

# **A Path Model of the Research Productivity and Instructional Performance of Secondary School Master Teachers in Caraga Region, Philippines**

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**Abstracts:** This study aimed to describe the implementation of Basic Education Research Fund (BERF), psychosocial variables to research, research productivity, and instructional performance of the master teachers in the Cabadbaran, Butuan, and Surigao city divisions. This research used a descriptive correlational integrating a Structural Equation Model (SEM) technique to understand the interrelationship among the variables. The respondents of the study were the master teachers from Cabadbaran City, Surigao City, and Butuan City Division. Based on the objectives of the study, results of the study revealed that: (i) Master teacher-respondents in the three divisions have good behavior toward research but research support and self-efficacy are areas that need further improvements; (ii) The implementation of BERF in terms of research outputs is better among the master-teacher respondents of Cabadbaran than in Butuan and Surigao City considering the number of respondents in each division; (iii) Master teacher-respondents performed their instructional functions beyond expectations; (iv) Research publications and productions are areas in that master teacher-respondents need reinforcements; (v) Research impact in terms of citation from Google Scholar needs further improvements among the master teacher-respondents, and (vi) The data support a best-fit model based on the fit indices that are within the acceptable range. Psychosocial and BERF implementation are the prime factors that positively increase research productivity.

**Keywords:** Psychosocial Variables, Research Productivity, Instructional Performance, Research Impact.

## **1. INTRODUCTION**

Instructional performance in the classroom is one of the critical indicators of better learning outcomes. Whether private or public, learning at schools primarily depends on the preparation and quality of instructions that the learner receives. Teachers must strategize ways to improve academic performance using instructional techniques that meet their students' learning needs and styles.

In the literature, several published studies revealed relevant factors that influence or significantly predict teachers' instructional performance in the classroom (Punongbayan & Bauyon, 2015). Accordingly, the instructional leadership of the school head (Amankwah & Hua, 2020), school facilities and support (Sebastian et al., 2019), and parental involvement (Joharis, 2017) are all known factors that contribute to student achievement. Only a few studies have dealt with the psychosocial variables, implementation of the Basic Education Research Fund (BERF), and research productivity of master teachers and its impact.

The psychosocial dimensions of the teacher are essential considerations in instructional performance, as Asuquo and Kalu (2015) define psychosocial dimensions as psychological and social factors that describe an individual's behavior, attitude, and emotions. Uche (2000) emphasized the vital link between psychosocial factors and instructional performance that primarily manifested in delivering instruction in the classroom setting.

One of the Department of Education's (DepEd) most successful initiatives for promoting better-quality instruction through research has been the implementation of the Basic Education Research Fund (BERF). DepEd specified the revised guidelines for the BERF in DepEd Order (DO) No. 43, Series of 2015. In the said order, DepEd started to provide a funding policy for research through BERF under DO No. 24, series of 2010. However, only twelve research proposals have been approved and completed in the four years of implementation. To address the very low utilization of the research fund, DepEd further defined a policy development process and procedures. Pantin (2019) further revealed that utilizing BERF in the division of Butuan City remains challenging.

The level of research production is another aspect of relevance. Research is an irrevocable element in planning and policymaking. Ayala and Garcia (2013) state that research preserves and improves the educational system and quality instructions; hence, recognizing its value is important. Abarro and Mariño (2016) viewed national and global progress as dictated by research outputs. Regarding educational advantage, Mahani (2012) asserted that research improved classroom teaching and has contributed to teachers' professional development; hence, investment in research provides higher chances of improving the quality of learning among students and teachers. Consequently, policymakers and economists continue to regard research productivity as a driver of economic development (Wagner et al., 2010).

The Philippine Republic Act No. 9155, also known as the "Governance of Basic Education Act of 2001," emphasizes the significance of research in managing and administering the basic education system. In response to and in compliance with the law, DepEd is persistent in its effort to promote a culture of research in all elementary and secondary schools in the country. In particular, DepEd adopted the Basic Education Research Agenda (BERA) stipulated in the DepEd Order No. 39, s. 2016. The agenda was a compass for the department's researchers in schools, divisions, regions, and the central office. It centers on topics that will respond to the critical knowledge gaps and cater to the needs of the primary education of the Philippines in line with the agency's vision, mission, and target outcomes.

