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Relationship Between Research and Teaching in Business Education: Synergistic, Complementary or Parasitic?

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Abstract
The current relationship existing between research and teaching in contemporary Business Education in the higher education discourse is critical to the survival of quality education across the globe. Notwithstanding the different interpretations (marital status, impending divorce, holy alliance and useful link) ascribed to the relationship between research, subsequent studies have adopted several approaches to measuring these two core mandates of the individual academic and their possible integration. For the purpose of this study, research productivity and teaching effectiveness were used as proxies for gauging the relationship. Even though, several earlier studies have concentrated on espousing a clearer link between research and teaching, most of these studies have not been able to come out with this relationship in specific terms such as the relationship between faculty member's research productivity and teaching effectiveness within the Business Education landscape. Using the stratified disproportionate sampling technique, 201 Business Education faculty members engaged from public universities in Ghana for the 2020-2021 academic year. A self-developed questionnaire was used for data collection. The questionnaires were validated through the Principal Component Analysis (PCA) method. The data were analysed inferentially (i.e., regression analysis), and descriptively (i.e., means, standard deviations). In all, it was found that research productivity is a significant positive predictor of teaching effectiveness. It is therefore, recommended that as part of the university's mechanisms for determining the teaching efficacy of faculty members, the management of universities are encouraged to incorporate research-teaching integration components into promotions and tenure-tracks by way of encouraging faculty members to promote research-based teaching. Also, faculty members should make the conscious effort to strike a balance between time devoted to teaching and time devoted for research in order to optimise the benefits derived from the perceived synergistic relationship between research and teaching.
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1.0 Introduction

In spite of the range of research-focused programmes developed by universities to generate knowledge within the teaching and learning landscape, many academic commentators argue that the role of research evidence in teaching remains limited, insignificant and blur (Goldacre, 2013). This is attributed to the contradictory empirical evidences found on the research-teaching nexus. Some studies (Brew, 2010; Robertson & Bond, 2001) show a positive, mutually reinforcing relationship between teaching and research; others describe them as separate enterprises (Benton & Cashin, 2010; Marsh & Hattie, 2002; Neumann, 1994; Jenkins, 2004), and under some circumstances, the two activities seem to turn into competing antagonistic activities (Coate, Barnett, & Williams, 2001; Hacker & Dreifus, 2010; Pascarella & Terenzini, 2005). These representations by different stakeholders and scholars have led to the different descriptions ascribed to the research-teaching nexus.

While the needs of the knowledge economy encourage a symbiotic link between research and teaching, counter-pressures in the form of globalisation, competition and marketisation of higher education, rather pull research and teaching apart (Arimoto, 2015; Beerkens, 2013). This is as a result of the global competition among universities as expressed in university rankings and promotions of faculty members. These rankings and promotion of faculty members seem to promote a single model of the good university as either a teaching university or research one: a model that to a large extent, can be reduced to only research excellence (Dill & Soo, 2005; Marginson & van der Wende, 2007) to the neglect of teaching. This has led to initiatives for creating research havens through various excellence initiatives at the national level (Shin & Kehm, 2013) to bridge the gap between research and teaching. It is worthy of note that the workload of most faculty members hinges on three major activities: research, teaching and community service. Inspite of the tripartite nature of the mandate of these faculty members, career advancement usually predominantly centres on their research performance.

However, these havens appear to further set research and teaching apart. This could be alluded to the fact that the created research havens ensure conducive and stimulating research environments such as travel

allowances, funding for attending conferences, office space, summer remunerations, workshops and academic writing trainings. However, due to scanty resources, most faculty members tend to compete for these provisions by focusing on research at the expense of teaching. In support of this claim, Bettinger and Long (2010) intimate that the tensions around combining research and teaching tasks affect not only the profile of universities, but also, the task portfolio of individual faculty members. Therefore, in many countries, there is an increasing tendency to use research grants for "buying out" teaching tasks (Bak & Kim, 2015; Smith & Smith, 2012) due to the higher priority placed on research at the expense of teaching by many universities.

A cursory analysis of the job specification of faculty members showed that they must possess both research and teaching skills. If faculty members possess these skills, their effective integration of research into teaching in order to promote effective teaching and learning has always been problematic for most of these faculty members (Shin & Kehm, 2013). A plethora of researches (Brew, 2010, Ellis, 2010; Wright, 2010; Borg, 2011; 2013; Nassaji, 2012; Arimoto, 2015) have indicated the significant role played by research in the teaching and learning process. For instance, Baldwin (2005), Nassaji, (2012) and Wright (2010) reveal that the active engagement of learners in academic activities, other than mere transmission of content knowledge such as the engagement in inquiry-based teaching and learning would develop in learners, a sense of creativity and innovation that would enable them embark on critical thinking to confront challenges in their daily lives and at the world of work.

Contrary to the latter assertions, and in support of the widened gap, an anecdotal observation of the Ghanaian economy reveals that we are in an era where stakeholders complain about a mismatch between academia and industry. The implication is that university graduates are not able to demonstrate problem-solving skills and a sense of creativity, innovation, as well as, critical thinking skills to meet the challenges at the workplace to the satisfaction of their employers. Prior literature (Dill & Soo, 2005; Marginson & van der Wende, 2007; Beerkens, 2013; Shin & Kehm, 2013; Arimoto, 2015) have indicated that there is a grievous disconnection between research and teaching attributed to the fact that most tertiary institutions have consistently placed research at the very core of their activities (Nassaji, 2012) at the expense of teaching. They have hired renowned faculty members and offered a wide range of scholarship activities and research opportunities, thereby, indirectly de-emphasising the teaching activity through policies and practices. To further worsen the situation, international rankings of institutions are mostly based on high-impact factor generated through research activities. Evaluation methods tend to overemphasise research, and to use research performance as a proxy for an institution's value. Therefore, institutions put in place research awards instead of teaching awards.

