Scientific research at Kurdistan universities: fundamental issues and pragmatic solutions

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Abstract

This study based on the author’s 25 years experience in studying, researching and teaching at universities in the UK and Iraq, including the Kurdistan region. The author attempts to compare the role of scientific research between these two countries within the dedicated budget, funding process, types of research, the strategy of research, following up of the results, etc. The study shows the pragmatic issues in the research planning systems, regulations, and funding at universities in Kurdistan.

The study shows clearly that, so far, the Kurdistan government has not a clear strategy for engaging the universities, researchers and academic staff in a well-organised plan of research. The achievements, nowadays, are personal efforts, which will be used for promotional purposes of the academic staff.

In general, the two main essential requirements for activating the role of research in any society are, funding and establishing proper regulations. The dedicated budget needs to be utilized in the infrastructure, and funding the research that leads to the society’s ambitions, based on their priorities.

1 Introduction

The term “research” in English was first used in the context of a managed process of systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions in the sixteenth century. Since that time, many authors have tried to define research, or scientific research as is sometimes called the gathering of data, information and facts for the advancement of knowledge, or it is studious inquiry, examination, investigation, experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of
such new or revised theories or laws, and other definitions for describing the word research [1, 2]. However, in principle, all of the approaches can be poured in one container and described as: the research is a systematic investigative process applied to generate, enhance, increase, revise or validate the knowledge by discovering new facts, proofs and applications.

Nowadays, due to widening of the demand of research, to be directed properly, the word research has been classified according to different bases, such as: theoretical or practical, pure or applied, qualitative or quantitative, multidisciplinary or single discipline level, original or normal, etc. [3]. However, the main two well-known types have remained as basic and applied research.

The basic research, pure or fundamental – as it is sometimes called – is primary objective the advancement of scientific knowledge and theoretical understanding of the relationships among variables. The scientific basic research can be empirically or theoretically motivated, as it may start with a question that needs to be addressed, or with a theoretical model or framework that generates questions or predictions that can be tested through experiments. Furthermore, there are other types of basic research include historical research, doctrinal research and research through practice, which involve a range of different methodologies, including experiments, interviews and surveys, modelling and simulations, case studies, ethnography, textual analysis and action research. In general, basic research is not expensive and does not need large funding.

On the other hand, the applied research aim at using basic research for solving problems or developing new processes, products or techniques. In the wide sense, basic research lays down the foundation for the applied research, which is expensive because it is generally conducted on a large scale basis. Examples of applied research are: treat or cure a specific disease, improve the energy efficiency homes, improving agriculture crop production, improving the communication among workers in large companies, etc. [1–3].

Multidisciplinary research, sometimes called interdisciplinary or trans-disciplinary, can simply be defined as a research that combine two or more single disciplines, e.g., pure sciences with engineering, medicine with biology, the environment with agriculture, security and communications, etc. Increasingly, nowadays the developed countries have realized that solution of today's most pressing research problems will require inputs from multidisciplinary teams of researchers, bringing a range of different perspectives, expertise and methodological approaches to address the problem [4]. Accordingly, most of the funding will be dedicated for the multidisciplinary research programmes such as energy, nanoscience, living with environmental change, global uncertainties, security for all in a changing world, ageing – lifelong health and well-being, and digital economy.

2 Countries versus research

Despite global uniformity in many areas of society, there is no single answer as to what constitutes the most appropriate systems, structures or policies for higher education, research and innovation. The reason is, because these crucial
processes take place in varying historical, social, economic, political and cultural contexts, as their outcomes cannot be uniform.

The level of attention that will be given by each country or region regarding the scientific research is measured by the amount of money that is dedicated from the annual state budget to the scientific research, establishing the instructions to specify the mechanism of spending the allocated budget, nominating the funded research based on significance and priorities and following up.

Generally speaking, the satisfaction of the countries over the world, in terms of the role and importance of the research on the development, can be divided into three categories:

Countries such as the USA, Japan, South Korea, Canada, Australia, China, Russia, Israel and the western European countries such as Germany, the UK, France, Italy, Sweden, as these countries spend up to 10% of the national budget on research [5]. The research matter in these countries is taken as matter of national importance and would not be changed with changing the governments and/or political parties. They depend on research as an essential way to the success of the knowledge-driven economy, creating wealth and employment, supporting modern public services, notifying policymaking, developing an understanding of the world around us, and enriching the cultural lives.