To further guide in managing research initiatives at the national, regional, school divisions, and school levels, DepEd establishes the Research Management Guidelines (RMG) by DepEd Order No. 16, s. 2017. DepEd Memorandum No. 144, s. 2017, or the Supplemental Research Guides and Tools, strengthened research by providing guidance for personnel who intend to conduct research and those who intend to seek funding through their respective school, division, regional, and national research committees. However, despite these efforts, the research productivity of teachers in the country remained very poor (Capulso, 2020).

The master teachers' overall instructional performance precedes research productivity as specified under the Results-Based Performance Management System (RPMS) (DO 2, S. 2015). At the national level, improving instructional performance through research has been recognized as an opportunity for improvement. DepEd continues to empower teachers through research capability training and seminars as an effective strategy to address classroom problems and improve instruction.

At the regional scale, particularly in the three city divisions of Cabadbaran, Surigao, and Butuan of Caraga Region, the research performance of master teachers remains an area that needs improvement (Pantin, 2019). This study seeks to unfold the master teachers' instructional performance by understanding psychosocial variables, implementation of BERF, and research productivity of master teachers and their impacts. Significant findings of the study will serve as inputs in developing intervention or enhancement programs that are instrumental in promoting research culture and productivity. Further, the expected output of the study may serve as a benchmark for other divisions in improving research productivity for all teachers, resulting in better learning outcomes for all Filipino learners.

In general, the study assessed the psychosocial variables, implementation of BERF, research productivity, and its impact on the instructional performance of master teachers in the three divisions of the Caraga region. Specifically, this paper discusses the extent of manifestation of psychosocial variables of master teachers, the status of the implementation of the BERF as experienced by the master teachers, the instructional performance of the master teacher, the level of research productivity of master teachers, and status of the impact of completed research in terms of utilization and citation. Finally, a path model that can best fit the interrelationship of the variables in the study is derived and discussed.

## **2. THEORETICAL FRAMEWORK**

The theory of self-efficacy developed by Albert Bandura and the theory of planned behavior (Ajzen, 2001) are the foundations for this present study. Albert Bandura, a social cognitive theorist, published a book in 1977 titled

"Social Learning." In his book, he laid the groundwork for the theory of learning that bears his name. In his theory, Bandura (1986) defines self-efficacy as "people's judgment of their capabilities to organize and execute courses of action required to attain chosen types of performances." Competence is highly correlated with skills and productivity (Papanastasiou, 2005). Bandura argues that people with high self-efficacy demonstrate better competence and behavior toward a particular task (Ajzen, 2001). In the conduct of research, one's feelings, way of thinking, and motivation affect one's attitude and, eventually, the result of the research.

Bandura cites four significant activities the learners undergo in the learning process. First, the learners obtain information or new behaviors (attention). Second, they keep the new information or behaviors inside their brains (retention). Third, they repeat the information or new behaviors in the future (reproduction). Finally, they become motivated to maintain and expand such information or new behaviors (motivation). In the context of this study, competence and attitude are manifestations of self-efficacy, resulting in better research productivity (Jacob, 2016).

Motivation is the last method by which individuals acquire information and continue to learn. In his book, Bandura defines motivation as "an internal stimulus that leads to mimicking the learned behavior." In addition to his perspective on motivation as a process that enables learning, Bandura is specific about the unique and particular characteristics of motivation as an independent process, as evidenced by the term he coined, "self-efficacy," which is a fundamental aspect of human behavior.

This study's primary concept derives from Bandura's theory of self-efficacy and relevant literature reviews that support the positive association between competence and attitude towards research and research productivity of master teachers. Self-efficacy underpins teachers' competence and behavior and is very influential in achieving higher productivity in research.

Further, the Theory of Planned Behavior (TPB) is a parsimonious, empirically supported, widely cited, prominent, compelling, and well-established model for predicting intentional behavior (Hasbullah, 2014). In this theory, positive attitudes towards certain practices determine the intention to perform these behaviors. Although the plan does not always translate into action (Silver, 2009), positive attitudes can be considered a prerequisite for teachers' and educators' intentions to conduct research. TPB best explains the drives and purpose, either positive or negative, of the teacher in scientific research.

Previous studies have supported the idea that competence and attitude toward research are vital to research productivity. In addition, DepEd policies are very clear about their support and mandates for teachers to use research as a powerful weapon in improving the quality of education. Figure 1 illustrates the variables in a more specific manner which depicts the relationship between the variables discussed in the conceptual framework.

### **3. METHODS**

This descriptive correlational study described the relationship between the measured variables without inferring a cause-and-effect relationship. Descriptive correlational studies help explain how one phenomenon relates to another when the researcher has no control over the independent variables believed to cause or influence the dependent or outcome variables (Lappe, J., 2000).

