issues along with targets and indicators are analyzed, organized, and presented as follows.

6.1 Strategic Issues/Themes

The six strategic issues are listed below. These strategic issues also inform the process of developing strategic objectives**.**

- Competitiveness in teaching-learning and staff development
- Competitiveness in research and innovation
- Competitiveness in technology transfer and community engagement
- Competitiveness in good governance and leadership
- Competitiveness in infrastructure development, communication, and partnership
- Competitiveness in Cross-cutting issues

6.1.1 Competitiveness in teaching-learning and staff development

This theme could be realized by enhancing the staff profile, skill, knowledge, and attitude through a variety of internal and external human resource development efforts; launching the programs based on the country priority needs and enhancing accessibility through various modes of delivery; strengthening and developing competency-based and practical oriented curriculum in line with national and international standards and by establishing enabling mechanisms and methods for quality education, continuous assessment, and feedback.

Goal 1: Enhancing the quality of education

Main activates:

* Revise curriculum with the active participation of stake-holders
* Perform relevance and need assessment through tracer study
* Establishing smart classrooms
* Updating quality assurance system at the faculty level
* Creating a multidisciplinary courses management system
* Creating cross chair coordination system
* Establishing an exam center for standardization

* Engaging with a process of ABET accreditation for all programs
* Creating a web-based thesis documentation database and plagiarism checker system
* Ensuring continuous assessment and peer-led learning
* Implementing E-learning
* Conducting monthly seminar
* Disseminating skills obtained from internship practice

Indicators:

» By 2022: The faculty shall implement exam standardization systems
» By 2022: An automated student feedback system shall be put in place
» By 2026: All programs shall have tracer study and curriculum revisions
» By 2023: The faculty shall implement a multidisciplinary courses management system
» By 2024: 50% of FMIE class shall be smart classes
» By 2024: All programs shall finalize the process of ABET accreditation
» By 2026: 80% of the course in all chairs has started E-Learning programs
» By 2026: All programs achieved 100% performance in monthly seminar compared to submitted yearly plan

Goal 2: Program expansion

Main activities

* Consistent and scheduled program evaluation as per the market need
* Increasing enrollment and intake capacity
* Establishment of unique programs

Indicators:

» By 2023: All programs shall be revised based on the tracer study
» By 2024: The enrollment capacity of postgraduate shall increase by 100%

» By 2024: 7 need-based programs shall be started

Goal 3: Staff development

* Recruiting the number of academic staff as per the prescribed teacher-student ratio
* Granting a scholarship opportunity emphasizing on PhD
* Attract, recruit and retain high caliber staff
* Affirmative action of female academic staff recruitment
* Giving training packages such as ICT, externship, HDP
* Awareness creation and training to enhance attitude and ethics
* Developing academic recognition packages to encourage outstanding staff
* Creating a performance-based reward system
* Creating a conducive environment for alumni involvement
* Creating a conducive environment for retaining staff
* Creating a career development center

Indicator:

» By 2023: All programs shall start 50% of their staff getting capacity and capability development training

» By 2023: The faculty shall start a performance-based reward system for all programs

» By 2024: All programs shall have one Alumni in the teaching-learning process

» By 2025: The faculty shall launch a career development center

» By 2026: Ratio of BSc:MSc: Ph.D. has reached 0:57:43[2]

» By 2026: The teacher-student ratio shall be 1:10

2 *Assumption: all mentioned activities performed, start with current 121 active staff, Assumption recruiting 3 MSc. Holder per year, sending 6 staff per year for Ph.D., 6 Ph.D. staff return per year at the end of two consequent years of the plan, all 25 Ph.D. students will return at the end of the plan. Then at the end of the strategic plan the faculty will have, 43 Ph.D. holder staff*

- By 2026: 75% of the academic staff shall be certified with technical, pedagogical, didactical, and attitude skills as per the BiT plan
- By 2026: The number of female academic staff shall reach 25% as per the BiT plan

6.1.2 Competitiveness in research and innovation

This theme could be achieved by encouraging interdisciplinary and collaborative research with quality output and dissemination of results. This can be done by strengthening research-based graduate study programs and improving the research fundraising through partnership and collaboration and through establishing and strengthening the research and innovation centers at the faculty level.

