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## Funding trends of research universities in Malaysia

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### Abstract

Research findings from previous studies had pointed out that many public universities in different countries had been facing with decreasing trend of government funds to finance their operational and research expenditures. As such, this study attempts to provide the funding trends of five Research Universities in Malaysia over the period of five years from 2006 until 2011. The objectives of study are to identify the types of funding sources and to analyse the funding trends of five Research Universities in Malaysia in financing their operational and research activities.

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### 1. Introduction

Research Universities (RU) have become the fastest way for the government to move the nation towards the knowledge-based economic country and in turn to achieve greater prosperity (Ramli et al., 2013). In United States of America (US), RU become an importance centre for advancing knowledge in Science and Engineering field which can contribute to the national economic growth (Atkinson & Blanpied, 2008). The formation of RU has also led to the enhancing of quality research outcomes mainly due to the competitiveness among them in securing external fund to finance their research projects (Ramli et al., 2013). In recent years it was found that RU in the East

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Asian region particularly in China have shown rapid improvements in the quality of their research as well as their teaching and learning (Atkinson & Blanpied, 2008). These achievements will lead to RU becoming more competitive with other well-known RU globally.

According to Jowkar et al (2001), the need for financial support from public and private sector will help RU to carry out their daily operations' functions. The level amount of funds obtained by RU will definitely affect their ability as to whether they have enough sources of funds to hire their academic and non-academic staffs and to acquire advanced technology equipment and infrastructures to conduct research. Thus, research funds will have direct impact in producing high quality research outputs (Jowkar et al., 2011). Findings from the top tier research institutions in the US found that financial resources and material resources are very crucial in the overall RU's operational performances. Requirements for adequate laboratory space and equipment are very crucial for Science and Engineering research university. In addition, intellectual resources such as research mentors are also important to assist junior researchers to complete their research and publications (Mullen, Murthy, & Teague, 2008). Financial support from the government will enable RU to maintain low students' tuition fees which in turn can attract higher students' enrolment. Government funding for RU will help to train and guide postgraduate and professional students to produce ground-breaking research products and innovations (Kuo & Ho, 2008). A case study on the impact of funds towards Iranian publications has proved that funded research publications will achieve higher quality results and higher number of citation counts than those of the unfunded publications (Jowkar et al., 2011).

To promote research and innovations, the Malaysian government has also provided financial support for the Research Universities in Malaysia. The Budget 2013, RM 600 million has been allocated to five Research Universities in Malaysia for the said purposes. These funds will be administered by the Ministry of Higher Education as being highlighted in the 2013 Budget Speech. Likewise, the US government has allocated around USD40 billion for their Research Universities in 2011 for research developments (Weigley & Hess, 2013). In essence, government funding has become the most important source of funds to the Research Universities to enhance their innovations and research development progress. The competition among the RU for government and non-government grants has also become an important factor that might raise the quality of the research conducted by the universities (Atkinson & Blanpied, 2008).

In recent years it was noted that the financial support from the government for Research Universities expenses has been in a decreasing trend (Kuo & Ho, 2008). Berger & Kostal (2000) reported that due to the decreasing amount of funds received from the US government, the universities have to find other alternatives to increase their available funds such as by increasing the student's tuition fees and seeking other external sources of income in the form of donations, grants, and contracts. A study carried out by Berger & Kostal (2000) found that if we were to increase the tuition fees, the number of the students enrolment will subsequently decreased (Berger & Kostal, 2000). To overcome the above financial constraint due to the reduction in funds from the government, the effected universities result to different approaches. For example in Taiwan, instead of increasing the student tuition fees, or obtaining donations from firms, they opted for managing their funds more effectively i.e. by reducing the universities' expenditures (Kuo & Ho, 2008). Atkinson & Blanpied (2008) pointed out that due to insufficient internal funds, the universities need to obtain financial support from other external sources such as government fund, private funding from industry and the non-profit organizations. It seemed that many universities in Europe and US are looking at the market-based or the performance-oriented funding mechanisms (Jongbloed, 2008). This marketing based approach helps to promote competition among the universities in obtaining external funding sources. This will help to improve the university's performance and the quality of the research and development (Kuo & Ho, 2008). This way forward approach also allows RU to focus more towards consumer interests and value creation of service qualities and consequently RU are capable to generate self-generating income from their entrepreneur's activities (Jongbloed, 2008). In Malaysia, the government planned to introduce the performance-based funding with the purpose of helping the universities to become more competitive in their quest for obtaining external sources of funds for their benchmarked quality of teaching and research orientation (Ahmad, Farley, & Naidoo, 2012). Based on previous studies, Jongbloed argued that the ideal funding model will depend on the university itself in terms of the goal setting and expected achievements (Jongbloed, 2004).

