White Paper 1

New Paradigm for Operational Research & Development Excellence In Saudi Arabia: Conceptual framework and Operational Model

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Introduction:

Applied research is a kind of research that is used to answer a specific question that has direct applications to the world.[1] On the other hand, IDM in this paper defines operational research as "the utilization of scientific methods to generate evidence that can influence the decision making in an organization or at least be a considerable factor in the decision-making process". Nevertheless, decision-making by itself is vast domain consisting of tools, theories, and practices used to support and understand the decision-making process. However, operational research is a more objective form of applied research in which the answer is feeding into the decision-making process. Thus, the need for evidence-based decision making is the cause of the existence of operational research.

Where the majority of the academic research is investigator initiated research with fundamental premise here is that the responsibility of being both the sponsor and investigator lies with the person who conceives of and conducts the research project; operational research findings have a clear and structured implementation process and most-importantly a need and priority decided by the client who had raised the concern/challenge.[1] In academic research the investigator holds the primary responsibility to determining the level of priority to the topic of interest, Yet, due to lack of client engagement, findings are most left underutilized. It is important to highlight that the end point of academic research is scientific publication of research findings. At the United States (US), the higher education sector authored 74% and 75% of all the US scientific articles in 2001 and 2015.[2, 3]

Moreover, although academia is perceived as the major player in research execution, higher education share of research production is relatively low. However, the share of research and development (R&D) performed by the higher education sector had had increased to 17.4% of the total R&D effort within the Organization for Economic Co-operation and Development (OECD). [2] The relatively small share of R&D in OECD is a myth-busting the assumption that the higher education is the way to go for operational research. Nevertheless, the share of research performed by the government was 12.3% in 2003 within the OECD.[2] most of the share however were performed by businesses 67.7%.[2]

In terms of types of research, an OECD country had on average 54% of its basic research performed in academic sector compared to 28% performed by governmental agencies.[2] Basic research is driven purely by curiosity and a desire to expand knowledge and tends not to be directly applicable to the real world directly, but increases our understanding of global phenomenon.[4] This dimension supports the argument stated earlier that the academic research is not necessarily originated from a real world need or clear application. However, the results of such endeavor are very important, as it created a pool of knowledge ready when the needs arise.

General university fund ranges between 65% and 70% of academic research in 2003.[2] In 2014, the average percentage of total R&D financed by government was around 13.3% and 58.3% by business sector in OECD.[5]

Although academic sector in Saudi Arabia is the key player in conducting research projects due to very small business contribution to research share, it still has similar other features to the academic sector in the OECD mentioned above. In addition, governmental research centers are also following mostly the academic model of preforming research in general with a no clear cutoff between operational research (mainly to help decision making) and Academic research (mainly to expand knowledge).

Lack of operational model and reliance on academic model in decision-making research highlighted the need for establishing a new operational research model to reinforce the value of research activities initiated and conducted by governmental agencies. Thus, the aim of this article is to shed light on a new paradigm for operational research focusing on development of conceptual framework and operational model.

