

## BUILDING A CULTURE OF RESEARCH IN A HIGHER EDUCATION INSTITUTION

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### ABSTRACT

*The study explores the development of a Context Based Forecasting (CBF) model as a management tool for situating and predicting scenarios for research institutions. An HEI in Bukidnon was used to test this model. Findings showed that the developed model was effective in situating and predicting the identified scenarios. Using the CBF model, the HEI research unit was able to: (a) determine the requirements/criteria for quality research taking into considering leadership role (Political Factor) and the culture of research and innovation (Social Factor); (b) situate the present scenario and predict future scenario; (c) realize the need for more time, effort and in developing research for international publication and citation. The study recommends that research institutions may utilize the CBF model for situating and predicting scenarios. Careful consideration may be placed in the setting of time duration of strategic plans to be more realistic. HEIs may harness the Social and Political factors identified in this study to focus on important task of producing quality research for international publication and citation.*

**Keywords:** *research culture, context-based forecasting, scenario building*

### 1.0 Introduction

In recent years, higher education institutions (HEIs) in the Philippines have been challenged to fully engage in research and innovation. The HEIs' successes are already anchored in its ability to produce quality, relevant and meaningful research. An important tool for HEIs is its ability to produce and publish research in international refereed publications. This was not required in the past. It has become a necessary requirement to be able to gauge the ability to produce/generate knowledge. For an HEI to gauge itself in terms of research capability and innovation, it has to benchmark with the internationally ranked universities in the country and the world.

The existence of ranking institutions like Times Higher Education (THE, 2012), Quacquarelli Symonds (QS, 2012) and Academic Ranking of World Universities (ARWU, 2012) can provide for HEIs clear criteria on what it takes to be part of world-ranked institution. One important criterion that these ranking institutions provide is the university's ability to produce and publish quality research. This requires HEIs in the Philippines to shift from instruction-based institutions to a research and innovation-oriented institutions.

The shift demands radical change that entails socio-cultural and administrative factors. On one hand, it demands that HEIs must develop a culture centered on research and innovation. This entails that faculty and students should have the necessary and advance skills and capability to conduct research activities. On the other hand, it requires that the leadership/administrative support in terms of funding, incentives, equipment, training, scholarship, and support for publication and dissemination are in place.

Considering these two factors, any HEI may want to situate itself in the relation to the international criteria for research and project itself at a desired scenario in the future. By situating its present condition in terms of the socio-cultural and administrative capability to support research, it may carve a path toward a direction paved by research and innovation.

Hence, this study attempts to utilize these two factors in creating a management tool to situate the current status of an HEI and its desired scenario in a not so distant future.

### *Objectives*

Specifically, aims to do the following:

- 1) Develop a Context-based Forecasting (CBF) model that can situate an HEI in terms of its adherence to international standards for research considering the social and political factors;
- 2) Evaluate the situation of an HEI in terms of its adherence to international standards four years after; and
- 3) Recommend steps needed for the HEI to achieve its desired scenario.

### *Literature*

In assessing the current situation of research/instruction culture of an HEI in the Philippines, the political (administrative) and the social (cultural) factors are taken into account. These factors (social and political) are also used in predicting the research scenario in the next four years. In setting the political context, administrative support for research activities is identified as an important determinant of quality. Macdonald's (2004) case study established the importance of administrative support to encourage the evolution of research culture among the

faculty. Likewise, Clemeña and Acosta (2007) also underscored the role of the leadership in both research and management practice in creating an inspired research culture among the faculty. In this culture the political or administrative context showed two kinds of leadership: (1) a *capable leadership* that implements and regulates as provided by law and regulation the research activities of the faculty and students while (2) an *innovative leadership* participates and inspires faculty and students to excel internationally in research and instruction.