In Ghanaian universities, the major criteria for faculty promotion are the quantity and quality of research papers in reputable journals. This has triggered the popular dictum ***"publish or perish".*** Most faculty members, desirous not to perish and wish to be promoted, spend substantial amount of their time working on their research interests, but they seem not to integrate these researches into their teaching, and that is likely to create a disconnection between research and teaching. This seemingly disconnection between research and teaching activities in the universities in light of research for promotion has the tendency to lead to inequity in striking a balance between the two critical roles of the faculty member. The overall consequence is that this seemingly disconnection between research and teaching is likely to adversely affect students' learning outcomes and experiences. Thus, the best teaching occurs when active researchers use their expertise in teaching, while research ideas and approaches are stimulated and sharpened through interactions with students (Shin & Kehm, 2013). Therefore, being research active and sharing those research findings in class takes the learning experience to the next higher level (Brew, 2010).

Adding to the complex and contested nature of the research-teaching nexus, faculty members, according to Seyyed, Al-Haji Umar, and Al-Hajji (2004, p. 16) "face perplexing choices in balancing their workload among teaching, research, and service activities to maximise educational outcomes". Such a choice can be the result of mixed signals as to how best to expend energies across the three workload activities of faculty members likely to lead to workload strain contributed by inadequate time.

After a rigorous review of the extant literature, the impression created is that investigations into the links between research and teaching by a majority of scholars mentioned earlier about the research-teaching nexus seems to have failed to establish the exact nature of the link, as well as, the level of integration. Therefore, by making inference, it is not that results on the research-teaching nexus are only conflicting, but also sounds inconclusive.

Geographically, a study about the link between research and teaching and its influence on students' learning outcomes in Ghana is yet to be identified. Also, it seems both faculty and students struggle to come out with a conceptualisation of the link between research and teaching (Robertson, 2007). This study espoused the conceptualisation through a factor analysis. Previous studies have also ignored determining whether a statistical difference exist among the gender, rank and age of faculty members measured against their level of integrating research into teaching, as well as, their conceptualisation.

In the South Korea, a study by Shin (2011) is another example addressing the question of how the research-teaching link actually varies by contextual factors, including career stage and academic ability of staff,

disciplines and patterns of research publication (book, domestic journal and international journal). Drawing on survey data from a research-university of South Korea, the study revealed evidence that the research-teaching link was not consistent according to different measures of research output, and varied across faculty career stage and discipline, thus, providing support for arguments of a positive as well as a negative link. The link was shown to be positive when research performance was measured by book and domestic journal publications, and negative when measured by international journal publications. This would suggest that it is not only the number of publications, but also the type of publication that can be relevant to examine.

Marsh and Hattie (2002) conducted a study on the relationship between research output and teaching efficacy. They did this by conducting a meta-analysis of 58 studies focused on establishing the relationship between research and teaching. They took a weighted average of the relationship between quality of teaching and research was slightly positive (r= .06), less than 1% of the total variability in common. It emanated from the study that the relationships as manifested from the meta-analysis revealed near-zero relationships and that the message portrayed is that there is very little variance, anywhere, between research and teaching. No matter how they investigated the data, zero was zero (ibid). Overall, they consistently found out that there is a zero relationship between teaching and research at the individual academic and at the departmental level. The misinterpretation and misrepresentation of the overall finding in extant literature led them to conclude that research and teaching are not linked, and therefore, should be separated for funding purposes. There were no differences relating to the type of university, whether they were Doctoral, research, liberal arts, Polytechnics, domain of study, or type of teaching or research measure. They found out that the overall correlation between time on teaching and time on research was -.17. Based on this finding, they concluded that the common belief that research and teaching are inextricably entwined is an enduring myth. Good researchers are only a little more likely to be better prepared as teachers and have better teaching competencies than non-researchers.

Furthermore, the presumed link or connection between research and teaching, be it symbiotic and desirable or disjointed, has not been evidenced by any substantial quantitative study. These studies adopted either the quantitative or qualitative approaches, and not the adoption of the mixed methods. It is, therefore, appropriate to use the mixed method to establish the link for purposes of triangulation, thick description and complementarity (Creswell, 2013). Empirical evidence suggests that the critics (Brew & Boud, 1995; Colbeck, 1998) queried whether correlations or qualitative research designs were most appropriate to address the research-teaching nexus. It seems obvious that the choice of either quantitative or qualitative separately is unlikely to resolve these issues, and that both (mixed methods) can provide different perspectives in establishing a clearer link within the context of Business Education.

Stemming from this discourse, the questions left unanswered are whether, it is conceivable to merge research and teaching harmoniously. If that is likely, is it possible to create better spaces for the nexus across disciplinary spaces? Also, can building on the connection between research productivity and teaching effectiveness become a catalyst for building better connections between and among faculty members, students and 'real world' communities? It is therefore, regularly hard to find some kind of harmony among teaching and research and to incorporate the two effectively to promote effective learning outcomes. That notwithstanding, it is possible because it is likely that, one's research can be influenced by one's teaching and vice versa. Illustratively, it is regularly evident that encouraging an idea compels one to comprehend it better than anyone might have expected for what it's worth now that research assumes a critical part in enhancing the adequacy of the teaching and learning procedure.