Goal 1: Enhancing research culture by encouraging multi-disciplinary and collaborative researches

Main activities:

* Creating a better interaction of incubation center with the faculty
* Active involvement in multidisciplinary projects and research activity
* Subscribing on reputable journals
* Creating guidelines to ensure intellectual property right guidelines
* Conducting annual workshop
* Accrediting FMIE laboratories at the national level

Indicator:

- By 2026: The faculty shall implement intellectual property right guidelines
- By 2026: Key thematic areas shall be revised 10 times
- By 2023: All programs shall participate in multidisciplinary projects and research activity
- By 2026: All programs shall have at least 1 project connected with the incubation center
- By 2026: The faculty shall have at least 2 journal subscripts
- By 2026: The faculty shall have 50% of laboratories are accredited at the national level

Goal 2: Enhancing quality of research output

Main activities:

* Executing transformational research and innovation activities
* Increasing publication
* Creating common international conference and workshop forums
* Motivating students and academic staff to participate in national innovation competitions.
* Sustaining continuous participation in international conferences
* Establishing reputable journals at the faculty level
* Develop research plagiarism regulations

Indicators:

» By 2023: The faculty shall implement research plagiarism regulation

» By 2022: The number of staff participating in conferences per year shall reach 12

» By 2023: The number of annually funded multi-disciplinary research projects shall be reached to eleven

» By 2024: The research output should be able to solve at least eight community problems

» By 2024: FMIE shall have a research editorial center

» By 2025: All curriculums shall be reviewed based on the national priority and international standards

» By 2025: Support five internationally submitted and unsuccessful research projects

» By 2025: FMIE shall have a journal

» By 2026: The number of annually published articles on Web of Science and Scopus indexed journals shall be 175

» By 2026: The faculty shall produce five common international conference and workshop forums

» By 2026: At least 4 staff shall participate in innovation

Goal 3: Improve research fund-raising through partnership and collaboration

Main activities:

* Searching external funding opportunities
* Working on having a financial autonomy

Indicator:

» By 2026: Faculty shall have secured 5 and 8 international and national research grants respectively

» By 2025: Faculty shall have 6 research-based partnerships

» By 2026: At least two projects shall be implemented using emerging technologies

Goal 4: Establishing new research centers

Main activities:

* Establishing a center of competitiveness for research
* Becoming research faculty

Indicator:

» By 2025: the faculty shall establish at least one new research centers

» By 2026: the faculty shall establish at least one new research-grade laboratories

» By 2026: the faculty shall establish one center of excellence

6.1.3 Competitiveness in technology transfer and community engagement

To realize this theme, the Institute will enhance and develop staff capacity; develop inclusive guidelines; enhance collaboration and partnership with the customers and stakeholders; strengthen incubation center; develop entrepreneurial and job creation capability and work on income generation.

Goal 1: Enhancing staff capacity and participation in Technology transfer activities

Main activities:

* Engaging with transformational research and innovation activities
* Providing training and consulting on technology transfer activities
* Identifying and responding to emerging problems of the community including the pandemic
* Creating fund seeking committee for a grant project
* Working to integrate technologies with indigenous knowledge
* Encourage staff to perform industry-based projects

Indicators:

» By 2026: The faculty shall have seven transformational research and innovation activities

» By 2026: The faculty shall have 70 training and consulting on technology transfer activities

» By 2026: The faculty shall have 35 identified and solved emerging problems

» By 2022: The faculty shall have one fund seeking committee for a grant project

» By 2024: The faculty shall have 7 technologies integrated with indigenous knowledge

» By 2026: The faculty shall have 70 industry-based projects

Goal 2: Enhancing staff capacity and participation in community engagement activities

Main activities

* Support initiatives for enhancing consultancy service

* Identifying key intervention areas
* Motivating staff to participate in community engagement
* Preparing evaluation and assessment metrics for community engagement achievements
* Develop a compressive guideline for community engagement and incentive mechanisms
* Conduct impact assessment of community engagement activities

Indicators:

» By 2022: the faculty shall launch a project to develop a compressive guideline for community engagement and incentive mechanisms

» By 2022: the faculty shall launch a project on key intervention areas

» By 2023: the faculty shall launch a project on Preparing evaluation and assessment metrics for community engagement achievements

» By 2023: the faculty shall launch a project to conduct an impact assessment of community engagement activities

» By 2026: the faculty shall have 80% staff engaged in community engagement activities

» By 2026: the faculty shall have 70 consultancy services

Goal 3: Enhancing collaboration and partnership with industries, customers, and stakeholders

Main activities:

* Strengthen links with the community through awareness creation and mutual evaluation
* Identify and recognize collaborative industries
* Crating different communication modals
* Strengthen partnership through firm MOU agreements

