



# King Mongkut's University of Technology Thonburi



Good University Report 2017



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## Organizational Characteristics



King Mongkut's University of Technology Thonburi (KMUTT) has more than 57 years of development history. It is originated from "Thonburi College of Technology", which was founded in B.E.2503 (1960), and **is the first public university transferred to be under the government's control** in B.E.2541 (1998). Could be used an Autonomous University in We focus on producing graduates with hands on knowledge, aiming to be a medium-sized research university for quality graduates in science and technology, create new knowledge through research and development, provide academic service by exchanging knowledge and experience on technology to industrial community in Thailand. The university consists of 4 campuses including **KMUTT (Bangmod)** located in Thonburi, Bangkok, conducting main learning activities and administrative tasks, **KMUTT (Bang Khun Tien)** for supporting cooperation with external organizations both government and private sectors through industrial park mechanism and cultivating technology and business, **KMUTT (Ratchaburi)** as an educational service center providing new form of science and technology learning called Residential College, and **KX (Knowledge Exchange)** as an area to develop Innovation Eco System for integration of learning, researching and academic services for private sector, community and society. Our graduates are innovators who can do start-up or become an entrepreneur in Technological field. Currently, each year, KMUTT produces about 4,000 graduates in engineering, science and technology in Bachelor's degree through Doctorate including regular and international programs. There are 47 programs, 145 fields of study in 11 faculties/institutes/graduate schools.

**In terms of research**, KMUTT is 1 of the 9 universities in National Research Universities Project conducted by Office of the Higher Education Commission since 2010. From outstanding researches, KMUTT is included in world ranking by various ranking institutes. According to ranking by THE (Times Higher Education World University Rankings), KMUTT is the only one university in Thailand which is among the top 400 universities around the world for 3 consecutive years during 2012-2014. Since 2014 until present, KMUTT is still ranked in top 10 of Thailand universities by all ranking institutions. **In regards to academic services for the society**, KMUTT cooperates with all external sectors to convey knowledge and technology in solving problems for the community, society, and the country. For example, "**University and Community/Society Project**" has been continued for more than 35 years since 1982. There are also other volunteer activities by using community/society as a laboratory called "Social Labs" for students and teachers to learn and the problems in the community/society can be improved and solved at the same time. At present, there are 2,430 personnel (including contract employees) in KMUTT, divided into 891 academic staff (teachers/researchers) and 1,539 support staff (as of May 2017).



All missions of the university including learning activities for producing quality graduates, researches, and academic services to create knowledge which is useful for the community/society, to maintain arts and culture, and to respond to the community/society shall be connected and in line with vision, mission, and values of the organization. These are from participation of KMUTT community with different strengths in each service area, following long-term university development frame of 20 years (KMTT Roadmap 2036) of which divided into 5 years strategy plan. Currently, it is under strategy plan No.12 (B.E. 2560-2564). Performance indicators are called KMUTT Super KPIs, which are in accordance with both organization and division levels.



*“ We make value creation based on knowledge because we are a knowledge institute  
If we have some value, it would be the value based on our knowledge.  
Such value gives us resources for work and enables us to work more and more.  
This helps us have more value and meaning.  
Without doing this, we will be pushed away and become meaningless in the end.”*

*Assoc. Prof.Dr. Sakarindr Bhumiratana  
President, KMUTT*

KMUTT management is under the supervision and advice from University Council, where there are experts from various professions. There are both official meetings (monthly) and unofficial ones (twice a year) which is called Retreat. The suggestions gained from the meeting will be adapted and applied in the university management. Additionally, the University Council performs self-evaluation every year to provide a guideline for the committee’s self-evaluation, considering and reviewing performance following the specified role and duties. The result of such self-evaluation is used to improve the committee’s management to be more effective. The average of previous evaluation results is in highest level in every dimension.

In the level of faculty, office and institute, the President granted the authority in management for the flexibility in working, which is an important mechanism contributing to continuous development.