Conclusively, the justification for this current study is that if members of faculty are to be encouraged and supported to align their research expertise and experiences to their teaching for the benefit of their students, more information would be needed on how the link between research and teaching can be facilitated and sustained at the institutional, departmental and practitioner levels. Hence, the need for this study. Stemming from the above discourse, determining the direction and magnitude of the relationship between research productivity and teaching effectiveness is the focus of this write-up as a way of enhancing research-based teaching. It is in light of this contradiction that this current study sought to clarify, by investigating the actual relationship existing between the research output of faculty members and their teaching efficacy. The rest of this article is organised as follows: An extensive review of literature followed by the methods as well as the results dichotomized into quantitative and qualitative results. After which a comprehensive discussion was followed by drawing implications on the findings by way of conclusion and was climaxed by recommendations through highlighting some policy implications.

2.0 Literature Review

2.1 Divergent Perspectives on Research output and Teaching efficacy: Theoretical Perspectives

For most faculty members, their primary allegiance is directly tied to their field of study or profession; the institution they work for is typically considered secondary (Healey, 2005). As competition and demand for teaching positions increases, major public and private universities have been requesting staff and faculty

members who excel in research (Brew, 2010). But, as students enrol in large universities for their reputation and brand name, some question the quality of instruction they are receiving, believing faculty members have become too enthralled with the research aspect and have neglected classroom teaching and student learning. Some scholars describe the nexus between research and teaching as negatively related, while, others perceived the relationship as positive or zero. These divergent perspectives about the research-teaching nexus are elaborated as follows:

2.2 Negative relationship

A long-standing debate exists pertaining to whether or not "research output in the faculty incentive and reward system is often justified by the claim that research enhances teaching" (Amundsen & Wilson, 2012, p. 283). Feldman (1985) searched for a connection between research output or scholarly accomplishments of faculty members and their teaching efficacy as assessed by their students. Feldman found that the link between research output and instructional quality is extremely small, if it exists at all. Additionally, many researchers believe there is a negative relationship associated with research and teaching. Callaghan and Coldwell (2014) conducted an exploratory quantitative cross-sectional research study of a university in South Africa to determine the satisfaction levels of professors. They found that professors who derived their primary job satisfaction from teaching were much less productive in the research labs when compared to professors who were more satisfied from research.

The ***Differential Personality Model*** also proposes a negative relationship between academic research and quality of instruction. The model highlights the personality traits of an effective teacher as one who seeks out company, handles pressures, ignores distractions, prefers communication with students, and enjoys manipulating ideas (Arif, Rashid, Tahira, & Akhter, 2012). Alternatively, researchers are more prone to desire to work alone; become easily irritated from distractions; develop frustration with external pressures; and favour ideas, facts, and materials of a discipline rather than working with students or teaching classes (Arif et al., 2012). This model purports that teachers are unable to adopt to a personality that requires demands from both the research and classroom domains.

The ***Divergent Reward System Model*** suggests that research and teaching are conflicting roles with unique expectations and obligations. The role of the teacher and the role of the researcher are in constant strain that involves an apprehensive division of labour, necessitating trade-offs at the expense of the other (Fox, 1992; Hattie & Marsh, 1996).

2.3 Positive relationship

While several models exist that allege a negative relationship between academic research and instructional quality, several models assert a positive relationship between the two realms.

The ***Conventional Wisdom Model*** argues that teaching and research are positively correlated and the relationship between the two are mutually enriching (Neumann, 1992). Teaching and research, in practice, often merge in the university environment and facilitate achievement in both domains. The relationship operates as the "tangible connection relating to the transmission of advanced knowledge, the intangible connection relating to the development in students of an approach and attitudes towards knowledge and a stimulating and rejuvenating milieu for academics, and the global connection relating to the interaction between teaching and research at the departmental as well as the individual level" (Hattie & Marsh, 1996, p. 511).

Additionally, the "G" Model proposes a positive relationship between academic research and a high quality of instruction (Hattie & Marsh, 1996). The "G" Model reasons that the positive relationship between research and teaching lies in the inherent abilities one must possess to succeed at either. A high performing researcher will possess traits resembling high levels of commitment, perseverance, dedication, hard work, and other positive academic attributes. Likewise, a high performing teacher will possess similar characteristics (Hattie & Marsh, 1996).

2.4 No (Zero) relationship

The previous two stance have assumed that a relationship exists between professors conducting academic research and the impact their research has on the quality of instruction. While several models exist, both supporting and opposing a positive or negative relationship between the two domains, other
models purport that no relationship exists.

The ***Different Enterprises Model*** contends that research and teaching are entirely different enterprises that bear no effect on one another (Hattie & Marsh, 1996). "Research relates more to the discovery of knowledge usually by normative means within various disciplines; whereas, teaching involves imparting information leading, it is intended, to student learning" (Hattie & Marsh, 1996, p. 513). This model demonstrates how researchers are valued for what they discover, while teachers are valued for what they enable their students to discover.

The Unrelated Personality Model also suggests that no relationship exists between the two different domains. This model is based on the belief that researchers and teachers are different types of people, and very few personality attributes overlap (Hattie & Marsh, 1996). Researchers are more likely to be ambitious, enduring, definitive, dominant, aggressive, independent, and unsupportive; whereas, teachers are more liberal, sociable, extroverted, calm, objective, supportive, intelligent, and aesthetically sensitive (Hattie & Marsh, 1996).

