

Determinants of organizational practices and research culture for the enhancement of research performance in Malaysian universities

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Abstract

Aim: Through a focus on Universiti Putra Malaysia, one of the best Research Universities in Malaysia, especially in agriculture fields, this study examines the similarities and differences of organisational practises and research culture among academic staff that influence the research performance in Malaysian public universities.

Method: Forty professors and lecturers in science and technology, as well as the social sciences, arts, and humanities, participated in a qualitative focus group interview.

Findings: Research performance factors must be determined after considering the researchers' perspectives and experiences. This research reveals that the academic staff agree on the existence of 5 possible tangible and 8 intangible factors that contribute to research performance, with one intangible factor emerging as a novel factor that will affect research performance. These things can be used as a yardstick against which other things are measured.

Implications/Novel Contribution: This research fills a gap in the existing literature by illuminating Malaysia's public universities' institutional norms and research ethos.

Keywords: Academic Staff, Research Performance, Research Output, Public Universities, Factors Affecting Research, Research Management, Qualitative Approach

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INTRODUCTION

Before allocating funding for research activities, the government considers several factors, one of which is a research element. However, research output varies widely between institutions, fields of study, and even individual departments. Research performance factors also vary between institutions. The government has made a significant effort to boost public university research output in recent years. The results of the studies were used to evaluate the research performance of the individual universities. However, research output is an intangible indicator that varies widely across disciplines, departments, and institutions. Research performance factors also vary between institutions.

The research administration at Universiti Putra Malaysia could benefit from more clarity on this issue, as it would allow them to better understand the factors that motivate and hinder the work of the university's academic staff. This research will take a qualitative approach to identify the factors influencing organizational practices and research culture. Using the factors identified by Adora (2017); Arockiyasamy, Surendheran, and Bullard (2016); Siti Fatimah, Norhafizah, Noryanti, Rozieana, and Hassan (2015); Wood (1990) describe the research performance of Australian universities concerning their allocation of resources and their targeting of substantial research funds toward the national priority. According to the findings of the bibliometric study cited in Nederhof (2006), research productivity in the humanities and social sciences can be tracked through citation analysis. The Edgar and Geare

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(2013) group agreed that there is still a lot we don't know about how to improve research performance, and they brought attention to whether or not certain managerial practices are essential to influencing research performance outcomes when paired with a bolstering set of cultural characteristics.

Using the quantitative goals established in the MyRa tools for hard science and social science, art, and humanities research, Malaysia's R&D quality was assessed. Publication, grant funding, IP protection, and knowledge transfer are some of the leading indicators of research success that can be gleaned from the MyRa report covering the years 2010-2015. Research Assessment Exercise (RAE) in Britain, Research Excellence Framework (REF), Australia's Excellence in Research for Australia (ERA), and New Zealand's Performance Based Research Funding (PBRF) are just a few examples of the many tools introduced by the stack holder to measure the impact of research on a global scale (Abramo, D'Angelo, & Caprasecca, 2009; Hicks, 2012; Jacolbia, 2015).

Input process - output model in describing the research performance is used by MyRa to evaluate the output of all Malaysian universities (A. R. Ahmad, Farley, & Kim Soon, 2014; Ngwaru, 2017). The quantitative and qualitative aspects of a university's research productivity are considered using 51 criteria in MyRa, such as grants, publications, intellectual property, and commercialization. Malaysian universities' research performance was varied, as shown by the annual MyRa assessment conducted by the authority.

There is a need for more research in the Malaysian context because research performance is a comprehensive and general concept (A. R. Ahmad et al., 2014; Ngwaru, 2017). Thus, researchers analyze research performance as productivity based on well-known indicators like publication and impact factors.

Why do researchers at different universities have such varying levels of success in their pursuits of knowledge? Several factors in Malaysian public universities likely affect research performance, including the degree to which academic staff share or diverge in their organizational practices and research culture. Different organizational practices and research cultures also affected the studies' quality. In the context of organizational practices and research culture in Malaysian universities, this research looks to confirm similarities and investigate new potential factors that affect research performance.

Through the use of a Focus Group Discussion (FGD), this research examines the perspectives of department managers, top management, and senior lecturers from UPM's faculties and institutes. The UPM star rating for the research performance of faculties and institutes from 2010 to 2015 will be analyzed and compared to current performance. The essence of the research culture and support cycle within the faculties and institutes will be studied as an influencing factor of performance using a bottom-up data approach (Jaskiene, 2015).

