

Empirical Model for the Culture of Research in Basic Education

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Abstract

This study developed an empirical model that will build the culture of research in the basic education. The study was mainly quantitative involving the collection of primary data from 400 basic education teachers intended to determine the dimensions of organizational characteristics and culture of research using principal component analysis of exploratory factor analysis (EFA). After this, the impact of the organizational characteristics on the culture of research was identified using the multiple linear regression analysis (MLR).

Exploratory factor analysis revealed that there were three dimensions of organizational characteristics which included institutional support and reward system, strategy, and structure. The culture of research was also revealed to have three dimensions including the allocation of knowledge and skills training and development and resources, maximization of incentives and personal and professional opportunities, and integration of research into the school routine. Given that these dimensions are adopted and well implemented, the culture of research is highly likely to be built. The regression analysis disclosed that the three dimensions of the organizational characteristics were significant predictors of the culture of research in basic education with their linear combination for a very high variation in the culture of research.

Keywords: Empirical model, culture of research, basic education, exploratory factor analysis, multiple linear regression

Introduction

In the Philippines, research is uncommon among basic education teachers. Much of the research outputs come from higher education institutions. This is because research is a rewarding exercise (Norton, 2019) and has become part of the academic culture in higher education while in the basic education, it does not form part of its productivity or performance targets. But until recently, teachers from the basic education in the Philippines have found the relevance of researching in the form of action research. According to Glanz (2014, p. 10), action research methodologies are commonly done by basic education teachers to examine their teaching practices and their impact on achievement. With the undeniably practical great benefits that research offers, there

is no question as to why there is a rising trend for organizations to transition into becoming research-driven, even including those which traditionally did not venture into research or of which research had practically not been expected from. The academic environment is manifesting a predominance of research. There is an unmistakable countervailing trend that faculty members perceive research and publication to be important in their promotion and tenure (Mendez & Cruz, 2014, p. 136). In recent years, it is not only the higher education institutions that are working towards the development of the research culture. The basic education institutions have been equally thriving on the same, although it is more concerned with action research.

With time, however, the demand for research and its impact on the field of practice has intensely deepened that it is deemed to be necessarily inclusive and collaborative. That is, it is not to be taken only by a limited few but is demanded to be shared, well understood and carried out by, and a function of possibly everyone in practice, thus making it a culture (Hine, 2013, p.152). The basic education institution has started to establish research arms in promoting and institutionalizing the culture of research towards the quality delivery of educational services. Despite these undertakings, however, the great challenge remains on paving the way for a positive welcome of research among the teachers in the field. This problem is evidenced by the low turnout of research outputs and their utilization according to the report by MCBEDS (2014). According to Kukari (2012), there is a critical need to create a pool of researchers to lead in designing and carrying out high-quality research.

Theoretical Framework

This study is anchored on the Star Model developed by Galbraith (2011). It is one of the most widely-used and accepted organization design frameworks of which design policies fall into five categories namely, strategy, structure, process, rewards, and people. The strategy drives structure while the processes are based on structure. Likewise, the structures and processes define the implementation of the rewards systems and people policies in a certain organization. Hence, these mentioned indicators represent the variables of this study which were then tested to determine the model of the research culture of the basic education division.

Objectives of the Study

Learning on the need to mainstream research engagement among teachers of basic education in the Philippines, this research was conducted to develop an empirical model that will build the culture of research. Specifically, it identified first, the dimensions of organizational

characteristics, second, the dimensions of the culture of research, third, the likelihood of the culture of research, and lastly, developed the empirical model of research culture in basic education.

Materials and Method

This study predominantly worked within the exploratory and causal research designs. An exploratory design can extract the possible dimensions of organizational characteristics and culture of research (Ngulube, 2019). Meanwhile, causal research design paves the way for understanding why the world works the way it does by proving a causal link between variables and eliminating other possibilities. It does not simply claim the relationship of two or more variables but predicts that a variable or a set of independent variables will affect the dependent variables. Further, it is used to measure the impact of a specific change on existing norms and assumptions (Creswell & Plano Clark, 2018, p. 52).