2.5 Empirical Review on Research output and Teaching efficacy

In Slovenia, Cadez, Dimovski and Groff (2017) investigated the relationship between research performance and teaching quality by distinguishing between quality and quantity indicators (productivity) of research and teaching. While research quantity (productivity) was measured by publication counts, research quality was assessed at the share of papers published in high-quality journals. Using a large cross-disciplinary sample of 223 academics within a research-oriented university, the study employed the survey to find out the relationship between research performance and teaching quality. The study found out that consistent with prior evidence, that research output is not related to teaching quality, whereas research quality is positively related with teaching quality. It also emanated from the study that the workload of most academics involves two main activities: research and teaching. However, balancing these activities posed a serious challenge to academics. Despite the dual nature of the work, career advancement usually chiefly depends on research performance. Since academics are rational actors, warnings are beginning to emerge that current predominantly research-based performance evaluation systems may be detrimental to creativity and innovation in teaching. These findings discount fears that research-based performance evaluation in academia may be detrimental to teaching quality.

Elken and Wollscheid (2016) published a report that examined international state-of-the-art literature on the relationship between research and education. The Research Council of Norway is collaborating to develop an evaluation model ("Integrated Academic Evaluations") for academic research, education, and the interplay between the two in Norwegian higher education. To inform this work by international state-of the-art research, the council has commissioned a literature review about the relationship between research and education, and the development of a set of indicators that could be used for this purpose. The review uncovered that literature in this area is inconclusive. The positive relationship between research and education in the tradition of Humboldt is supported by academic staff, but also taken for granted. At the same time, multiple studies show no relationship. However, the literature broadly does suggest that engaging students in student-active learning forms has positive effects on student learning outcomes.

One can expect that these benefits would be even more pronounced on the graduate level. In a recent study in the US, Horta, Dautel, and Veloso (2012) examined the positive link on graduate level, where teaching can also have a positive effect on research production. They constructed a model where both staff and students are partners in the learning process, and use this model to reprocess a number of existing empirical evidence. They use large scale cross-sectional data from the US to examine faculty output in terms of four indicators for publication (dependent variable), and explanatory variables related to the teaching function (teaching assistant, number of students, percentage of time on research, and time allocated for research with students). Their results indicate that traditional teaching activities show weak linkage to research outputs. However, having a teaching assistant has a positive effect on research production. Furthermore, a positive effect on research production was found when engaging with research activities with both undergraduate and graduate students, emphasizing teaching approaches where students are actively engaged in the research process. The study shows how the teaching-research relationship is dependent on teaching methods (Horta et al., 2012). Similar results regarding publications have also been reported earlier for the PhD level education in the Norwegian context, where it has been highlighted that this can have a positive effect on publication patterns (Kyvik & Smeby, 1994).

In response to their numerous criticisms regarding their efforts in establishing the relationship between research and teaching, Hattie and Marsh (2009) assembled all the criticisms and devised a study to explore these possible alternatives. They did this by searching for potential mediating and moderating variables: including background variables such as research and teaching ability, satisfaction, personal goals, extrinsic rewards, constraints, beliefs; departmental ethos for teaching and research; resource issues, the most common being time on teaching and research; and the actual activities that academics undertake in pursuit of teaching and research outcomes. They spent some time constructing instruments to assess these possible moderators and mediators, and administered them to a sample (N=182) from one university. They also had access to multiple indicators of research publications and multiple indicators of teaching efficacy – including academic's self-ratings of their own effectiveness as teachers and researchers. It emanated from the study that differences in departmental ethos (or any other departmental characteristic) can have little or no impact on teaching efficacy, research publications, or the teaching-research relation. In contrast to suggestions by Ramsden and Moses (1992), there is no teaching-research relation at the departmental level.

In concluding the extensive review of literature, most of the prior studies, either adopted the qualitative or quantitative approaches to investigating the various aspects of the research-teaching nexus. This did not allow

for deeper insights into the issues investigated in these previous studies since it was narrowed to fewer data collection procedures. However, to address this issue, this current study adopted the mixed method approach, specifically, the sequential explanatory design, to investigate the nexus to ensure a comprehensive collection of data in order to answer the research questions and effectively test the hypotheses.

3.0 Research Methods

3.1 Population

The population for this study comprises all 996 Business Education lecturers from the Humanities across public universities that offer Business Education Based on the Krejcie and Morgan (1970) sampling table, 201 Business Education lecturers were sampled from across these public universities in Ghana. The choice of these universities was informed by the fact that they offer Education and for that matter, are properly positioned to offer better insights about the link between research and teaching in the context of curriculum development.

Regarding the sample selection, the proportionate stratified sampling technique was used to select the Business lecturers so as to ensure a fair representative selection. Afterwards, the simple random lottery technique was used to complete the selection process in order to ensure that each lecturer was given an equal chance to participate in the study. The sampling of the cases was done in such a way to reflect the different perspectives from the participants in order to have enriched and deeper insights into the issue under investigation (Creswell, 2013). In all, 201 Business Education lecturers were selected to partake in the study.

3.2 Research Instruments

Self- developed questionnaire was used to elicit information from the Business Education lecturers. In order to ensure a high level of reliability of the instrument, it was designed to conform to literature, and aspect of it was adapted from reliable scholars to ensure high integrity. The development of the instrument was informed by literature subjected to peer review and enriched with pilot testing. A pilot-test of the questionnaire was conducted in one of the Universities have similar mandate and characteristics of the universities involved in the actual study. To ensure the face validity of the items on the questionnaire, the items were strictly crafted to conform to the literature. To also ensure content validity, the questionnaires was handed over to experts and other colleagues who went through and offered their suggestions. In order to ensure the construct validity of the self-developed questionnaire, a principal component analysis (PCA) was conducted. An oblique, specifically, *promax rotation* was used, where the eigenvalue-greater-than-one rule was used to determine an appropriate number of factors to retain. Thus, only factors with an eigenvalue of 1.0 or more were retained for further investigation (Kaiser, 1958).

