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A Guide for Researchers to Negotiate the Research Process.

Dr Garry Blair[1] and Dr Rosane Pagano[2]

[1]Manchester Metropolitan University, [2]Manchester, United Kingdom

Abstract: Research is vital to society in order to advance every sphere of human endeavour. High quality research that produces new knowledge forms the essence of progress in all fields. This paper provides a guideline to the research process, based on personal experience from practice and academia. The authors' roles as practitioners, tutors and researchers have been accessed to produce guidelines for future research. The critical processes are identified and considered, from identifying and defining the research topic; presenting a rationale; defining a contribution; recruiting a research team; reviewing the literature; creating a conceptual framework; selecting an appropriate methodology for the research; carrying out the empirical study; analysing and verifying the results; reporting the findings to an audience; and receiving feedback. The contribution can then be stated in theoretical and practice terms, exploited and further research undertaken as required. Examples from existing literature sources are utilised to illustrate this process. This is principally in the disciplines of Business, Project and Technology Management.

The need for a training scheme to inform the researcher, appropriate access to the research subject and support for the process is also detailed. The context of the research is mentioned, in respect of providing a supportive environment for the research, thus enabling the contribution to be made. The critical factors for a successful research project are therefore identified.

Keywords: Research Guidelines, Skills Acquisition, Team Working, Research Contribution.

1. Introduction:

This paper provides a guideline for researchers, illustrated with examples mainly sourced from the literature. A systems approach is used to analyse the situation, highlighting the inputs, processes and outputs in order to consider the fundamental requirements. This is as per Blair et al. [1], after Checkland and Scholes [2]. The research inputs comprise all of the resources required to perform the research in order to attain a successful completion. The outputs are the contributions from the research, for instance the development of theory and the provision of management recommendations, based on the research findings. The processes are the research activities that are carried out in order to fulfil the designated research objectives.

2. Motivation:

The first requirement of the researcher is the motivation to do the research and obtain new knowledge. This could be for personal motives, professional reasons or a combination of the two. The attempt to glean such knowledge will require considerable effort, perhaps expended over years. It is important to have a deep interest in the topic in order to sustain such an effort. The researcher needs to have a strong appreciation of the topic and considerable curiosity to motivate bringing the research to a satisfactory conclusion. Selection of a subject for other reasons may mean that motivation is difficult to obtain.

The rationale could be elevation in status, for example professional advancement, but should also include a deep desire to know more about the research area. This curiosity needs to sustain the investigation to completion.

The process of researching is a continual learning process, informed by the environment and mentors. The act of engaging in research can be viewed as an experiential learning process, as the researcher gains knowledge via engagement in the activity [3]. Action is taken in respect of the research and there should then be a period of reflection to assess the outcomes. Consideration is then given to alternative responses or forms and a selection made and implemented. The results of the research intervention are then appraised for the 'learning' cycle to continue until the results are deemed satisfactory for further analysis with possible assessment and dissemination of results.

3. Topic:

The actual research topic needs to be selected, ideally within a subject that is familiar to the researcher. The topic should be defined and its importance clearly stated.

The topic may be prescribed by a professional or

academic body, in the case of funded research. The work will be performed by a nominated or recruited individual or team. The main criterion in this case is to negotiate with the research owner (or owners) to define the topic, as previously mentioned. This should allow the expectations of the main stakeholders to be managed by the researcher.

A way of stimulating new research is detailed by Furr et al[4]. The problem is highlighted as a tendency to confirm the existing position and operate within the prevailing confines of the subject area. These authors suggested transplanting ideas from other areas in order to stimulate new work. The status quo can also be challenged by reconsidering former assumptions and testing them, to see if progress has removed the former barriers and changed the constraints to allow new solutions to emerge. The aim is to avoid cognitive bias towards existing rationales and knowledge.

