

IDENTIFYING PILLARS FOR RESEARCH CULTURE FORMATION

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ABSTRACT

This paper attempts to identify the necessary pillars that have significant contribution to the formation of a research culture in the academe. By using the Principal Component Analysis, the five university research pillars identified in this study were reduced into three (3) dimensions. These are the research and institutional leadership, stakeholder valuing of university research, and faculty characteristics and curriculum. The results revealed that if these three dimensions are available in a university, a research culture can be developed or formed resulting to an increase of research productivity.

Keywords: *Principal Component Analysis, research culture, research productivity, research pillars*

1.0 Introduction

Developing a culture of research has become one of the concerns in State Higher Education Institutions (HEIs) in the Philippines. HEIs have identified various research dimensions and productive research environment as essential measures in establishing a culture of research in the academe. Research culture as defined by Naoreen and Adeeb (2013) is the type of environment which leads academics to the research productivity in HEIs. It is the way of doing research in the University or institution (Rao, 2003). Likewise, Merchant (n.y.) characterizes culture as a system of widely shared and strongly held values. Accordingly, if there is research culture, research is uniformly expected, discussed, produced, and valued in a supportive environment. For different purposes, research outputs are evaluated and monitored at different levels. The research productivity is one of the indicators of academic performance, basis for Universities ranking (Jung, 2012), funding allocation (North, Zewotir, & Murray, 2012) Philippine Normative Financing, and other quality assurance evaluation.

Similarly, in developed countries, there are increasing pressures from governments and their funding agencies to demonstrate impact from the spent R&D Funds (Kern, 2011). This creates the need to understand better the productivity of

public research, both in academic settings and in governmental institutes. In the quest of optimizing research productivity in higher education institutions, concerned agencies have been finding means and strategies to achieve the desired level of productivity and establish a research culture. This is also being supported by the different initiatives taken by the Commissions on Higher Education (CHED, 1994; Pakistan HEC, 2005) whose vital role is to promote research activities in higher education institutions. However, there are many barriers to the development of research culture as well as factors that encourage research productivity.

Numerous studies have been conducted to identify what facilitating characteristics have greater impact to the research productivity and culture of the institution. They tried to identify the major factors and models that will explain research productivity of the faculty. Finkelstein (n.y.) suggested seven critical variables that predict faculty publication rates, viz: interest of faculty in research, having highest education degree; primary publishing habit; previous publishing activities; relationship with colleagues from the same discipline; membership in great number of journals; and devotion of adequate time to research.

Bland et.al (2002) also identified three important characteristics that will account for research productivity such as Faculty characteristics, Institutional characteristics, and leadership characteristics.

Moreover, Hill (2002) identified two levels in establishing and sustaining a research culture in the academe, viz: institution and individuals. At the level of the institution, these important characteristics, namely: (a) sharing expertise and knowledge, (b) having research direction, niche or strategy, (c) having institutional support including commitment at top level, researcher's perception of that support and administrative support, and (d) provision of research facilities and resources are considered. Research culture may develop when at the level of the individual consideration is given to (a) motivation and incentive, (b) developing the institution's endowment of research skills through recruitment and/or education and training and (c) the parallels between the study of research culture and organizational culture per se.

Based on the literature review, it is evident that Principal Component Analysis has not been explored in other research studies in terms of identifying pillars to develop a research culture. Hence, in this paper, we identify the pillars that are closely related to each other and reduced these using the Principal Component Analysis.

2.0 Materials and Methods

This study employs a quantitative approach utilizing the empirical data gathered from a State University in Surigao del Sur, Philippines. The data gathered include the evaluation of the respondents' experiences related to research in the academe, university and their respective leaders, degree of emphasis given to research

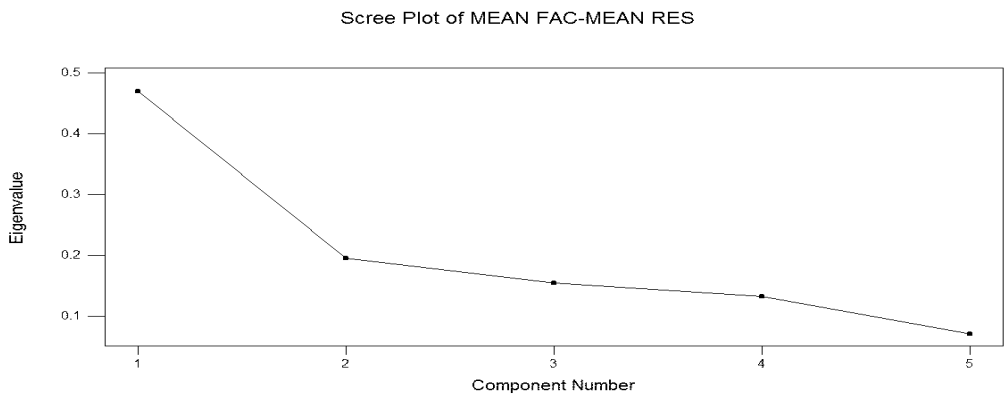
integration in teaching, and how the respondents value research. The respondents were the faculty of the university with at least three (3) years of teaching experiences.

