# Key Performance Indicators:
## Influence on Research and Development Institutes in Thailand*

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While some organizations occasionally have succeeded in better performance because of adherence to the precepts of key performance indicators (KPIs), it is worthwhile to note that irreplaceable scientific and commercial value would be put at risk if KPIs are set improperly. This study argues that not having a good understanding of what is vital to an organization could result to KPIs that may jeopardize scientists' intellectual value. In order to understand the trend of KPI's influence in scientists' behaviour in Thailand, this study, divided in two main phases, was conducted. The first part introduces the IMD World Competitiveness ranking factors, which help clarifying why certain aspects such as patents, incomes become part of KPIs in many R&D institutions. Moreover, it elaborates other domestic factors that are essential to an academic and scientific value including incentive policy to promote knowledge and technology transfer to the industries. The latter part explores the influence of KPIs in scientists in an R&D institute. Selected case studies from leading R&D institutions in Thailand were used to reflect the changing behaviours and mind-set of scientists within the organization. The cases cover issues like the concerns posed by scientists' career path promotion criteria, licensing deals with close business partners, and other questionable activities. The study provides recommendations to the organization's top management and calls for a more in-depth research whether a re-examination of the current institutional KPIs is required.

**Keywords:** *KPIs, UBI, patentability, promising technologies, scientific community*

* The views expressed in this paper are of the author and do not necessarily represent the views of the organization.

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The influence of key performance indicators (KPIs) in scientific research in Research and Development institutes (R&D institutes) in Thailand is a core discussion in this paper.

So far as a country's competitiveness ranking is concerned, keeping up with the IMD World Competitiveness ranking is inevitable. According to the IMD World Competitiveness ranking, the infrastructure is one of the four key factors that indicate a country's competitiveness. Within the infrastructure criteria, patent applications and granted patents, and adequate intellectual property enforcement are two out of four sub-factors indicating the scientific infrastructure ranking. This partially justifies why many public R&D institutes set the numbers of patents as their institutional KPIs. In Thailand, its scientific infrastructure has been ranked 40 out of 58 countries since 2009 with no improvement. This stagnant in rank has resulted in a major revamp in policy from the top management at both institutional and national levels to improve R&D activities by creating many new projects or activities. For instance, the Office of the Higher Education of Commission (HEC) under the Ministry of Education has launched two pioneering projects aimed at promoting the transfer of academic research to the industry namely the University-Business Incubator (UBI), launched in 2004; and the Technology Licensing Office (TLO) project, launched in 2006, respectively. Both projects share the common attributes that selected universities would receive the financial supports to stimulate university-business incubations and university technology licensing activities. As a result, patent applications and start-up companies are set as university KPIs. Thus, should those selected universities wish to secure a continuation of the financial support, they have to deliver the numbers of patent applications and set up start-up companies corresponding to the numbers they have committed at the beginning of each granting phase. The record of UBI and TLO activities over the past six years is instructive in several ways. Concerning the transparency of sponsored activities, given a progress report is required and there is a site visit of a subworking committee every six months, it is still difficult for the HEC to monitor the subsidized activities within the wall of those universities. In many cases, the principle purpose of some universities is not to secure opportunities for the transfer of academic knowledge, but rather to earn money that can be utilized for other purposes. More importantly, when it comes to the issue of patent applications, most critical concern involves quality of those pending and granted patents. Suffice to say that at present those who set the KPIs in many R&D institutes weigh more on the quantity of the patents over the quality of the patents. This may come from the existing patent filing policy that the patent fee is waived to most public institutes, including R&D and academic institutes in Thailand. Consequently, there are an exodus number of scientific or engineering discoveries seeking for patent protection at no cost.

Furthermore, the existing system with less quality concerns on patents has already spoiled the top management in many academic and R&D institutes to keep increasing the number of patent filing each year. In other words, to benchmark with the IMD competitiveness ranking, many academic and R&D institutes set high numbers of patent applications as their organization's KPIs regardless of other circumstances such as limited human resources on intellectual property management, losing eagerness of scientists to do basic research, etc. This incident is overwhelmingly overlooked by the top management could one day jeopardize and undermine those organizations in the future. For example, in a patent battle field, patent invalidation is a typical argument against patent infringement assertions. Now that universities are forced to find additional financial sources, commercializing their intellectual property becomes one of the means to bring in more money to the university. This lucrative commercialization opportunity could raise the ethical concerns to university personnel at all levels. At present, majority of patents filed by universities or R&D institutes are gravely underutilized and therefore, a challenge on patent validity is extremely rare. Nonetheless, if one of those patents ever becomes a core part of a business potential, those patents have to be able to withstand all challenges on patent validity. As a result, it is time for university inventors, professors, and researchers to learn how to properly file high quality patents and defend the patentability and value of their scientific discoveries should there be any patent infringements asserted against their patents. Having discussed at length regarding the institutional KPIs and quality patents, next part shares the experiences calling for closer attention on the changing behavior of the scientists in R&D institution.

In this part, the influence of the KPIs in R&D institute is explored. As mentioned above, KPIs are normally used to measure the performance of the organization and admittedly, such KPIs would be a key element that drives the direction of the organization. At a leading R&D institute in Thailand, it has become a norm in setting high numbers of patent applications, licensing deals and incomes, and research collaborations as organization's KPIs. Some of these KPI factors could be counted to promote researchers' career path. In practice, the KPIs will be deployed to an individual research laboratory. Noting that meeting laboratory's deployed KPIs would gives that scientist a higher opportunity to grow in his or her career path, this results in higher numbers of patent applications each year. According to the inventorship principle, only true inventors could be named in a patent application. But because of the promotion criteria, a research team tends to put as many names of their colleagues as possible to share their laboratory's KPIs. No patentability on the inventorship has ever been challenged just yet but this would become an expensive lesson if this issue has ever been disputed in court.

Besides using patents to meet career path promotion criteria, the organization also provides a series of incentive policy aimed at promoting the development of promising technologies and dissemination of such technologies through commercialization process. For instance, over the past three years, there was a pioneer three-year project enhancing the filings of patents disclosed by in-house researchers. Every filing of a patent application, a research team will receive THB 5,000 (equivalent to USD 150 at current change rate) while THB 30,000 would be awarded to a research team whose patent is granted by the Department of Intellectual Property (DIP). Therefore, over 150 patent applications have been filed annually but a record of commercializing research shows that out of 950 patent applications, 97 of which are granted but only 7% has been licensed. Instead, it is other forms of intellectual properties such as trade secrets, copyright software that yield more licensing deals. An institutional benefit sharing policy is available to a research team whose intellectual property rights (IPRs) is commercialized. An inhouse research team receives 70% of all income up to a threshold of THB 1 million accumulated licensing income. The research team receives 30% of any additional income if the accumulated licensing income goes beyond THB 1 million. As a result of this policy, many in-house researchers start to seek for advice regarding forms of commercial deals which would entitle them to the benefit sharing. Numbers of research collaboration is also counted as another institutional KPI. An in-house legal division begins to pose a question if a commercially oriented deal is entirely appropriate. For example, instead of doing a typical contract research, a research group has convinced its business partner to do research collaboration so that they could jointly own IPRs and count those IPRs and the collaboration as their KPIs. Taking all factors into account, this study argues that the KPIs have many causes, but it could never have played this much influence on scientists' behavior had it not been set without a good understanding. Therefore, to better serve society by the scientific community, this study calls for a thorough attention on proper KPIs at the top management level to minimize potential future risks on ethics in science and technology.■