This study was conducted in the three divisions of the Caraga Region namely, Cabadbaran City, Surigao City, and Butuan City. Figure 3 shows the location of the three divisions in the Philippines: namely, Cabadbaran City Division, Butuan City Division and Surigao City Division. Table 1. The sample size is taken from each school based on its population.

The respondents of the study are the master teachers from the Divisions of the Department of Education in Caraga Region, Philippines. Table 1 shows the distribution of the respondents.

**Table 1.** Distribution of Master Teachers from three Divisions of DepEd.

Division	Total (N)	Sample Size (n)
Division A	12	9
Division B	108	78
Division C	32	23
Total	152	110

This study used a combination of researcher-made and standard questionnaires that are commonly used in the literature. The psychosocial variables namely, motivation towards research, research support, and self-efficacy towards research were measured using a five-point Likert scale. In this study, the researcher measured the attitude toward research by modifying the commonly and widely used “Attitude Towards Research Scale” into a 5-point Likert scale instrument, where the value of 1 stand for strongly disagree, while 5 stands for strongly agree. The Attitudes Toward Research Scale is a self-report measure of teachers’ attitudes towards the field of research, regardless of their research orientation (quantitative, qualitative, or mixed methods). This measure which exists in both Greek and English consists of 32 Likert scale items in which scales range from 1 to 7. The value of 1 stand for strongly disagree, while 7 stands for strongly agree. Papanastasiou (2005), who conducted an exploratory factor analysis of the data in her sample, has identified the existence of five factors, such as “Research usefulness” ( $\alpha=.919$ ), “Research anxiety” ( $\alpha=.918$ ), “Positive research predisposition” ( $\alpha=.929$ ), “Relevance to life” ( $\alpha=.767$ ), and “Research difficulty” ( $\alpha=.711$ ). The factor of Research usefulness measures the teachers’ perceptions in reference to how useful they perceive research in their professional lives. The Research anxiety factor measures the negative feelings of stress and anxiety felt by the teachers in relation to the research. The third factor of Positive research predispositions measures the existence of positive feelings and interest in research. The factor of Relevance to life measures the teachers’ perceptions of whether research can be applied in the teachers’ daily lives. Finally, the factor of Research difficulty identifies the problems that teachers face with various aspects of research. Each of these factors was considered in crafting the modified survey questionnaire used to measure the attitude towards the research of the respondents of this study. The research productivity of the respondents was measured by adopting the research productivity of Jacob (2016).

Further, other variables that are measured using a researcher-made Likert scale questionnaire were tested for reliability using Cronbach’s alpha technique. A pilot test of thirty (30) master teachers was conducted and Cronbach’s alpha for motivation towards research is 0.909, for self-efficacy is 0.902, for research support is 0.804, and for attitude towards research is 0.875. All the alphas are greater than 0.70 which showed high internal consistency and reliability of items.

Data gathering was conducted face to face and via google forms through the permission of the Regional Director and endorsed by the Schools Division Superintendents ensuring propel channel and protocol. Research ethics was observed through prior-informed consent. The respondent's rights are always the researcher's concern and were protected with high prudence. Respondent's participation in the study is voluntary, and no one shall be compelled nor influenced to answer questions without their consent which was expressed in the form.

Data were analyzed using the following techniques: mean and standard deviation to describe the extent of manifestations of the psychosocial variables, frequency, and percentage to describe the extent of the status of the implementation of BERF, instructional performance, research publications, research productivity, and research impact and Structural Equation Model (SEM) Technique to test the hypothesized path model as shown in the schematic diagram of the study.

**4. RESULTS**

This section presents the data and the results of the study along with interpretations and insights. In addition, relevant studies were incorporated to corroborate the generated findings. Qualitative and quantitative presentation, analysis, discussion, and interpretation were used.

Table 2 summarizes the extent of manifestation of psychosocial dimensions among master teacher-respondents across the three divisions. It can be seen in the table that respondents from Division B and Division C reported high levels of all psychosocial variables. This could be attributed to the annual capacity building conducted by each division and the regional office through research conferences and training seminars. In addition, respondents in these divisions believed that research could enhance instruction; consequently, they have a positive

outlook and are motivated to conduct research in order to enhance their teaching and promote the quality of learning, in addition to the benefits implied by conducting research, such as promotion.