In this paper, we explored the possibility of reducing the dimensionality of the number of research pillars from five (5) to possibly three (3) dimensions. By performing a Principal Component Analysis of the pillars themselves and analysing their eigenvalues as weights, the following research dimensions that are operant in the university setting were identified, viz:

- Pillar 1 – Research and Institutional Leadership
- Pillar 2 – Stakeholders Valuing of University Research
- Pillar 3 – Faculty Characteristics and Curriculum

3.0 Results and Discussion

In this paper, we address the issue of which (fewer) pillars are necessary for the formation of a research culture when properly synchronized. A Principal Components Analysis was performed on the data set. Figure 1 shows the Scree Plot of the principal components:



The Scree Plot shows that around 3 or 4 principal components are needed to explain the total systems variance. Table 1 shows the results of the eigen-analysis:

Table 1: Linear Combination of Basis Dimensions for Research Culture

Eigenvalue	0.47015	0.19455	0.15381	0.13168	0.07075
Proportion	0.461	0.191	0.151	0.129	0.069
Cumulative	0.461	0.651	0.802	0.931	1.000

Variable	PC1	PC2	PC3	PC4	PC5
MEAN FAC	-0.302	-0.221	0.626	0.535	-0.426
MEAN INS	-0.639	-0.121	0.190	-0.047	0.734
MEAN LEA	-0.698	0.096	-0.398	-0.294	-0.508
MEAN RES	-0.059	-0.229	-0.641	0.720	0.123
MEAN RES	0.096	-0.935	-0.056	-0.327	-0.076

Basis = .461*Faculty Char + .191*Inst. Char. + .151*Leadership Char + .129*Res. Integ + .069* Res. Valuing

Tabular values show that 80.20% of the total system variance is already explained by the first three (3) principal components while 93.10% is explained by four (4) principal components. Analysis of these principal components revealed the following characterization:

Principal Component 1 : Institutional Characteristics and Leadership Characteristics

Principal Component 2: Value of Research to Stakeholders

Principal Component 3: Contrast of Faculty Characteristics and Research Integration in the Curriculum

Principal Component 4: Compatibility of Faculty Characteristics and Research Integration into the Curriculum

Thus, one dimension that certainly stands out as a research pillar in a University setting is **The Typology of the Institution and Choice of Research Leaders (PC1)**. Is the institution a Research University or a Teaching Institute? Are the research leaders properly chosen given the typology of the University?

A second dimension that has not been prominently analyzed in past studies is the extent to which the **Stakeholders Value the Research Outputs (PC2)** of the University. Is the community reliant on the University for new information? Do they consult the University to solve problems that arise in the community?

The third dimension has something to do with the variance in the **Faculty Characteristics and the Extent to Which Research is integrated in the Curriculum (PC3)**. This is the dimension that explains why a research culture may not be present in a University despite the fact that research is already integrated in the course of study of the students viz. the faculty members implementing the curriculum may not possess the desired characteristics of a researcher.

The fourth dimension is complementary to the third dimension, namely, the **Extent to Which Faculty Characteristics are Compatible with the way Research is integrated into the curriculum**. In sum, we conclude that the following research pillars are operant in a University setting:

Pillar 1: Research and Institutional Leadership

Pillar 2: Stakeholders Valuing of University Research

Pillar 3: Variance in Faculty Characteristics and Curriculum

Pillar 4: Compatibility of Faculty Characteristics and Curriculum

Since pillars 3 and 4 refer to the same dimensions of faculty characteristics and curriculum, they can be summarized into one (1) dimension. This simplification effectively reduced the original five (5) pillars into three (3) main pillars for the formation of a research culture.

4.0 Conclusion

The formation of a research culture in the academe depends on the goal of the university and attainment of the few research pillars identified through Principal Component Analysis. Hence, an institution that is directed to become a University Research instead of a Teaching Institute has greater access to achieving the minimum criteria of the first identified research pillar. Moreover, if the community is reliant on the University for information and consultation on research related issues this implicates establishment of the second pillar. When the faculty implementing the curriculum possessed the desired characteristics of a researcher, the third pillar is then

acquired. Thus, attainment of these three identified pillars of research, viz: Research and Institutional Leadership, Stakeholder Valuing of University Research, and Faculty Characteristics and Curriculum resulted to the formation of a research culture in the academe.

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