The purpose of this research is to examine the funding of the RU in Malaysia and to further analyse the funding trends of the financing structures of RU in relation to the financial assistance required for their operating activities, research and innovations. For the purpose of this research, four objectives have been identified:

1. To examine the types of funding sources for the operating activities of RU and to further classify it under these categories:
  - a) Funding sources from the public funds which is also known as the government grants
  - b) Funding sources from the students' tuition fees and other related fees that were being charged to the students
  - c) Other sources of funding received by RU
2. To study the trends of the government funds which were used by the RU to finance their operating activities
3. To examine the types of funding sources for the RU's research and innovation activities and to further classify it under three categories:
  - a) Funding sources from the public funds which is also known as the government grants
  - b) Funding sources from private business entities.
  - c) Other sources of funding which include funds received from foreign-based organisations and corporation and also internal funds generated by the RU.

The following are research questions that need to be answered in order to address the research objectives of this study:

1. What are the types of funding sources available for the Research Universities to finance their operating activities?
2. What are the trends of the government funding received by the Research Universities?
3. What are the types of funding sources available for the Research University to finance their innovations and research activities?

The scope of the study is to examine the funding sources and the funding trends of the five RU in Malaysia which are 1) Universiti Sains Malaysia (USM), 2) Universiti Malaya (UM), 3) Universiti Kebangsaan Malaysia (UKM), 4) Universiti Putra Malaysia (UPM) and 5) Universiti Teknologi Malaysia (UTM). The selected five universities are currently the only RU in Malaysia. This study will examine the types of funding sources of the RU and the trends of these funding sources to finance their operational and research activities. The secondary data gathered from the Annual Reports and Audited Financial statements produced by the five RU for the period of five years (2006 until 2011) were used, analysed and interpreted accordingly.

## 2. Literature review and research background

By obtaining financial assistance from different sources of fund may help RU to reduce their dependence on the government funds and hence this may help them to adapt to the challenges of changing environment (Dominicis et al., 2011). Nevertheless, most universities' funding trends now are moving towards obtaining fund from private funding sources (Pitman, 2013). This scenario is largely due to the challenges faced by the research university in obtaining sufficient public fund to meet their current expenditures and financial obligations while at the same time to promote for the universities' expansions (Estermann & Pruvot, 2011; Kerr, 2006). It was also argued that for the RU to maintain and improve their current position and performance efficiency, they will have to diversify their sources of income by seeking more funds from private sources instead of relying largely on the government funding support (Simha, 2005). To a large extent, competitions among RU in obtaining external funding will somehow lead to better improvement on the quality of their research outcome (Atkinson & Blanpied, 2008).

A study carried out by Ahmad & Farley (2013) has found that the funding reforms introduced in the RU in Malaysia have enabled the universities to enhance their quality of education and research. Apart from that the Malaysian government has also planned to introduce the Performance-Based Funding (PBF) mechanism to the universities. The introduction of PBF mechanism will however reduce the proportion of the government funding to the universities and when this happen the universities have to find other sources of funds to support their operating

and research activities (Ahmad et al., 2012). By increasing the research capacity and innovations, RU will be able to assist Malaysia to become a more competitive nation in the global market. New innovative products produced by RU can be used for commercialization and consequently will contribute to the country's additional sources of revenue income (Ahmad et al., 2012). Malaysian government had also allocated a large amount of fund to support the five RU. This is to ensure that the RU are able to continuously produce innovations and quality research outputs. Under the Budget 2013, the Prime Minister Dato' Sri Haji Mohammad Najib bin Tun Haji Abdul Razak had allocated RM 600 million to be distributed to the five RU ("The 2013 Budget Speech," 2012) to assist the RU producing high impact research output. The continuous and significant commitment made by the Malaysian government in supporting the RU is for the purpose of meeting the long term nation's prosperity which one of them is by producing high impact research outputs. A high-impact research output can only be achieved if there is enough fund to support the day-to-day research operations: the cost to obtain up-to-date materials; the cost for hiring professionals and skilled researcher; the cost of purchasing and maintaining the appropriate equipment to be used to conduct the research activities (Aziz, Harris, & Norhashim, 2011).