*Retreat Meeting*

**Personnel Management and Development:** KMUTT conducts manpower planning, salary and wage specification, recruitment, personnel development, performance evaluation, promotion, rotation, incentives and discipline, termination, and welfare. Moreover, there is code of conduct for the staff to behave and perform their work properly. In **Human resource development**, KMUTT set up plans to develop personnel to be proactive and responsive towards development both in career path and core competency. In terms of **personnel's opinion**, it is measured by Personal Engagement survey which is exploring motivating factors that affect organizational attachment in each aspect

The university provides **information technology system** to support the performance and decision-making by using IT and Communication Master Plan B.E.2560-2564 as a framework for operation. KMUTT Information technology can be divided into 2 main systems which are the IT system **for learning and researching activities** including admission system, student registration system, research and intellectual property database system, financial system, personnel system, etc, and the **IT system for management and decision-making** including KMUTT Information Service System: KISS, IT system for executives, KMUTT Super KPIs, etc.

**Information System for Operation and Decision-Making Support inside KMUTT  
(consisting of 2 main systems)**



**1 Information System for learning and researching**

(Usage level equivalent to Transaction Processing Systems: TPS)



**2 Information System for management and decision making**

(Usage level equivalent to Management Information Systems : MIS and Executive Support Systems : EIS)

KMUTT has a mission to provide education, promote advanced academic and profession, teaching, researching, and providing academic service to the society, as well as developing and transferring science and technology, maintaining arts and culture. KMUTT mission can be divided in the following aspects:

**Education:** KMUTT arranges learning activities under Thai Higher Education standard framework (Thailand Qualification Framework – TQF) and KMUTT Student QF, which specify the characteristics of graduates to have practical excellence and be social change agent under practice framework called “KMUTT Educational Reform”. This helps to create learning atmosphere and environment in KMUTT by developing learning activities which is outcome-based education. A strength of Bachelor's degree program is that in every program, learning by doing or Capstone Project is applied. In graduate level, there are both knowledge and advanced research to respond to the country's needs both in short and long terms. Also, learning mechanism is developed in different ways to promote learning such as Work-integrated Learning – WIL, Active Learning, and Problem-Based Learning (PBL), which is aimed to produce graduates with knowledge, skills, and mindset of entrepreneurship needed for employers and their future career.

KMUTT focuses on enabling students to develop self-learning skills by using e-Learning media and improved classrooms called X-Classroom. Moreover, since the academic year 2013, KMUTT has prepared to create new type of engineers through a learning method called **Residential College** at KMUTT (Ratchaburi) as an example of soft skill development following the 21st century graduate qualifications. This activity accepts 120 boarding students per year for attending a new learning process called Modular Learning, which is created for co-learning. In this style, one teacher is assigned to handle 10 students. There are activities outside the classroom and other activities such as spending time in the evening together by watching drama, playing sports and playing musical instrument. There is an advisor teacher responsible for a certain group of students.





*“Residential College” KMUTT (Ratchaburi)*

Focusing on student based learning education, it is necessary to have some **facilities** to build up capabilities of the students regardless of time and place. For this purpose, the university has set up **IT Basic Structure** to support students, which includes online learning resources, e-Content, online KMUTT-library system, hi-speed internet, intranet, and wifi system throughout the university as well as for the communication channel between different campuses of KMUTT.

Regarding the policy on promoting learning beyond classroom, since 2005, KMUTT started to build up learning Space in KMUTT Library. Then, in 2013, the Learning Space was enlarged with modern equipment and technology in 3 areas including SoA+D Learning Space Fabrication Lab in the School of Architecture and Design, Science Learning Space in the Faculty of Science, and Library Learning Space at the KMUTT Library. There are 51 central classrooms with multimedia equipment called Flipped Classroom. In 2016, the university opened the Center for Effective Learning and Teaching (CELT) as an area for exchanging learning experience and providing consultation on learning development following KMUTT Educational Reform.



Learning Space in KMUTT

In terms of supporting educational opportunities, KMUTT offers scholarships for undergraduate and graduate students. Each year, the number of scholarships recipients equal to 36 percent of all KMUTT students. The scholarships are divided into 4 groups. These include scholarship for developing student's potential, scholarship for developing good student with virtue, scholarship for financial aid, and scholarship for foreign students.