In determining the number of samples to be included in the study, the standard rule of 400 was used (Garson, 2012, p. 47). The number of teachers in elementary and secondary, when rounded to the nearest thousand, arrived at a ratio of 6:3. Thus, 266 teachers came from the elementary and the other 134 came from the secondary using a multi-stage stratified random sampling technique (Zhao, Liang & Dang, 2019, p. 420). They accomplished the survey questionnaire that consisted of two parts. The first part was aimed at determining the dimensions of the organizational characteristics of the basic education institution while the second part was aimed at exploring the dimensions of research culture. Both parts were composed of 40 items which were answered using the five-point Likert scaling. According to Russell and Cohn (2012), when responding to a Likert questionnaire item, respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Before the administration of

the survey, the questionnaire was submitted for content validation by education program supervisors. Then, the questionnaire was administered as a pilot test to 30 teachers in the elementary public school. The data from the pilot test were analyzed for reliability using the Cronbach alpha coefficient specifically on the second part and the third part. The analysis generated a Cronbach alpha coefficient of .98 both for the second part and the third part. This is indicative that the items are consistent in measuring the construct of interest in the study. The questionnaire was then reproduced and handed to the 400 respondents.

For ethical consideration, written communication was submitted to the Office of Superintendent requesting permission to conduct the study. Upon approval, the indorsement letter signed by the Schools Division Superintendent was attached to the written communication to the School Administrators. A written consent which was to be voluntarily signed by the respondent was also attached to the questionnaire. Then the questionnaires were distributed to the identified schools upon the approval of the School Administrators.

The study further used exploratory factor analysis (EFA) as a data reduction technique for the organizational characteristics and the culture of research. According to Newson (2012), EFA can discover the factor structure and the number of latent constructs of a set of variables without imposing preconceived hypotheses about the nature or outcome of the underlying factor structure of a measure. EFA was also used to examine the internal reliability of a measure. Finally, multiple linear regression (MLR) was used to determine which of the dimensions of the organizational characteristics that best predicts the culture of research which allowed the generation of the best predictor of a certain outcome (Thrane, 2019).

Results and Discussion

The results of the study are discussed according to the sequence of the objectives of

the study.

Dimensions of the Organizational Characteristics of the Basic Education Institution

Presented in Table 1 is the result of the Kaiser-Meyer-Olkin(KMO) and Bartlett’s Test of Sphericity for organizational characteristics as attributes to the culture of research.

Table 1. KMO and Bartlett’s Test of Sphericity for Organizational Characteristics

| KMO | Bartlett’s Test | Df | Sig. |
|------|-----------------|-----|------|
| .976 | 1.355E4 | 561 | .000 |

It can be observed that the KMO is .976 and a chi-square of 1.355E4 with df of 561 and a p-value of .000. This indicates that the sampling is adequate for the analysis. This also improved the communalities extraction coefficient to at least .6 which is above the cut-off of .3. Displayed in Table 13 is the total variance explained for organizational characteristics.

Table 2. Total Variance Explained for Organizational Characteristics

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings* |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|------------------------------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | |
| 1 | 20.570 | 60.499 | 60.499 | 20.570 | 60.499 | 60.499 | 16.912 |
| 2 | 2.310 | 6.793 | 67.293 | 2.310 | 6.793 | 67.293 | 15.552 |
| 3 | 1.246 | 3.646 | 70.939 | 1.246 | 3.646 | 70.939 | 17.956 |
| 4 | .771 | 2.269 | 73.208 | | | | |

It can be observed that there are three-factor loadings based on the eigenvalue cut-off off of 1. Factor 1 has variance explained at 60.50 percent, factor 2 at 6.79 percent, and factor 3 at 3.65 percent resulting in a total variance explained at 79.94 percent. The yielded Cronbach alpha coefficients for each dimension were .961, .945, and .964, respectively. All of these are described as excellent which means that the items in each dimension have passed the reliability standards.

Displayed in Table 3 is the first dimension

of the organizational characteristics of the basic education institution. It can be noted that 12 items loaded on this dimension that are aimed at measuring institutional support. The factor scores range from .596 to .875. The Cronbach alpha coefficient for this dimension is .961.

Table 3.
Dimension 1: Institutional Support and Reward System

| Item No. | Item Statement | Score | Construct |
|----------|--|-------|--|
| 29 | The basic education institution supports the personal and professional growth of the teachers. | .596 | Institutional Support and Rewards System |
| 30 | The rewards system is based on the performance of the teachers in carrying out their responsibilities. | .775 | |
| 31 | The teachers have a clear knowledge of how their performance is being/should be assessed. | .709 | |
| 32 | The leaders recognize employees whose efforts make a difference. | .718 | |
| 33 | The institution provides for teachers with various avenues to develop professionally. | .791 | |
| 34 | The institution provides sufficient time for teachers to work on their tasks such as reports, research, etc. | .608 | |
| 35 | The present reward system motivates teachers to continuously perform better. | .822 | |
| 36 | The institution selects teachers and leaders who are equipped with the potentials to carry out their responsibilities. | .745 | |
| 37 | The institution regularly provides training to improve teacher performance. | .875 | |
| 38 | The training provided enables teachers to reach the Division's goals. | .728 | |
| 39 | The teachers receive constructive feedback from their superiors on their performance enabling them to improve. | .773 | |
| 40 | The institution develops teachers to have the competencies to interact across organizational boundaries, participate in teams, and make decisions. | .810 | |

The institution develops teachers to have the competencies to interact across organizational boundaries, participate in teams, and make decisions.