To clarify further, the eigenvalue of a factor represents the amount of the total variance explained by that factor. It is worthy of note that, what Thurstone (1947) refers to as 'simple structure' was experienced through the factor analytic process. This involved each of the variables loading strongly on only one component, and each component being represented by a number of strongly loading variables, making the measurement scales stronger. The least Kaiser-Meyer-Olkin measure of sampling adequacy was .64, which is acceptable. Bartlett's Test of Sphericity indicates that the correlations between variables are different enough from zero, $p < .001$. Several factors emerged, which cumulatively explained an average amount of 70% of the variance measured by the items.

3.3 Data Processing and Analysis

The data gathered was checked one after the other to ensure its completeness. Respondents who did not respond to more than 10% of the items on the questionnaire were eliminated (Koshy, 2010). The questionnaires were then numbered from one to the last number based on each category of respondents. The data was coded and entered into the Statistical Product for Service Solution (SPSS, version 23) computer software. The data was screened for entry errors and outliers. Inferential analysis was done using a confidence interval of 95% and an alpha level of .05. For inferential analysis, the researcher checked for the normality assumptions together with other significant assumptions depending on the type of statistical analysis.

In testing for the normality, multiple indicators were used since only one could not be relied on. The Shapiro-Wilk test did not provide enough evidence, an inspection of the graphs was necessary. In some cases, the mean and the median were also compared. This was necessary because Pallant (2010) argues that data with large samples are likely to yield a significant result using the Shapiro-Wilk test. After testing for statistical significance, the practical significance (effect sizes) was also computed to find out the magnitude of the differences. After a thorough check, the closed-ended questionnaire items were analysed statistically using descriptive statistics (i.e., means and standard deviations).

3.4 Measures

Teaching effectiveness was gauged using students' assessment of their lecturers administered by the Universities

of Cape Coast and Education, Winneba for 2020/2021 academic year, as well as, lecturers' self- assessment of their own teaching efficacy. The questionnaires administered on the lecturers were uniform and measured on a five-point Likert scale.

3.5 Research productivity

Research output was assessed using publication counts of faculty members in Business Education. The measure deployed included the number of publications in journals including articles, books, book chapters, conference papers, and thesis supervised (Sabharwal, 2013). All these research output indicators are used to measure research output in this study because according to Auranen and Nieminen (2010), the use of a single database reduced the subjectivity concerned with the assessment of an individual faculty member's research output, hence, it is ideal for measuring a holistic research output. Therefore, benchmarked research output was calculated by dividing each lecturer's publication count by the average number of publications per lecturer.

3.6 Teaching effectiveness

Teaching efficacy was assessed with students' evaluations of teaching efficacy based on the standard university form of the universities involved in the study (Scriven, 1994). The evaluation form included overall ratings of the faculty members and the value of the course from the perspective of students. The scores obtained from the students were intended to be of diagnostic value that would reveal the performance of faculty members from their students' perspectives. For purposes of the present investigation, I focused on the overall faculty rating that was intended to be the primary summative evaluation from this instrument for each faculty member.

3.7 Results

Effect of Research Productivity on Faculty Members' Teaching Effectiveness

This paper sought to establish the effect of research productivity on teaching effectiveness. The justification for this is that there is a contention among scholars as to how the exact relationship between research productivity and teaching effectiveness is, and ought to be. Some contend that the relationship is either positive, negative or zero. This has led to debates and controversies among scholars. Therefore, there was the need to investigate in order to further clarify the exact nature of the relationship between research productivity and teaching effectiveness using a simple linear regression.

In order to measure the relationship between research productivity and teaching effectiveness, teaching effectiveness was gauged using students' assessment of lecturers administered by the universities under investigation for the 2020/2021 academic year, as well as, lecturers' self- assessment of their own teaching effectiveness, whilst, research productivity was assessed using publication counts for these lecturers. The publication counts included the number of publications in journals including articles, books, book chapters, conference papers, and thesis supervised. The results are displayed in Table 1.

Regarding the indicators for gauging research productivity, the study revealed that the most dominant research activity undertaken by most lecturers is journal articles publication (M=17.66, SD=8.59) as displayed on Table 1, followed by a review of articles (M=9.16, SD=7.23) and conference papers (M=4.26, SD=3.59). It is however, interesting to know that the average authored books (M=2.42, SD=1.91) of these lecturers is relatively smaller in quantity, not to talk about contribution to book chapters (M=.96, SD=1.86).

Table 1: Descriptive Statistics of Publication Counts of Faculty Members

Publication Counts	Mean	Std. Deviation
Journal articles	17.66	8.59
Articles reviewed	9.16	7.23
Conference papers	4.26	3.59
Authored books	2.42	1.91
Book chapters	.96	1.86
M.Phil thesis	4.92	4.59
PhD thesis	3.27	.16

Source: Field Data (2020)

From Table 1, the least among the research activities undertaken by lecturers is supervision of Doctoral (PhD) thesis (M=3.27, SD=.16). The least could be accounted for by the fact that there were few professors who took part in the study and per the criteria for supervision at the PhD level, you should have obtained a professoriate status. In addition, most of the lecturers had supervised M.Phil thesis (M=4.92, SD=4.59) relative to those who have supervised PhD.

To establish the effect of research productivity on teaching effectiveness, a multiple regression analysis was undertaken where teaching effectiveness was treated as the dependent variable and research productivity was operationalised as the independent variable made up of several indicators leading to the performance of simple linear regression. The model summary of the relationship is presented by Table 2.