Scholarship for undergraduate and graduate students	
 <p>The number of students in KMUTT who receive scholarship equals <b>36%</b> of all students.</p>	 <p><b>Scholarship for student's potential development</b> Pra Jomklao's Diamond Scholarship, Diamond Polishing Scholarship</p>
	 <p><b>Scholarship to grant opportunity and develop virtuous people</b> Thammaraksa Scholarship, 50th Anniversary of KMUTT : 50 scholarships for developing efficient and virtuous students</p>
	 <p><b>Scholarship as student's aid</b> Student support scholarship, educational loan</p>
	 <p><b>Scholarship for foreign students</b> Sahapanya Scholarship, scholarship for foreign students from Greater Mekong Sub-region (GMS)</p>

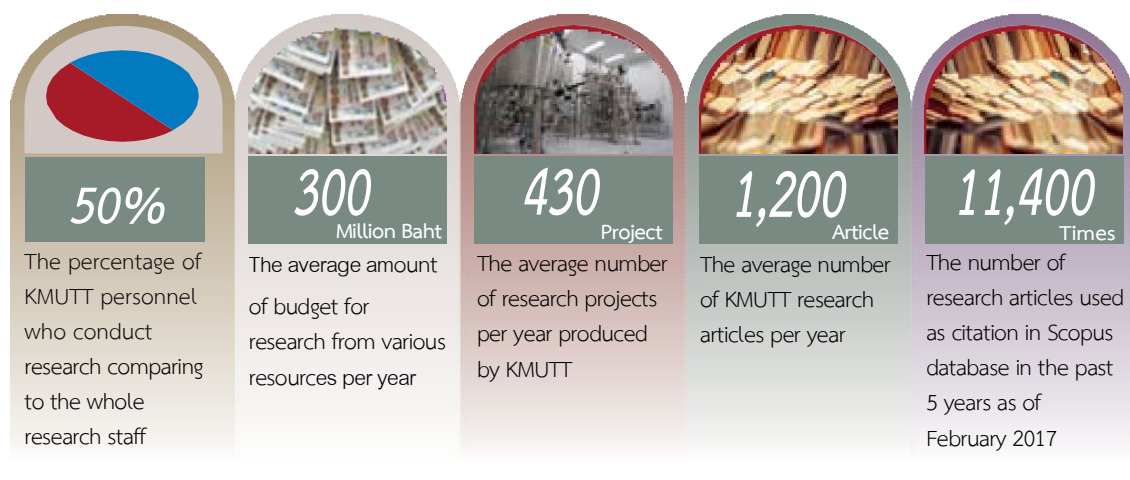


**Research:** KMUTT focuses on high-impact researches. The knowledge gained through researching leads to the enhancement of KMUTT staff and students academic skill. They also respond to the demands of the society, and industry, etc. **Research, Innovation and Partnerships Office** was established to be responsible for managing and organizing research and innovation as well as specifying the clear criteria and guidelines in setting up Research Cluster, research laboratory. There are several mechanisms that KMUTT use to strengthen and promote KMUTT research groups, for example, visiting professor, distinguished visiting professor, and post-doctoral fellowship from abroad. Additionally, advanced research equipment are procured to support learning and research. Also, International Research Advisory Panel (IRAP) was appointed to help increasing the quality of the university's researches significantly.

Cooperation with the industrial sector is made through different activities such as research and development, staff exchange, financial support, material and research equipment support, consulting, training and cooperating in other aspects with the industry sector. There are in total 51 organizations/companies including Betagro Public Company Limited, IRPC Public Company Limited, S.R.T. Electrified Train Company Limited, etc. Additionally, we also encourage researchers to work in a real business enterprise under the project called **Talent Mobility**. KMUTT is a center to recruit researchers following the needs of business organization, which shall lead to joint research project between government and private sectors. Up to present, there have been several companies continuously joining this project. Moreover, since 2012, the university organizes an honorable award ceremony every year to congratulate and express gratitude to staff and students who have built up good reputation to the university and obtained researches and inventions awards. **KMUTT Researcher Award** is given to young researchers to motivate them and make progress in their future career path.

Annual budget for research is around 300 million Baht, gained from different resources. There are 430 research projects and more than 1,200 research articles per year in average. In the past 5 years (as of January 2018), 11,443 articles were used for citation in Scopus database. These make KMUTT recognized by various institutes as one of leading universities both in regional and global levels. Additionally, KMUTT also has researches and innovations registered for patent and petty patent for 61 and 90 items, respectively. About 250 items are on the process for registration.