The institutional support and rewards system enable the teachers to engage in research. They provide motivation and ensure incentives for the basic education teachers who are engaged in research. Institutional support may include training and development as well as the provision of funding support in the conduct of research. Meanwhile, incentives can be in the form of monetary or non-monetary. Non-monetary incentives may include feedbacks, training, recognition, transparency, and a sense of involvement. When these forms of support are strongly felt and observed by the teachers, their motivation to conduct research increases.

The human resource is the most important asset any organization can possess. Since organizations have to perform optimally and compete effectively, they must maximize their resources, especially human resources (Hoole & Victor, 2017, p. 8). Any organization like the basic education institution must have an in-depth understanding of its employees' needs which should inform the organization's appropriate reward system if the organization aims to experience effective functioning and quality performance. To achieve the required performance standards from human resources, employee motivation is necessary. Employees perform more efficiently and effectively if they are certain that their efforts will be rewarded by the management (Armstrong & Taylor, 2017, p. 473). An effective reward system is one that seeks to meet the employees' specific needs; however, for an employee who has already achieved his/her basic needs through monetary reward, then he/she will tend to value rewards that reinforce his or her self-actualization and hence will be more motivated by relational rewards (Kawara, 2014, p. 3).

Furthermore, Pratheepkanth (2011) argued that a reward system has three main components which include compensation, benefits, and recognition. Njanja, Kibet, Maina and Njagi (2013, p. 55) added that they can include awards and other forms of recognition, promotions, reassignments, nonmonetary

bonuses like vacations, or a simple thank-you. A key focus of recognition is to make employees feel appreciated and valued. Research has proven that employees who get recognized tend to have higher self-esteem, more confidence, more willingness to take on new challenges, and more eager to be innovative. There has been a realization among organizations for the essentiality of establishing a balance between employee's contribution to the organization and the organization's contribution to the employee. The fundamental purpose is to provide positive consequences for contributions to the desired performance. The only way employees will fulfill the employers' dream is to share in their dream. Reward programs should be properly designed to reinforce positive behavior which leads to performance or engagement in research.

Presented in Table 4 is the second dimension of the organizational characteristics of the basic education institution. It reveals that there are eight items loaded in this dimension. Factor scores range from .689 to .935. The Cronbach alpha coefficient for this dimension is .945.

The items loaded in this dimension reflect the vision, mission, and core values of the basic education institution. A mission and vision are standard and critical elements of a company's organizational strategy (Taiwo, Lawal, & Agwu, 2016, p. 130). Kuipers and Giurge (2016, p. 3190) believed that strategy always involves an organization's managers in some way, reflected in the focus on strategizing and the role of managers in the field of strategy theory. Further, an organization's strategy inevitably involves the organization's employees in some way because it will not become operationalized without the efforts of organizational members. Hence, it is of great interest and importance to study how members of an organization relate to and perceive the organization's strategy and its content to reveal in what way strategy guides the organization and its employees in a direction that seems appropriate to reach the organization's preferred goals.

Table 4.
Dimension 2: Strategic Management

| Item No. | Item Statement | Score | Construct |
|----------|---|-------|-----------|
| 1 | All policies are geared towards achieving the institution's vision and mission. | .895 | |
| 2 | The teaching-learning policies produce globally competitive teachers. | .935 | |
| 3 | The institution provides opportunities for its teachers to develop their potential. | .764 | |
| 4 | The core values are exemplified by the teachers. | .801 | Strategy |
| 5 | The institution is run by efficient human resources. | .689 | |
| 6 | The institution enjoys the sincere involvement and respect of the stakeholders. | .814 | |
| 7 | The institution upholds functional education. | .827 | |
| 9 | The institution manifests improved managerial and instructional leadership. | .801 | |

Strategies make organizational objectives clearer by specifying what activities are to be undertaken for achieving organizational objectives. According to Sarang, Bhasin and Verma (2016, p. 36), when objectives are clear and specific, they provide clear direction to persons in the organization responsible for implementing various courses of action. Hence, most people perform better if they know clearly what they are expected to do and where their organization is going. If the decisions are systematized, every teacher knows how to proceed, how to contribute towards organizational objectives, where the information may be available, who can make decisions, and so on. Such clarity will direct the teachers on their engagement in research. In the words of Kukari (2012), research must be meaningfully interwoven with policy development, planning, and practice to ensure that high-quality and informed decisions are made up of the policy development and the planning processes.