While, on the other side of the track, there are countries such Somali, Mozambique, Zimbabwe and other African countries, suffer from the scientific backwardness due to the poverty or civil war, and they are far away from the scientific research.

The rest of the countries, which are considered as the largest number compared with the above two categories, is difficult to characterise all under one type because they have different approaches, understating and concern about the scientific research. Some of these countries, such as Malaysia, India and South Africa have started seriously to take the research as the basic strategy; however funding will remain as the main issue. Few countries, such as Iran and North Korea, take the research matter for political and/or military purposes. On the other hand, the Arab countries can be subdivided according to their income and attention to the research, for example few countries such as Saudi Arabia, UAE, Kuwait and Qatar have high income and noticeable attempts to the scientific research, however due to different reasons they have not been recognised, so far, as highly educational countries. Other countries, such as Egypt, Yemen, Syria, Tunisia, have difficulties to funding research due to the low income and resources. While countries such as Iraq and Libya, although they are oil based countries, no noticeable funding have been dedicated for the research; and they have not clear strategy to use the research in developing their countries and nations. The reasons behind this fact are many, including the universities dependency, lack of having a comprehensive law to organize the research funding mechanism, research selection process, following up the results, etc.
3 Research funding and regulations: the UK as an example

Engaging in research costs money, more or less. This can be seen extremely obvious. Academics, industries, research councils and professional bodies have strongly recognised this fact; accordingly votes everywhere over the world have highly demanded dedicating suitable budgets and management processes. Funding the research is essential, however establishing the right regulations and instructions about the ways of spending the money on research, type of the research, the priority, reviewing the submitted application, following up the results, etc, have the same significance, otherwise the dedicated money for research could be spent on other matters which are not related with the research.

In the UK, when the Royal Society was founded in 1660, it was already recognized that research had implications for both the well-being of the national economy and for national security. The first government grant for research was given to the royal society in 1850. During that time, basic research was singled out as a key area for public investment not only in the UK but throughout the industrialized world [1, 2].

Nowadays, in the UK and a number of other countries such as Canada, Australia, New Zealand; the government is the key funder for the university research (with the exception of private universities) through two main different sources; which are an unrestricted block grant awarded by the Higher Education Funding Councils HEFC and another is in the form of project and programme grants and is allocated by the Research Councils, such as Medical Research Council (MRC), Engineering and Physical Sciences Research Council (EPSRC), Natural Environment Research Council (NERC), etc. The combination of the two streams (unrestricted block grant and research council) is known as the Dual Support System DSS.

Usually, the research councils support basic, strategic and applied research across a wide range of disciplines on competitive bases, where the submitted applications, funding management method and the follow up of the results would be reviewed by the Research Assessment Exercise (RAE) [6]. It is worth noticing that due to the criticism that has faced the RAE; it has been decided to be replaced, after 2014, by the Research Excellence Framework (REF). The research funding allocated to universities, called Quality-Related (QR) funding depended on the quality ratings of the subject areas. The review of these panels would be used as feedback to evaluate the quality of research undertaken by British higher education institutions, accordingly the allocated funds are distributed in accordance with the ranking of different institutions.

There are other funding sources such as charities, for example Wellcome Trust (the largest research charity in the UK), scientific associations such as British Royal Society and British Academy, governmental departments such as the National Health Service, the European Research Council, NATO Science Programme, etc. Industry is another source, and usually the government, from time to time, has incentive schemes, some of them through the appropriate Ministries. On the other hand, the European Union has become a major source of financial support for many groups in the UK as well as other countries. However,
the situation has changed recently and many possible partners have become increasingly concerned with the money when carrying out these projects.

The government usually separates the dedicated fund for learning and teaching that dedicated for research, for example, in 2010, across all THE UK universities, HEFC in England awarded around £7 billion for learning and teaching, compared with around £2.8 billion for research, and almost the same amounts have been allocated for 2013–2014 [1, 2].