* Strengthen the attachment with UIL in the faculty
* Invite customers, industries, and different stakeholders

Indicators:

» By 2022: the faculty shall have exhibitions for customers, industries, and different stakeholders

» By 2022: the faculty shall have a project to Identify collaborative industries

» By 2023: the faculty shall have 1 UIL representative

» By 2024: the faculty shall have multimedia (YouTube and others)

» By 2026: the faculty shall have 5 MOU agreements

6.1.4 Competitiveness in good governance and leadership

Governance and Leadership: this theme could be achieved by ensuring quality leadership and governance in the institute; strengthening the strategic communication in the institute; strengthening the institutional control system and working on enhancing efficiency and performance of administrative staff through various modes of human resource management efforts.

Goal 1: Enhancing empowerment of chair systems

Main activities:

* Strengthen the power of the chair council
* Exercising accountabilities and responsibilities of the chair system
* Enabling competition and merit-based assignment
* Encouraging power dissemination and decentralization

Indicators:

» By 2022: the faculty shall implement 100% power of the chair council

» By 2022: the faculty shall implement 100% accountabilities and responsibilities of the chair system

» By 2024: The faculty shall implement 100% power dissemination and decentralization

Goal 2: Enhancing the conducive working environment

Main activities:

* Giving consistent training to improve the communication skill of leaders
* Motivating young staff
* Strengthen course management and execution skills
* Empowering staff exercising for academic freedom
* Create guidelines for effective and efficient resource utilization
* Encourage staff to serve the university as the higher official
* Enabling a sense of ownership
* Evaluation of the existing systems
* Create enabling a management system to enhance commitment
* Encouraging positive attitude and readiness for change
* Encouraging transparency and willingness to distribute tasks for all staff
* Sustain involvement of staff association and student union on the decision-making process

Indicators:

» By 2022: the faculty shall give for all staff soft skill and change management training's

» By 2022; the faculty shall prepare guidelines for transparent task distribution

» By 2022: the faculty shall give course management and execution skills training for all staffs

» By 2023: The faculty shall create guidelines for effective and efficient resource utilization

» By 2024: 50% of young staff in the faculty shall participate in academic positions and projects

- By 2026: 5 faculty staff shall serve the university as the higher official
- By 2026: Giving training to all academic officers
- By 2026: the faculty shall evaluate the existing system at least two times

Goal 3: Enhancing to integrate administrative and academic staff

* Remove barriers between academic and technical assistant
* Encourage academic staff to invite technical staff on grant projects
* Encourage technical staff for full control of laboratory classes
* Encourage technical staff to prepare and update laboratory manuals
* Strengthen cross administrative activities (Transportation, finance, human resources, etc.)
* Take corrective actions for the delayed response and unethical behaviors

Indicators:

- By 2024: the faculty shall fully remove barriers between academic and technical assistant
- By 2025: 50% of the technical staff shall participate in grant projects
- By 2022: 100% of laboratory classes shall be controlled by technical assistants
- By 2022: All laboratory classes shall have laboratory manuals
- By 2026: The faculty shall be free from unethical behaviors[3]

6.1.5 Competitiveness in infrastructure development, communication, and partnership

Establishing enabling environment in the Institute: this theme could be achieved by expanding the infrastructure, resources, and ICT systems; developing and rehabilitating the institute utility facility; enhancing the service provision and resource utilization, and working on cross-cutting issues and pandemic mitigation.

3 *Realized by taking corrective actions*

Goal 1: Improve the provision of adequate and reliable infrastructure facilities for the advancement of academic aspiration

Main activities:

* Asses and determine the infrastructure requirement of the faculty
* Sustain rehabilitation activities of facilities
* Refurbish and expand smart classrooms, laboratories, workshops, and offices to the standard
* Establish digital library and e-learning platform
* Secure enough space for expanding faculty physical infrastructure
* Establish community networks to create a partnership
* Engage with alumni to fulfill laboratory facilities
* Prepare technical specifications to the requirement of advanced facilities
* Ensure purchased facilities are as per the technical specifications
* Enabling waste management system

Indicators:

» By 2025, a quality audit shall be done for all programs

» By 2023: all courses shall have standard textbooks and laboratory manuals

Goal 2: Improving initiatives to have Memorandum of Understanding (MOU) agreement with different institutions

Main activities:

* Identify potential partners and networking areas
* Reinforcing brand and strategic marketing and communications strategy
* Strengthen the reputation of the faculty