Table 5 shows the third dimension of the organizational characteristics of the basic education institution which loaded 14 items. The factor scores range from .550 to .872 and the Cronbach alpha coefficient for this dimension is .96.

Table 5.
Dimension 3: Structure

| Item No. | Item Statement | Score | Construct |
|----------|--|-------|-----------|
| 13 | The organizational structure of the basic education institution is functional, efficient, and effective. | .633 | Structure |
| 14 | The leaders effectively help fulfill the Division's goals. | .570 | |
| 15 | The organizational structure empowers the teachers. | .550 | |
| 16 | The organizational structure is welcoming of teachers' comments, suggestions, and opinions. | .783 | |
| 17 | It is well-organized as an educational institution. | .604 | |
| 19 | The power and authority are evenly distributed from the superintendent down to the classroom-teachers. | .577 | |
| 20 | There is no redundancy of functions in the organizational structure. | .550 | |
| 21 | There is strong collaboration among supervisors, administrative officers, and superintendents. | .604 | |
| 11 | There is favorable support from top management. | .652 | |
| 12 | The institution holds a strong partnership with teachers. | .571 | |
| 22 | There is a smooth workflow. | .792 | |
| 23 | The institution is sensitive to the needs of the teachers. | .872 | |
| 24 | There is an excellent mechanism in communicating orders and/or memoranda. | .852 | |
| 25 | The institution provides convenient means to access and/or transmit information/ answers to queries. | .786 | |

placement of power and authority in the organization. It also defines how the activities, such as delegating tasks, coordination, and supervision are directed towards the achievement of organizational goals and objectives. The order in which the authority and power in an organization are exercised and delegated is important for executing the related activities and achieving the goals and objectives successfully (Zhang, Yu, & Lv, 2015, p. 1440). An ideal organizational structure fosters the spirit of constructive and creative approach in management. Such an atmosphere will allow the staff to display their hidden creative talent, exercise independent, creative thinking, and a spirit of initiative (Ahmady, Mehrpour, and Nikooravesh, 2016, p. 459).

Basic education teachers want to work in an environment of trust and respect where they feel they are making a real contribution to organizational goals and objectives. They want to be able to have the opportunity to show to the management that they can accomplish research with the creativity obtained from working in teams. According to Woyengo, Nzulwa, and Odhiambo (2019, p. 618), high-performance organizations offer individuals the opportunity to obtain the level of success they desire. Further, high-performance organizations share information regarding the organization with their workers. This sharing provides workers with the knowledge they need to perform their job well and to enjoy what they are doing.

Dimensions of the Culture of Research

The second objective was to determine the dimension of the culture of research. The responses of the respondents were then analyzed using EFA to determine the dimensions of the culture of research. Presented in Table 6 is the result of the KMO and Bartlett's Test of Sphericity which shows that the EFA generated a KMO of .973 and a chi-square of 1.767E4 with df of 780 and a p-value of .000. This signifies the adequacy of sampling. When the communalities extraction was examined, the least coefficient

Tobert and Hall (2016) explained that an organizational structure determines the

was revealed to be .532. Thus, all items have passed the cut-off of .4.

Table 6.
KMO and Bartlett's Test of Sphericity for Culture of Research

| KMO | Bartlett's Test | Df | Sig. |
|------|-----------------|-----|------|
| .973 | 1.767E4 | 780 | .000 |

Presented in Table 7 is the total variance explained for the culture of research. Based on the Kaiser's criterion, there are four components loaded with eigenvalue of 23.80, 2.67, 1.47, and 1.34, respectively. Dimension one has 17 items with a coefficient of .963; dimension two has 14 items with a coefficient of .938, and dimension three has seven items with a coefficient of .922. All of these are described as excellent and therefore indicate that the items are reliable. The fourth component, however, was not included in further analysis and discussion due to its insufficiency of items.

Table 7.
Total Variance Explained for Culture of Research

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 23.797 | 59.493 | 59.493 | 23.797 | 59.493 | 59.493 | 10.713 | 26.782 | 26.782 |
| 2 | 2.666 | 6.665 | 66.158 | 2.666 | 6.665 | 66.158 | 9.448 | 23.620 | 50.402 |
| 3 | 1.470 | 3.676 | 69.834 | 1.470 | 3.676 | 69.834 | 6.936 | 17.341 | 67.743 |
| 4 | 1.339 | 3.347 | 73.181 | 1.339 | 3.347 | 73.181 | 2.175 | 5.438 | 73.181 |
| 5 | .910 | 2.274 | 75.456 | | | | | | |

Presented in Table 8 is the first dimension of the culture of research in basic education. Among the 40 items, 18 items loaded on this dimension with factor scores ranging from .477 to .839. These items altogether yielded a Cronbach alpha coefficient of .963. Through thematic analysis, these items pertain to the dimension on the allocation of research knowledge and skill training and development and resources.