### 3. Research methodology

Content analysis is used as the research strategy which is an approach to the analysis of documents and texts, that seeks to quantify content in terms of predetermined categories and in a systematic and replicable manner, which is a very flexible method that can be applied to a variety of media (Bryman & Bell, 2007).

Since the focus of this study is to analyse the funding trends of the five RU in Malaysia, the use of content analysis as a means of gathering data was considered to be most appropriate. For the purpose of this study, the secondary data gathered from the official statistics in the form of annual reports and audited financial statements for five years period starting from year 2006 until 2011 produced by five RU in Malaysia were used, analysed and interpreted accordingly. The following are few reasons for choosing data source from year 2006 until year 2011 as the specified timeframe for this study. There are only four universities in 2006 that were being recognised as RU in Malaysia i.e. Universiti Sains Malaysia (USM), Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM) and Universiti Malaya (UM) and later followed by Universiti Teknologi Malaysia (UTM) in 2010. The annual reports from the five Research Universities for the year 2012 could not be located either in the RU's libraries, in the Registrar's office or even in the Research Universities' official web page.

The data which were extracted from 30 annual reports of the five RU were processed and analysed. Findings from the data processed were displayed in the form of clustered columns, line graphs and tables. Clustered columns and line graphs were used to answer the research objectives and research questions.

### 4. Findings and discussion

Research findings for this study are presented and discussed based on the following three research objectives: 1) Types of funding sources available for RU in Malaysia; 2) Trends analysis of government funds received by the RU and 3) Types of funding sources available for the RU to finance their innovations and research activities

#### *4.1 Research question 1: What are the types of funding sources available to the RU in Malaysia to finance their operating activities?*

Based on this study, there are several funding sources available for the RU to finance their operating activities. These funding sources can be grouped into three categories: government funds; student's fees; and funds from other sources. The funds from other sources can be in the form of funds from private organizations, funds from the non-profit organizations and donations received by the RU.

Figure 4.1 shows the average percentage of funds received by the five RU: government funds, student's fees and funds from other sources for six consecutive years (2006 to 2011). As we can see from Figure 4.1 the major source of funds for the RU came from the government. As for example the average percentage of funds received from the government by USM in year 2006 to 2011 is 92% from its total operating income. This followed by UTM (84%),

UKM (80%), UPM (78%) and UM (67%). Students' fees and funds from other sources made up only a small percentage of the total operating income. The students' fees collected by the RU can be in the form of tuitions fees, student's hospitality fees, courses and seminars fees, activities fees and other fees which are directly related to the student's involvement in the activities held by the universities. Figure 4.1 shows that the average percentage of funds received from students' fees by the RU (2006 to 2011) was 10.8% (UM), 7% (UKM), 5% (USM), 10.7% (UPM) and 8% (UTM). The results for the average percentage of funds received by the RU for the third category (funds from other sources), were quite similar to the second category (students' fees). It was noted that in 2006 to 2011 the average percentage of funds received by the RU was 22% (UM), 13% (UKM), 11% (UPM), 8% (UTM), and 3% (USM).

Based on research finding, there are three types of funding sources available for the RU in Malaysia: government funds, student fees and funds from other sources. Figure 4.3 below shows that more than 70% of the RU funds in year 2011 to finance their operating activities came from government funds. This finding is consistent with the previous studies carried out by Hagedoorn et al (2000), Berger & Kostal (2000), Estermann & Pruvot (2011), Dominicis, Pérez & Zubieta (2011) who argued that majority portion of funding for RU are contributed by the government.

