

Factors Affecting Faculty Research Productivity: Conclusions from a Critical Review of the Literature

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ABSTRACT

Publication is the most visible sign of an active researcher. It is central to a research career and academic advancement. Also, the institution gains prestige and the researcher gains a notable reputation and career rewards. The study summarized the findings from a systematic investigation into existing literature and views regarding the factors that affect faculty research productivity, to discuss themes and components of such work, and to propose a conceptual framework. A systematic analysis of existing literature was used to address the problems. It is found that faculty research productivity is influenced by individual factors (self-efficacy, affiliation, motivation, commitment, orientation, basic and

advance research skills, sense of achievements, contributing to society, sense of responsibility, scholarly pursuit, autonomy and flexibility, satisfying interest and curiosity), institutional factors (have fewer course preparations, staff support, advising and mentoring, resources, rewards, sufficient work time, culture, research emphasis, tenure and promotion, financial rewards, satisfying performance standards, peer and social recognition), leadership factors (highly regarded able scholar, research oriented, work for departments with a similar priority placed on research). Ascriptive factors refer to gender, an age of a faculty member at a given point in time, intelligence, a personality of the individual. The paper has implications for higher education institution administrators regarding managing faculty members' research performance.

Keywords — Institutional Research, research productivity, faculty performance, higher education, literature review, Philippines

INTRODUCTION

Why are some faculty members more productive than others in academic research? Institutions of higher education are complex, having multiple facets and unique infrastructures. Consequently, it is vital to the success of the institution to successfully integrate different factors and balance resources for the collective purpose of the institution. Universities and other academic institutions have constantly served as feeder institutions to the overall development of nations through scientific research (Uzoka, 2008). The staffs of higher education institutions are the key research resource.

Productive faculty members do not only expand the knowledge in their professional fields by integrating their findings with those of others through scholarly publications circulated around the world, they also bring visibility and prestige to themselves and their affiliated institutions (Brewer, Douglas, Facer, & O'Toole 1999; Bland, Center, Finstad, Risbey, & Staples, 2005; McGill & Settle, 2012; Zhang, 2014). Due to this, higher education institutions are increasingly emphasizing research productivity when assessing promotion, merit, funding and performance recognition (Creswell, 1985; Blackburn & Bentley, 1993; Hardré, Beesley, Miller, Pace, 2011; Zhang, 2014). As a result, it is no surprise to see a growing interest in studying the factors that affect faculty research productivity (Blackburn & Bentley, 1993; Williamson, & Cable, 2003; Bland, Center, Finstad, Risbey, & Staples, 2005; Kim, Morse, & Zingales, 2009;

Hardré, Beesley, Miller, Pace, 2011). One approach examines the characteristics of all academic researchers is Bland *et al.* (2005) model to predict faculty research productivity.

Although that these studies have significantly improved our understanding of faculty research productivity, the findings are often incomplete and even conflicting, depending upon the research approach undertaken and academic disciplines being studied. We examine the possible factors affecting the research productivity of faculty in different higher education institutions from various journal publications.

Faculty Research Productivity

For a majority of academic scientists, research productivity is a lifelong process with a distinct life-cycle profile. It sharply increases to a peak early in life and then gradually declines (Stephan & Levin, 1992). Research productivity has been measured as the quantity and/or quality of the artifacts produced by faculty scholarship (Dundar & Lewis, 1998; Meho & Spurgin, 2005).

Faculty members serve a key role in the academic success of their students, advancement of knowledge throughout society, and their professional achievements. Their skills and experience significantly contribute to the mission and purpose of higher education, to advance learning and promote human knowledge. Faculty work encompasses multiple interrelated activities of teaching, research, and service (Fairweather, 1993, 2002; Paulsen & Feldman, 1995).

During the past few decades, considerable attention has been devoted to the topic of faculty research productivity (Blackburn & Bentley, 1993; Bland, Center, Finstad, Risbey, & Staples, 2005). Such attention is warranted since productivity is often used as an index of departmental and institutional prestige and is strongly associated with an individual faculty member's reputation, visibility, and advancement in the academic reward structure (Creamer, 1998). Indeed, for many faculty, the pure number of publications is far more influential in shaping one's career.

