



The Conceptual Framework of Success Research Management Based On Best Practice Research and Knowledge Management (Mygrant Case Study)

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Abstract

Difficulties in accessing research activities and best practices within own as well as others institutions are commons problem among researches which leads to redundancy in research area, poor research findings, affects innovation growth and hence productivity. The invention of a new social media enhanced communication and people may get connected at anytime and anywhere. Peer to peer without a proper platform communication even via a new media resulted unsatisfactorily gate to research discoveries. Thus it is essential to have a systematic management system that integrates component of best practice, research management system and knowledge management system which systematically facilitates acquiring, sharing, utilising and storing knowledge and best practice effectively within research network. This paper presents a framework of success research and knowledge management systems which focuses on capturing and sharing best practices in all aspects of research and knowledge management systems. The framework has been implemented in MyGRANTS project which comprises of sixty (60) universities in Malaysia. After two years implementation of the framework, it is found that the number and quality of research among Malaysian researchers have shown a positive improvement.

Keywords: Knowledge management, Research management, Best practice, New media, MyGRANTS.

1. Introduction

A higher learning institution represents the ultimate knowledge organization. However, many researchers experience that they are not able to access to research activities and best practices within their own institution as well as from external resources. This limitation prevent researches who are having common research endeavour from boosting their research findings thru research collaboration and as a result leads to redundancy – in research, reduces innovation and intellectual properties and poor productivity. By adopting the best practice research method supported with the unrestricted access to the knowledge can improve the research quality through a systematic means of acquiring, sharing, using and storing knowledge effectively within an institution. This research works present research success framework based on research best practice and knowledge management system features to create collaborative and interactive research for researchers in their research works. The framework enables and facilitates researchers to work on researches and access to research materials, best practice and experts. The proposed framework opens the door to knowledge and expertise to researchers instantaneously and real-time. The framework has been implemented in MyGRANTS project to support all researchers in higher learning institutions in Malaysia. Sixty (60) universities in Malaysia are taking part in the implementation of MyGRANTS. It is found that a collaborative knowledge creation and sharing can empower the researchers to adapt to increasing complexities of knowledge and research society through MyGRANTS system. The detail a framework of success research management which focused on capturing and sharing best practice in all aspects of research and knowledge management system is explained in the next sections.

2. Related Works

2.1. Knowledge Management System

Knowledge management (KM) is specialization in a number of professions, including Information Science (IS) are contributing to and influencing the developments in KM in their own ways. (Kebede, G. 2010). Knowledge management is a complex, and dynamic which applies the systematic vision that

considers all details and processes of managing the knowledge. Knowledge management discipline has emerged coincide with the development of the global knowledge based economy in which emphasizing on traditional production factors like as capital, land has been shifted to emphasizing on knowledge. In addition effective management of knowledge was introduced as one of the key elements to ensure sustainable strategic competitive advantages (Mehrabani, S. E., & Shajari, M. (2013).The successful research also can come from best Knowledge Management System.

2.2. Research Management System

Research activity is a major knowledge management initiative for knowledge creation or manufacture. Many universities and research institutes have established research management centre to manage their research activities. However, researchers facing a lot of challenges to initiate the right and organized research, find right and well organized research materials, access to related researchers and right experts. Thus, it is a crucial need to access to a portal which allow intelligent search which match right research materials, researchers and experts. Various initiatives and projects of research portal have been explored and developed to serve the purposes. For example, Star BRITE project serves as the main online location for research support addressing issues such as identification and location of resources, identification of experts, guidance for regulatory applications and approvals, regulatory assistance, funding requests, research data planning and collection, and serves as a central repository for educational offerings (Harris et al, 2011).

In this research, the KMS Framework has been designed to create more interesting and motivating environment for the researchers to allow more effective knowledge creation, sharing, usage and storage with various features including social networking features and knowledge rich.

3. Background on Mygrants Project

To achieve the country's growth on research and innovation, the Malaysian Ministry of Education (MOE) has initiated research grants more than RM 500 million every year. There are various types of funds that have been initiated for higher institution which is Fundamental Research Grant Scheme (FRGS), Long Term Research Grant Scheme (LRGS), Exploratory Research Grants Scheme (ERGS) and Prototype Development Research Grant Scheme (PRGS).