**Table 2.** Summary Table on the Extent of Manifestation of Psychosocial Variables of Master Teacher-Respondents.

Psychosocial Dimensions	Division A			Division B			Division C		
	Mean	SD	VD	Mean	SD	VD	Mean	SD	VD
Motivation Towards Research	3.92	0.73	High	4.23	0.67	High	4.24	0.72	High
Self-Efficacy	3.35	0.47	Average	3.76	0.66	High	3.83	0.61	High
Research Support	3.39	0.76	Average	3.96	0.84	High	3.89	0.77	High
Attitude Towards Research	3.76	0.47	High	3.98	0.64	High	3.98	0.65	High
<b>Overall Mean</b>	<b>3.76</b>	<b>0.47</b>	<b>High</b>	<b>3.98</b>	<b>0.64</b>	<b>High</b>	<b>3.98</b>	<b>0.65</b>	<b>High</b>

Note: 1.00-1.50: Very Low, 1.51-2.50: Low, 2.51-3.50: Average, 3.51-4.50: High, 4.51-5.00: Very High

SD- Standard Deviation

VD- Verbal Description

On the other hand, respondents from Division A reported a high level of motivation and a positive attitude toward research. Nonetheless, respondents from the said division demonstrated an average level of self-efficacy and research support. In addition to the respondents' heavy workloads, this can be attributed to their need to improve their data analytics skills, as shown in Table 3, and the lack of research support in terms of providing a conducive environment for conducting research at school, as shown in Table 4. According to the respondents' daily schedules, the majority of their time is spent instructing and performing other ancillary functions.

The high motivation and positive attitude of respondents in the three divisions may be explained by their belief in the efficacy of research in enhancing instruction and their desire to learn and advance in their field. The lack of support could be enhanced to maximize the respondents' motivation and positive attitudes. Through research, DepEd administrators may design policy or program support aimed at improving instruction and management.

Table 3 presents the status of BERF in the three divisions as experienced by the master teacher-respondents. Seven (7) out of nine (9) (77.78%) of the respondents from Division B have submitted proposals for funding, 66.67% (6) have proposals funded, 66.67% (6) have completed and funded research, and 66.67% (6) presented the funded research in the academic fora. In addition, 22.22% of respondents from Division B have utilized the funded research project in classroom instruction or school administration.

In Division A, there were twenty-two (22) out of seventy-eight (78) (28.21%) master teacher-respondents who submitted proposals for funding, 20.51% (16) proposals were being funded, and 15.38% (12) of which were completed. It is also noted that 12.82% (10) of these respondents have presented research in academic fora and 6.41% (5) have published research outputs in at least refereed journals. Also, 16.67% (13) of the respondents were able to use their funded research in classroom instruction or administration.

In Division C, there were a total of twelve (12) out of 23 (52.17%) master teacher-respondents who submitted proposals for funding, 17.39% (4) were funded and 13.04% (3) were completed. Accordingly, 26.09% (6) of these respondents have presented research papers in academic fora and 13.04% (3) have published in refereed journals. Further, 21.74% (5) teachers were able to implement the research outputs in classroom instructions and school administration.

**Table 3.** Status of the Implementation of BERF in the Three City Divisions as Experienced by the Master Teacher-Respondents.

Indicators	Division A		Division B		Division C	
	Count	%	Count	%	Count	%
1. Submitted proposal/s for funding	7	77.78%	22	28.21%	12	52.17%
2. Funded proposals	6	66.67%	16	20.51%	4	17.39%
3. Funded research completed	6	66.67%	12	15.38%	3	13.04%
4. Funded research presented in academics for a	6	66.67%	10	12.82%	6	26.09%
5. Funded research is published in at least refereed journals	0	0%	5	6.41%	3	13.04%
6. Funded research is used in classroom instruction or school administration	2	22.22%	13	16.67%	5	21.74%

**Sample size:** Cabadbaran-9, Butuan-78, Surigao-23, Total-110

The small number of master teacher-respondents conducting research in these three divisions can be attributed to their heavy workloads. Accordingly, they no longer have time to conduct action research due to their heavy classroom responsibilities. The majority of these master teachers have six (6) teaching loads. In addition to advisership, classroom observations, and providing technical assistance to other teachers, they have other ancillary functions. This finding corroborates Pantin's (2019) study that the difficulties master teachers face in Division B when conducting research includes a heavy workload and a lack of time, among others. As emphasized by Barner et al. (2015), other than self- efficacy, competence, and attitude toward research, the personal and work life of teachers are also affecting their research productivity. The bulk of non-teaching functions among teachers is one of the spotted reasons that is highly linked to poor research productivity (Morales, 2016).