The key point is that, by international standards, the UK has a higher education system that enjoys a high degree (but not absolute) of autonomy in its internal funding decisions and has historically taken advantages of this to make effective investments in new approaches and fields and to exploit established strengths, which have given the UK its competitive advantage.

4 Scientific research in the Kurdistan region

Until 1991, Salahaddien University – Hawler, which is located in Erbil, was the only university in Kurdistan, which directly – similar to the rest of the Iraqi Universities – belonged to the Ministry of Higher Education and Scientific Research in Baghdad, Iraq. Since 1992, after the historical Kurdish community revolution and the change of the political layout of Kurdistan, the number of universities has increased to fifteen state universities, and ten private universities. In addition to the same number of technical institutions, as recently several of them have been changed to Poly-Technique Universities. The Ministry of Higher Education and Scientific Research (MoHESR) in the Kurdistan Regional Government (KRG), Iraq, supervise these universities and academic institutions.

Since 1992, the consequent Kurdistan government cabinets, dedicated certain budget to the MoHESR, covering the stipend of the university staff and academic institutions, supporting students, grants for buying equipment and consumed laboratory materials, building, maintenance and dedicating certain budget for each postgraduate student to cover the requirements of the research such as materials and equipments.

In the last 22 years, the number of universities has increased by 25%, approximately one university in a year. The academic staff has increased from several hundred to several thousands, and the students at the academic institutions and universities has increased from few thousands to almost hundred thousand.

Although the MSc courses and PhDs were postponed or delayed due to political and security instabilities, generally speaking, in the last 20 years, the number of the enrolled students was going up year after year from tens, to hundreds, and more than a thousand, as was in 2012–2013 academic year. Furthermore, from 2010 to 2013, as the biggest national step to support the higher education within a programme called “Human Capacity Development Programme (HCDP)”, more than 2500 postgraduate students have started the MSc and PhD courses over the world, more than the half are in UK universities. Meanwhile, recently new postgraduate scheme called “Split Side PhD Study”
has been launched which is a course supervised by two professors, one inside Kurdistan and another abroad. This scheme allows the enrolled students to take half of the course, e.g. laboratory experiments, inside one of the universities in Kurdistan and the other half in another university, where the external supervisor works.

As is noticeable, the above changes in numbers are huge, and the differences between the past (1991) and now (2013) are big. However, such differences cannot be seen when the research is the case, as all the above attempts, directly or indirectly, focused on the higher education, i.e. teaching and learning, not mainly on the scientific research. In another mean, the goal of all the above attempts were preparation of the requirements, mainly the academic staff, to guarantee the continuity of teaching and learning process of the year twelve graduates in the secondary schools to the universities and institutions.

Also, research centres have been established inside the universities, with their speciality such as medicine, agriculture, genetics, engineering, religion, politics, etc, however, their achievements have not crossed the limit of a single discipline research, as so far none of these centres has announced an obvious achievement that can be taken as a national realization for developing the country.

Quantitatively speaking, the above information shows that the MoHESR in Kurdistan, in the last 22 years, has experienced a big jump in number of students engaging in research programme. By taking an example that relates to research, it can be found that the number of MSc and PhD certificates that have been awarded to the Kurdistan alumni from locally and international universities might reach ten thousand pieces of research, or even more, in all the fields of expertise and specializations.

Although, understandably, enrolling in the postgraduate studies has helped these people to receive more knowledge in their field of expertise, and accordingly they could catch a career, as an academic staff, assistant lecturer and lecturer for MSc and PhD certificate holders respectively, or in other ministries in the KRG.

Meanwhile, producing this number of postgraduates have guaranteed the continuity of oncoming universities in the learning and teaching process.