Table 8.
Dimension 1: Allocation of Knowledge and Skills Training and Development and Resources

| Item No. | Item Statement | Score | Construct |
|----------|---|-------|---|
| 1 | Training on research will be given. | .769 | |
| 2 | I will be taught how to make scholarly sentences/ paragraphs for my research paper. | .812 | |
| 3 | Templates will be provided. | .796 | |
| 4 | I will be taught how to select respondents/participants for my research. | .817 | |
| 5 | I will be taught how to arrange my manuscript. | .839 | |
| 6 | I will be made to understand the relevance and importance of research to my teaching works. | .795 | |
| 7 | There is a memorandum requiring teachers to conduct research. | .591 | |
| 8 | Someone will mentor me in drafting and finalizing my research paper. | .739 | Allocation of Knowledge and Skills Training and Development and Resources |
| 9 | Research goals and direction will be clear to me. | .746 | |
| 10 | I will learn about the benefits of research. | .744 | |
| 11 | The literature will be readily available. | .663 | |
| 12 | There will be a research center provided in the Division. | .616 | |
| 13 | Research outputs from different schools in the division will be accessible. | .696 | |
| 16 | There will be easy access to the internet. | .477 | |
| 17 | I will be made to understand the practical contribution of research to my work as a teacher. | .564 | |
| 18 | I will learn about the direction of research in the Division. | .614 | |
| 19 | It will be explained how research outputs will be utilized by the superiors to benefit the teachers and the learners. | .492 | |

This dimension implies that the teachers need assistance in enhancing their knowledge of the technicalities of conducting research and on the contribution of research to their work. Aside from training and development, the teachers also recognize their need to be provided with resources such as templates,

access to other research outputs, and the internet, as these will make conducting research easier and convenient.

Another implication of this finding is that training should not only be focused on the technicalities of research like teaching teachers the proper format, how to choose and run the appropriate statistical treatments, what appropriate design to use, and the like. Aside from these, there is a need to inform teachers of why they need to conduct research, what brought forth changes in the institution that paved the way for research, and how they would be benefited by conducting research. Teachers must be made to appreciate and value research.

Training involves learning and educating employees to do something to result in things being done differently. Training is a process that is planned to facilitate learning so that people can become more effective in carrying out aspects of their work (Karim, Huda, & Khan, 2012, p. 145). In the context of research, training, therefore, can contribute to making teachers become effective researchers. To improve the efficiency of training programs, organizations should allow the participation of the employee in designing training methods and modules. Training is not a cost; it is the most sustainable investment of a company to improve the level of motivation of the employee (Tobert & Hall, 2016). It is pointed out that the skills in doing research can be learned by just about anyone. The key is to learn habits that train the brain into the necessary capacities and to believe that effort rather than talent is the key to success (Martin, 2009, p. 265). Further, developing intrinsic motivation is far more powerful for long-term productivity. Many researchers work hard because doing research satisfies them by developing and exercising high-level skills, discovering or developing knowledge, and being part of a socially worthwhile enterprise.

Also, further effort must be made to make resources available for the teachers. To some

extent, this may push for the need for a research center where teachers have great access to books, computers, research journals, data banks, and other relevant resources which can widen the knowledge of the teachers on their topic of interest. In the study of Hadjinicola and Soteriou (2005, p. 10), their analysis revealed that the presence of a research center and external funding for research are factors affecting research productivity and even increase the quality of research outputs. Their study further showed that better library facilities also promote research productivity. This is corroborated by the study of Sharobeam and Howard (2002) wherein the faculty members identified the lack of research facilities, limited support for travel, and lack of external funding as limiting factors to research productivity.

Table 9 displays the second dimension of the culture of research. Fourteen items loaded on this dimension with factor scores ranging from .449 to .755. The Cronbach alpha coefficient for this dimension is .938. By thematic analysis of the items, this dimension pertains to the maximization of incentives and personal and professional opportunities.

The incentives referred to in this dimension include monetary or financial (extrinsic) and non-monetary or non-financial (intrinsic) forms. Monetary rewards mean pay-for-performance like performance bonuses, job promotion, commission, tips, gratuities, and gifts, etc. Meanwhile, non-monetary rewards are recognition, praise, and genuine appreciation (Okwudili, 2015, p. 8) that can be manifested in the forms of being recognized for their research outputs by receiving certificates, having their outputs published in research journals, having the chance to present their work to others, having their findings utilized by others, and even, by having their effort recognized through the support and encouragement shown by their colleagues and superiors. These can make the teachers feel rewarded because their hard work has paid off.