Table 2: Model Summary of the Relationship between Research Productivity and Teaching Effectiveness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.348[a]	.121	.103	.61812	1.785

F(1, 50) = 6.88, *p* = .012. *IV=Research Productivity, DV= Teaching Effectiveness*

The regression model containing research productivity and teaching effectiveness was statistically significant, $F(1, 50) = 6.88$, $p = .012$. The implication of this result is that research productivity explained 12.1% of the variations in teaching effectiveness. Therefore, research productivity of faculty members contributes a 12.1% upsurge in their teaching effectiveness. The coefficients of the relationship is presented in Table 3.

Table 3: Coefficients of the Relationship between Research Productivity and Teaching Effectiveness

Model	Unstandardised Coefficients		Standardised Coefficients		
	B	Std. Error	Beta	t	Sig.
Constant	6.664	.117		57.192	.000
PRODUC	.010	.004	.348	2.50	.012*

*Significant, $p < .05$

Source: Field Data (2020)

As shown by the findings in Table 3, a beneficial association (.01) signifies a good relationship among research efficacy and teaching effectiveness. The regression coefficient (.010) tells the nature of the relationship between research productivity and teaching effectiveness. It also tells us the magnitude of change in teaching effectiveness as explained by research productivity. Thus, a unit increase in research productivity leads to .01 units increase in teaching effectiveness. The mathematical model for the impact of research productivity on teaching effectiveness have been illustrated in the following equation:

$TE = 6.664 + 0.010(ResProd) + \varepsilon$, where the Independent Variable is Research Productivity (Res Prod), Dependent Variable is Teaching Effectiveness (TE).

From the equation, *TE* represents teaching effectiveness, which is the criterion variable in this case. The 6.664 in the model represents the intercept or constant. The 0.010 in the model represents the slope or the unstandardized regression co-efficient. This denotes the contribution of research productivity (*Res Prod*) to teaching effectiveness. This is the predictor variable in the model. The 'ε' in the model represents the residual, which is the difference between the predicted and the actual slopes. The results depicted by the equation shows that a unit increase in research productivity leads to .01 increase in teaching effectiveness.

4.0 Discussion

Research productivity was found to be a positive predictor of teaching effectiveness. This result implies that a unit increase in research productivity leads to an upsurge in teaching effectiveness. In spite of this result, many stakeholders are skeptical about the exact relationship existing between research productivity and teaching effectiveness, including scholars of the research-teaching nexus. Notwithstanding the exposition realised from the quantitative phase of this study that research productivity is a significant positive predictor of teaching effectiveness, a relatively higher number of the participants still are not clear on the exact nature in reference to the connection among research profitability and teaching adequacy. Contrary to the findings, Callaghan and Coldwell (2014) found a negative relationship between research and teaching, hence, adding to the complexity associated with the research-teaching nexus.

Some of the lecturers also attributed the nature of connection among research productivity and teaching effectiveness on the competences of the individual lecturer in handling the two activities. Therefore, some of them revealed that whether a strong bond exists between the two activities depends on the individual lecturer and the readiness level of their students. Therefore, they indicated that there is a clear difference between the actual practice and ideal practice geared towards the effective incorporation of research into teaching. This creates the impression that the way the lecturer manages the activities of research and teaching would tend to be positive or negative depending on the management strategy adopted by this individual lecturer. For instance, Arif, Rashid, Tahira, and Akhter (2012) espoused that an effective teacher as one who seeks out company, handles pressures, ignores distractions, prefers communication with students, and enjoys manipulating ideas. Alternatively, researchers are more prone to desire to work alone; become easily irritated from distractions; develop frustration with external pressures; and favour ideas, facts, and materials of a discipline rather than working with students or teaching classes

Authenticating the findings, Horta, Dautel, and Veloso (2012) indicated through their study that when there is a weaker connection among research and teaching, there is the tendency for faculty members and students to determine its nature which poses a challenge for the effective integration of research into teaching. Thus, a perceived weaker link is likely to affect the level of integration. Adding to the controversy on the assurance of the exact strength of the research-teaching nexus, Horta, Dautel, and Veloso examined the constructive connection on graduate level, where it was made manifest that that teaching can likewise positively affect

research creation. In determining the relationship, they built a model where both faculty members and students were seen as cohorts in the learning and knowledge production process. Contrary to other research results (Callaghan & Coldwell, 2014) it was indicated that the traditional teaching activities showed a weaker linkage to research outputs. However, their study indicated that faculty members having teaching assistants had a positive effect on research production.

Their analysis also revealed that, by participating in research practices for both undergraduate and graduate students, a beneficial impact on research production was observed, underscoring teaching methods where learners are completely associated with the research cycle. The thesis reveals how the relationship between teaching and testing relies on teaching techniques (Horta et al., 2012). Comparable effects on publications have likewise been documented previously in the Norwegian sense for the PhD stage of education, where it was demonstrated that this may have a favorable influence on publishing trends (Kyvik & Smeby, 1994).

It is essential to recognise the way that the qualitative findings from the interview corroborates the quantitative findings that suggest that a constructive connection exists among research productivity and teaching effectiveness. The associations among research productivity and teaching effectiveness may consequently be defined mainly as either unidirectional, or they might have a clear two-way, reciprocal nature. The movement among research and teaching is conventionally assumed to act mostly, if not entirely, from the previous to the last mentioned. This, however, lacks the future advantages of staff research that may stream from teaching (Brew, 2010).