Qualitatively speaking, this big number of research, compared with the population of Kurdistan, should put this region within the countries that are research-based knowledge dependent, however all the indications confirm that this is not the case. The main reasons behind this fact can be referred to:

- The type of the research was basic and has been done only for increasing the knowledge, i.e. research for research.
- The types of this research are not tailored properly to be considered as multidisciplinary research.
- The results are not reliable because of uncertainty of equipment calibrated and expiring dates of laboratory materials.
- The subject that was carried in one of the developed countries has no application in Kurdistan, or the required materials and equipment are not available.
- The lack of a concrete national strategically plan that cover the type of research that are necessary for developing Kurdistan.
These above facts and data indicate that the research process in universities and academic institutions have not been organised according to the sound plan. This unclear strategy covers different levels, such as the lack of establishing a national sense that confirms the significance of the research on the nation’s security, dedicating noticeable annual national budget to the research, and establishing the entire instructions to show the mechanism of spending the budget in a right way that lead to the effective and productive research.

5 The pragmatic issues of research in Kurdistan

Identifying the reasons behind the lack of effectiveness and efficiency of scientific research on community development is a hard work and rather complicated. Accordingly, it is not fair that the MoHESR holds all the responsibilities, because there are other interrelated concerns with this theme, such as the education system from nurseries to secondary schools “which is the Ministry of Education’s responsibility” society insight, the role of media, the influence of religion, political stability, the priority of the government, etc. However, there are some well-known reasons that belong to the regulations inside the universities or MoHESR, affecting negatively the activation of the research process. Below are several fundamental issues that need urgent solutions.

5.1 Funding and regulations

Funding is essential in research, i.e. no funding no effective research, however funding without systematic regulations and identified goals which direct the research to serve the community and the nation, practically lead to the same end, i.e. no effective research. Except funding the postgraduate studies, under the schemes HCDP, split site supervision and inside universities (the traditional scheme), gaining funding for a research group, department, research centre has no clear strategy or regulations. In another mean, the government or MoHESR has not announced clear strategy for funding research with identifying the criteria and regulations based on the priority of the region, meanwhile nominating the bodies and panels that are responsible to follow up the process.

5.2 Postdoctoral research

In terms of using the postgraduates, MSc and PhD, the majority of them will be employed in academic positions, involving a combination of teaching, sometimes in administration, but very rare some of these graduates been dedicated for doing research only. This situation acts indirectly to stop the graduates to follow up the results that have gained during the postgraduate study, or trying to promote the work to better or more advanced results. The main reason behind that is, the MoHESR has not legislated the required laws and instructions to use the MSc and PhD graduates in research, within a strategically plan. Although, there are research centres in most, if not all, universities, however so far there are no feasible instructions that show the rights and
responsibilities of each staff member (researcher) works in these centres. In another mean, there are no known funding sources, councils or foundations, such as nominated and specialist directorate at universities, the MoHESR and the government, have responsibility to allocate the raised money for research, receiving the application forms, review committee, appeal committee, etc. Shortly, the shiny ideas could not find the straightforward way to apply for funding. Some researchers might have received funding for their personal research; however such funding has not been gained within an announced competitive based application.

Most, if not all, the postgraduates are engaging in teaching process, even those that are employed in other ministries, such as industry, health, etc. They are trying to be engaged in the teaching process in the academic institutions because there are no opportunities of doing research in those ministries.

In developed countries, academics must teach but they prefer to engage in research. A smaller proportion is employed either on teaching-only or research-only contracts [7]. In countries such as the USA, most of European Countries, Australia, Canada, etc; the universities employ large numbers of researchers, often as research assistants or fellows on fixed-term contracts. Some of these will move on to obtain academic lectureships in the course, and some may remain as researcher to the end, with renewing the contracts every 3–5 years [1, 2]. However, in Kurdistan, the priority of most of the academics is teaching. The reason behind this approach can be diagnosed as the time required to stay as researcher, which is at least six hours a day, however with the academic staff (teaching), they need to be exist according to the timetable of the scientific department, and the maximum hours required to justify the continuity in the career is 14 hours a week. Meanwhile, due to this big difference, those that have engaged in teaching process, they have a chance to teach extra hours, i.e. more than 14 hours a week, with extra payments over the fixed monthly stipend.