Regardless of the small number of master teacher- respondents conducting research, the statistical figures presented above still reflect the efforts of the teachers and the institutional support particularly the Basic Education Research Fund (BERF) of DepEd. Considerably, the research outputs reflected in Table 6 are still indications of the growth and productivity of these master teachers conducting research despite the evident challenges. However, increasing the number of research outputs remains an evident area that needs improvement. DepEd administrators may reflect on the numerical findings above in evaluating the return on investment behind the implementation of BERF assistance.

Table 4 shows the frequency and percentage distribution of master teacher- respondents in terms of their instructional performance based on the classroom observable objectives in their IPCR ratings for the School Year 2021 – 2022. It can be observed that 88.89% (8) of the master teacher-respondents from Division A have demonstrated outstanding performance while 11.11% (1) obtained very satisfactory. In Division B, 88.46% (69) of the master teacher- respondents are outstanding, 10.26% (8) are very satisfactory, and 1.28% (1) obtained a satisfactory rating. In addition, 65.22% (15) of the respondents from Division C posited an outstanding performance while the remaining 34.78% (8) performed very satisfactorily.

It gives the detail of the instructional performance's mean ratings of the master teacher-respondents by division on the seven (7) classroom observable objectives in the three (3) Key Result Areas (KRAs) stipulated in D.M. 004, s. 2022. The KRAs include: (1) Content knowledge and pedagogy, (2) Learning environment, and (3) Diversity of learners, curriculum, planning, and assessment reporting. The objectives under KRA 1 are: Objective 1 - Modeled effective applications of content knowledge within and across curriculum teaching areas; Objective 3 - Modeled and supported colleagues in the proficient use of Mother Tongue, Filipino, and English to improve teaching and learning, as well as to develop learners' pride of their language, heritage, and culture; and Objective 4 - Displayed a wide range of effective verbal and non-verbal classroom communication strategies to support learner understanding, participation, engagement, and achievement. For KRA 2, the classroom observable objectives include; Objective 5 - Exhibited effective strategies that ensure safe and secure learning environments to enhance learning through the consistent implementation of policies, guidelines, and procedures; and Objective 6 - Exhibited effective practices to foster learning environments that promote fairness respect and care to encourage learning. While in KRA 3, classroom observable objectives are: Objective 9 - Assisted colleagues to design, adapt and implement teaching strategies that are responsive to learners with disabilities, giftedness, and talents; and Developed and applied

teaching strategies to address effectively the needs of learners from indigenous groups. The ratings under these objectives were rated by the school head during the conduct of classroom observation.

Table 4. Summary of the Instructional Performance of the Master Teacher - Respondents Based on the Classroom Observable Objectives of their Latest IPCR Ratings.

Adjectival Rating Equivalence	Division A		Division B		Division C	
	Count	%	Count	%	Count	%
Outstanding (4.500-5.000)	8	88.89%	69	88.46%	15	65.22%
Very Satisfactory (3.500-4.499)	1	11.11%	8	10.26%	8	34.78%
Satisfactory (2.500-3.499)	0	0%	1	1.28%	0	0%
Unsatisfactory (1.500-2.499)	0	0%	0	0%	0	0%
Poor (Below 1.499)	0	0%	0	0%	0	0%
<b>Total</b>	<b>9</b>	<b>100%</b>	<b>78</b>	<b>100%</b>	<b>23</b>	<b>100%</b>

**Note:** Classroom observable objectives are: KRA 1: Objectives 1, 3, & 4; KRA 2: Objectives 5 & 6; KRA 3: Objectives 9 & 10.