In setting the social context, mentoring and capability building in research/instruction is necessary for the development of a research culture in a university. Cheetam (2007), Sunder (2008), Macdonald (2004), Clemeña and Acosta (2007) share the same view that mentoring is essential in faculty involvement in creating a vibrant research culture. A research culture can be described in two ways: (1) A *developing research culture* that still needs a strong mentoring system and proactive research training and capability while (2) an *established research culture* is marked with excellent quality research that are published and cited internationally. Hanover Research (2014) stressed that a culture of research requires both institutional and unit-based leaders to set clear research goals and communicate them effectively. Institutions wishing to develop a culture of research must allocate significant resources for faculty training and support. In fact, developing the culture of research requires open and collaborative personal relationships among faculty members. It is important that to implement cultural change, administrators must be prepared to tailor resource allocations based on faculty members' current motivations and abilities. Lastly, a culture of research may take years to develop and, once established, requires regular maintenance.

## 2.0 Methods and Design

This study utilized scenario building and context-based forecasting approaches (Padua, 2012) for building a forecast on the development of an institution's research culture. The Edinburgh Scenario (ES) building was used to situate the institution's research capability in relation to international quality standards for research and innovation. ES building follow these steps: (1) Scoping; (2) Trend Analysis; (3) Building Scenarios; (4) Generating Options; (5) Testing Options; and (6) Action Planning. In plotting the data, a Cartesian coordinate system lays out the various scenarios.

In the scoping process, the social and political contexts are identified as factors that greatly influence the development of research culture in a learning institution. These were then cross-validated using focus group discussion (FGD) of a jury of experts. The jury of experts is composed of the various stakeholders in the conduct of research activities in the HEI.

To gauge the HEIs’ adherence to international standards, the criteria of ranking institutions Times Higher Education (THE, 2012), World University Rankings, Quacquarelli Symonds (QS, 2012) University World Rankings and Academic Ranking of World Universities (ARWU, 2012) that emphasized research were used. The World University Rankings, along with the QS World University Rankings and the ARWU are described to be the three most influential international university rankings. THE is an international ranking of universities published by the British magazine Times Higher Education (THE) with Thomson Reuters supplying data based on citation database information. The ARWU, commonly known as the Shanghai ranking, is a publication that was founded and compiled by the Shanghai Jiaotong University to rank universities globally. QS is a leading global provider of specialist higher education and careers information and solution. Each ranking institution has its criteria for ranking universities.

Table 1 showed that THE criteria for research comprised a total of 60% (research output and citation). While ARWU have similar total percentage of 60% (research output 20% + publication 20% + research citation 20%). QS has only 20% for research, but a vague 40% for academic reputation may still be referring to research reputation. For purposes of this study, the criteria set by the THE and ARWU on research output/citation are the ones to be used as the gauge for adherence to the international standard. The observations gathered pointed to the status of research and instruction of the ranked university, with research having the biggest percentage of the criteria for International Standards.

Table 1. Ranking Criteria and Weights of THE, QS and ARWU

THE <sup>(1)</sup>	QS <sup>(2)</sup>	ARWU <sup>(3)</sup>
<ul style="list-style-type: none"> <li>• Teaching-Learning Environment (30%)</li> <li>• Research (Volume, Income, and Reputation) (30%)</li> <li>• Citations (Research Influence) (30%)</li> <li>• Industry Income-Innovation (2.5%)</li> <li>• International Outlook (7.5%)</li> </ul>	<ul style="list-style-type: none"> <li>• Academic Reputation From Global Survey (40%)</li> <li>• Employer Reputation (10%)</li> <li>• Citation Per Faculty From Science Journal (20%)</li> <li>• Faculty-Student Ratio (20%)</li> <li>• Proportion of International Students (5%)</li> <li>• Proportion of International Faculty (5%)</li> </ul>	<ul style="list-style-type: none"> <li>• Quality of Education (Alumni) (10%)</li> <li>• Quality Of Faculty (Staff) (40%)                             <ul style="list-style-type: none"> <li>▪ Award</li> <li>▪ Citation in Research</li> </ul> </li> <li>• Research Output (20%)                             <ul style="list-style-type: none"> <li>▪ Published (20%)</li> </ul> </li> <li>• Per Capita Performance (10%)</li> </ul>

Source: <sup>(1)</sup> Times Higher Education World University Rankings 2011-2012

<sup>(2)</sup> QuacquarelliSymonds University World Rankings 2011

<sup>(3)</sup> Academic Ranking of World Universities 2010

The identified key factors that can lead toward the aspired direction were political and social factors. Political factor means the support and relevance of any HEI administrator to the research activities while the social factor means the

research culture of the HEI. The political spectrum ranges from an *able leader* to an *innovative leader* while the social spectrum ranges from a *developing research culture* of the HEI to an *established research culture* of the HEI.