LITERATURE REVIEW

Currently, government expect all the public and private universities in Malaysia to become more excellence and efficient in both teaching and research. Performance of the universities will be based on the key performance indicator set by the government and also World Universities Ranking as an assumption of the good research performance as well.

However, there are not many studies on what factors that can increase their research output as an indicator to value the research performance among the academic staff in Malaysian universities. Many studies done by analyzing the journal articles publication numbers indexing in Web of Science using the quantitative method. This is an important issue facing higher education institutions, and the purpose of this research is to focus on the factors that have an influence on the low and high research productivity of academic staffs.

Literature based on quantitative studies showed that the main character that influence the high performance research is an autonomy, egalitarianism (Edgar & Geare, 2013; Hardré, Beesley, Miller, & Pace, 2011; Jordan, Meador, & Walters, 1989; Solihah, Djuyandi, & Rahmatunnisa, 2018), personal characteristics (differences in research styles) (Baruffaldi & Landoni, 2012; Dundar & Lewis, 1998; Jaskiene, 2015; Jung, 2012; Verbree, Horlings, Groenewegen, Van der Weijden, & Van den Besselaar, 2015; Wichian, Wongwanich, & Bowamkitiwong, 2009; Wood, 1990), strategies between disciplines; dependency on research funding (A. R. Ahmad, Soon, & Yee, 2016; Auranen & Nieminen, 2010; Benneworth, 2015; Fedderke & Goldschmidt, 2015; Grimpe, 2012; Gulbrandsen & Smeby, 2005; Hicks, 2012; Wood, 1990) and program faculty size (Dundar & Lewis, 1998; Hadjinicola & Soteriou, 2006; Jordan et al., 1989). Impact of research performance also comprise two basic components, with six secondary level dimensions and a range of potential indicators and the main factors to be consider to achieve high

research performance is engagement, task orientation, research practice and intellectual processes (Bazeley, 2010).

They are a few number of empirical study done to identify factors influencing research performance and most of research done by measured the impact from publication criteria, journal citation and impact factor (S. S. Ahmad, Rahmat, Hashim, & Saedan, 2013; Cherney & McGee, 2011; Huang & Chang, 2008; Landry, Amara, & Lamari, 2001; Pardoe, 2014).

When used in comparison, research performance is usually considered using funding and publication as the major research performance indicator in Malaysia (A. R. Ahmad et al., 2014; A. R. Ahmad, Farley, & Naidoo, 2012a). The lengthy definition of research performance has continued to be applied until today, either partly or wholly, by researchers. All these ideas of performance are combined into the definition proposed based on the country. Johnes and Li (2008) indicate that geographical location of the universities in China show differ on efficiency in the production of research between west and coast.

Therefore, there is needed to study that factors that influence the research performance in Malaysia universities. This study will verify that the different policies from the Malaysian university authorities and implementation of the R&D strategic plan from the management will showed the different result showed from the previous studies, that will impacted the research performance. Universiti Putra Malaysia is a unique universities that have two campus in Malaysia, that separated from geographical and culture. The main campus on Peninsular Malaysia (West) at Serdang, Selangor and the second campus located at East Malaysia, Bintulu Sarawak, separated by the South China Sea that similar with Johnes and Li (2008) case study. From the trend measured in Malaysia context (S. S. Ahmad et al., 2013; S. S. Ahmad, 2012) show that there is not much different between two field of research, the low performance of social science and humanities research based compare to science and technology on MyRA report, mainly from publications impact at only 3.5% of the Malaysian publication output (S. S. Ahmad, 2012).

In general, the study will analyze research self-efficacy on individual and institutional factors including formal mentoring programs (Muschallik & Pull, 2016), foreign researcher group performance (Baruffaldi & Landoni, 2012), with considering timeliness of evaluation execution and accuracy of performance rankings (Abramo, Cicero, & D'Angelo, 2012) as factors will increase the productivity of research in Malaysia. We proposes to prove Jung (2012) main significant factors to measure research productivity in Malaysia research culture heritage based on 3 research output (papers in scientific journals, new recommendations and new techniques). All the input will be including on the semi structured question during the focus group discussion session. But the study will not looking further on the gender and marital status that can have has significant impact based on areas of specialization factors in Malaysia research environment. Jung (2012) highlighted the factors that influence research productivity in Hong Kong academics that have differ significance cultural heritage for the styles of knowledge production. Therefore, Jung (2012) four main factors; personal characteristics, workload, differences in research styles, and institutional characteristics to prove the significant factors to measure research productivity in Malaysia research culture. Result from this study will verify significant tangible and intangible factors identify from previous study from literature review based on Malaysian research culture and governance system.