**Key Result Area (KRA) 1** – Content knowledge and pedagogy

**KRA 2** - Learning environment

**KRA 3** - Diversity of Learners, Curriculum and Planning & Assessment and Reporting

It can be observed in the table that master teacher-respondents in the three divisions obtained outstanding performance in all the seven (7) observable objectives evidenced by their overall mean ratings of 4.873 for Cabadbaran City, 4.835 for Butuan City, and 4.602 for Surigao City. All the master teacher-respondents in all divisions rated outstanding in the seven (7) classroom observable objectives except for Objective 3 and Objective 6 of which Surigao City respondents rated very satisfactory. The numbers presented in Tables 8 and 9 strongly support that master teacher-respondents have performed beyond what is expected. This is along with the evident research outputs and undeniable challenges that were encountered in doing research. Looking back at the remarkable performance of these master teachers, it could be implied that research culture is already introduced in schools since one of the targets or deliverables of master teachers is the conduct and production of research outputs. In addition, the instructional performance of respondents is mostly attributed to their significant years of teaching experiences and exposure to DepEd-sponsored training and seminars. In supplement to the research outputs of the master teacher-respondents with assistance from BERF, Table 5 displays the frequency and percentage distribution of the master teacher-respondents' research productivity in terms of publication and production. It can be noticed that respondents from Cabadbaran City Division have not published any research papers, even at the local level. However, three (3) master teacher-respondents have printed several copies of the research, two (2) have provided the school with copies of the research, and one (1) master teacher respondent has been able to apply for a patent on the invention.

Table 5. Master Teacher – Respondents' Mean Ratings on Instructional Performance on the Classroom Observable Objectives by Division

Key Result Areas (KRAs)	Classroom Observable Objectives	Division A		Division B		Division C	
		Mean	VD	Mean	VD	Mean	VD
KRA 1. Content Knowledge and Pedagogy	1. Modeled effective applications of content knowledge within and across curriculum teaching areas.	5.000	O	4.885	O	4.609	O
	3. Modeled and supported colleagues in the proficient use of their Mother Tongue, Filipino, and English to improve teaching and learning, as well as to develop learners' pride in their language, heritage, and culture.	4.778	O	4.821	O	4.435	VS
	4. Displayed a wide range of effective verbal and non-verbal classroom communication strategies to support learner understanding, participation, engagement, and achievement.	4.889	O	4.872	O	4.565	O
	5. Exhibited effective strategies that ensure safe and secure learning environments to enhance learning through the consistent implementation of policies, guidelines, and procedures.	4.889	O	4.859	O	4.652	O
	6. Exhibited effective practices to foster learning environments that						
KRA 2. Learning Environment.	promote fairness, respect and care to encourage learning.	4.889	O	4.910	O	4.478	VS
	10. Assisted colleagues to design, adapt and implement teaching strategies that are responsive to learners with disabilities, giftedness, and talents.	4.889	O	4.744	O	4.609	O
KRA 3. Diversity of Learners, Curriculum and Planning & Assessment Reporting	11. Developed and applied teaching strategies to address effectively the needs of learners from indigenous groups.	4.778	O	4.756	O	4.870	O
	<b>OVERALL MEAN</b>	<b>4.873</b>	<b>O</b>	<b>4.835</b>	<b>O</b>	<b>4.602</b>	<b>O</b>

**Note:** The classroom observable objectives are based on DM No. 004 s. 2022. Ratings are taken from the submitted Individual Performance Commitment and Review (IPCR)

Scale: 1.000-1.499 – Poor (P); 1.500-2.499 – Unsatisfactory (U); 2.500-3.499 – Satisfactory (S); 3.500-4.499 – Very Satisfactory (VS); 4.500-5.000 – Outstanding.

VD – Verbal Description

KRA – Key Result Area

Master teacher-respondents from Butuan City have published and produced researchers, as shown in Table 8. It can be gleaned that sixteen (16) master teacher-respondents have published research papers in print journals at the local level, nine (9) published research papers in print journals at the division level, fifteen (15) published research papers in print journals at the regional level, fifteen (15) published research papers in online journals, ten (10) published research papers in a national journal, and twelve (12) published research papers in international journals. In terms of production, a total of 49 research papers have been printed, and 22 were provided in the school library. Further, five (5) research innovations have already been applied for patents.

Table 6. Research Productivity of Master Teacher-Respondents in Terms of Research Publications and Research Production

Research Productivity	Indicators	Division A		Division B		Division C	
		Count	%	Count	%	Count	%
<b>Publication</b>	Published research papers in print journals in local level.	0	0%	16	20.51%	1	4.35%
	Published research papers in print journals in Division level.	0	0%	9	11.54%	1	4.35%
	Published research papers in print journals in Regional level.	0	0%	15	19.23%	3	13.04%
	Published research papers in online journals.	0	0%	15	19.23%	1	4.35%
	Published research papers in national journals.	1	11.11%	10	12.82%	0	0%
	Published research papers in international journals.	0	0%	12	15.38%	0	0%
	<b>Production</b>	Printed several copies of research.	3	33.33%	49	62.82%	13
Provided school libraries with copies of research.		2	22.22%	22	28.21%	5	21.74%
Applied patents for inventions.		1	11.11%	5	6.41%	1	4.35%

In Division C, Table 6 showed that one (1) master teacher-respondent has published a research paper in a print journal at the local level, one(1) has published a research paper in a print journal at the division level, three (3) have published research papers in print journals at the regional level, one (1) has published a research paper in an online journal, and no one has published research papers in national and international journals. As to research production, there are a total of thirteen (13) research papers being printed; five (5) were provided in the school library; and one (1) has already been applied for a patent.