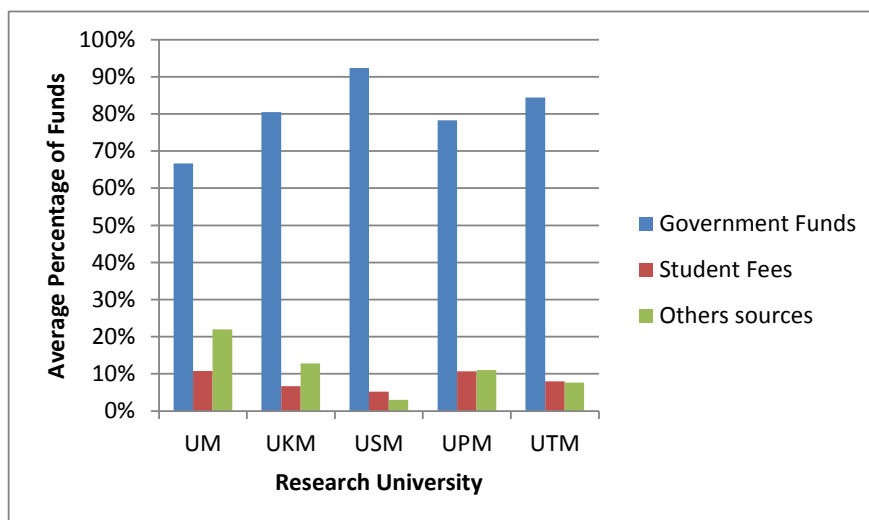


Figure 4.1: The average percentage of funds received by the Research University for 2006 to 2011.

#### 4.2 Research question 2: What are the trends of the government funding received by the Research Universities?

Figure 4.2 shows the total amount of government funds received by the five RU for six consecutive years (2006, 2007, 2008, 2009, 2010, and 2011). From this line graph, it can be seen generally there was an upward trend for all the RU in terms of the total amount of government funds received by them (annually) except for year 2010. However, UPM is seemed to have experienced the downward trend for two years (2009 and 2010). For government funding to RU in the year 2011, the UKM was allocated the highest amount of funds (RM 1,138,195,000), followed by USM (RM 983,700,000), UM (RM 755,679,102), UPM (RM 713,416,139) and UTM (RM 563,944,778).

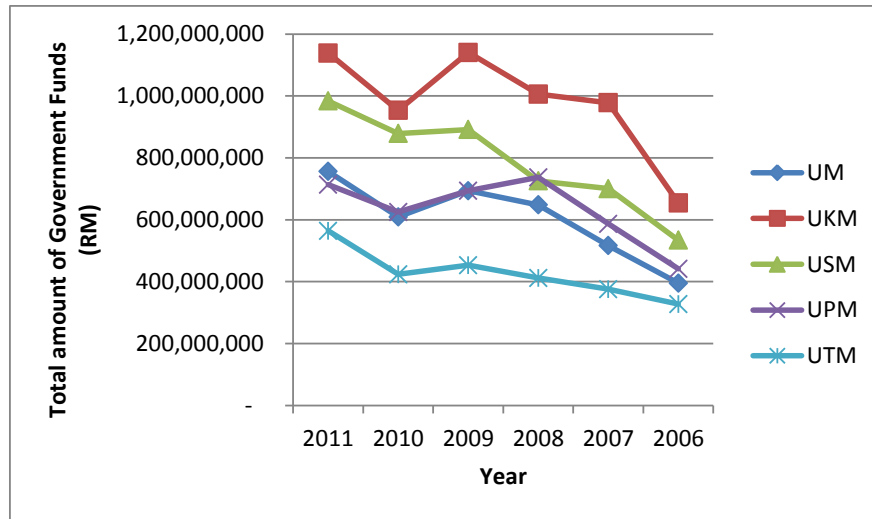


Figure 4.2: The total amount of governments funds received by the five Research Universities for year 2006 to 2011

On the other hand, Figure 4.3 shows the total percentage of government funds received by the RU to finance their operating activities for year 2006 to year 2011. From this line graph it was noted that the total percentage of government funds received by USM is 94% of the total revenue for year 2011; UTM (87%), UPM (83%), UKM (76%) and UM (71%). Figure 4.3 seemed to show that all the RU in Malaysia received and heavily relied upon the government funds to support their operating expenditure.