Lucertini, Nicolo and Telmons (1995) urge schools to seek relevant benchmarks to search, measure, and compare their processes to the best practices that their external competitors have developed. Previous studies have provided three types of benchmarks for research productivity: (i) qualitative rank of related journals, (ii) quantitative measures of total and average research productivity of faculty, and (iii) quantitative measures of total and average research productivity according to where faculty earned their doctoral degrees.

Several variables have been reported to be related to research productivity. One key variable is the involvement of faculty with graduate student research. Kelly and Warmbrod (1986) found that the number of doctoral committees chaired successfully resulted in higher faculty research productivity. This was supported by Dundar and Lewis (1998) when they reported that high ratios of graduate students to faculty also correlates with productivity, and the percentage of graduate students that were hired as research assistants correlated highly with research production. Gorman and Scruggs (1984) also reported that participation in graduate student research was related to faculty research productivity.

FRAMEWORK

Time-Scarcity Theory

A hypothesis rests on the assumption that commitment of time and energy to one role must come at the expense of success in another. The scarcity theory of role behavior is exemplified by the work of Goode (1960) as well as Coser (1974), and may be used to account for perceptions of debilitating responsibility as individual faculty attempt to fulfill numerous commitments. Under this theory, time spent in any role except research would be negatively and linearly related to research performance.

Complementary Role Theory

Time spent preparing for classes could have a beneficial effect on research practice through the development of complementary knowledge and skills. Complementary role theorists such as Marks (1977) and Faia (1980) have gone on to suggest that a balanced commitment to various roles is likely to have an energizing impact on all activities. This position suggests non-linear relationships between time spent on alternative roles and research productivity, with moderate activity in alternative roles being associated with the highest levels of performance.

Motivation Theory

Latham and Pinder (2005) work reported between 1993 and 2003, concluding that goal-setting, social cognitive and organizational justice theories are the three most important approaches to work motivation to appear in the last 30 years. They reach 10 generally positive conclusions regarding predicting, understanding, and influencing work motivation in the new millennium.

Selection Theory

Hesli and Lee (2011) explain selection theory that only the most productive faculty members are promoted, eliminating low producers before they reach higher ranks and, thus, creating a situation in which higher ranking faculty produce more. Although intellectual curiosity is a powerful intrinsic motivator for those who have decided to devote their lives to a field of study, there still exist the extrinsic rewards of promotion and tenure that cannot be overlooked.

Individual factors

Personality is regarded in the management literature as an alternative for an individual's level of motivation (Barrick, Stewart, & Piotrowski, 2002). Various scholars have particularly embraced the Five-Factor Model of personality as a replicable and unifying taxonomy of personality (Goldberg, 1992; John, 1990). In particular, Barrick *et al.* (2002) argued conscientious individuals have higher intentions for achievement striving. Conscientious individuals are dependable, responsible, organized, ordered, and achievement-oriented (McCrae & John, 1992), all of which appear relevant for academic research productivity.

Evidence shows that the average rate of faculty publication tends to be low and the variation in performance is high. Fox (1984) explains this variation in several ways that productive researchers possess certain psychological and individual characteristics that are absent in less productive researchers. High producers may have innate scientific ability or talent, possess a sacred spark of motivation and desire, and have a certain type of personality or cognitive structure. Biographical studies of eminent scientists reveal hardworking people who play with ideas, recombine familiar concepts easily, and tolerate ambiguity and abstraction (Fox 1984).

Ramsden (1994) found out that genuine individual interest in one's discipline or field was a significant predictor of research output. Indeed, prior empirical research has found that academic researchers with high professional commitment and values demonstrate the highest research productivity (Fox, 1992; Bland, Center, Finstad, Risbey, & Staples, 2005; Hardré, Beesley, Miller, Pace, 2011).

Lee and Bozeman, (2005) posit that even if one understands the relationship between collaboration and individual researchers' publishing productivity in all its richness and complexity, the health and well-being of scientific fields will continue to depend, critically, on the ability to replicate and extend research skills across generations.

Faculty development consists of program activities, practices, and strategies that aim both to maintain and to improve the professional competence of individual faculty (Prince, Felder, & Brent, 2007). Part of faculty career development could be researched development, though writers have not specified the nature of the activities. Blackburn et al. (1980) noted that when faculty was asked about the areas in which they needed professional development, improvement in teaching ranked first, but research-oriented activities manuscript preparation and publication, proposal writing, and computer use ranked second.