* Strengthen international connections and partnerships
* Seeking and reaching an agreement for MOU
* Enriching the partners and stakeholders through the faculty website
* Enabling mutual resource sharing with partners

Indicators:

» By 2022: The faculty shall set a project to asses and determine the infrastructure requirement

» By 2022: The faculty shall have a committee for laboratory facility procurement team

» By 2023: 80% of the facility shall be refurbished and expanded

» By 2023: the faculty shall have an effective waste management team

» By 2024: 80% of facilities shall be rehabilitated

» By 2026: The faculty shall establish a digital library and e-learning platform

» By 2026: The faculty will have one community networks forums

» By 2026: 5 Alumni shall engage in laboratory facilities

6.1.6 Competitiveness in Cross-cutting issues

Goal 1: Enhancing income generation

Main activities:

* Develop entrepreneurial and job creation capability
* Identify and promote faculty infrastructures for income generation
* Compute in national and international grand calls and bids
* Preform a feasibility study for faculty income generation
* Provide need-based consultancy service

Indicators:

» By 2026: The faculty shall have two entrepreneurial projects for job creation

» By 2026: The faculty shall secure 35 grant projects and bids

Goal 2: Equity and inclusiveness

Main activities:

* Encourage females academic staff requirements and provide leadership training
* Encourage female staff to prepare workshops and seminars
* Provide tutorial classes for female, disabled, and less performer students
* Encourage female staff to take responsibility for the chair system
* Encourage inclusive and equity on vision and mission of the faculty
* Ensuring the participation of female staff in sport and entertainment
* Encourage female staff to participate in extra-curricular activities

Indicators:

» By 2022: Ensure 80% tutorial accessibility for females, disabled, and performer students

» By 2023: All-female academic staff shall take leadership training

» By 2025: 25% of the chair council shall be female

» By 2025: 50% of the female academic staff shall participate in research

» By 2026: 50% of the female academic staff shall involve in workshops and seminar

» By 2026: The faculty shall have a female sport team

PLANNING BASED ON GOALS AND INDICATORS

Note: N/Av

Strategic Theme 1: Teaching and learning								
Strategic goals	Indicators	Unit	Baseline (2021)	Targets				
				2022	2023	2024	2025	2026
Goal 1: Enhancing the quality of education	Implement exam standardization systems	N/Ap	N/Av	✓	✓	✓	✓	✓
	Automated student feedback system	N/Ap	N/Av	✓	✓	✓	✓	✓
	Tracer study and curriculum revisions	%	N/Av	10%	25%	50%	75%	100%
	Implement a multidisciplinary courses management system	N/Ap	N/Av		✓	✓	✓	✓
	Smart classes	%	N/Av	----	25%	50%	75%	100%
	ABET accreditation	%	50%			100%	100%	100%
	Starting E – Learning programs	N/Ap	N/Av	10%	20%	30%	50%	80%
	Performance in monthly seminar compared to yearly plan	%	80%	100%	100%	100%	100%	100%

Goal 2: Program expansion	Tracer study				✓	✓	✓	✓
	Enrolment capacity of postgraduate		50%	80%	90%	100%	100%	100%
	Start New Programs		---	---	---	---	---	✓
Goal 3: Staff Development	Capacity and capability development training	%	N/Av	---	50%	80%	100%	100%
	Start a performance-based reward system	N/Ap	N/Av	---	✓	✓	✓	✓
	Alumni in the teaching-learning process	Number	0	---	---	7	8	9
	Career development center	N/Ap	N/Av	---	---	---	✓	✓
	Staff Ratio (BSc:MSc:PhD)	Number	12.5:74:13.5	10:70:15	8:65:20	2:61:30	1:60:40	0:57:43
	Teacher-student ratio	Number	1:20	1:20	1:18	1:15	1:12	1:10
	Certified Academic Staff	%	---	5%	25%	45%	65%	75%
	Number of female academic staff	%	---(12%)	12%	15%	18%	20%	25%

Strategic Theme 2: Competitiveness in research and innovation Teaching and learning								
Strategic goals	Indicators	Unit	Baseline (2021)	Targets				
				2022	2023	2024	2025	2026
Goal 1: Enhancing research culture by encouraging multi-disciplinary and collaborative researcher the quality of education	Implement intellectual property right guidelines	N/Ap	N/Av	---	---	---	---	✓
	Revising key thematic areas	Number	-----	3	5	7	8	10
	Multidisciplinary projects and research activity	N/Ap	N/Av	---	✓	✓	✓	✓
	The project connected with the incubation center	Number	------	2	4	5	6	7
	Journal subscripts	Number	0	---	---	---	1	2
	FMIE Accredited laboratories at the national level	%	0	---	---	25%	25%	50%
Goal 2: Enha	Implementing research plagiarism regulation	N/Ap	N/Av		✓	✓	✓	✓