As shown in the table, many of the publications and productions are observed by the master teacher-respondents in Butuan City. This implies that more efforts have been made in Butuan, which also reflects a good culture for doing research. Accordingly, there are many master teachers in Butuan City who have pursued graduate studies which made them produce more research outputs. Some schools in Butuan have also been receiving technical research assistance through community extension projects or services that were hosted by the Caraga State University (CSU) and other research-driven agencies.

Table 7 presents the status of the impact of the completed research in terms of utilization and citation. In terms of citations indexed by Google Scholar, forty-five (45) notable research outputs were cited, and these are from Butuan City divisions. None of the respondents from Division A and Division C have records of Google Scholar citations. In terms of patented inventions, Cabadbaran has one (1), Division B has six (6), and Division C has none.

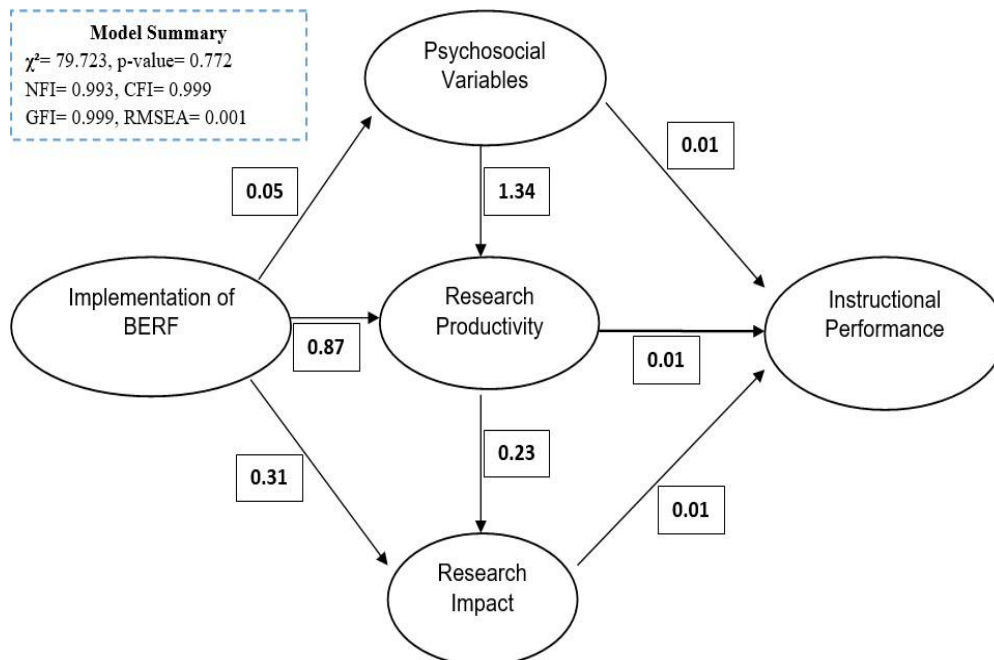


Lastly, the given table showed that there are five completed studies from Division A that were already used in teaching, one hundred (100) in Division B, and eleven (11) in Division C.

**Table 7. Impact of Completed Research in Terms of Utilization and Citation**

Research Impact	Indicators	Division A		Division B		Division C	
		Count	%	Count	%	Count	%
Citation	1. Number of research citations indexed by google scholar	0	0%	45	57.69%	0	0%
	2. Number of patented inventions	1	11%	6	7.69%	0	0%
Utilization	3. Number of innovations used in teaching	5	56%	100	128.21%	11	47.83%

The statistical figures above reflect the reality regarding the impact of research outputs in the journal community. Relatively few have yet been cited in Google Scholar, but it is already a manifestation that teachers in Caraga are gradually producing research impacts. However, it must be noted that the same figures reflect more improvements, especially since research outputs are already evident. There is probably a dire need to push and encourage teachers to publish their research outputs in credible journals to be used and to create a significant impact in the community of researchers and users.