A scenario quadrant is shown in Figure 1 where the horizontal and vertical axes represent the social and political spectra respectively. It also indicates the probability of scenario of the four quadrants. Probabilities were computed for each quadrant as follows:

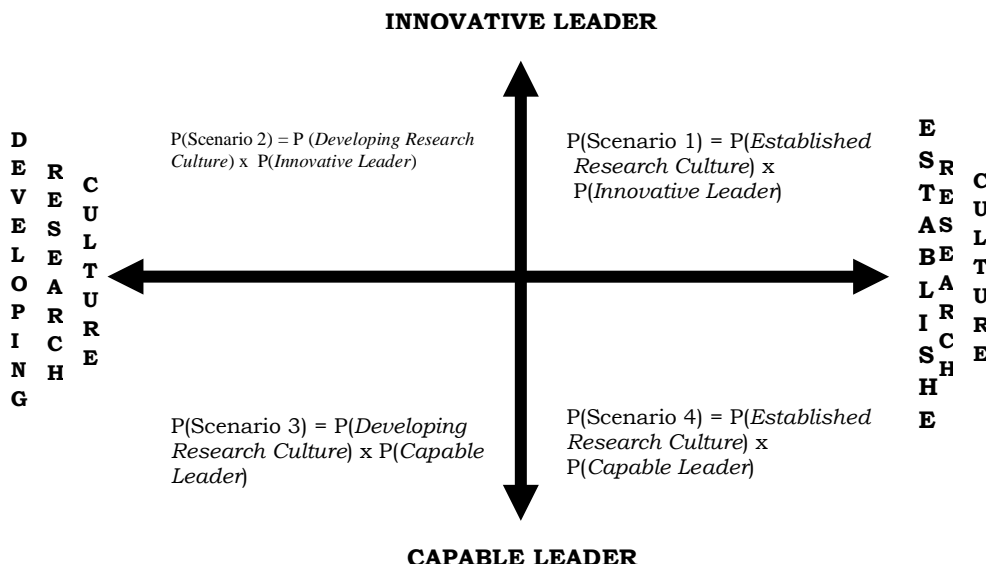


Figure 1. Scenario Quadrant with Computation of Probabilities

The formulas for determining the Social Factor are as follows:

$P(\text{Established Research Culture}) =$  Proportion of faculty who were able to publish in a refereed journal

$P(\text{Developing Research Culture}) =$  Proportion of faculty who were not able to publish in a refereed journal

The formulas for determining the Political Factor are as follows:

$P(\text{Capable Leader}) =$  Proportion of leaders who are able/competent leaders

$P(\text{Innovative Leader}) =$  Proportion of leaders who are transformational leaders

In the computation of the four scenarios, the Social and Political factors are computed to produce the following:

$$P(\text{Scenario 1, Quadrant 1}) = P(\text{Established Research Culture}) \times P(\text{Innovative Leader})$$

$$P(\text{Scenario 2, Quadrant 2}) = P(\text{Developing Research Culture}) \times P(\text{Innovative Leader})$$

$$P(\text{Scenario 3, Quadrant 3}) = P(\text{Developing Research Culture}) \times P(\text{Capable Leader})$$

$$P(\text{Scenario 4, Quadrant 4}) = P(\text{Established Research Culture}) \times P(\text{Capable Leader})$$

The outcome of the probability computations, produce the four probable scenarios that situate the HEI in relation to the criteria for research. It can also show its distance from the other scenarios. Using this distance, the HEI may have two options (a) use this distance to predict its status over time, and/or (b) it may use this as guide on how to close the gap to reach the desired scenario (having an *established research culture* with an *innovative leader*) it wishes to achieve over time.