	Number of staff participated in conferences	Number	10	12	14	16	18	20
	Annually funded multi-disciplinary research projects	Number	--	7	11	13	16	20
	Solved community problems	Number	----	---	7	8	10	12
	own research editorial center	N/Ap	N/Av			✓	✓	✓
	Curriculum revision	%	---	---	50%	80%	100%	100%
	Support internationally submitted and unsuccessful projects	Number	---	---	10	8	5	0
	Faculty owned journal	N/Ap	N/Av	---	---	---	✓	✓
	Annually published indexed journals	Number	---	14	21	35	70	175
	Common international conference and workshop forums	Number	---	---	2	2	4	5
	Staff participation in innovation	Number	---	1	2	2	3	4
Goal 3: Improve research fund-	International research grants	Number	---	1	2	3	4	5
	National research grants	Number	---	2	2	4	6	8
	Research-based partnerships	Number	----	2	3	4	6	8

	Projects on emerging technologies	Number	----	---	---	1	1	2
Goal 4: Establishing new research centers	New research center	Number	----	---	---	---	1	1
	New research-grade laboratories	Number	----	---	---	---	---	1
	Centers of excellence	Number	----	---	---	---	---	1

Strategic Theme 3: Competitiveness in technology transfer and community engagement

Strategic goals	Indicators	Unit	Baseline (2021)	Targets				
				2022	2023	2024	2025	2026
Goal 1: Enhancing staff capacity and participation in Technology transfer activities	Transformational research and innovation activities	Number	----	---	2	2	3	7
	Training and consulting on technology transfer activities	Number	----	15	30	45	55	70
	Identified and solved emerging problems	Number	----	7	14	21	28	35
	Fund seeking committee	N/Ap	N/Av	✓	✓	✓	✓	✓
	Technologies integrated with indigenous knowledge	Number	----	---	---	7	14	28
	Industry based projects	Number	----	7	21	28	35	70
Goal 2: Enhancing staff capacity and	Compressive guideline for community engagement and incentive mechanisms	N/Ap	N/Av		✓	✓	✓	✓

	Project on key intervention areas	N/Ap	N/Av	✓	✓	✓	✓	✓
	A project on preparing evaluation and assessment metrics for community engagement achievements	N/Ap	N/Av	---	✓	✓	✓	✓
	A project to conduct an impact assessment of community engagement activities	N/Ap	N/Av	---	✓	✓	✓	✓
	Staff engaged in community engagement activities	%	---	20%	35%	45%	60%	80%
	Consultancy services by the faculty	Number	----	7	14	28	35	70
Goal 3: Enhancing collaboration and partnership with industries, customers, and stakeholders	Exhibitions for customers, industries, and different stakeholders	N/Ap	N/Av	✓	✓	✓	✓	✓
	a project to Identify collaborative industries	N/Ap	N/Av	✓	✓	✓	✓	✓
	Setting UIL Representative at the faculty	N/Ap	N/Av	---	✓	✓	✓	✓
	own multimedia (YouTube and others)	N/Ap	N/Av	---	---	✓	✓	✓
	MOU agreements	Number	----	2	3	4	5	5

Strategic Theme 4: Competitiveness in good governance and leadership								
Strategic goals	Indicators	Unit	Baseline (2021)	Targets				
				2022	2023	2024	2025	2026
Goal 1: Enhancing empowerment of chair systems	Implement power of chair council	N/Ap	N/Av	✓	✓	✓	✓	✓
	Implement accountabilities and responsibilities of the chair system	N/Ap	N/Av	✓	✓	✓	✓	✓
	Implement power dissemination and decentralization	N/Ap	N/Av	---	---	✓	✓	✓
Goal 2: Enhan...	Soft skill and change management training's	N/Ap	N/Av	✓	✓	✓	✓	✓