An illustration of potential research project sources is highlighted [5]. The two themes of technology and business are considered, relating to internal and external orientation in respect of organisations. The key stakeholders in each of these areas can be examined, possibly by direct canvassing of opinion, to consider potential, new research projects. Recent global events may also provide a source of research projects [6]. One of the major effects of the pandemic has been a general movement of activity online, utilising web conferencing systems. This has generated potential new areas of research, directly identified by these authors. These include the sustainability of the new virtual world; the creation of the new society enabled by this technology; drivers and barriers to adoption of web conferencing systems; and security aspects, emerging from the heavy reliance on web conferencing systems.

Once the topic has been selected then the key research question should be framed. This should encapsulate the enquiry, summarising the quest for new knowledge into a single direct question, to be investigated in the literature review and the empirical work.

The scope of the study should be achievable within the prescribed research period. It is important to define the scope so that the research project is not too large, thus rendering the investigation unachievable within the set period. 'Scope creep' must also be avoided, that is the addition of further research targets which dilute the original aims and can cause the research project to fail

[7]. This is a common problem, as further research goals are set, based on the findings to date. Access to a director of study and a study team may help with this problem. The latter should evaluate any changes and demand a research plan be drawn up and followed, in order to ensure that the progress is not affected by a dilution of the original aims.

4. Contribution:

The intended contribution of the research should be stated, in terms of both practice (so improving work in the area) and theory (thus enhancing understanding in theoretical terms). The practice aspect should improve technique in the field under review. The theoretical aspect should develop understand in respect of the relationship between cause and effect, in the chosen area. The requirement for the researcher to manage the project, considering the time, cost and quality aspects of the work, is paramount.

5. Team Working:

The researcher needs a team to guide and assess the work. This will usually include a principal director of studies and other suitably qualified individuals to supply expertise and guidance in the subject area. This team will also assess the final work, usually with the assistance of an external examiner, who is from outside the organisation and has not been involved with the ongoing research process. The latter will thus provide an external perspective on the work. The view of the external examiner is usually critical in grading the research project.

The team should possess the required mix of skills and personalities to ensure that successful research is enacted. This was emphasised by Johnson Vickberg et al. [8] in their analysis of the main qualities of effective teams and requisite qualities for team members. All of the aspects and roles identified by these authors are required for the research team. The four different team roles comprise: 'pioneers' who seek new ideas and regard the strategic perspective; 'guardians' who favour order and learning from the past; 'drivers' who are driven by achieving the tasks and obtaining the desired results; 'integrators' who favour consensus and team working. The team needs all of these qualities to be successful. The requirement is to ensure all aspects are fairly reflected and the team does not become biased towards one perspective, to the detriment of the work.

6. Training:

A programme of training is usually required to prepare the researcher for the work. This is usually a formal course of study or a mentoring process with an experienced academic or professional. It could also be a combination of these two methods. The aim is to train the researcher up to the required levels of competence to perform the work. The programme should include quantitative and qualitative research methods and methodology, including the philosophy of study. The ability to write at a level required by the research should also be included in this training.

The required learning will thus be a combination of formal and informal inputs. The concept of the 'personal learning cloud' is useful here, where online mechanisms for knowledge accumulation and acquisition are utilised [9]. The notion is that learning is 'personalised' for the individual. Learning networks are established to sustain the researcher. Learning is 'contextualised', that is related to the research environment, namely the sector and organisation where the research is located. The requirement for training to be tracked and validated by the appropriate institutions or personnel, is also noted. This is important for the credibility of the work and approval of the researcher.

A skills development process can be followed, to ensure that the researcher obtains the requisite skills and experience. Learning resources should be available, such as access to libraries, research subjects, facilities – including computer resources and funding. The researcher needs to possess or develop the intellect, 'soft skills' and any technical skills to complete the work. Learning networks, including the study team, should sustain the researcher in the enquiry. The process should lead to qualification with a recognised awarding body. Society should regard the contribution as useful and provide both remuneration and validation, in respect of the final research outputs.