Conceptual Framework

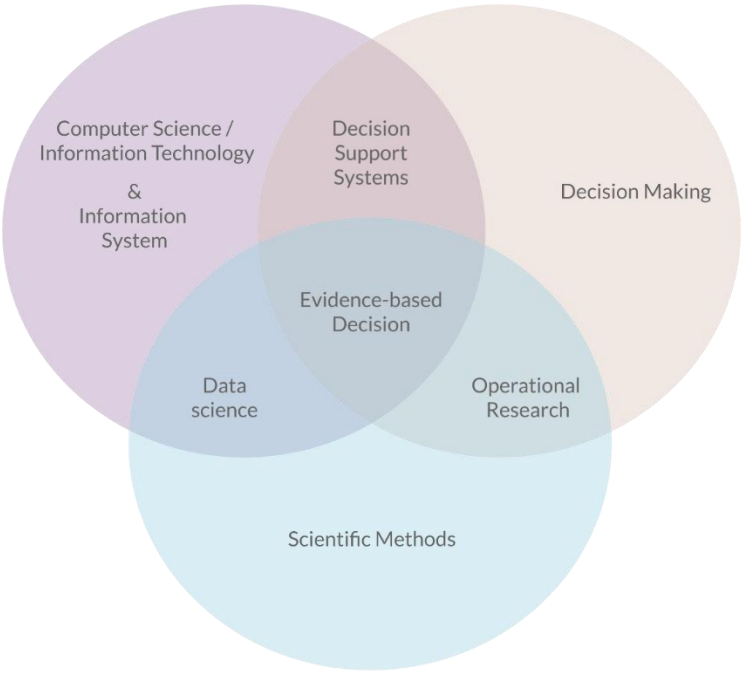
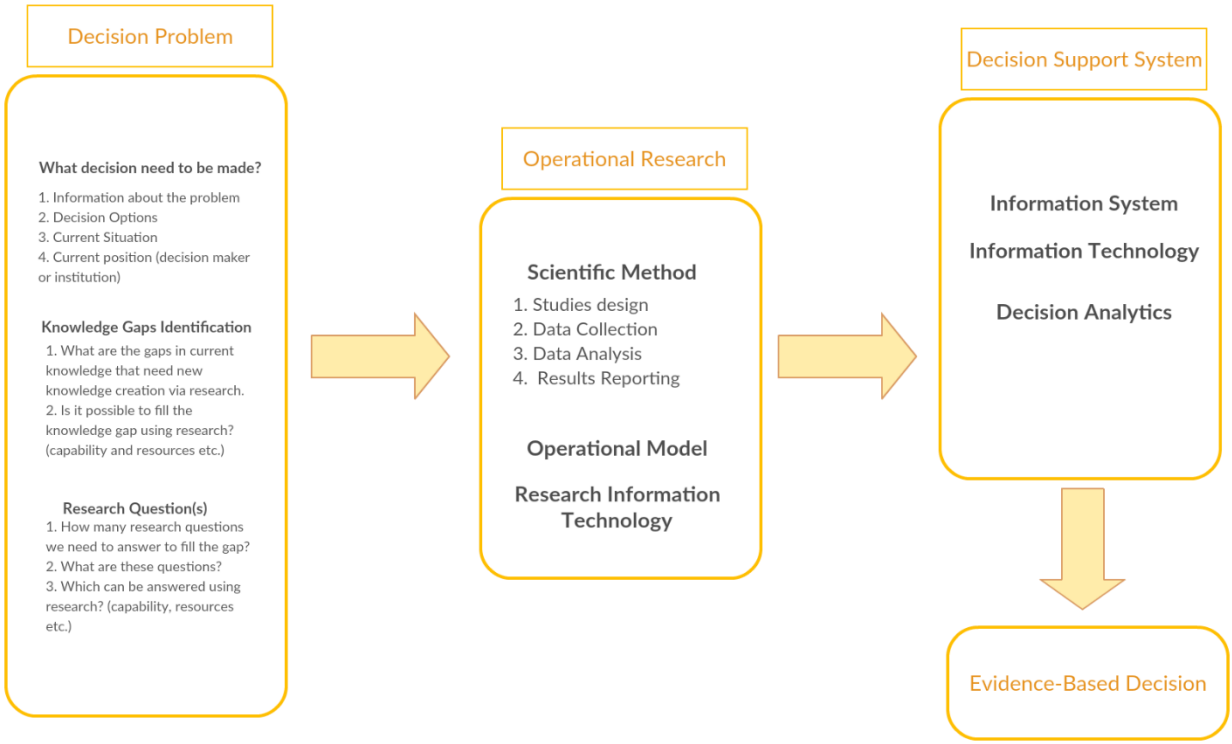


Figure 1: Interactions between disciplines in evidence-based decision making.

Figure 1 demonstrates the interaction between multiple domains that affect evidence-based decision-making process. However, the proposed conceptual framework (Figure 2) for evidence-based decision making is based on operational research model; the operational research will respond to decisional challenges that were raised by decision makers. Then utilizing the scientific method, the new model will generate new significant evidence-based information to support the decision-making process. The utilization of information technology and efficient operational model will support the automation of data collection and feeding into the decision support systems (DSS) in timely manner to help in systemizing and standardizing the generation of future similar scientific information to accelerate evidence generation and maintain methods and outputs validity and reliability. This conceptual framework supports the sustainability of data influx and maintain the quality of data process which in turn ensures that output meets the needs and addresses the demand to resolve challenges.

Nevertheless, it had been observed that currently the outputs of DSS were not utilized to support decision-making appropriately, which may explain observed discrepancy between planned decision-making model and implementation of decision making process in practice.[6] Thus, the DSS in this framework was not specifically designed to alter the current organization decision making process, taking into account that each organization has its own ways of the models and processes used in decision making. The goal here is to deliver a comprehensive research evidence to the decision-making process in time and with highest quality.



*sub-questions in this conceptual framework is not inclusive

Figure 2: Conceptual framework for evidence-based decision making based on operational research.

It is assumed that the use of the proposed conceptual framework should improve the organization focus on real decisional priorities and efficiently utilize research resources. This can be achieved by directing the research resources toward operational challenges and organizational needs rather than individual interests that was observed in academic research model. It will also help resolving the dilemma of research priority setting that faces many sectors in Saudi Arabia, which was primarily established based on experts' opinion. Finally, it is important to notice that the implementation of the framework is the responsibility of the organization's highest authority rather than the responsibility of the research "department" alone. A system reform is necessary to integrate the concept of operational research into the decision-making practice. This requires capacity building and change management that requires a long-term phase-based plan that focuses on human capital engagement and utilization of available resources to set the foundation for a self-operated DSS.

Operational Model

As described in the conceptual framework beside the need for the scientific method in operational research an operation model to guarantee the delivery of research results on schedule with the highest quality is needed. Unlike academic research, operational research is timely sensitive, the owner of the research project is the organization not the individual researcher, the time and budget need to be optimized and efficient, and finally, the quality need to be systematic regardless of who is responsible. Thus, there is a need for a different operation model to transfer the research activities in the organization into an operation that complement and add value into the other operations within the organization increasing the clarity of the role of research activities and the clarity of expectation and collaboration needed form internal clients.

At IDM we work with our clients to implement our operational research conceptual framework with a uniquely developed Operational Model based on our client value-chain and strategic goals.

To this point, this article emphasizes the importance of transforming research activities in non-academic institutions into systematic operations to increase focus, efficiency, and contribution to organization decision making process and overall value generation.

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