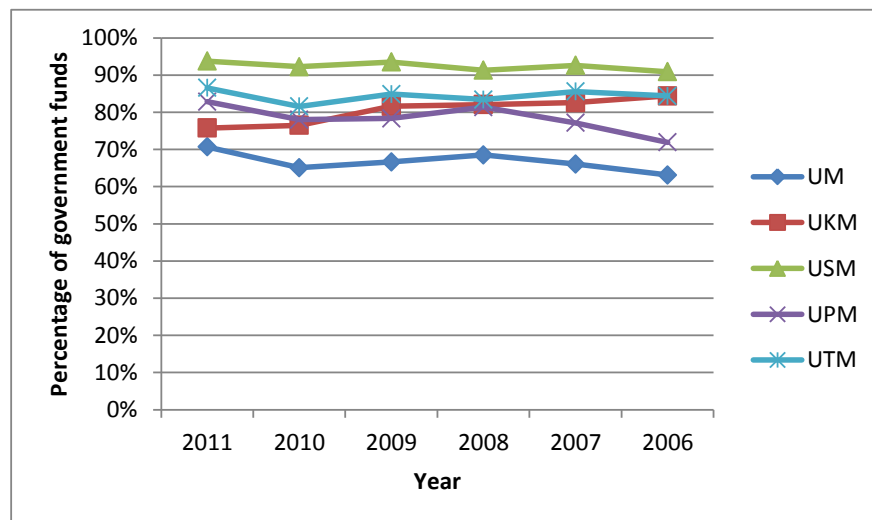


Figure 4.3: Percentage of government funds received by the Research Universities from year 2006 to 2011

The research finding also showed that there is an increasing trend of government funds received by the RU in Malaysia. This finding is supported by previous studies: Ahmad & Farley (2013), Easternmann & Pruvot (2011) & Dominicis, Pérez, & Fernández-Zubieta, (2011). Ahmad & Farley (2013) claimed that the government funds have become the major source of income for the public and research universities in Malaysia apart from those

contributed by the student fees. For the universities in Europe, the government funds represent an average of nearly three quarters of the universities' total income (Eastermann & Pruvot, 2011 and Dominicis, Pérez, & Fernández-Zubieta, 2011).

#### 4.3 Research question 3: What are the types of funding sources available for the Research University to finance their innovations and research activities?

Figure 4.4 shows the average percentage of funds received by the five RU to finance their innovations and research activities. The financial assistance contributed for RU's research and innovations include 1) government funds, 2) funds from private business entities and 3) funds from other sources (funds received from foreign-based organizations and corporations and the internally-generated funds of the RU) for six consecutive years (2006 to 2011). Figure 4.4 showed the major source of funds for the RU to finance their innovations and research activities come from the government with the exception of USM of which the majority of the funds received for the same purpose come from other sources (funds received from foreign-based organizations and corporations and the internally-generated funds of RU). The average percentage of funds received from the government by UTM in year 2006 to 2011 is 89% from the total funds allocated for innovations and research activities; followed then by UPM (76%), UKM (65%), UM (57%) and USM (22%). The average percentage of funds received from private business entities is quite substantial for UKM and USM but quite small for UPM and UTM and very little for UM. On the other hand, the average percentage of funds received from other sources of funds (internally-generated funds and foreign based funds) is quite substantial for UM and USM but quite small for UPM and UTM and almost negligible for UKM.