### ***Model Application***

Using the CBF Social and Political Factors model, the researchers applied this model in an HEI (HEI-A) located in Bukidnon, Philippines.

The HEI-A is a leading institution in with strong focus on teacher training. However, with a new mandate set in 2007, the HEI-A is now committed to research and innovation. In 2012, its research unit was tasked to situate the HEI status in relation to the international standards for research and innovation using the criteria set by the international ranking institutions.

The HEI utilized Context-Based Forecasting (CBF) and the Edinburgh Scenario (ES) building to situate the HEI on the criteria set by the ranking institutions. ES building process followed the steps: (1) Scoping; (2) Trend Analysis; (3) Building Scenarios; (4) Generating Options; (5) Testing Options; and (6) Action Planning.

In the scoping process, the leadership role (political) and the culture of research (social) are identified as factors that greatly influence the development of research culture in a learning institution. A cross-validation was conducted through a focus group discussion (FGD) of a jury of experts. The experts were the institution's Vice President for Academic Affairs (VPAA), the Deans of the colleges, Research Directors and representatives of the faculty of instruction.

Using the data gathered in scenario building, Figure 2 showed the Cartesian coordinate system with the four scenarios:

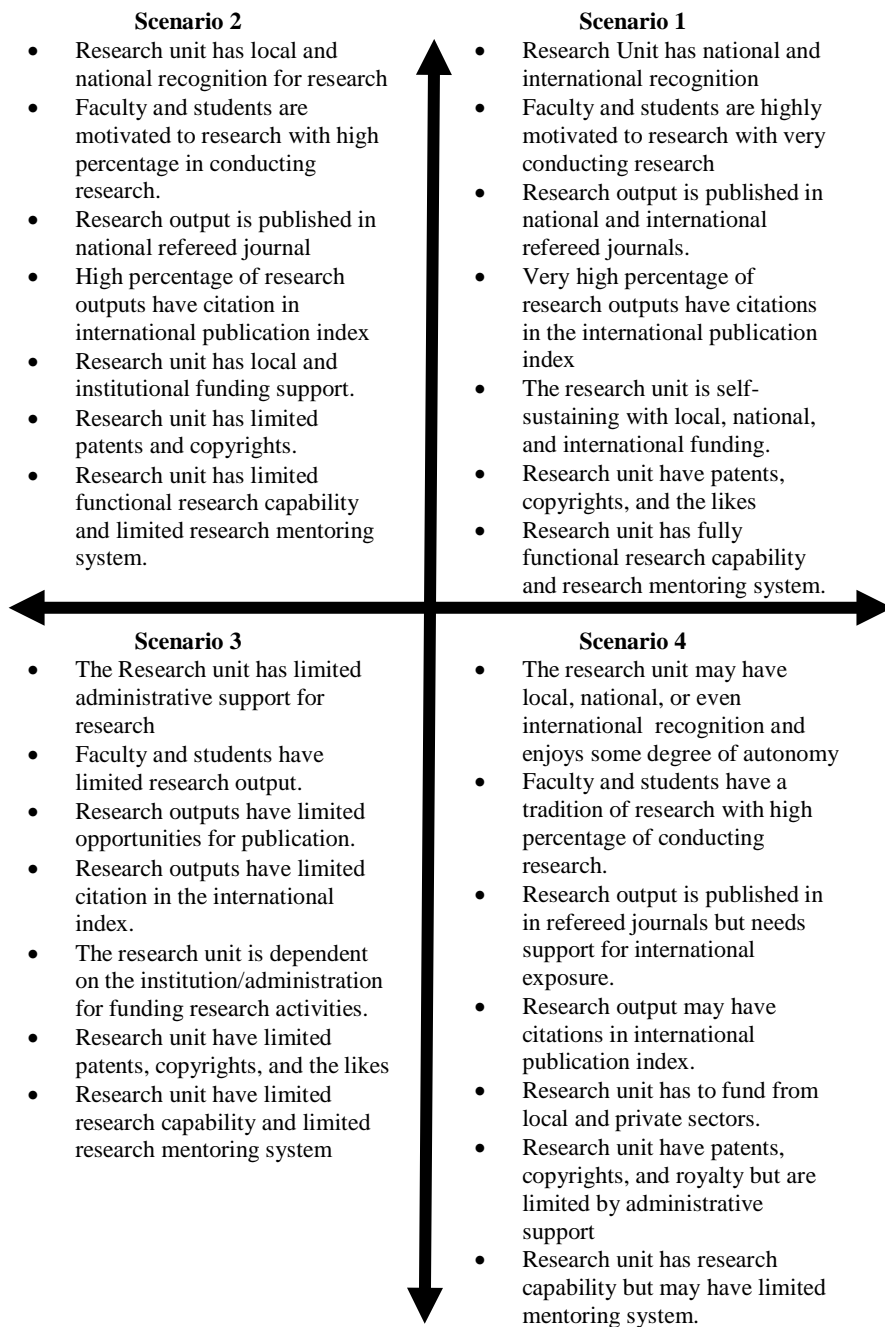


Figure 2. Four Scenarios of the Research Culture using Political and Social Contexts

As the Research Unit incorporated the data on Social Factor (*Established Research Culture* = Proportion of faculty who were able to publish in a refereed journal and *Developing Research Culture* = Proportion of faculty who were not able to publish in a refereed journal) and Political Factor (*Capable Leader* = Proportion of leaders who are able/competent leaders and *Innovative Leader* = Proportion of leaders who are transformational leaders), the computation revealed the following:

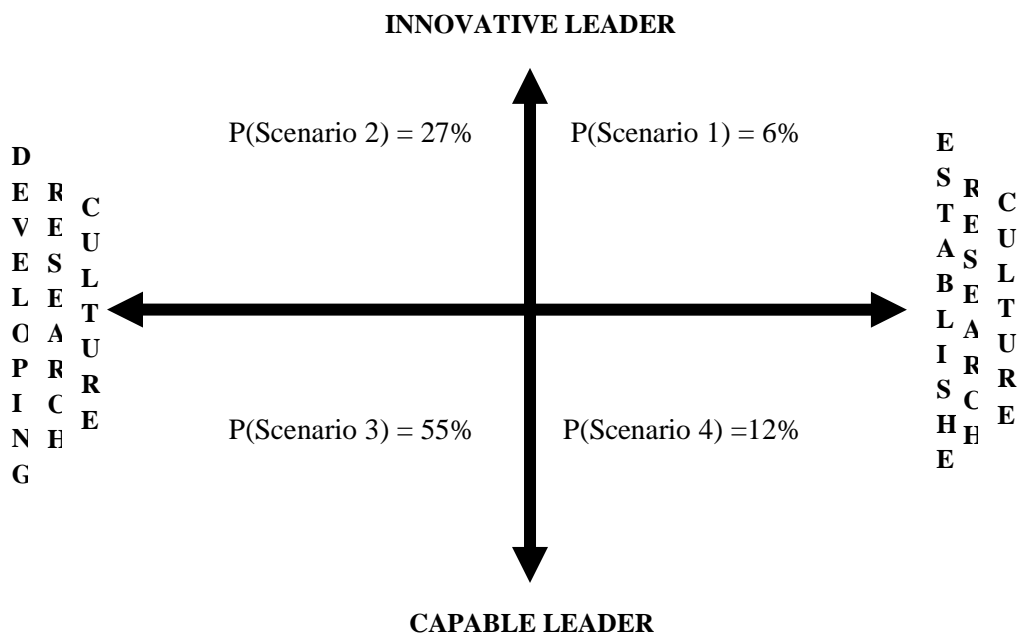


Figure 3. Scenario Quadrant with Corresponding Probabilities (2012)

Figure 3 result showed that HEI-A in 2012 was situated in Scenario 3 with 55% probability. It further showed that the probability of achieving Scenario 1 in the coming years would be 6% when the political and social conditions remain the same. With this initial result, the Research Unit in 2012 used the scenarios to plan out strategies to address the existing condition to improve to a higher scenario in the next 4 years.