Thus, to support the MOE research initiatives, MyGRANTS (Malaysia Greater Research Network System) project has been initiated, designed, developed and implemented as a fully web-based research management system that effectively bring all those involved in research managements and operations onto a common information platform. MyGRANTS environment, which provides research ecosystem, was designed as tools to help researchers, nurture collegiality amongst researcher and to help develop a critical mass of researches.-The objectives of MyGRANTS project can be listed as follow:

1. to manage the operation of research management at university level to optimize the available research grants,
2. to coordinate researches and grant applications under FRGS, LRGS, ERGS and PRGS to avoid overlapping and duplications,
3. to facilitate the research grants approval which need to be federated for better selections of research proposals and transparent process,
4. to systemize information search and retrieval in order to help researchers and industries,
5. to nurture collegiality among researchers,
6. to assist, nurture and guide young researchers.
7. to analyse the research areas and progress for better decision and planning,
8. to better monitor researches progress,
9. to have a one-stop centre to help the industries search for relevant researches thus better potential for research commercialization,
10. to expose the researchers and their works to the world,

The MyGRANTS project was started in November, 2012 and has been competed in November, 2014, composes of the following modules: application, configuration application, verification, evaluation, finale approval, project monitoring and controlling and project conclusion. MyGRANTS is now under maintenance and enhancement phase. Sixty (60) universities in Malaysia are involved in this project. The project is fully sponsored by MOE.

4. The Framework of Knowledge Management

The conceptual framework of success research management based on best practice research and knowledge management implemented in MyGRANTS is illustrated in Figure 1. The figure consists of two depended variables which are Knowledge Management Elements and Research Management Best Practice.

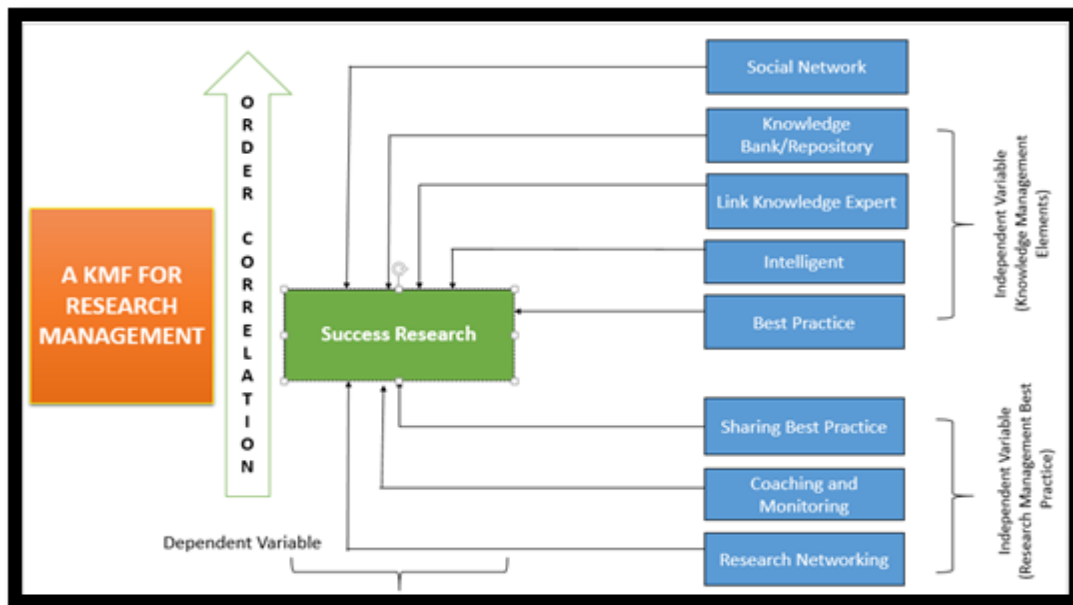


Figure-1. The conceptual framework model for success research management

4.1. Knowledge Management Elements

As shown in Figure 1, Knowledge Management comprise of five components: Social Network, Knowledge Repository, Link Knowledge Experts, Intelligent, and Best Practice while Research Management Best Practise comprises of three components: Sharing Best Practice, Coaching and Monitoring, and Research Technologies. Each component is described in Table 1.

Table-1. Description of components in Knowledge Management.