METHODOLOGY

This research employs a qualitative technique to achieve the above objectives. Semi-structured interviews in focus group discussion is considered useful for this particular research since it could provide rich information on the determinants of organizational practices and research cultures for the enhancement of research performance in UPM. In addition, quantitative technique focuses on objective measurements and analysis of numbers in order to draw generalizations about research subjects. There will be two stages of qualitative techniques that will be employed in this research. These include exploration of determinants through the FGD's. Since there is not much information on the factors within organizational practices and research culture that contribute to research performance the use of the above methods is believed to be appropriate for this particular research. In this research we attempt to explore the factors that are most critical to effectiveness of research performance in UPM. This study would enrich the empirical data on the factors that influence the research performance based on different organizational practices and research culture that implied to the universities in Malaysia.

In the beginning, 151 of 1,612 (2016) academics staff as researchers from 16 faculties UPM were chosen based on rank of researchers (Professor, Associate Professor and senior lecturer) based on their experience factors

(Grimpe, 2012; Ramesh Babu & Singh, 1998; Sinclair, Barnacle, & Cuthbert, 2014; Syverson, 2011; Verbree et al., 2015; White, James, Burke, & Allen, 2012; Wood, 1990) and their total number of publication (data from 2010 to 2015) produces. Two (2) researchers will be selected within the range of high performance (top 5%) and one (1) researcher at low performance (lowest 5%) on each rank based on their faculties. The data of those who perform and do not perform will be obtained from the UPM Knowledge Management System (KM-Portal) by Research Management Centre (RMC), UPM.

This study using publications as the main research output to measure research performance. This is consistent with other studies that also incorporate the use of bibliometrics method to measure research performance based on publication index in Web of Science (Abramo, Cicero, & D'Angelo, 2013).

All the participants selected and separated into two main groups of Science and Technology (S&T) and second group as Social Science, Art and Humanities (SSAH) to encourage the participants to express their experience in the same area of research. Discussion from participants between S&T and SSAH group may dig out different factors that influence in this two major fields of research (A. R. Ahmad et al., 2012a; Archambault, Vignola-Gagné, Côté, Larivi, & Gingrasb, 2006; Chou, Lin, & Chiu, 2013; Finardi, 2013; Gazni & Didegah, 2011; Huang & Chang, 2008; Nederhof, 2006; Verleysen & Weeren, 2016; Wood, 1990).

However, out of that total, only 40 were available during the times allocated in 7 focus group discussion. Each FGD respondents will be grouped by the same research fields in science and technology research based or social science, art and humanities research based with the same performance categories (low or top performer).

Member of the group as a chair person and moderator on every session based on 16 semi structured questions that identified on literature.

The material recorded in the FGD was transcribed immediately after the sessions had ended. Since the spoken language in the interviews was mainly English, the transcriptions were reported as they conversed, although translations in Bahasa Malaysia were sometimes required in a few parts of the transcription and note-taking processes. The notes taken during the remaining interviews were also refined as soon as possible while the information was still fresh. Any quotations recorded were carefully written to avoid any confusion later on. Since not all of the FGD were tape and video recorded, software was not used in analyzing them. Instead, the data analysis was done manually.

In an effort to discuss the FGD, all the participants are explained as individual cases based on their experience as researcher and also their experience as a top management in their respective faculties such as Dean, Deputy Dean, Director or Head of Department (A. R. Ahmad et al., 2014; A. R. Ahmad, Farley, & Naidoo, 2012b; Iqbal & Mahmood, 2011). The participants are identified with the short alphabetic name as contributors to the FGD session. For an example, participant Siti Aisyah Hassan was called participant SAH.

RESULTS AND DISCUSSION

In order to find the similarities and differences across the fields of research. There are two main themes to describe the factors determined that influence the research performance specifically the tangible factors (hard factors) and intangible factors (soft factors).