	Preparing guidelines for transparent task distribution	N/Ap	N/Av	✓	✓	✓	✓	✓
	Course management and execution skills training	N/Ap	N/Av	✓	✓	✓	✓	✓
	Creating guidelines for effective and efficient resource utilization	N/Ap	N/Av	---	---	✓	✓	✓
	Young staff participation in the faculty	%	----	---	30%	50%	50%	50%
	Serving the university as the higher official	Number	3	---	3	3	4	5
	Training to all academic officers	N/Ap	N/Av	---	---	---	---	✓
	Evaluate the existing system	Number	-----	---	1	--	---	2
Goal 3: Enhancing to integrate administrative and academic staff	Remove barriers between academic and technical assistant	N/Ap	N/Av	---	---	✓	✓	✓
	Technical staffs participation in grant projects	%	----	20%	30%	40%	50%	80%
	Laboratory classes controlled by technical assistants	%	----	100%	100%	100%	100%	100%
	Laboratory manuals	N/Ap	N/Av	✓	✓	✓	✓	✓
	Unethical behaviors	N/Ap	N/Av	---	---	---	---	✓

Strategic Theme 5: Competitiveness in infrastructure development, communication, and partnership								
Strategic goals	Indicators	Unit	Baseline (2021)	Targets				
				2022	2023	2024	2025	2026
Goal 1: Improve the provision of adequate and reliable infrastructure facilities for the advancement of academic aspiration	Quality audit	N/Ap	N/Av	---	---	---	✓	✓
	Standard textbooks and laboratory manuals	N/Ap	N/Av	---	✓	✓	✓	✓
Goal 2: Improving initiatives to have Memorandum of Understanding (MOU) agreement with different institutions	Asses and determine the infrastructure requirement	N/Ap	N/Av	✓	✓	✓	✓	✓
	Committee for laboratory facility procurement team	N/Ap	N/Av	✓	✓	✓	✓	✓
	Refurbished and expanded facilities	%	---	50%	80%	100%	100%	100%

	The effective waste management team	N/Ap	N/Av	---	✓	✓	✓	✓
	Facilities rehabilitation	%	---	50%	60%	80%	100%	100%
	Digital library and e-learning platform		---	---	---	---	---	✓
	Community networks forums	N/Ap	N/Av	---	---	---	---	✓
	Alumni engagement in laboratory facilities	Number	----	---	1	2	3	5

Strategic Theme 6: Competitiveness in Cross-cutting issues

Strategic goals	Indicators	Unit	Baseline (2021)	Targets				
				2022	2023	2024	2025	2026
Goal 1: Enhancing income generation	Entrepreneurial project for job creation	Number	---	---	3	4	5	6
	Grant projects and bids	Number	---	---	7	14	28	35
Goal 2: Equity and inclusiveness	Tutorial accessibility for females, disabled, and less performers	%	N/Av	80%	100%	100%	100%	100%
	Female academic staff leadership training	N/Ap	N/Av	✓	✓	✓	✓	✓
	Involvement of female staff in chair council	%	----	---	5%	10%	25%	50%

	Female academic staff research participation	%	---	---	5%	10%	25%	50%
	Female academic staff workshops and seminar involvement	%	----	---	5%	10%	25%	50%
	Female sport team	N/Ap	N/Av	---	---	---	---	✓

EXPECTED OUTPUTS/OUTCOMES

Effective accountability of the strategic plan can be achieved through a committed implementation of the indicators for each theme with an insight into the projected goals that are presented in Sections 6 and 7. This section presents a summary of expected outputs/ outcomes aligned with each strategic theme.

8.1 Teaching-learning

Successful execution of the activities designed for this theme will lead to high caliber academic staffs with professional integrity, quality programs focused on multi-discipline, with carefully designed curriculum including standardized assessment and feedback mechanisms. This helps to produce competent graduates with professional knowledge and holistic life skills. It ensures good communication and problem-solving skills, creativity, global awareness, team building, inclusiveness and enables the candidate to gain fully engaged citizenship in the society.

8.2 Research and innovation

Successful execution of activities in this theme will increase the number of staff with a culture of and necessary skills of research and innovation, well-defined research thematic areas, increased number of internally and externally funded mega-research projects, increased number of students participating in research projects. This also shall enhance the research output in terms of publications in high-impact journals and increase the number of innovations.

8.3 Technology transfer, community engagement, and income generation

Successful implementation of activities under this theme will lead to increased participation of staff and students in technology transfer and community engagement leading to growth in the number of technology transfers, community engagement projects, the number of community problems solved, jobs created due to the enhanced entrepreneurial skills of students and staff, research projects secured by partnering with industries, stakeholders and customers, increased number of income-generating sources. These ultimately contribute to national development and society.