### 3.0 Results and Discussions

#### *On the development of CBF model*

The study developed a Context Based Forecasting model to situate the condition of an HEI in 2012. The model was tested thru an HEI in Bukidnon. Using the unique experience of the HEI in leadership (Political) and culture of research (Social), the study set a Cartesian quadrant of probabilities where result showed



that the HEI is situated in Scenario 3 using cross-validation it was determined that the HEI has *developing* research culture and has a *capable* leader. This scenario is characterized as: (a) the research unit having limited administrative support; (b) faculty and students have limited research output; (c) research outputs have limited opportunities for publication; (d) research outputs have limited citation in the international index; (e) the research unit is dependent on the institution/administration for funding research activities; (f) research unit have limited patents, copyrights, and the likes; and (g) research unit have limited research capability and limited research mentoring system. Consequently, the HEI developed a strategic plan to address the above conditions. The plan was focused on three areas: Incentive system, capability for publication in refereed journals, and administrative support for research.

### 1. INCENTIVE SYSTEM

- a. Provide financial incentives for researchers, inventors, and writers of literary works that earned national and international awards and recognition.
- b. Secure patents and copyrights for inventions and innovations made by faculty and students and provide incentives thereof.
- c. Full financial and document assistance for students and faculty who disseminate completed researches in international conferences.
- d. Provide financial incentives to faculty/students who develop instructional/reading materials and published regionally, nationally and internationally.
- e. Provide incentives to senior researchers who render research mentoring to junior researchers.

### 2. CAPABILITY FOR PUBLICATION IN REFEREED JOURNALS (INCLUDING E-JOURNALS)

- a. Publish researches of students and faculty in refereed journals (including e-journals) with ISI index.
  - i. Require RDU Journal to be registered as an indexed e-journal;
  - ii. Require quality control for publishable researches.
- b. Colleges and departments are required to institute the mentoring system for research.
- c. Invite international authors and researchers to share expertise in submission to international journals.
- d. Engage in collaborative researches with other institutions (national and preferably international)
- e. Integrate research as part of the curriculum
  - i. Research will be included in the teachers' load

### 3. ADMINISTRATIVE SUPPORT SYSTEM FOR RESEARCH

- a. A research capability development program for students and faculty.
  - i. Sustain and enhance existing capability thru more training and workshops on research.
- b. Develop researches in other fields of specialization (i.e., Language, IT, social sciences, philosophy, nursing, law, etc)
- c. Implement an accelerated faculty development program to ensure vertical articulation of faculty.
- d. Provide modern facilities and equipment for research and instruction.
- e. Utilize researches, patents, and literary works to develop materials that can generate possible income/royalties.
- f. Integrate research into all curriculum
- g. Ensure security and protection of copyrights and patents.
- h. Ensure networking/linkages for research endeavor with national and international institutions.
- i. Set policy for the inclusion of research load to all faculty

*Evaluate the situation of the HEI in terms of its adherence to international standards after four years*

After four years of implementing its strategic plan, this study revisited the CBF Model developed in 2012. It is observed that the HEI, as of 2016, has yet to reach the Scenario 1. This showed the accuracy of the prediction of developed CBF model. As observed the main problem was the difficulty of publication and citation of research outputs in ISI indexed journals. Though research capability has been enhanced and more faculty and students are into research. The administration has been very proactive in its support of the research activities. It is further observed that the four year target set in 2012 was not enough to develop the needed capacity for publication and citations in international indexed journals.

#### **4.0 Conclusion and Recommendation**

The development of the CBF model as a management tool for situating and predicting scenarios for research institutions proved to be effective in the case of the HEI. Using the CBF model, the HEI research unit was able to: (a) determine the requirements/criteria for quality research taking into considering leadership role (Political Factor) and the culture of research and innovation (Social Factor); (b) situate the present scenario and predict future scenario; (c) realize the need for more time, effort and in developing research for international publication and citation.

Research institutions may utilize the CBF model for situating and predicting scenarios. Careful consideration maybe placed in the setting of time

duration of strategic plans to reflect realistic plan. Social and Political factors maybe harnessed to the important task of producing research output for international publication and citation.

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