#### Results of KMUTT research development



KMUTT has several organizations which conduct research and provide academic service including Institute for Scientific and Technological Research and Services, Pilot Plant Development and Training Institute (PDTI), Industrial Park Center (IPC). PDTI and IPC are located inside KMUTT (BangKhunTien), which is regarded as the first **Industrial Park Center in Thailand**, operated since 2000. It focuses on researching, transferring technology, and industry support. KMUTT is also a model of a Green university with good environmental management.



**National Biopharmaceutical Facility:** NBF is also located inside KMUTT (BangKhun Tien). NBF has acquired the license from Thai FDA to produce drugs for both public and private sectors to experiment in producing biological product/vaccine used in human (Clinical Trial Phase I & II) and for marketing test. In 2017, customers from both public and private sectors continuously use NBF's services such as National Vaccine Institute (NVI), Siriraj Hospital, and Berli Jucker Public Company Limited, etc.



**Academic Service and Corporate Social Responsibility (CSR):** KMUTT provides academic service focusing on practical work following the demand of public sector, society, and industrial sector concretely. This allows KMUTT to accumulate experience and skills in developing research and creative work which can be extended to actual practice. At the same time, knowledge and skills gained from the experience in academic service develop KMUTT personnel in every aspect including learning approach, high impact research and network building between industry and university.

Apart from this, the university continuously works together with society and community in many levels from family, community, to province and utilize knowledge in developing work with the society and community. KMUTT connects with community in different ways through academic service project organized by the university. For example, **University and Community Project** includes **universities and schools group, universities and career development group, life quality and environment, universities and royal projects group, and royally-initiated development projects.**

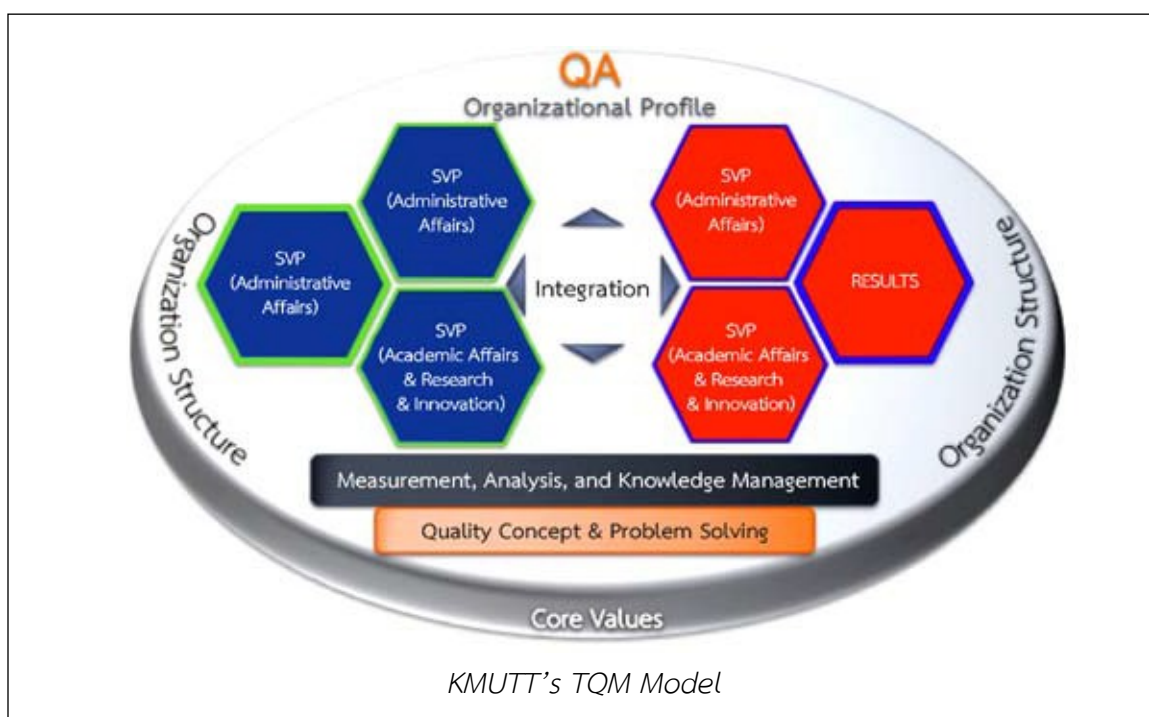


**Art and Culture Preservation:** Art and culture activities are conducted in both university and department level. The university has set up the Art and Culture club and also grant Petchara Pra Jom Klao scholarship for students with special abilities in arts and culture in order to promote Art and Culture.