8.4 Governance and leadership

Diligent implementation of this theme will lead to robust internal management, efficient utilization of resources, effective communication, transparency, and accountability. It should lead to management characterized by a commitment to supporting student-centered, high-impact educational experiences, and leveraging and aligning institutional resources central to building a collaborative, meaningful, productive academic life. These help to develop leaders who are visionary to guide and orient the faculty to the long-term directions.

8.5 Infrastructure development, communication, and partnership

Careful implementations of the activities in this theme will help in establishing a conducive teaching-learning, research, and innovation environment in the faculty. Besides, the faculty will have residential, recreational facilities, which will boost the satisfaction of the staff and students.

8.6 Cross-cutting issues

Focusing on the indicated activities in this theme the faculty will play a leading role in the institute on the cross-cutting issues. In addition, it will improve the faculty's contribution to cross-cutting issues and pandemic mitigation activities in the community. Through, careful implementation of listed activities the faculty will have two entrepreneurial projects for job creation, Secure 35 grant projects and bids as a business, and will have one owned business institute.

INSTRUMENTAL TOOLS TO IMPLEMENT THE STRATEGIC PLAN

9.1 Risk Assessment (Risk Response Planning Contingency Plan)

Any strategic plan has to deal with uncertainties. The previous situation analysis has identified anticipated influential threats which come from the external environment. However, in the strategic plan, uncertainties shall not be only based on anticipated threats, Identified strengths and weaknesses may not have expected consequences. The anticipated opportunity to be used may have a devastating effect on the identified goals of the faculty. Thus, this strategic plan shall oversee and assist for its implementation guiding through way-outs in times of unprecedented events. Consequently, the faculty management and academic staff shall take the advantage of opportunities and minimize or, if possible, avoid risks set by surprising or anticipated threats. Thus, to use the long-time positive impacts of identified goals by 2026; the faculty shall do evaluative assessments at least two times and answer the following key questions.

- What could happen that would affect the faculties' ability to meet identified goals? (Risk identification, consolidation, and classification)
- How likely is it to occur? (Likelihood of occurrence)
- How serious might it be? prioritization: impact of the risk events)

- What are the faculty's top ten risks in its strategic time? (Finalizing top risks)
- What else the faculty shall know about its top risks? (in-depth analysis)
- What can the faculty do to manage the risk? (action planning – risk strategy)
- How the faculty shall monitor the risk? (Risk monitoring)

Expected risks in the strategic timeline

- **Strategic risks**: relate to the faculty's choice of strategies to achieve its objectives. By their nature, these risks endanger the achievement of the faculty's high-level goals that align with and support its mission.

- **Operational risks**: relate to 1) threats from ineffective or inefficient faculty's main processes for quality and availability of infrastructure and the impact on students/staff, financing, transforming, administrative process, student and customer satisfaction and 2) threats of loss of faculty's assets including its reputation.

- **Reporting risks**: relate to the reliability, accuracy, and timeliness of information systems and reliability or completeness of information for either internal or external decision making.

- **Compliance risks**: address the presence or lack of systems to 1) monitor communication of laws and regulations, internal behavior codes, and contract requirements, 2) provide information about the failure of management, employees, or partners to comply with applicable laws, regulations, contracts, and expected behaviors, and 3) Partnerships-collaborative teaching and research with other institutions, knowledge exchange and partnerships with industry, and other relationships with external bodies.

Generally, in addition to the aforementioned categories of risks, the unstable political system of the country, the unmanageable behavior/action of students due to some external forces, sustainability of income streams, student-staff recruitment systems, and staff motivation may remain big challenges to the faculty in the process of achieving the targeted goals.

9.2 Communicating the Strategic Plan

The main responsible body to accomplish this task is the top leadership team of the faculty. Thus, the strategic plan preparation team wants to forward the following points as basic guidelines to communicate the strategy to the major internal and external stakeholders of the faculty.

Meetings, training, and other forums should be arranged to raise the awareness of stakeholders about the strategic plan of the faculty. Summary of the SWOT result, the vision, the mission, strategic objectives, and the strategies designed to achieve the objectives shall be presented to all faculty staff. If the member of the faculty clearly understands and share the vision and strategy, they will be motivated to achieve the objectives given through cascading.

Training on topics such as change management, team building, time management, customer relationship management, and other tailored made training should be given. This will help employees feel competent enough to perform their tasks effectively and efficiently. The usual question raised by members, "What is in it for me (WIFM)" shall be answered for them by clearly sharing the strategy of the faculty. Through communication, people should see the benefit they will get if the faculty accomplishes its vision and mission success.

