

## The Role of SPECTECH and RASP in the Realization of National and University Transformation Plan One Aim, One Goal

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**Abstract:** This study forecasts the resurrection in the form of the contribution by Spectrum Technology Research Group (SPECTECH) and Research Advancement Strategic and Planning (RASP) to realize the university transformation plan and thus, the contribution to the country's economic transformation. This study also proposes initiatives to be taken to improve university's publication KPI by forming the internal network that connects outstanding faculty and faculty who are not able to publish. With this network, researchers from the faculty to publish less have the opportunity to collaborate with researchers from outstanding faculty to jointly carry out a research and subsequently get to publish as well as opening a new chapter in the research world. In addition, examples of which will be projected until the year 2018 by using the analysis of recent achievements are discussed in this study.

**Key words:** Opportunity, analysis, network, forecast, planning, Malaysia

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### INTRODUCTION

In the post-economic crisis period after the year 2000, every country has developed a new strategy and plan to increase their country's economic growth. Accordingly, Malaysia has also announced an economic revival plan called Economic Transformation Plan (ETP). There are also factors that can realize the ETP where the component R, D and C is the main component:

- Develop the economy led by private sector
- Support the growth of innovation-led economic
- Realising the role of government in business such as privatization and the GLC
- Helping Small and Medium Enterprises (SMEs) as engines of growth and innovation
- Compete in global markets
- Develop world-class infrastructure
- Focus on the engine driver through 12 NKEAs

Accordingly, the strategic plan for higher education was announced on 31 March, 2006 and thereafter, the announcement of the establishment of the Research University (RU) on October 11, 2006 has made the component R, D and C as a leader of excellence in

universities. These components were developed and have produced eight criteria used to assess and evaluate the RU achievement. Consistency between PSPTN, RU and ETP is important in developing the intellectual basis of economic growth. Each university is also a center of intellectual spark to play a role in the realization and success of the ETP. As a result, all lecturers must do research and then produce an output in the form of publications and prototypes and then commercialize it (Zain *et al.*, 2011). It is relevant with the mission of RU as an engine of national growth that has opened opportunities for students and scholars to exchange ideas and conduct research in a conducive environment to spur exploration and creativity in exploring new knowledge and generate wealth and thus change the quality of life. ETP, PSPTN, RU and UKM Transformation Plan is a plan based on the R, D and C and this can be achieved with continuous research and exploit results for universal needs.

Spectrum Technology Research Group (SPECTECH) UKM was established in November, 2008 which serves to assist the existing research in the Photonics Technology Laboratory (PTL) IMEN. PTL will focus on the areas of photonics and Nano-photonics technologies that have a tendency towards Science and Physics while SPECTECH

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focus on studies based on optical communication system with user access system. Meanwhile, the RASP has been established to study the best strategies and plans for every research are managed efficiently and lead to the qualitative and quantitative research output. The output of this group is the books presented in the form of modules, user manual to guide the lecturer in conducting research. Apart from that members of this group is also involved in the talks as the main speakers or invited to assist lecturers in local universities.

Based on the seven factors to the achievement of the ETP and 12 Sector NKEAs, infrastructure plays an important role in the national economy. Infrastructure refers to the facilities provided for the global community as well as communication systems to facilitate the communication system. Communications system refers to the broadband technology that connects directly to consumers. Various applications can be exploited from broadband technology. Based on World Bank study, the increase of broadband penetration within 10% per household can increase GDP exceeding 1%. Therefore, the government's target is to increase the penetration rate of up to 75% by the year 2015. Thus, various initiatives were introduced to catalyze the use of broadband within the community. Among them are:

- Cash rebate for subscription
- Affordable packages for students and rural communities
- Encourage the ownership of personal computer
- By-laws of the uniform building already amended to require developers to provide broadband facilities in residential and commercial areas

World-class broadband refers to a system of high-speed security, high reliability and safe to use. High reliability means that the communication system will continue to function in case of damage to the connecting fibers or devices. Meanwhile, the security state that this technology does not negatively impact humanity in any circumstances.