Table 9.
Dimension 2: Maximization of Incentives and Personal and Professional Opportunities

| Item No. | Item Statement | Score | Construct |
|----------|---|-------|--|
| 23 | There will be a cash incentive for the research conducted. | .449 | Maximization of Incentives and Personal and Professional Opportunities |
| 24 | There will be a formal recognition for research conducted. | .639 | |
| 27 | All research outputs will be published in the Division Research Journal. | .702 | |
| 28 | I understand how research can benefit me for promotion. | .665 | |
| 29 | Previous research outputs will have been utilized for Division policies. | .726 | |
| 30 | There will be a balanced time provided for teaching and research. | .579 | |
| 31 | I can regularly attend research conferences. | .684 | |
| 32 | I will be allowed to present my paper to my colleagues and other teachers. | .711 | |
| 33 | I will be given certificates for my produced research. | .658 | |
| 35 | I will be mentored on the different research designs. | .611 | |
| 37 | My colleagues will also conduct research. | .630 | |
| 38 | The superiors will conduct research. | .642 | |
| 39 | School administrators will utilize my research for school improvement. | .755 | |
| 40 | The superiors will encourage me to participate in and undertake research endeavors. | .746 | |

The aforementioned incentives can pave the way for the teachers' greater personal and professional opportunities. Personally, their observations of being rewarded can boost their belief in their capabilities thereby providing them an avenue to develop their full potential. Similarly, being able to gather certificates and other forms of recognition can aid them in their professional growth like promotion. In a study, it was revealed that when faculties are rewarded with an appropriate compensation or incentive, research productivity improves and that it can also result in creating a positive cultural change within the department, thus aiding it to achieve its mission (Osibanjo & Adeniji, 2013, p. 125). Indeed, financial incentives have a significant

effect on employee's performance but it was discovered that financial reward is not the most motivating factor and it even has a demotivating effect (Okwudili, 2015, p. 10). Giving praise and positive feedback works to create enthusiasm and works for employees to ensure that they give their best to the organization thus helping the organization achieve its goals and objectives (NjoyaNdungu, 2017). Therefore, the implication for this is that mechanisms should be developed to make research more rewarding for teachers. Rewards provide motivation. Thus, if the rewards system for research is inviting, teachers will be more motivated to conduct research.

Revealed in Table 10 is dimension three of the culture of research. This dimension only has seven item-loadings with factor score ranging from .456 to .784. The Cronbach alpha coefficient for this dimension is .922. By thematic analysis, the items in this dimension pertain to the integration of the conduct of research into the school routine.

Table 10.
Dimension 3: Integration of Research into the School Routine

| Item No. | Item Statement | Score | Construct |
|----------|--|-------|---|
| 14 | There will be fewer pupils. | .732 | Integration of Research into the School Routine |
| 15 | The time for research will be allocated in the class program. | .663 | |
| 20 | Teachers will be appropriated during weekdays the time to go to other schools and/or to the Division Office for purposes of research. | .503 | |
| 21 | There will be fewer paper works. | .781 | |
| 22 | There will be a lesser number of pupils in my class. | .784 | |
| 25 | Division supervisors and administrative staff, and superintendents altogether will show support for the proliferation of research in the Division. | .627 | |
| 34 | Research can be done within school hours. | .456 | |

At present, the conduct of research is an additional workload of the teachers. This means research can be done beyond school hours thus adding up to their load of reports, teaching preparations, and other paper work. Similarly, it minimizes their time for recreation. Hence, the teachers recognize the need for research to be integrated into their school routine. That means they can work on their research within school hours thereby not compromising their time for their family and other routines apart from work. Teachers, nowadays, have been complaining about the abundance of workloads. There have been a lot of paper works, and the high number of pupils in the class means additional paper works. Teachers complain being exhausted from these situations, but they can manage. However, any additional tasks such as research can result to dismay.

Therefore, this dimension pushes for planning on how research can be integrated into school routines. This may require appropriating an hour daily or weekly for research purposes. Further, this may also require minimizing the pupils in each class ideally to the ratio of 1:45. This is one form of institutional support that teachers wish to observe. Employees need to feel and perceive support from their employer because it is by then that they can achieve their potential, they value their organization more, and they even go out of their way to actively collaborate in achieving the organization's goals and objectives (Torrentira, 2019, p.18).