Knowledge Management Elements	Description	Citation
Social Network	Social network sites is a web-based services that allow individuals to construct a public or semi-public profile to restricted system, and so on.	(Boyd, D. M., & Ellison, N. B. 2007)
Knowledge Repository	Stored information include the states of equipment and measurements.	Bastos, M. R., Martini, J. S. C., Junior, J. R. A., & Viana, S. (2010).
Link Knowledge Experts	Knowledge sharing can be defined as transferring information that is specific to the organization	Yang, L. (n.d.). Notice of Retraction Knowledge, Tacit Knowledge and Tacit Knowledge Sharing.
Intelligent	Intelligent tutoring systems is the ability to provide a user self-adapted presentation of the teaching material	Zhiping, L. I. (2010). Agent-based Knowledge Management in Intelligent Tutoring Systems,
Best Practice	As mechanisms for the sharing of practical knowledge and the support of collaboration among business enterprises.	Fragidis, G., Box, P. O., & Box, P. O. (2006).

In MyGRANTS project, Social Networking element is embedded in all MyGRANTS modules including application, configuration application, verification, evaluation, finale approval, and monitoring and project conclusion. The Social Networking embedded in MyGRANTS is presented in Figure 2.



Figure-2. The screenshot shows the element of the social networking feature of MyGRANTS

The social networking allows the interaction between researcher and other researcher, research management centre, researcher and domain expert, the evaluator, and head of panel the ministry. Furthermore, the social network framework allows sharing of documents, comments, suggestion, announcement, reminders, and datelines. Thru the social network embedded in MyGRANTS, it is apparent that the communication can be saved for featured natural and analysis. Although external social network system promises wider interaction, due to independent and disintegrated with MyGRANTS, data and information to be captured and save to database were not allowed. The specific feature of the social network system in MyGRANTS is diatomite generation of social network group based on the particular research project, where the researcher does not need to create a group manually. The group were being granted automatically at a point of submission of the application. Another important feature in Social Networking system in MyGRANTS is that it allows the researcher to identify the others researcher or user thru the profile validated by the institution. Thus this feature only allows registered and qualified researches in MyGRANTS system.

Second element of Knowledge Management System is Knowledge Repository. Thru Knowledge Repository in MyGRANTS both tacit and explicit knowledge are captured. The explicit Knowledge are the application, application attachment, report, statistic, and all free determine template of knowledge whereas the tacit knowledge captured in MyGRANTS system, compress of best practise, enter by expert for each research activities form identified problem until the conclusion of the research. The tacit knowledge also includes the comment, suggestion from evaluator, and reason of resubmission, reason of rejected and acceptant. The restless of Tacit and Explicit Knowledge in MyGRANTS depend on the research activities happen during research management. The allocation of research grant from the ministry shall motivate the use of MyGRANTS system. Tacit and Explicit Knowledge shows in Figure 3 and 4.

The third element of Knowledge Management System is Link Knowledge Expert. The registration of evaluator and evaluation panels creates profile Knowledge Expert in MyGRANTS system. Link Knowledge Expert shows in Figure 5.

Current Outcome

Type	Number
Activities	3
Publication	2
Exhibition	3
Intellectual Property	2
Product	2

Milestone

No.	Description	Expected Completion Date	Completed Percentage	Actual Completion Date
1	Milestone Example	30/04/2016	70	28/04/2015

Research Abstract [Edit]

Summary of Research Findings [Edit]

Problems/Constraints if Any [Edit]

Recommendation [Edit]

Figure-3. The example of Tacit Knowledge.

Evaluation List

No.	Level	Batch	Version	Research Title	Evaluate	Remove
1	IPT	FRGS 2013-2	1	Demo Application		N/A

Evaluation History

Batch:

No.	Level	Batch	Version	Research Title	Evaluation	Edit/View
1	IPT	FRGS 2013-2	1	Resubmission Demo	Recommended	
2	IPT	FRGS 2013-2	1	Demo for RMC Evaluation	Recommended	

Figure-4. The example of Explicit Knowledge.

Figure-5. The example of Expert Profile.

The expert categories based on Research Interest cluster and research experience. This element enables the young researchers’ access to knowledge expert allowing them to learn from their experience, the profile, the publication, and research project which are captured in MyGRANTS system. Screen for Sharing Knowledge shows in Figure 6.