7. Literature Review:

A thorough review of the current literature should be undertaken. This will ensure that a deep understanding of the subject area is developed and exhibited in the final document. The key point is to locate the empirical work in the existing body of knowledge on the subject. A summary conceptual framework can be provided, in order to highlight the key themes of the topic area under review. This should illustrate the potential area for contribution or reinforcing and developing of a key theme. The literature review and framework thus summarise the prevailing knowledge in respect of the research topic area.

A scheme for selecting the key literature for the research needs to be developed [10]. The areas for the research need to be determined, together with the 'keywords' to permit a search of these areas. The appropriate sources need to be identified and then a search enacted, via online or manual mechanisms. The required books and articles can then be identified with a check of the abstract or summary providing the rationale for selection or rejection. The process is then repeated, with the search parameters being redefined as required. The process ends when the required number of suitable sources have been obtained.

8. Methodology:

A research methodology should be selected, appropriate for the work, and a rationale for selection given. The usual choice is between qualitative and quantitative methodologies. The former represents an interpretive approach, usually comprising a small sample of research subjects' views, considered via a thematic analysis. The latter represents a positivistic view, gathering large samples of survey data to formulate statistically significant conclusions, utilising experimental techniques. The use of mathematical and statistical functions is prevalent, in order to process the data to produce an analysis. Qualitative methods tend to utilise inductive processing, with the theoretical constructs being developed as the data is processed. Quantitative methods tend to employ deductive techniques, formulating a hypothesis and using the data to test it in order to obtain the research conclusions.

A review of research methods should be undertaken in order to decide the optimum approach to the research [10]. The research question should be formulated, as previously stated, with the researchers, stakeholders, context and subject of the study being the prime factors in influencing the final form. The appropriate methodology should be selected, aligned with the researcher's views and appropriate to the topic under investigation. The use of the particular methodology and methods should be justified, with suitable references being cited to support the researcher's choice.

9. Empirical Study:

This should comprise the researcher's contribution to

knowledge, located in the existing body of knowledge on the subject under review. The stated methods will be used to glean research data for analysis. This may take the form of interviews, scientific experiments, gathering secondary data from other sources, observation of events, learning via attempted change (action research). The aim is to gather data to create new knowledge in the chosen area. The results of the empirical study should be related to the literature review and the contribution to the summarised conceptual framework noted.

10. Results And Application:

The data can be analysed in many different ways, as stated. The results of a scientific experiment, with a control group and groups where elements have been varied, is one such method. An inductive, grounded approach can be used, where theory is developed through processing the data without a preconceived coding frame. A deductive approach can, alternatively, be employed. This comprises the formulation of a hypothesis which is then tested against the data. The validity of this hypothesis is thus ascertained.

The contribution to knowledge can then be stated. This should detail the application of the research to practice and mention any theoretical gains, indicating areas for further research.

The contribution in technology projects is usually an addition to the theory of change management, oriented to this area, together with a statement of advice for management or technology personnel, in terms of setting an agenda for change.

An illustration of the latter is the sphere of technology change management, where Leavitt's seminal general theory is developed by Lyytinen and Newman [11]. This has been further adapted to show the four principal change factors, namely technology, task, organisation and people, with critical elements for society in a volatile environment. The technology requires both standards and resources. The task will represent a contribution to knowledge, society and learning in the subject discipline. The organisation has a virtual aspect, employs agile techniques, appropriate culture and reconciles 'freedom of information' with 'data protection'. The people have safety and security requirements, possess skills, comprise users and supply leadership. These factors exist in equilibrium until one or more changes and then the situation will change until a new equilibrium is reached. These have

the potential to be disruptive, producing a paradigm shift, or to reinforce the current position. This is an example of a classic theory being reinterpreted in a leading technology journal article to be relevant to the current context. A statement of recommended action for managers to adopt, utilising this amended theory as a basis, could be framed to assist with the managerial agenda. This research can thus produce a contribution to both theory and practice, in the chosen subject.

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