Likelihood Index of the Culture of Research

Illustrated in Figure 1 are the likelihood index of the culture of research in the basic education and its dimensions. It presents how likely the culture of research can be built based on the dimension. This is arrived at by converting the scale responses into the index. Index A represents dimension 1; index B represents dimension 2; index C represents dimension 3, and culture index represents the cumulative dimensions.

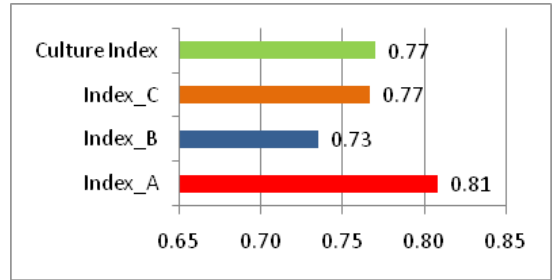


Figure 1. Likelihood index of the culture of research and its dimensions.

It can be noted that dimension 1 has an index of .88 which is very high. This means that the culture of research is very highly likely when there is an allocation of knowledge and skill training and development, and resources. This dimension is the foundation of the culture of research. Regardless of how well laid out is the direction and mechanism of the research in the department, if the teachers lack the knowledge, skills, and resources to carry out their research, then the attempt to build the culture of research will be a failure. Foremost, the teachers need to be capacitated by equipping them with the required knowledge, skills, and resources. This will enable the teachers to normally and sustainably conduct action research.

Dimension 2 has the least index value of .73, but this still is within the high level. This indicates that since the culture of research is highly likely given this dimension, then, this needs to be worked out. This may imply that when teachers exert effort on a particular task such as research, they do not intend to or pay less attention to gain incentives. However, being rewarded for their efforts is a well-accepted and well-appreciated bonus.

Dimension 3 is at the same level as dimension 2 although it has a higher index value of .77. This means that the culture of research is also highly likely if research is integrated into the school routine. Being bombarded with their present workload, the teachers can hardly allocate additional time for research. Therefore, when they do not have to work on their research

beyond school hours, they are highly likely to produce research outputs.

Overall, the culture of research is highly likely given the three dimensions will be implemented based on the index value of .77 which indicates a high level. Meaning, the teachers will normally and sustainably conduct action research if they are allocated with knowledge and skills training and development, and resources are offered with maximized incentives and personal and professional opportunities, and when allowed to work on their research during school hours. When these dimensions will be put into practice, conducting research will become normal and sustainable, hence, the culture of research will be built. James and Augustin (2018) emphasized that the success of action research is predicated on several conditions such as motivation, trust, mutual respect, and resources, particularly time spent within the situational context (p. 340). This finding is further supported by the study of Meerah, Johar and Ahmad (2001) which concluded that the type of training and teachers' knowledge are some of the variables that contribute to the teachers' involvement in research.

Empirical Model for Building the Culture of Research in Basic Education

After running the multiple linear regression, the following model is generated as the best predictor of the culture of research.

Table 11. Empirical Model for the Culture of Research in Basic Education

| Variables | B | SE B | B | t-value | p-value |
|-------------|------|------|------|---------|---------|
| Constant | .026 | .003 | | 9.626 | .000 |
| Dimension 3 | .503 | .007 | .550 | 73.537 | .000 |
| Dimension 1 | .304 | .005 | .356 | 56.282 | .000 |
| Dimension 2 | .147 | .005 | .155 | 28.333 | .000 |

Table 11 reveals the empirical model for the culture of research. To note, three predictors appear to have a statistically significant effect

on the culture of research with the p-value of .000. In this model, it appears that among the three dimensions of the organizational characteristics, dimension 3 that pertains to structure has the biggest effect on the culture of research, of which an increase in its index leads to an increase in the index of the culture of research by .503. Dimension 1 that pertains to institutional support and reward system comes second in terms of the amount of effect on the culture of research of which an increase in its index leads to an increase in the index of the culture of research by .304. Finally, dimension 2 that pertains to strategy has the least contribution to the culture of research of which an increase in its index only leads to an increase in the index of the culture of research by .147.