Publication is the most visible sign of an active researcher. It is central to a research career and academic advancement. Accordingly, producing publications during doctoral candidature is increasingly expected (Aitchison, Kamler & Lee 2010; Cuthbert & Spark, 2008; Raddon, 2011). Some studies measure the subsequent productivity of doctoral candidates as an indicator of the quality of doctoral programs (Roy, Roberts & Stewart 2006). Candidates completing doctorates with some publications are better placed for future employment, including research employment.

Lockwood (2005) defined motivation as it represents the forces acting on or within a person that cause the person to behave in a specific, goal-directed manner. Because the motives of employees affect their productivity, one of management's jobs is to channel employee motivation effectively toward achieving organizational goals. Although job performance involves the factors more than motivation, motivation is an important factor in achieving high performance (Ramsden, 1994).

Institutional factors

High research performance is already admired and desired throughout the institutional structure. Scholarly productivity enhances a faculty member's teaching ability by providing better insight into the discipline and contributing to the latest developments. Presidents and trustees value efficiency for the visibility and reputation it indirectly earns for the institution. Administrator's and deans admire productivity for the creative, stimulating forces it brings it to the collegial atmosphere (Creswell, 1985).

Allison and Stewart (1974) measured resources as the percentage of worktime spent on research, the number of research assistants, and the proportion of respondents who reported that they "always" get the grants they seek and found out that worktime spent on research is an important predictor of high research performance.

In management, promotion is one of the reward systems to help motivate employees. Some scholars believe that promotion has a motivating effect on research productivity. For example, Lockwood (2005) suggested that higher education institutions can influence academic staff research behavior through the manipulation of the reward structure for promotion.

Chen, Gupta and Hoshower, (2006) concluded that the tenured faculty members are motivated more by intrinsic motivation rewards, whereas untenured faculty are more motivated by extrinsic rewards. Tenure and promotion are potent motivators of staff research productivity, whereas pay raises are insufficiently linked to research productivity to be a good incentive.

Most universities have clear written documents of performance requirement set for academic staff. The annual workload of lecture and research publications varies from one university to another (Lee, 2000). The assessment of academic staff professional performance is conducted every academic year from both departmental and individual perspectives.

Academic rank and tenure are also related to research productivity according to the literature. For example, faculty members who are in the higher professorial ranks have larger publication (Blackburn, Behymer, & Hall, 1978). We are aware that full professors, those who have, in theory, attained the highest promotional rank, continue to publish as well. Intellectual curiosity does play a significant role in publishing productivity, especially for tenured faculty, as some studies have shown that full professors produce the most scholarship (Tien & Blackburn, 1996).

Leadership factors

As a service-oriented unit, research administration offices are responsible for various administrative tasks which include submitting proposals, preparing budgets, risk management, financial reporting, and interpreting policy (Langley & Oforu, 2007). These administrative tasks are indirectly related to the research, yet necessary to ensure that the research is ongoing. Overall, the fundamental purpose of research administration is to enhance the ability to carry out successful research.

Administrative duties may provide the necessary resources that enhance performance. Knorr, Mittermeir, Aichholzer, and Waller (1976) tested the proposition that scientific productivity was associated with the status or position a scientist held in the formal or informal hierarchy of the organization. They argued that higher position (i.e., administrative position) contributed to

productive research because a scientist’s publication capacity is multiplied by the task force he or she supervises and by the project (and other) money to which he or she gains access. Knorr *et al.* (1976) examined this intriguing proposition using a data set of scientists located in academic and industrial organizations. They found that once a scientist attained a supervisory position, manpower resources and project tasks contributed to high research performance.

Ascriptive Factors

Some researchers argue that differences in research productivity between men and women come from administrative positions of researchers and their marital status. For example Xie and Shauman (1998) conclude that gender differences in research productivity has declined over time, while at the same time the population of female scientists has proportionally increased. Fox (2005) argues that the effect of gender is complex in a way that it is not possible to simply separate the effect of married and single researchers. He also refers to the career of spouse and family composition as two important factors of such complexity. In another study, Leahey (2006) argues that the reason of low productivity of women is that women specialize less than men, which is an important factor for research productivity. Table 1 shows factors the affect faculty research productivity in literature.