Generally, the following five areas outline questions and key information that should be considered when building and delivering a communications strategy designed to inform and guide employees through a change event:

1. Developing strategy
2. Involving Key Stakeholders in Communications Efforts
3. Determining Message Content
4. Identifying Most Effective Communications Channels
5. Ensuring Follow Up

9.3 Monitoring and Evaluation of the Strategic Plan Implementation

The need for monitoring and evaluation is to check whether the planned activities are performed as intended or not. It helps to take immediate remedial measures if the performance is not in accordance with the plan and to avoid obstacles that cause hindrance to achieving targets set. To achieve the targets on the Strategic plan, a coordinated effort has to be exerted by the leaders and the staff.

The strategies set for monitoring and evaluation of this strategic plan are as follows:

- A monthly performance evaluation report should be done on each chair council.
- The quarterly performance evaluation report should be done all over the chairs and the report document will be submitted to the faculty dean.

Different instruments will be applied to check whether targets are achieved and reported. The survey, observation, and report documents can be used as an instrument for monitoring and evaluation. The report should clearly show the planned target and achievements in accordance with indicators, the Problems faced during implementation and the solutions made to solve the problems, and the way forward to achieve the planned targets. Holistic performance evaluation of the strategic plan will be made at the end of the third implementation year and fifth year. The evaluation will be made by a team organized from different departments or independent bodies out of the university.

9.4 Reporting

The flow of reporting throughout the strategic plan will be as follows:

- Secretary of chair councils shall report to their respective department heads once a month.
- Department heads shall report to the faculty deans quarterly

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Agenda No:	FULL TASK NAME: FMiE Strategic Plan Action Plan																
DATE OPENED	DESCRIPTION	PRIORITY	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16
26/05/2021	**Strategic Plan Preparation Team Briefing Session**																	
	Phase I																	
4WKS	***As-Is Situational Analysis***																	
	Review Faculty SP and Prepare Review KPI's																	
	Faculty Visit Based on Prepared KPI's																	
	Secondary Data Collection																	
	Desk Study of Documents																	
	Team Meeting Review																	
2wks	**Evaluation of the current (Top - Down) strategic plan**																	
	Benchmark Desk Review																	
	Gap Assessment w.r.t International Standards																	
	Gap Assessment w.r.t International Practice																	
	Gap Assessment w.r.t Local Scenario																	
	Result Documentation																	
	Team Meeting Review																	
2wks	**Benchmark Study**																	
	Visiting																	
	Workshop																	
	Team Meeting Review																	
2wks	**SWOT Analysis**																	
	Evaluating Strong																	
	Evaluating Weak																	
	Evaluating Threat																	
	Evaluating Opportunity																	
	Team Meeting Review																	
	Phase II																	
1wk	**Crafting Vision and Mission of FMiE**																	
3wks	**Preparing Strategic Plan**																	
	Team Meeting Review																	
2wks	**Implementation of Strategic Plan**																	
	Monitoring and Evaluation																	
	Risk Analysis																	
	Key Performance Indicator																	
	Team Meeting Review																	
2wks	**Meetings and Consultation**																	
	Introductory Session with Focus Group (BiT, FMiE)																	
	Status Reports and Discussion (FMiE)																	
	Final Report and Discussion with Team																	
	Final Report and Presentation to FMiE																	

ACRONYM

ABET	Accreditation board for engineering and technology
AC	Academic commission
BDU	Bahir Dar university
BIT	Bahir Dar institute of technology
CAEs	College of agricultural and environmental science
ESDP	Education sector development program
FMIE	Faculty of mechanical and industrial engineering
GTP	Growth and transformation plan
HEIs	Higher education institutions
HERQA	Higher education relevance and quality agency
HDP	Higher diploma Program
ICAST	International conference on the advancement of science and technology
ICT	Information communication technology
IAIPs	Integrated agro-industrial parks
MoH	Minister of health
MoI	Minister of industry
MOSHE	Minister of science and higher education
MOU	Memorandum of understanding
N/Ap	Not applicable
N/Av	Not available
ODeL	Open distance and e-learning
RTCs	Rural transformation center
SA	Situational analysis
SDG	Sustainable development course

SP	Strategic plan
SPD	Strategic plan document
SWOT	Strength weakness opportunity threat
PESTL	Political economical social technological environmental and legal
UIL	University-industry linkage

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SP 2022-26