All these factors are summarized accordingly from the interviewed transcribe in Figure 1. Throughout the FGD, several similar organization practices and research culture factors were discovered by the respondents in all fields of research. Five (5) tangible factors that influence the research performance were identified, which were materials and technology, financial resources, students, human resources and collaboration. There is more eight (8) intangible factors that identified such as leadership, motivation, personal competence, personal characteristics, branding, policies, support system and work environment.

We will discuss further about three (3) critical factors that discover for more clarification and a new factors that slightly uncommon in the research performance.

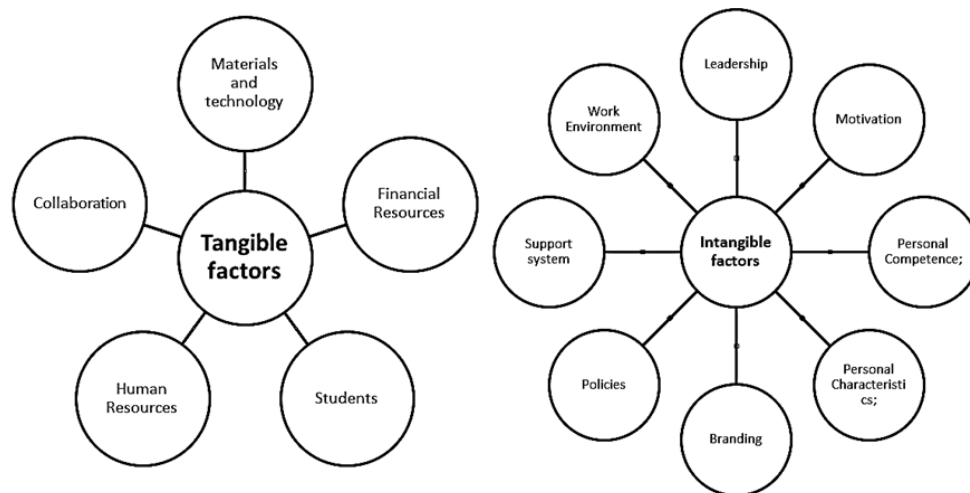


Figure 1. Tangible (hard factors) and intangible (soft factors) that influence the research performance

Policies

From the findings we can verify that the factors are similar from the other universities in the previous studies. Factors regarding policies are the most subject to be discussed by the respondents in all aspects on research activities. Geisler and Rubenstein (1989) studies show that universities set a policies to the most of faculty members required to conduct and publish research in order to get tenure, build their academic reputation, and get promoted.

"I see the expansion in UPM policy help a lot to do research in UPM as a RU (research university)" - (participant CRS)

"But we also have a lot of friendly policy to the researchers that always got a research contract every 6 month once".- (participant IAI).

UPM as a research university set up their polices in line with the research development as Putra Global 200 (PG200) to become well known universities among top 200 best universities in the world based on QS World University Rankings, an annual publication of university rankings by Quacquarelli Symonds that also have influence to the researchers.

"I think generally, all of us start from the beginning have a UPM policy itself. We targeted Putra200. It became a guideline to the university la. And and together we put university in 200 status ranking supposed to have their strategy in term of graduate and research" (participant AHA).

The policies similar to PG200 will boost up researchers spirit in performing their research and publications to become a world class university.

Financial Resources

Research grants still the major factors to enhance their motivation to performing the research activities. Funding from the government agencies from the Ministry of Higher Education (MOHE) and Ministry of Science, Technology and Innovation (MOSTI) is the predominant source of the university funding (Skoie, 1996).

"The major input to move a research performance is still money" (participants TCP).

Research university status give more benefit in term of research funding that received substantial amount of funding up to RM 25 million to RM50 million every year from the MOHE based on their performance.

"The problems is sometimes is because of financial is more difficult. There are a lot of industries to come to us but however if we don't have enough grant or we don't have I mean at least the first one of support from Serdang (UPM main campus) will be will be glad because let us fix some facilities" (participants PKJH).

The funding is required to do maintenance on the research lab or facilities to support their experiments and acquired research assistance or students to help the researchers to execute their research milestones.

Even though funding is major factors but some of our findings still agree that funding shifts do not strongly

affect the performance publication behavior (Benneworth & Jongbloed, 2010; Van Looy, Ranga, Callaert, Debackere, & Zimmermann, 2004).