This provides the sense that teaching will allow members of the faculty to put their research in a broader analytical sense than would usually happen when research is highly technical in nature. This will bring up new ideas and interactions. Students may offer direct input on research proposals and test results that can nevertheless serve to locate shortcomings in the review, though not guided by the experience of their colleagues, as well as offer reassurance and inspiration. Therefore, being conscious of the ethical problems that can be created, including coercion, the learning experience of learners would itself be a means of research materials, particularly when this practice is 'research-based' or 'inquiry-based.' For example, student experiments may help evaluate the methodological structures developed by academic personnel, or offer the foundation for venturing on comparative research that can afterwards be more systematically, objectively and rigorously undertaken (Arimoto, 2015).

The current literature concerned with the connection among teaching quality and research efficacy in advanced education is also dynamic and conflicting. There are observational research, as mentioned above, that indicate that there is minimal or no connection. But, paradoxically, faculty members around the world tend to say that there is such a connection. Research that reveals a clear qualitative inter-play among the two confirms this view. Analysis indicating a nonexistence of correlation appears to come from quantitative studies and, quite lately, from meta-analyses. For starters, Feldman (1987) concludes in a meta-analysis of 43 experiments that research profitability is just marginally correlated with teaching skills, that the possibility that research efficiency directly supports teaching is exceedingly slim, and that the two are basically unrelated for all practical reasons. Hattie and Marsh (1996) likewise showed a zero association in their meta-analysis of 58 reports. They reason that "… the common belief that research and teaching are inextricably entwined is an enduring myth. At best research and teaching are very loosely coupled" (p. 529).

It is imperative to bring up that research may be weakly incorporated or more deeply implemented into teaching practices. The former happens when the research of faculty members is represented as research findings as used in reading lists. In the opposite sense, when research is more deeply incorporated, the learning tasks taken out by students are used purposely to form it. The research and scholarly work of the instructor becomes a structural feature in the learning cycle for students instead of being merely an item of knowledge. The students become partners in the process of generating information instead of becoming simply receivers of knowledge instilled by the teacher. By assisting their teachers in the practice of advanced learning, they refuse to be solely an audience for research (Arimoto, 2015).

It is evident that a plethora of studies attest to the fact that there is a relationship between research productivity and teaching effectiveness. The assumption is that there is a beneficial relationship between the capacity to be an efficient teacher and an effective researcher. This provides the idea that members of the faculty who feel that they are extremely capable teachers are most probable to be inspired to be effective teachers, to invest more teaching resources, and thus to be great teachers. Likewise, those who feel that they are extremely capable of doing research as researchers would be more driven to do research, invest more research resources, and therefore be stronger researchers. In a variety of places, such self-efficacy has been found to be a crucial factor for performance.

Inspite of the positive relationship found between research productivity and teaching effectiveness through the regression analysis performed at the quantitative phase of this study, the follow-up interview also revealed a somewhat contrary relationship as some of the lecturers attested to the fact that they also believe there is a negative relationship between research and teaching. The reason alluded to this revelation is accounted for by the

fact that both activities are seen to be antagonistic since both activities compete for the same resources such as time, skills, knowledge from the same individual academic.

Centered on the above observations, it is essential to note that a number of reviews centered on personal knowledge and objective analysis of the academic position support the representation of a zero-relationship recorded in some empirical studies. Therefore, the function of researcher and the function of instructor are regarded distinct activities in higher education (Goldacre, 2013). To further worsen the situation, Romainville (1996, p.16) indicated that the belief in research-teaching nexus as complementarity is deemed somewhat "masochistic".

It could be inferred from the various conceptualisations of the link between research and teaching that the way faculty members perceive the link between research and teaching has the tendency to either create a stronger, moderate or weaker link, as well as, either positive or negative link between research and teaching. Thus, one's conceptualisation is likely to influence the level of integration and that would establish the nature of the link. This, therefore, influenced Badley (2002), in analysing and synthesising the research and teaching relationship based on these different interpretations of the research-teaching nexus including 'an impending divorce'; 'a marital relationship'; 'a holy alliance; 'a scholarly relationship'; and, 'a really useful link'. In an imminent breakup, independent research and teaching institutions exist. Fox (1992) postulated that there was a tension among research and teaching in explaining an imminent breakup, in that scholars sell off one package of finances against another. Thus, teaching and research *"do not represent aspects of a single dimension of interests, commitments, and orientations, but are different dimensions that are at odds with each other"* (p. 301).

Research is regarded as the male partner in a romantic partnership, and teaching as the female partner. In the perspective of a holy alliance, analysis is seen as a producer of confusion; and this uncertainty must be resolved by teaching. Research and instruction are distinct but overlapping academic practices in a scholarly partnership. Boyer (1990), therefore, indicated that research and teaching has something to do: the exploration and introduction of knowledge scholarship; and the application of knowledge scholarship. Badley (2002) subsequently, adds a 'really useful link' by portraying the research-teaching nexus as having an interactive relationship. Thus, one's conceptualisation is likely to influence the level of integration and that would establish the nature of the link between research and teaching.

Inferring from the mutual benefits realised from the previous research question, coupled with earlier studies, the core conclusion drawn from prior studies that found a positive link between research and teaching. Hence, validating the findings of this current study. Among these findings, Healey and Jenkins (2011) showed that the participation of staff research was critical for the comprehension of material by students, had an effect on their passion for studying and teaching, facilitated postgraduate research, played a significant part in undergraduate research and had an influence on the growth of skills relevant to work. Similar results have also been shown elsewhere in other related studies, of which most concluded that both lecturers and students report positive impact of staff research involvement in research with the view to linking it to their studies.