**Figure 3.** Path analysis model describing the structural relationship of the variables of the study.

Based on the data collected, the given Figure 3 displays and illustrates the best-fit path model that explains the structural relationships between the variables considered in the study. Besides the previous findings, the presented path model presents a more comprehensive understanding of the interrelationship of the variables. The model summary supports the overall goodness of the path model before proceeding to detailed discussions of the interrelationship between variables. The Chi-Square p-value (0.772) is greater than 0.05. This implies that data supporting the model, or the framework, is indeed a good model. Relative to the model evaluation criteria mentioned by Castor (2018), fit indices that are commonly used to substantiate the robustness of the model such as the Normative Fit Index (NFI), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), and Root Mean Square Error of Approximation (RMSEA). As shown in the given Figure 3, the NFI = 0.993 (should be > 0.95), CFI = 0.999 (should be > 0.95), GFI = 0.999 (should be > 0.95), and RMSEA = 0.001 (should be < 0.05) all indicate that the data support the goodness of the model.

Proceeding to the model implications, the values of the coefficients associated with all paths are considered. These coefficients are regression coefficients that are produced considering the covariance structure of the data. It can be observed that all paths or arrows are carrying a positive coefficient which signifies for positive correlation. For example, the implementation of BERF posits a regression coefficient of 0.87 toward research productivity. It implies further that every one-unit increase in the BERF implementation will result in an increase in research productivity of an amount of 0.87. Other coefficients that are shown in the model can be interpreted in a similar manner.

The implementation of BERF is basically showing a coefficient of 0.05 for psychological variables, 0.87 for research productivity, and 0.31 for the research outputs. These values imply that the influence of BERF is much higher in research productivity, followed by research outputs, and relatively lesser in the psychosocial variables. According to Aithal and Kumar (2016), research funds are very essential inputs to research production. Without funds, research is unlikely to happen. This is the reason why research funding agencies exist. In the study of Nuqui and Cruz (2012), it was found that with investment in research and development programs, more research outputs and innovations were produced. Hence, through the funds raised from BERF, teachers' research productivity was strengthened. Another factor of research productivity is the psychosocial variables as evidenced by the coefficient of 1.34 as shown in Figure 3. This means that motivation, research support, self-efficacy, and attitude toward research contribute to the research productivity of the teachers. Several studies have supported the idea that these psychosocial indicators or variables are factors to research productivity (Morales, 2016; Barner et al., 2015; Christafari & Mahdi, 2012; Tosun, 2014). In the paper of Tosun (2014), it was highlighted that self-efficacy, motivation, and attitude toward research are significant drivers of research productivity. DepEd issued DO No. 65, s. 2003 and DepEd released DO No. 42, s. 2007 also emphasized that research support is another important input towards better research output particularly in schools where functions and workloads are overlapping. The path model above definitely confirmed these existing results in the literature. Thus, adding to the body of knowledge regarding the positive influence of psychosocial factors on research productivity. In addition, high research productivity implies a higher impact as supported by the coefficient of 0.23.

On the other point of analysis, the paths point directly to instructional performance are coupled with relatively low coefficients (0.01). This indicates that data do not strongly show a connection between research productivity, psychosocial factors, and research impact on instructional performance because most teachers are commonly showing an outstanding level. This means that the variability (variance) of the variable instructional performance is less than enough to showcase a strong correlation. However, what must be emphasized here is the fact that master teacher-respondents have demonstrated outstanding levels of performance along with the evident research outputs that were presented in the previous discussions. Hence, descriptively speaking research productivity and instructional performance go together. It is therefore implied that research productivity among teachers shall be continuously supported by the management because of its positive implications for learning.

## **5. CONCLUSIONS**

Relative to the findings presented above, the following conclusions were drawn.

1. Master teacher-respondents in the three divisions demonstrated attitude toward research despite the fact that research support is not adequate and self-efficacy are relatively low .
2. The implementation of BERF in terms of research outputs is better among the master-teacher respondents of Cabadbaran compared with Butuan and Surigao City.
3. Master teacher-respondents performed their instructional functions beyond expectations.
4. Research publications and productions are areas in that master teacher-respondents need reinforcements.
5. Research impact among the master teacher-respondents in terms of citation from Google Scholar is relatively not fully evident.
6. The data support a best-fit model based on the fit indices that are within the acceptable range. Psychosocial and BERF implementation are the prime factors that positively increase research productivity.

### **CONFLICT OF INTEREST**

The authors declare no conflict of interest.

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