"Especially social science, we don't need a lot of money." - (participant IAI). "Get the grants Insha Allah, no problems so far Alhamdulillah OK. But for me, I don't request a lot, I apply depending on my ability because of once I get it, I would do it in the best way So the quality, that come, so not the quantity" - (participant MA).

Social science researcher are not require a lot of financial resources to publish the publication compare to the science and technology based researchers. Conventionally, using a same hardware and software would preserve their budget to produces more publication.

Students

Researchers' responsibility at the current predicament situation of universities in Malaysia to accomplish more than teaching and perform R&D nevertheless actively involves in consultation and expansion with community and industry. Consequently, researchers' dependency on post graduate students to execute their research milestone is crucial that can negative impact to the research performance.

"I could not find any master student to collaborate on my research, so the project was delay 3, 4 months. - (participant WAVY).

".. cannot perform because we don't have a student, we have grants but no students" - (participant MSK).

Availability of the post graduate student as well as their quality on exertion and writing the publication essentially required. Research performance gauge by the number of publication and excellent quality of the student particularly foreign students will help the researchers in thoroughgoing experiments and writing the publication.

" nowadays we believe we find it difficult to get student even from that would off course can affect their number of publication, quality of research and etcetera, And if the student are not good quality, truth is their quality are decreasing - (participant BSB).

Branding

Beside on the factors from the previous studies, we explore the interesting branding as intangible factors that not mention in prior study. UPM brand itself as an agriculture expert in R&D would convey certain impact to the research performance itself to the researchers in UPM. This agriculture expert brand would attract the industry players to have research collaboration utilizing universities expertise and such a recognition to the researcher to accomplish their best performance in research.

"The brand UPM, perhaps if we put under the same maybe we are apart maybe UKM. USM maybe in animal food science. Agriculture based. That's why they(industry) still come to us". - (participant TCP).

"Nobody knows actually, they said "pertanian"(agriculture). So now they change University Putra Malaysia. In a way is I think is a good for a public view and then and everybody knows Putra, variety kinds of study and few things." - (participant AWH).

Well branding of the universities itself in niche and focus area of R&D expertise will have significant influence to boost academicians motivation in conducting research.

Lack of dissemination on universities branding as a great R&D center have significant slightly adverse impact to the collaboration on research from the industry as well as the researchers motivation itself. In case of UPM satellite campus in Bintulu Sarawak facing the divergent impact to their research.

And another one is that actually the UPM campus here, Bintulu (Sarawak). So many people doesn't know about that. When I said I working at UPM campus Bintulu, and they (industry) just wondering. So that's mean we still aa.. we are failed to our existence here to the whole communities. - (participant NAP).

It is showed that branding factors of the universities have positive and negative impact to the research performance depending on surrounding R&D environment. The result showed that different perspective view from the different respondent environment even though in the same institutions separated between Peninsular Malaysia (West) at Serdang, Selangor and East Malaysia, Bintulu Sarawak, separated by the South China Sea.

DISCUSSION

According to the findings compiled from the data collected during the focus group discussion, together with previous literature, there appears to be many factors which influence the quality of research performance universities researchers.

Researchers divided the impacting factors into five groups, consisting of institutional factors, environmental factors, social contingency factors, personal career development factors, and demographic factors based on the previous studies. These earlier studies, however, it is not showing the relative level of the importance of these factors, therefore, this study has extended the exploration to classify these factors into three main groups, that were termed essential factors, desirable factors, and side-affect factors. This study explores the similarities using two main theme, namely tangible and intangible factors that determine based on research culture in UPM.

In general, the study will analyze research self-efficacy on individual and institutional factors including formal mentoring programs (Muschallik & Pull, 2016), foreign researcher group performance (Baruffaldi & Landoni, 2012), with considering timeliness of evaluation execution and accuracy of performance rankings (Abramo et al., 2012) as factors will increase the productivity of research in Malaysia. Jung (2012) highlighted the factors that influence research productivity in Hong Kong academics that have differ significance cultural heritage for the styles of knowledge production. Therefore, Jung (2012) four main factors ; personal characteristics, workload, differences in research styles, and institutional characteristics to prove the significant factors to measure research productivity in Malaysia research culture.