**Targets:** Research quality is stated in the citation which shows the results of a research group's research can influence other researches. To ensure this value increases, some initiatives may be needed. Among these are:

- Publish in quality journals (with impact factors)
- Publish in high quantities in journals indexed in Scopus
- Publish the journal

Publishing article in the journals with impact factors will lead to increased citations due to factors such and have the factors that determine each published article is cited in other publications. The higher the impact factor value the higher the probability that the journal will be cited. The quantity of publications is also important and these journals are usually listed in the index of Scopus. These journals are also open access (indexed DOAJ) which all researchers around the world can download the articles in it, although they did not subscribe to the database as IEEE, Science Direct and others. Therefore, this will open up great opportunities for the articles to be cited.

In addition by publishing its own journal could contribute the terms to researchers, particularly from local researchers. It will help local researchers to increase their value of citation and H-index. Therefore, the quality and quantity of publications is essential to highlight a researcher on the international stage with an increase in value of the citation and the H-index (Ab-Rahman *et al.*, 2012). Collaborative research also helps to increase the citation value by introducing the research to the colleagues through journal articles that have been published.

Through this publication, results of investigations in the form of innovation can also be introduced. An innovation is important to respond country's challenge, especially in the realization of the National Economic Transformation Plan. Figure 1 shows publication targets, network and affiliation and innovation at year, 2018 (Table 1).

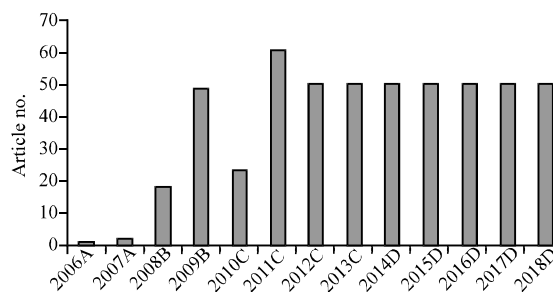


Fig. 1: Number of articles to be published based on projections to the year, 2018

Table 1: Publication targets, network and affiliation and innovation at year, 2018

Parameters	Components	Target for 2018
Publication	Journal	500
	Book	10
	H-index	20
	Citation	300
	Journal (publisher)	1 (12 times a year)
Network and link innovation	Colaboration	4 Universities and 2 industries
	Commercialisation	5 Products

Table 2: The initiative will be done to achieve the 2018 target

Activities	Initiative (2012-2018)	Objective
Publication catalyst	Indexed Journals Publication Workshop Impact Factor Journal Publication Workshop Q1 and Q2 Publication Workshop Scientific Books Purification Workshop Research Monitoring Workshop	Increased and the number quality of publication
Journal publisher	Science and Technology Research Journal	Increasing number of national publication (in the general context)
Book publication	Research Management Manual Research Management Module Integrated Research Management (IRMA) Easy Research; Research methodology	Mentoring new researchers carrying out excellent research and innovation
Research promotion	Scientific books (Collection of research in SPECTECH) Internal and International Seminar Organized SPECTECA 2012; Talk	Promote research groups to attract overseas students
Commercialisation	MADU and POF Device (2012) CAPU dan ACS (2013) SANTAD (2014); OXADM (2015) Wireless CATV Tester Unit (2016)	Increasing the number of the commercialization of intellectual property from universities and the country
Collaboration	Yuan-Ze Universiti, Taiwan Universiti Teknologi Bogor, Indonesia Universiti Muhammad Hamka, Indonesia	Strengthening the research

