ABSTRACT

The issue of particular interest within this research includes development of methodology for policy makers so that they can identify their research capacities to enhance the role of research organizations by and utilize for achieving the development goals, under the conditions in which they can also make programs related to enhancing their research capacities. The central research question of this thesis is: How to identify, and assess the research capacities of higher education institutions (HEIs) for achievement of their development goals? By making practical approach this research work is focused towards the specific development goals and areas of research capacities by answering the question: How to identify and assess the research contributions of the PhD faculty members in HEIs for achievement of the four targets of 7th millennium development goal (MDG), ensure environmental sustainability (EES)?

In this research, the new set of capacities termed as "knowledge capacities (KC) framework" is devised. The fusion of the above concepts in KC framework needs method for identification and assessment of knowledge capacities, and places a new methodology, called an Identification, Relevancy and Utilization (IRU) methodology, applied within the context of research organizations such as HEIs in Sindh. The basis of the IRU methodology is a need of societal development which is now only achievable through research and development in the fields of science, technology and innovation particularly related to development of society. In this scenario, HEIs require identification and assessment of their relevant research capacities in lines of the selected development goals. To fulfill the need related to identification and assessment of research capacities, the HEIs may adopt this newly designed IRU methodology. The methodology may help in making identification and assessment of research capacities through offered degree programs, available human capital and their research capital including other capacities required for its utilization, focusing on structural, relational and characteristics of utilized research capital. The IRU methodology can also help in policy making related to development of research capacities for future which can contribute in achievement of development goals.

The novel aspects of the IRU methodology are illustrated by applying it to the PhD faculty members of HEIs in Sindh offering degrees in field of environment, for the identification and assessment of their relevancy in terms of their expertise and thematic areas of their research work with available supporting environment in its utilization for achievement of four MDG (EES) targets.

The output from the research work includes:

I. A new framework termed as knowledge capacities (KC) framework, which focuses on the national issues: development areas, development goal, development targets and related research capacities in terms of Institutional capital (IC), human capital (HC)

and research capital (RC), following the capacities related to their utilization. The structural capital (SC) contains 7 factors related to infrastructure with 30 sub factors, relational capital (RC) contains 9 factors with 37 sub factors related to channels of knowledge transfer and utilized capital (UC) contains 7 factors with 22 sub factors presenting characteristics of utilized research.

II. A newly developed IRU methodology, which is organized into three stages with respect to their objectives and applications. Each stage follows separate procedures according to required objectives, in the first stage; for making identification of research capacities bibliometric analysis followed by their instrument and analyzing tools is selected, in the second stage for making assessment of relevancy of research capacities with development goals, content analysis with supporting instrument is selected and in the third stage for making assessment in terms of utilization of research capacities, interviews method is selected, the applications of the IRU methodology includes: electronic databases of research capacities, thematic databases, research utilization indicators presenting factors related to transfer and utilization of research capacities.

This research uses a case study approach making empirical assessment of contributions of PhD faculty members of HEIs in Sindh offering degrees in field of environment in achieving four MDG (EES) targets, by which getting;

1. Database for identification of research capacities of HEIs offering degrees in field of environment with their PhD faculty members and research capital is developed as applications of 1st stage the IRU methodology.
2. Identified expertise of PhD faculty members and thematic areas of research capital with their assessment related to selected development goal of four MDG (EES) targets as applications of 2nd stage of the IRU methodology.
3. Information about available capacities supporting the utilization of research capacities for achievement of selected development goals as application of 3rd stage of the IRU methodology.

The practical applications endorse three stages of IRU methodology, and propose the IRU methodology for identification and assessment of research capacities in different sectors for achievement of development goals.