Arts and Culture Conservation Activities range from annual activities to occasionally held activities in the faculty courses and general courses. Arts and culture preservation activities are publicized both internally and externally through several activities for example, an exhibition at the library.



Apart from the above-mentioned mission, in developing towards excellence, KMUTT applies P-D-S-A (Plan-Do-Study-Act) cycle through guidelines from Education Criteria for Performance (EdPEX) in university level and faculty level to lead the organization to achieve the goal effectively and efficiently. **The total Quality Management (TQM)** is used to assure that quality development is in line with the goal of the university in every process throughout the organization under P-D-C-A (Plan-Do-Check-Act) cycle. P-D-C-A is developed in accordance to the ASEAN University Network - Quality Assurance (AUNQA). All development mechanism is integrated into KMUTT's TQM Model.



In term of KMUTT's TQM Model, university's internal units create the **Organization Profile: OP** for Self-Assessment Report: SAR. Moreover, the university applies OP mechanism to allow faculties/offices to use it as tool for management and 3 years action/budget plan (**Action Plan and Budget 1+2**). The **Action Plan and Budget 1+2** is derived from 5 years strategy plan of the faculties/offices. This allows faculties/offices to specify the goal and analyze its current status to find GAP and plan to fill up the existing GAP to achieve the goal. In addition, **Super KPIs** is used to evaluate the performance of the organization. This mechanism leads every units within KMUTT to work and operate in the same direction under KMUTT Road Map and make KMUTT to become a world leading university.

Additionally, the university continuously improves its working process by appointing a working **group for productivity improvement (PI)** to perform duty for different work units in the university. PI working group helps improving and developing a working process or working procedures. **Service Level Agreement (SLA)** is announced to assure the customers of fast and effective service. Later on, it has been extended by cooperating with 4 main work units to specify **Service Catalog** is then developed to be use as a tool to clearly describe duties and service of each work unit.





The university management is operated under **the Risk Management System** (ISO 31000) following the standard of Internal Control B.E.2544 (COSO: 2544). Risk management committee are appointed both in university and department level to analyze and specify risks and risk factors that affect the goal of the university in order to control and/or prevent and mitigate the problems. Emergency plans are also made to ensure that every system is ready for work and has continuous improvement on a timely basis against changes.

Additionally, the university also arranges **Readiness Towards Crisis Management Plan** under the guideline of Business Continuity Management (BCM) under BS25999 standard which emphasizes on **risk assessment** that affects goal and threats of the university. Performance follow-up and evaluation are conducted and reported to the university council regularly every year.

In term of sustainability management of KMUTT, as an autonomous university, we have to depend on budget from the government. The main income is from government budget and tuition fee. However, there is a limitation as the government budget tends to decrease every year while the tuition fee is fixed. This is because the university do not have a policy to accept more students and raise tuition fee for a period of time although the university is having more expenses every year. The university, therefore, needs to find more resources from other sources such as research, academic services, and donation. In the fiscal year 2017, the university has income from the government in the amount of 1,719.06 million Baht, tuition fee of 986.01 million Baht, research and academic services of 1,137.85 million Baht, totaling 3,842.92 million Baht. Total expense is 3,636.38 million Baht, which is divided into personnel payment of 1,325.11 million Baht, other operation expense of 1,515.05 million Baht, public utilities of 209.79 million Baht and depreciation cost of 586.43 million Baht.

Throughout 57 years since the university was established and 19 years since the status was changed to be an autonomous university, it has been the time of development and leaps of growth in KMUTT. This continuous development is from well cultivated knowledge of teachers, staff, and students of the university. The KMUTT graduates apply knowledge and excellent academic and practical abilities in various leading organizations all over Thailand. This brings great reputation and acceptance to the university. KMUTT will still strive for becoming a reliable university for the society and a world's leading university following the visions further.



## Advisors

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## Cover

Adapted from Original Version of Dr. Worrasit Tantiniphankut : School of Architecture and Design

## Pictures / Infographic

Strategic Communications and Marketing Unit, University Relations Office  
Strategy Management and Planning Unit, Strategy Office  
Photos from Photo Contest Project by KMUTT students and personnel  
Photos from Various Work Units in the University

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