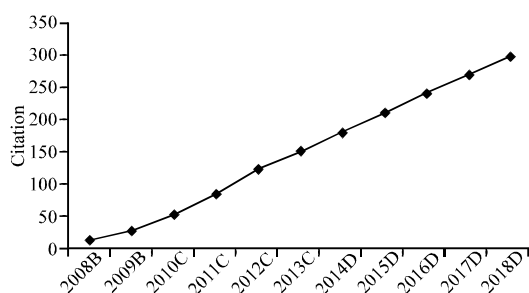


Fig. 2: Number of references obtained based on the projections to the year 2018

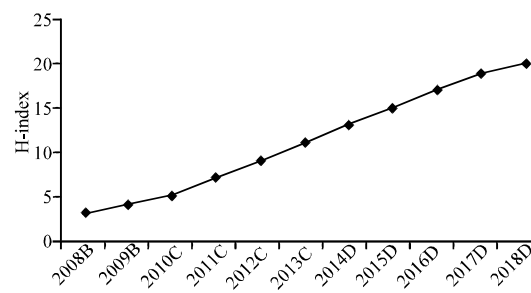


Fig. 3: H-index is obtained based on the projections to the year, 2018

**Plans and activities:** Table 2 shows details of the initiatives to be done to achieve the 2018 target. Figure 1 is important in determining the strength of a research group. It will also be directing the research by making the elements listed as a top priority in the implementation.

**Projection year 2006-2018:** By maintaining the same momentum of the publication (50 articles per year) would result in a total of 500 study by the year of 2018. The quantity of this publication is important to ensure that the journal article is published and thus increase the probability of this article will be cited in other publications. This will increase the number of citation for this research group. Targets for the citation by the year, 2018 are 300 and the H-index is 20. Apart from the publication with the quantity and quality, the numbers of graduates were also taken into account in performance evaluation of a university as shown in Fig. 1-4. By maintaining the same momentum of supervision (9 students per year), a total of 50 graduate students will be issued by the year, 2018. Quality

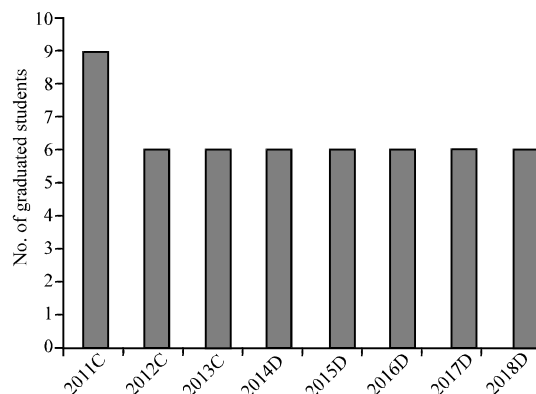


Fig. 4: The number of Msc and PhD graduates to the year, 2018 based on projections

supervision will determine the performance of publication and supervision of a research group. Good supervision will ensure that research can be conducted efficiently and continuously and then generate output in the form of publications and the number of graduates. To achieve this goal, several initiatives will be carried out include:

- Indexed Journal Writing Workshop
- Impact Factors Journal Writing Workshop
- Q1 and Q2 Journal Writing Workshop
- Universities Research Cooperation Workshop
- Faculty Research Collaboration Workshop
- Inauguration of Post Doctoral
- Mentoring Young Lecturer and subsequently appointed as a second supervisor of students

The organization of such workshops is important as a catalyst to increase the research group KPIs (Ab-Rahman and Zalmi, 2012b). It should be carefully planned and attractive so that all students will be motivated to attend this workshop and be prepared to contribute at least one input to obtain tickets (UNISA, 2011). At the same time, lead researcher may provide other programs to train new researchers and students in conducting research such as research ethics, research methods, methods of writing journals, Multi-Dimensional Assessment (MDA) and others who are the assets to contribute improved performance of the university in general (Ab-Rahman *et al.*, 2011a; Ab-Rahman and Zalmi, 2012b; Ab-Rahman, 2011). Research management must be designed correctly so that the burden to improve group's KPI not only relied to lead researcher and good planning can balance the load by distributing to them to others in a research group. This will reduce the pressure on the lead researcher (Ab-Rahman *et al.*, 2012).

The pressure usually is present from the students, the task of administration, finance, etc. and this can be solved with a good strategy and effective supervision (Ab-Rahman *et al.*, 2011b). High quality students will know their priorities and responsibilities as a contributor to the performance of the university and they will be capable to be independent and reduce the burden on supervisors (lead researcher) (Ab-Rahman *et al.*, 2011c).

**Initiatives for realizing university transformation plan (publications and research):** There are several reasons for the publication which can be divided into two classes namely, control and uncontrol. Factors can not be controlled (uncontrol) is an external factor that causes an unpublished article.