Table 12. Model Summary and ANOVA for Model 3 for the Culture of Research in Basic Education

| Model | R | R Square | SE of Estimate | F | Sig |
|-------|------|----------|----------------|---------|------|
| 3 | .998 | .996 | .008 | 2.949E4 | .000 |

Table 12 presents the model summary and ANOVA of model 3 for the culture of research. Results reveal that the linear combination of the three predictors is significantly related to the culture of research $F = 9.033, p = .000$. The multiple correlation coefficient is .998 indicating that approximately 99.6 percent of the variance in the culture of research can be accounted for by the linear combination of the predictors. Compared to model 2, model 3 results in a change in the R square by .009. Therefore, the empirical model that best predicts the culture of research in basic education is as follows:

$$CULTURE = D1*.304 + D2*.147 + D3*.503$$

Where:

CULTURE = culture of research

D1 = dimension 1 of organizational characteristics (Institutional Support and Reward System)

D2 = dimension 2 of organizational characteristics (Strategy)

D3 = dimension 3 of organizational characteristics

(Structure)

As revealed in the empirical model, the dimension of the structure has the largest effect on the culture of research. This is because structure involves the placement of power and authority. The placement of power determines the promotion or inhibition of any undertaking in the division. If the power is solely placed upon the only one individual, for instance the highest-ranking official, all decisions about a particular undertaking, i.e., the building of the culture of research, is reliant on that individual. If for instance he/she refuses to permit or support such undertaking, then it can hardly flourish. It is, therefore, critical for the authorities who hold the power in the division to model utmost zeal to build the culture of research. After all, they are the ones who take the lead. Their decisions affect the workflow, and thereby either make or break the culture of research. Bess and Lee (2012) noted that one of the characteristics found in institutions with high research production is a decentralized organization wherein governance structures are flat and decentralized thus participation of members is expected.

The dimension of institutional support and reward system has the second-highest effect on the culture of research. This implies that the authorities in the department must ensure providing an attractive reward system for research-related activities. As mentioned, the rewards do not only include those in monetary form. It can be in the form of additional merits and training and development which can aid the teachers in their promotion. Promotion is also one reward that teachers look forward to. This may help lessen the number of teachers who have not been promoted after several years in the service. One of the influential factors for a culture of research is the institution's provision of significant support to faculty research efforts through effective leadership and clear goals, faculty training, and support programs, research centers, recognition of research production, encouragement of faculty collaboration, balanced teaching, and research

responsibilities, and pay that is commensurate with expectations (Torrentira, 2019, p. 25).

The dimension on strategy which has the least effect on the culture of research still needs to be developed as it is found to be a statistically significant predictor. Strategy pertains to the practices directed to the achievement of the division's vision and mission and core values. Having the teachers observe that the division's undertakings are on track, further affirms the credibility of the division. That is, it validates that the division is doing what it is supposed to do. From this end, it is equally important for the division to transmit to the teachers the essence of the culture of research in the department. The teachers must, therefore, discover and realize that by venturing into research, the division does not negate itself from its educational duties and responsibilities. Instead, by doing so, it transforms itself to be adoptive of and equipped to address the ever-evolving educational demands. When the division succeeds in relaying this information to the teachers, they will gain a clearer understanding of the how's and why's of the research and thereby strengthen their intrinsic motivation to adopt the culture of research. Teachers must have a reason for wanting to engage in research (Borg, 2006, p. 24). Further, the institutional support to teachers in the conduct of research promotes a culture where students and teachers are at the center through professionalism and collaborative strategy (Mohr, 2004).

Conclusion

Based on the major results of the exploratory factor analysis and regression analysis, the following conclusions were drawn:

1. The result of the exploratory factor analysis revealed that the items about the organizational characteristics of the basic education institution included institutional support and rewards system, strategy, and structure.
2. A further result of the exploratory factor

analysis revealed that there are underlying dimensions of the culture of research which included the allocation of knowledge and skill training and development and resources, maximization of incentives and personal and professional opportunities, and integration of research into the school routine.

3. Finally, the result of the multiple linear regression analysis revealed that the dimensions of the organizational characteristics of the basic education institution which were institutional support and reward system, strategy, and structure significantly predicted the culture of research.

Recommendation

To increase the likelihood of success of its pursuit of building its culture of research, the basic education institution must enhance its practices in allowing the teachers to know the contribution of research in the achievement of its vision and mission and realize its core values. A series of orientation may be conducted for this matter. It must also be ensured that this information is distributed and well-understood by every member of the institution, across all positions. Second, the basic education institution must design an attractive reward system for research-related activities in the division. This may start with capacitation strategies by providing abundant and conveniently accessible resources and equipping teachers with the necessary knowledge and skills through efficient and effective training and development. Intensive planning for other forms of rewards especially in line with promotion through research endeavors may be done. Third, the basic education institution must strengthen the support and zeal of the officials and leaders in the division to build its culture of research. This may come in the form of coming up with memos, policies, and guidelines for research matters. This also calls for modeling by the superiors by leading the conduct of research and intensively encouraging their

subordinates to do the same. The utilization of the research findings and outputs of the teachers is also deemed of benefit and a manifestation of superior's support. Finally, the basic education institution must devise a mechanism for the integration of research into the school routine whereby the teachers will be allowed to work on their research during school hours.

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