At the next importance level are the desirable factors, those supporting systems that encourage more willingness for research, and increasing motivation to the researchers. In addition, these factors can help to change negative attitudes and, become a positive motivation.

The University should have a strategic planning to balance their academicians work-load since Malaysian Universities are not only focusing on teaching and research but at the same time in consultation and students welfare.

The University should make more opportunity to gain more research funds available from other agencies or private. Furthermore, the friendly policies to the working climate could be more encouraging toward the development of self-driven motivated academician. Even though we differentiated the tangible and intangibles factors, there is some data in a few areas that will be categorized based on our group members refining ideas among the academic staff itself.

Benefits

The expected findings will be useful for the strategies formulation purposes in organizational practices and researchers performance for Universiti Putra Malaysia and Research Management Centre (RMC) as a facilitator for the university. This determine indicator can be benchmarking to others university especially new age of university in Malaysia, categorized as focused University and Comprehensive university to achieve excellency in research.

This new branding factors can be benchmarking to others university especially new age of university in Malaysia, categorized as Comprehensive Universities (e.g., Universiti Teknologi Mara (UITM), Universiti Islam Antrabangsa Malaysia (UIA), Universiti Malaysia Sabah (UMS)) and Focused Universities (eg Universiti Teknikal Melaka (UTEM), Universiti Tun Hussein Onn Malaysia (UTHM), Universiti Pendidikan Sultan Idris (UPSI), Universiti Sains Islam Malaysia(USIM)) that based on focuses niche to achieve excellency in research. This study will develop new governance model of organizational practices and researchers performance in Universiti Putra Malaysia and also others university in Malaysia.

This study will identify best practices in research performance and UPM, one of the research university status, as a case study will give new knowledge in significant factors for enhancement research performance based on Malaysian university culture. There is no empirical study on the factors contributed to research excellence based on Malaysian university performance indicator and the influence of research culture in Malaysia. This study will fulfill the analysis on research performance study based on local culture and authority that conducted in all over the world.

Limitation of Research

Of the 20 universities in Malaysia, universities categorized as a Research University (RU), Comprehensive University (CU) and focused university (FU) by Malaysian Ministry of Higher Learning. The three categorized university has a different level of pressure on doing research depending on their different key performance indicator (A. R. Ahmad et al., 2014). The data collection only take one research university (UPM) as a case study and may be vary result from the Comprehensive Universities like UITM, UIA and UMS or Focused Universities like UTEM, UTHM, UPSI, USIM etcetera.

CONCLUSION, RECOMMENDATIONS AND IMPLICATIONS

Currently, the government and the public as a tax payer expect Universities to become more efficient in R&D and give back the benefit back to the nation and society. As a consequence, researchers in universities realize that they should maintain their research performance at a certain level because it is an important to make sure their R&D can benefited and solve the society issue and enhanced development of the nation building.

Because of the need from MYRA KPI and social needed, good research performance will resulted good research output to the universities that has become the main weightage to the carrier development and promotion to the researchers.

Based on the review of previous studies, this studies verify that the similarities on the important significant factors that appear to impact on research performance; some these are personal competence (Chow & Harrison, 1998; Edgar & Geare, 2013; Verbree et al., 2015; White et al., 2012; Wood, 1990) motivation (Edgar & Geare, 2013; Wood, 1990) and financial resources (Amran, Rahman, Salleh, Ahmad, & Haron, 2014; Auranen & Nieminen, 2010; Dundar & Lewis, 1998; Edgar & Geare, 2013; Grimpe, 2012; Hadjinicola & Soteriou, 2006; Verbree et al., 2015). Amran et al. (2014) also supporting that large amount of funding for R&D to the Research University such as UPM become greater incentives that have led to significant improvement in their research performance compare to CU and FU categorised.

The result showed that Malaysian academician have 13 tangible and intangible factors influence the research performance and has similarities identified factors from the previous studies. Determination on tangible and intangible factors that influence the research performance based on Malaysia culture and organisation structure shows the slightly different point of view to the prior studies in term of branding factors. Well branding of the universities itself in niche and focus area of R&D expertise will have significant influence the positive motivation to the academician in conducting research.

The result showing that the significant factors that influence to the positive and negative impact on research performance depending on environment of R&D institution in Malaysia universities between Peninsular Malaysia (West) at Serdang, Selangor and East Malaysia, Bintulu Sarawak, need to have further exploration.

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