Factors under this class are the queue period and reviewing process. Both of these factors are determined by the characteristics of a journal (number of products) and reviewer siding. Most of the field or the faculty to publish is caused by these factors. For example, some journals in particular fields just published in the small issue and take a long time to be reviewed. Eventhough it has been reviewed and accepted, it still takes some time to

Table 3: Designation of the publication of journals based on grade/rank of a researcher

Positions	Publication target
Profesor	3 ISI
Associate Profesor	2 ISI and 1 SCOPUS
Senior Lecturer	1 ISI and 1 SCOPU
Junior Lecturer	1 SCOPUS

be published. This factor causes most number of publications in particular faculties are low and this may lead researchers in that field are not motivated to carry out research and promoting research in the form of publications.

Controlled factor can be a factor that can influence the publications. Quantity and quality publications can be achieved if the programs undertaken are more efficient and have a strong commitment from the researchers. In addition, these factors can be divided into two parts namely, management division and research unit. Management refers to those who make policies and decisions while the research unit is the individual lecturer or researcher who led a research group comprised of a group of students. Management division will formulate policies, terms and conditions to create a program, encourage and motivate research activities with financial assistance and support facilities. However, management is not a major catalyst for the success of the publication. However, management division is not a major catalyst for the success of the publication. In fact, the quality and quantity publication only can be reached by the great, dinamic, creative, resistance and high motivated research unit (Ab-Rahman *et al.*, 2011d, e).

If a university able to have such of researchers, it is not difficult to achieve world class status. However, not all of researchers are able to be formed and moreover there is the existence of uncontrolled factor. Therefore, the university must play an important role in setting targets for each faculty publications as shown in Table 3 and also took the initiative to ensure that the faculty to achieve the KPI. One suggestion is by dividing the faculty and the institute into three groups; achievable with distinction, achievable and unachievable. The university needs to provide a program that catalyzes collaboration between an outstanding faculty and an unsuccessful faculty. The researchers from the outstanding faculty must cooperate in research (integrate the two fields) and allow the researchers from the inferior faculty also able to contributed the output to the university. With the integration of this research, new research fields can be introduced such as the Strategy and Planning Research Management, Islamic Science, Human and Machine Governance and others. With the same purpose, RASP research group established to integrate research from the Social Sciences. RASP focuses on research management strategy and plan and maximize the results through research. Research findings from this group were published in book form, modules, manuals and

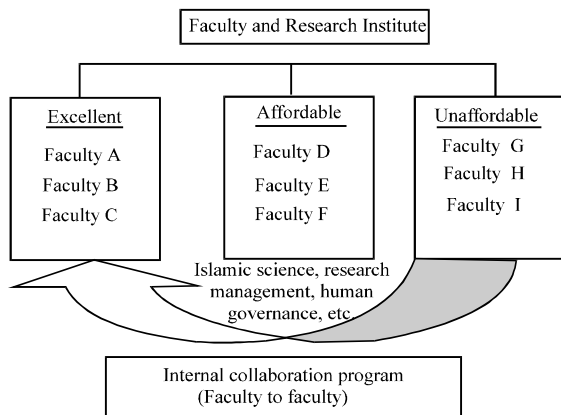


Fig. 5: Internal collaboration is an initiative to ensure that all of the various clusters of research and field work together, thus contributing to the achievement of the university

international journals. In addition, RASP team members are also invited as speakers and facilitators to train and guide new lecturers on how to conduct research (Fig. 5).

## CONCLUSION

There are two factors that encourage the pursuit of excellence in research that can be controlled such as an initiative of the management and intensification of the research unit. Program organized by the management important in ensuring all researchers are able to contribute KPIs through collaboration between faculties. In addition, the research unit should be aggressive with the use of all available resources to produce maximum output of the research. For this purpose, SPECTECH and RASP established to focus on technical research and research integration and balancing the two areas of research (science and social science). With this, researchers from the two clusters can join forces to contribute KPIs to the university. It is important that the university achieved the transformation plan and ultimately realizing the National Transformation Plan.

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