5.3 Promotion regulations

The academics enter the system at assistant lecturer or lecturer level and then, if progression occurs, move through assistant professor (senior lectureship in the UK, associate professor in Germany and other European countries) and to a professorship. The requirements for getting professorship level insists on having single paper, not shared with the other authors, meanwhile the submitted papers must be within the single discipline. These three requirements clearly restricted the academic staff to start with multidisciplinary research. On the other hand, the MSc and PhD graduates, after finishing their studies, they try to do research only for the promotion purpose; however, the researcher prefers not to continue on the same project, because the promotion regulations reject any published paper submitted for promotion purposes if the paper has sheathed even small related data or information from the postgraduate work. Although the promotion instructions mention that up to certain percent, sheath is allowed, this percent is not easily or accurately accountable, and as such, much research avoids working on the line that has gained experience on it. This means, instead of encouraging
the researchers to work on the same line that they have gained experience during their postgraduate studies, the regulations restrict them.

In the developed countries, the UK for example, both the research funders and universities are encouraging the staff to engage in multidisciplinary working, as such research has priorities in winning the research grants from QA panels. However some researchers still prefer to keep working at a single discipline, because of their interest to keep control over their own research, are concerned about some of the traditional tensions that collaborate working across disciplines can bring, are concerned about a shared language and understanding, and fundable proposals, manageable projects, etc. [1–4].

6 Exploring the solutions

Although there are many issues, only few main issues have been mentioned above. Similarly, there are many ways to deal with the research, and each expertise in this field has its own view. However, in the next coming paragraphs, practical solutions for the above issues would be highlighted.

First of all, the government and the MoHESR should catch the fact that research is the fundamental way of development, and they need to deal with the research as a patriotic matter. The government should understand that learning and teaching in the schools, institutions and universities are not part of supporting the research process. The government should prepare a long-term plan to direct the society to become familiar with the significance of research, through education curriculum and media.

Accordingly, the government should dedicate the budget and the MoHESR needs to ask for a suitable one for research besides the higher education, i.e. budget for teaching and for research individually. Meanwhile, the government should dedicate suitable budget for each ministry to be used for research and development (R&D). New regulations should be established to encourage the ministries to start collaboration research and/or consultancies between their foundations and the universities. Furthermore, the government needs to encourage creative organizations, which promote entrepreneurship and enhance the infrastructure to boost innovation.

The government needs to reach the thorough satisfaction that social development, political governance, economic growth, employment trends and income distribution, education levels, health care, rural and urban population patterns, energy and use of natural resources, communication technology, etc, come through building research schemes. These schemes can be built inside universities, research centres and other ministries. Succeeding these research schemes depends on funding, regulations and following up.

Figure 1 shows the interactions between KRG, ministries and universities with regulations, independent and non-governmental organization to promote the research role in the Kurdistan region.

Each research centre in a university should work on a long-term strategy, based on multidisciplinary approach, of the university’s areas of strength. For example, Koya University can focus on petroleum, mineral resources and gas
technology because such departments considered the oldest, besides they are existed together only in Koya. Meanwhile, the MoHESR has to organize this distribution over the universities in a way that cover all the region requirements.

Proper regulations are essential to be issued regarding postdoctoral research, which state that each graduate after MSc and/or PhD should be engaged in research activities for at least 3 years, in the established research centres. After that period, the applicant can apply for getting a lectureship, according to the need of the related department and the research history of the applicant. These new regulations should create the word “researcher” and their rights and responsibilities should be protected, compared with their peers in similar academic positions.

In an administration point of view, on the other hand, each university should be independent to spend its allocated research budget. Accordingly, each university should establish a research committee to review the submitted research proposals, and decide the projects that deserve funding. The committee can include one member in each faculty or college; they should not have other administration positions at the university and have long experience in research. The committee should prepare the application forms including the research plan, funding plan, appeal, follow up, etc. This committee will be independent and their decision will be final, however in case of having appeal cases, the university council will review the appeal application.

The regulations should be clear about the ways of spending the dedicated budget for each research, for example the budget can be used to buy necessary equipments, hosting visiting scholars, gather and analyse data, setting up research networks, conducting workshops and conferences, and funding travel to support collaborations with researchers based in different institutions and countries.
In parallel, independent agencies, e.g. independent newspapers, governmental and non-governmental foundations start following the progress of the research process in the universities to recognise the scientific achievements, the received grants from the industry, the rate of the graduates get employment, etc. The independent agencies rank the universities on the achievements, as can be used as a base for receiving funding from the government; besides this ranking process, the agencies encourage the universities to start scientific competition.