Research Area: Information and Communication Technology				
Membership	Field	Faculty/School/Centre/Unit	Invitation Status	
Leader Panel 3	Information and Communication Technology>Computer Networking,Information and Communication Technology>Multimedia,Information and Communication Technology>Software and Information System		Accepted	-
Sub-Project 3 Title:				
Research Area:				
Membership	Field	Faculty/School/Centre/Unit	Invitation Status	
Leader Panel 4	Applied Science>Computer Science,Information and Communication Technology>Computer Engineering		Pending	-

Figure-6. The screen for sharing knowledge

The fourth element of Knowledge Management System is intelligent. In MyGRANTS system, element of intelligent is use to improve the quality of research proposal. For example, in Figure 7, the control of distribution of research budget allocation is embedded into budget module, thus the amount for each vote is automatically allocated.

E. Budget					
Budget Type	Description	Year 1	Year 2	Grand Total	
11000 - Salary and Wages	2 x Master students	30000	36000	66000	-
Sub-Total		30000	36000	(46.22%) 66000	
21000 - Travelling and Transportation	Local	10000	30000	40000	
	Overseas	7500	10000	17500	
Sub-Total		17500	40000	(40.27%) 57500	
24000 - Rental	Wireless communication	1300	1200	2500	-
Sub-Total		1300	1200	(1.75%) 2500	
27000 - Research Materials and Supplies	Consumable items such as printer	2500	1300	3800	-
	Computer accessories	1500	1500	3000	-
Sub-Total		4000	2800	(4.78%) 6800	

Figure-7. Intelligent element of budget module

Furthermore, MyGRANTS intelligently suspended the submission of proposal once the system found the co-researcher/s does/do not accept the offer to become a research group member. Other than that, as shown in Figure 8, the system also embedded systemic search engine to check the similarity among the research proposal.