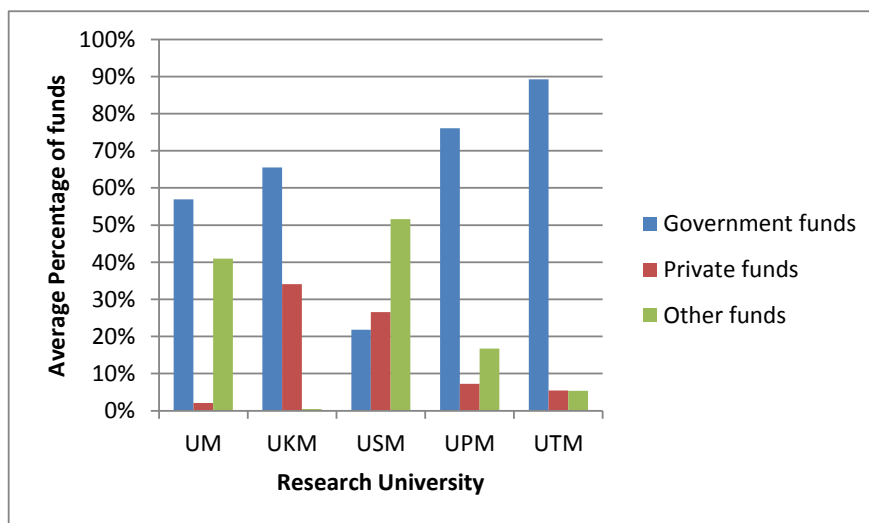


Figure 4.4: The average percentage of funds received by the Research University to finance innovations and research activities for year 2006 to 2011

Based on this research finding, there are generally three types of funding sources available for the RU in Malaysia to finance their innovation and research activities which include 1) government funds; 2) funds from private business entities and 3) funds from other sources (funds received from foreign-based organizations and corporations and from the internally-generated funds by the RU) This finding is found quite similar to the previous

study carried out by Bolli & Smogyi (2010) which reported that the funds received from private business entities and public funds (government funds) are the main source of funds received by the RU to carry out their innovations and research activities.

## 5. Conclusion

From the previous studies, it was emphasized that many public universities in different countries had been facing with decreasing trends of government funds to finance their operational and research expenditures. As such this study will give an overview on the funding trends of the RU in Malaysia.

The first and second research question for this study is to identify the sources of fund available for the five RU in Malaysia and to analyse their funding trends for six consecutive years (2006 to 2011). There are three types of sources of fund available which include 1) government funds, 2) students' fees and 3) other sources of fund. The finding from this study is consistent with Estermann & Pruvot (2011), Dominicis, Pérez, & Zubieta, (2011) and Berger & Kostal (2000) who argued that RU depend greatly on the government funding. This study showed that the government had contributed more than 60 percent of the total funds required by the RU for their operating activities. It was further noted that the funding trends of the government funding is still increasing from year 2006 to 2011 for all the five RU in Malaysia. The findings showed up by this study are found consistent with the findings revealed by Ahmad & Farley (2013) and Hagedoorn et al. (2000) who highlighted that most RU depend largely on the government funds to support their operating activities. In Malaysia, the increasing trend in government funding could have resulted from the significant commitment made by the government in supporting the RU for the purpose of meeting the long term nation's prosperity and promoting the nation's economic growth and development. The third research question for this study is to identify the types of funding sources available for the RU to undertake research activities. The sources of funds from the 1) government, 2) private business entities and 3) funds received from foreign-based organizations and corporations as well as the internally-generated funds are used for innovations and research activities in RU. This result is also found similar to the previous study carried out by Bolli & Smogyi (2010) who reported that the high percentage of government funds are used to finance research and innovation works in RU. Since 70% to 90% of the total funds for the research and innovations came from the government, this may indicate that the Malaysian government wants to see that there will be no disruptions in the research and innovations activities of the Research Universities. The outputs from the research and innovations can be commercialized and at the same time this will enable the RU in Malaysia to become more competitive in global educational market.

## 6. Limitation of study and suggestion for future research

Data collected for the five RU for six consecutive years for each university is considered small. The issue of small sample size is unavoidable because there are only five RU in Malaysia. Secondly, the period under review for data collection from year 2006 until 2011 can be considered quite outdated for the current funding trend analysis of RU in Malaysia. The third limitation is inadequate disclosures of financial information and inconsistent use of terminology found in the annual report of five RU. Thus, authors recommend that a more detailed study should be conducted in the future so that a more accurate finding could be generated from the similar extended study. Future research should also consider other related factors that might affect the level of government funding in the Malaysian RU such as the total number of staff employed, total number of students enrolled and graduated, total number of publications and innovations and total amount of external funds received.

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