Slovenia's Cadez, Dimovski, and Zaman Groff (2015) examined the correlation between research output and teaching efficiency by discriminating among research and teaching quality and quantity metrics (productivity). Although the quantity of research (productivity) was determined by the number of publications, the quality of the research was calculated by the proportion of studies published in high-quality journals. They discovered that research productivity was linked to teaching efficiency, which was calculated by the quantity of publications. On the other hand, the quality of testing was negatively linked to the quality of teaching assessed by student tests, consistent with prior data (Hattie & Marsh, 1996). This means that the level of fulfillment with a task can impact the sum of optional resources that an individual spends in a task (time, energy). Thus, the better the anticipated standard of teaching, the more pleasure an educator receives from teaching; likewise for research, and even for those who are dedicated to both teaching and research. In addition, one determining factor of the relationship between teaching and research results may be the connection between satisfaction resulting from research and teaching (Marsh, 1996).

The impact of the nexus may also promote co-learning. By co-learning, I mean a systematic and focused approach to optimizing the synergetic connections between research and teaching in such a way that their symbiotic development builds on all participants' previous learning and interactions and ideally reflects back on the content of both research and teaching contexts. It can therefore, be ironed out that with co-learning, the development of Business Education can occur in a distinctive way that would not have been possible if research and teaching were deemed and treated as separate endeavours or in isolation as mostly, one is used in buying out the other (Bak & Kim, 2015; Smith & Smith, 2012).

Any drawbacks should be taken into consideration when evaluating the study's results. As noted earlier, perspectives on the use of publications and student reviews as proxies for the quality of research and instruction are controversial, although these indicators remain commonly used (Gerschwind & Brostrom, 2015; Lucas, 2007). Article numbers do not necessarily reflect the final objective of the testing operation, i.e. the development of information (Buckley, 2011); student grades do not necessarily reflect the final objective of instruction, i.e.

student learning (Deem and Lucas, 2006). Despite this, the alternate teaching efficiency metrics suggested in recent research include student learning outputs (Healey, 2012; Malcolm, 2014) or their career development following completion of the curriculum (Healey, 2012; Malcolm, 2014) (Melese, 2013).

In addition, while the described variance in the model is similar to current studies (Gentry & Stokes, 2015), it is fairly small. Other variables, such as the skill, enthusiasm and time for teaching of the scholar, seem to be more significant indicators of teaching efficiency than research activity (Buckley, 2011). Even so, the objective of this research was not to optimize the model's explanatory capacity, but to provide reliable parameter estimates. Although a possibility for excluded variable bias is present in either model, if the excluded variables are not associated with the included regressors, a standard least square estimation approach yields reliable parameter results (Magi & Beerkens, 2016). Any limits are often unique to study. Second, a weighted number of publications can be a stronger measure of the effectiveness of a person (in terms of authors). While the Slovenian Research Agency uses the same metric to determine research efficacy (Cadez, Dimovski, Zaman-Groff, 2017), others can justifiably claim that it is not the best objective measure of research productivity. Given these shortcomings, in the contemporary higher education academic setting, this analysis offers new insights into the correlation between research and teaching, and research efficiency and teaching effectiveness. I am also of the strongest conviction that there exists a stronger relationship between research productivity and teaching effectiveness depending on how both activities are managed.

5.0 Conclusion

The questions asked at the initial stage of this write up was whether the relationship existing between research and teaching is synergistic, complementary or parasitic. That notwithstanding this outstanding contentious contemporary discourse in academia, several researchers have established their stance of which some have described the relationship as ‘an impending divorce’; ‘a marital relationship’; ‘a holy alliance; ‘a scholarly relationship’; and, ‘a really useful link’. I may therefore, conclude that within the context of Business Education, coupled with the onset of this write-up, the relationship between research and teaching is somewhat complementary and if the necessary steps are made, they could be synergistic. This therefore, creates the impression that the relationship between research and teaching may be described as a marital relationship and for that matter, a useful relationship. However, if this description of the relationship will stand, it requires some level of efforts on the part of both faculty and students to work collaboratively in order to promote research-based teaching.

Implications for Policy and Practice

- Universities should strive to build a comprehensive research culture in order to serve as a basis for developing capacities in both faculty and students to embrace the research-teaching nexus.
- Universities should train their faculties for them to effectively integrate research into their teaching as a way of practicing research-based teaching.
- Faculty members should make the conscious effort to strike a balance between time devoted to teaching and time devoted for research in order to optimise the benefits derived from the perceived synergistic relationship between research and teaching.
- Lecturers should be sensitised on how to effectively integrate research into their teaching.
- Universities, through their respective faculties/schools and departments should develop a policy for the research-teaching nexus. The policy should be supported by a policy document to serve as a guideline to enable faculty members practice research-based teaching. This can be facilitated by drafting disciplinary-specific research-teaching nexus policy documents to cater for the uniqueness of each field of study.
- The university and its faculty should create the enabling environment and encourage their students to enrich their research experience. Sufficient opportunities such as research conferences, seminars, exhibitions should be created for students to attend in order to enrich their research experiences and exposure to serve as preparatory grounds to achieve the research-teaching nexus goals. Also, the various experiences that students are exposed to should be part of the assessment process and must be strictly enforced to benefit students’ learning outcomes.
- As part of their mechanisms for determining the teaching effectiveness of faculty members, the management of universities is encouraged to incorporate research-teaching integration components into promotions and tenure-tracks. This could be facilitated through the exhibit of sample documents showing the extent to which faculty have integrated research into their teaching.

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