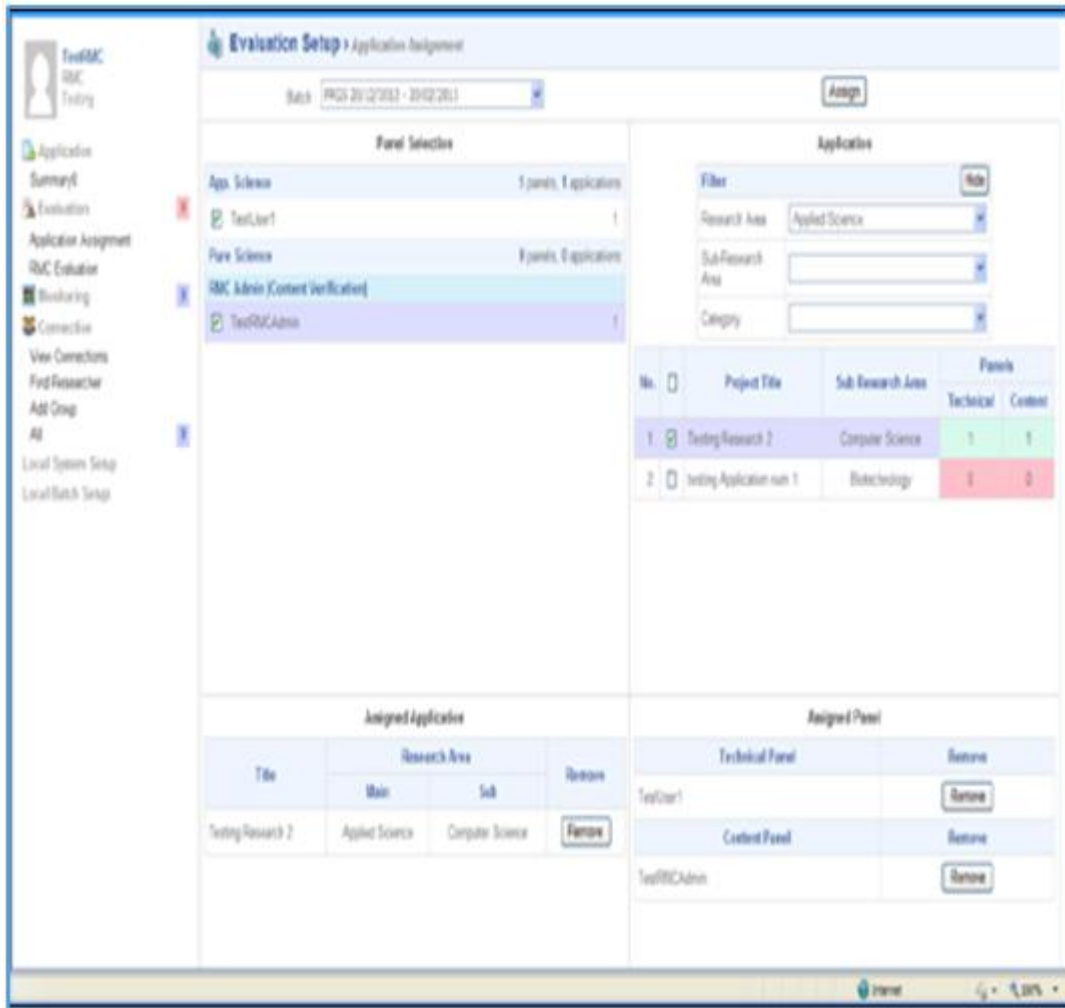


Figure-8. The intelligent features in MyGRANTS

Final element of Knowledge Management System is Best Practice. MyGRANTS system allows research experts and senior researchers to share the best practise of accepted research projects, thus avoiding other researchers repeat the similar mistakes and hence produce high quality and high standard of research projects and research products. Best practice in MyGRANTS is shown in Figure 9. This figure shows that the principle researcher is allow to provide an option to the invited researcher either to accept his or her request or not.

MyGrant Researcher								
Picture	ID	Name	ResearchOrg Name	Department Name	Groups	Position	Cluster	Add
	12790	4220zmy	Universiti Teknologi Malaysia			Associate Professor/Senior Lecturer	Social Sciences>Sociology	add
	12153	891959	Universiti Teknologi Malaysia			Associate Professor/Senior Lecturer	Social Sciences>Psychology, Social Sciences>Sociology	add

Figure-9. Best Practise in MyGRANTS

4.2. Research Management Best Practice

Scientific research management system refers to share of information system for managing scientific research projects, research achievements and forms for reporting statistics in universities and research institutions (Lin, X. 2013). Research Management also can include a Best Practice to make sure the research is carry out smoothly. Most supervisors always show and share their best practice in research activities to their students or young researches. Similarly, members belong to a research group for a specific research project share their best practice of their research activities among them. To be able to become productive and well known researcher, one requires various references of best practicum at all stages of researcher. In a conventional research environment sharing the best practise with external and foreign researches is very difficult and limited but thru a new medium of communication and online system, various best practises from expert researchers can be shared easily and unlimited. By combining expert of best practise and knowledge management system that support the best access and sharing practise shall improve success rate of knowledge management.

The second element of research management best practise is coaching and monitoring. One of the main factors that contribute to a success research is a continuous coaching and monitoring activities. It has been recorded that many research centres are experiencing incomplete and fail research projects especially among a young researchers due to inefficient coaching and monitoring activities. Since research is about investigating, exploring and experiment many new things, many researchers drown during initial stage. They cannot identify the actual problem, scope and limitation of the research as well as identified the significant and benefits of the research works. Coaching and monitoring are known as an important element in solving difficulties during carry out the research works such as experiments, data collection and data analysis.

Third element of research management best practise is research networking. Research networking is required and an important instruments for a researcher to validate their findings with other experts in the similar domain area. Higher level of accuracy and validity is obtained is depending on the size of the networking. Larger networking resulted higher degree of accuracy and validity. It has been proven that many research difficulties and problems can be handling successfully, effectively and creatively through a larger research networking. The common examples of research networking activities are international conferences, symposiums, forums, seminars, research exhibitions, research competitions, research colloquiums, research collaborations and networking through an enterprise research project. Combining and integrating physical research and social networking allow effective and efficient sharing of problems, challenges and findings and thus reduces failure rate of research.

5. Concluon

In this paper, the challenges of the existing research management centres, that many researchers are not able to access to research materials, best practice and activities not only within their own institution but also institutions and agencies is addressed. The drawback often leads to low quality of research, lack of innovation and productivity, and higher rate of research failure among young researchers. Thus, in this study, a framework of success research management which focused on capturing and sharing best practice in all aspects of research works and knowledge management system is proposed. The framework has been implemented in a Malaysian national research management project named as MyGRANTS which affected sixty (60) institutes of higher learning and universities in Malaysia. The overall framework required the integration of Research Management Best Practice and Knowledge Management System Element to support the research activities throughout research management life cycle. The implemented framework found that the increase of amount of research grants approved and awarded to the Malaysian researches, which means the quality of research among the Malaysian researchers have been improved.

6. Future Work

MyGRANTS portal shall be continued in several phases including the development of complete knowledge management portal, analytics, and integration with all universities' system in Malaysia.

7. Acknowlegments

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