Regarding the promotion regulations, new rules should be justified to encourage the researchers and academic staff to be engaged with multidisciplinary researchers. The single discipline level should be restricted to minimum, as should only be allowed for the justified subjects. The encouragement toward multidisciplinary research should cover their priority on funding based competition, accounting higher weigh in promotion application, all the authors in each published paper should be considered for promotion purposes, quality assurance assessment, conference expenses funding, etc.

The above solutions are considered essential and urgent to create an initial identity for the term “research” inside the universities of Kurdistan, to be used systematically for developing the region. However, there are many other procedures should be considered practically in the academic institutions, universities, industrial companies and ministries. These procedures cover PhD distance learning, the knowledge society, capacity building to create highly skilled groups, professional development, establishing effective quality assurance mechanism, documenting research systems, creating enabled institutions that facilitate innovation such as Intellectual Property (IP), rights and tax laws, commercialization of knowledge, international networking, etc [1, 2].

7 Koya-Record: an unfunded effective project

Based on the funding and regulations mentioned above, there is no chance for the research centres at universities to create effective research groups. However, in early 2011, the Research Centre in the Faculty of Engineering at Koya University started a small project; called “Koya-Record Project”; the author of this paper is the founder of the project. The aim of project based on three lines:

- Collecting the data and information about Koya district and identifying the available resources, e.g. human and mineral resources, local construction materials, etc.
- Identifying the Koya foundation/office’s requirements, such as specifying the road issues, data base establishment for hospitals and schools, pollution and environment, crop improvement, etc.
- Combining the above two lines – the available resources and the requirements – through generating research projects for the final year students. Currently, more than 20 projects, which are relevant to Koya foundations, have been done. The relevant departments will continue on the same project lines for the next coming years.
From the beginning of the project until mid 2013, six comprehensive meetings have been held between the research centre staff and the representative of Koya’s foundations. Accordingly, a Koya-Record panel is established, which include 35 representatives, as regular meetings are in progress.

On the other hand, the Faculty of Engineering has started a plan to engage the postgraduate students, who has finished MSc courses but still waiting for achieving academic position, in these research plans that are related to Koya-Record project. Although the researcher stays for a short time, e.g. several months, the plan is quite similar to the postdoctoral research. According to this plan, by mid 2013, the number of MSc students in the research centre, who had not achieved the academic position, reached 15 researchers. This was a good number to announce the First International Symposium on Urban Development – Koya as a Case Study. The ideas and thoughts of these researchers have become the core of this symposium, meanwhile each of them has been asked to contact other foundations and industrial companies, making new shared projects. As such, half of the submitted papers in this symposium belong to the researchers themselves or to those authors that had been encouraged by the researchers. Thus, an International Symposium on developing cities has been established with no funding from the government or the MoHESR. The reason behind this progress is attributed to the strategy of the faculty for generating research lines and groups.

8 The impact of research on developing cities

Each society has requirements and ambitions for the development. Such ambitions can be achieved through research, if the there is a strategic and systematic plan to follow the requirements to reach the ambitions. Therefore, engaging the universities through their research abilities, e.g. laboratories and researchers, with the requirements will lead to the results, although it takes time.

If the research plans focus on the requirement of the society, such as urban development, transportation, education, health, agriculture, water resources, mineral resources, economy, political, etc; the outcome of the research will improve these sectors. However, this process should be carried out on short and long term strategically plans.

9 Conclusions

1. There is no clear strategy for funding research in the universities in Kurdistan.
2. There is no dedicated budget for research in particular, apart from learning and teaching process.
3. Approving proper legislations and instructions for funding research and following up are essential.
4. Postdoctoral research scheme helps activating the research.
5. The current rules and legislations do not encourage the research activities.
6. Encouraging multidisciplinary research can compensate for the huge delay in research in Kurdistan.

References