Table 1. Factors that Influence Faculty Research Productivity in Literature

Study	Factors
(Baum, Hancock, & Breuning, (2015); Fox, 1992; Mitchell & Rebne, 1995; Kotrlik, Bartlett, Higgins, & Williams, 2002; Bland, Center, Finstad, Risbey, & Staples, 2005; Hardré, Beesley, Miller, Pace, 2011; McGill & Settle, 2012)	Sufficient research time
(Brewer, Douglas, Facer, & O’Toole 1999; Bland, Center, Finstad, Risbey, & Staples, 2005; McGill & Settle, 2012; Zhang, 2014)	Financial rewards, Funding for attending conferences, Promotion and Tenure, Performance evaluation

(Baum, Hancock, & Breuning, (2015); Creswell, 1985; Blackburn & Bentley, 1993; Hardré, Beesley, Miller, Pace, 2011; Zhang, 2014)	Interest in research, Research self-competence, Self-efficacy for research, Personal research
(Blackburn & Bentley, 1993; Williamson, & Cable, 2003; Bland, Center, Finstad, Risbey, & Staples, 2005; Kim, Morse, & Zingales, 2009; Hardré, Beesley, Miller, Pace, 2011)	Colleague, Advising and mentoring, Communication with professional network, Advisor research, Affiliation
(Blackburn & Bentley, 1993; Toutkoushian, Porter, Danielson, & Hollis, 2003; Bland, Center, Finstad, Risbey, & Staples, 2005; Prince, Felder, & Brent, 2007; McGill & Settle, 2012)	Institutional support Doctoral-level institutions
(Blackburn & Bentley, 1993; Bland, Center, Finstad, Risbey, & Staples, 2005)	External grant, Student and clerical assistance
(Brewer, Douglas, Facer, & O'Toole 1999)	Research Institute, Seminars
(Zhang, 2014)	Sense of achievement, Satisfying interest and curiosity, Contributing to society, Sense of responsibility, Scholarly pursuit, Autonomy and Flexibility, Performance recognition, Job potential, Job significance, Peer and social recognition, Social respect
(Sinclair, Barnacle, & Cuthbert, 2014)	Emotional engagement with research, Doctoral experience, Establishment of research efficacy, Repertoire of soft skills, Have flexible, responsive and adaptive dispositions
(Prince, Felder, & Brent, 2007)	Faculty development programs, Promote involvement in research, Recognize and reward faculty performance, Encourage faculty members to use inductive teaching methods, Recognize and reward academic, departments and programs

(Fox, 1992)	Commitment, Orientations of faculty, Departmental reward structure, Academic roles and work, Teaching loads
Baum, Hancock, & Breuning, (2015)	University type, Teaching load, Same-sex mentor, Tenure clock, Summers dedicated to research, Conference presentations, Marital status, Children and primary caregiver, Paid vs. unpaid childcare, Methodological preference, Area focus
(Williamson, & Cable, 2003)	Early career research, Pre-appointment research productivity, Academic origin
(Kotrlík, Bartlett, Higgins, & Williams, 2002)	Confidence and ability to conduct research, Faculty members' perceptions of their research confidence, Organizational culture, Support of research, Age, Gender, Rank
(Bland, Center, Finstad, Risbey, & Staples, 2005; McGill & Settle, 2012)	<p>Highly regarded, Able scholar, Research oriented, Uses assertive-participative style</p> <p>Fulfills critical roles:</p> <ul style="list-style-type: none"> ● Manager ● Keeps goals visible ● Assures presence of individual characteristics <p>Socialization, Motivation, Context knowledge, Basic and advanced research skills, Simultaneous projects, Autonomy and commitment, Orientation, Work habits, Resources, Rewards, Clear coordination goals, Size/experience/expertise:</p> <ul style="list-style-type: none"> ● Positive group climate ● Assertive participative governance ● Brokered opportunity structure ● Decentralized organization <p>Culture, Communication, Research emphasis, Recruitment and selection</p>
(Creswell, 1985)	Psychological, Superior intellectual ability, Strong motivation, Background characteristics, Access to resources, Reinforcements
(Hardré, Beesley, Miller, Pace, 2011)	Resources, Motivation for research, Teaching load, Service load, Perceived departmental support for research, Family and life commitments
Salazar-Clemeña, & Almonte-Acosta, 2007)	Culture, impact of research, administrative practices, inter-institutional collaboration, institutional research strategy, financial reward system, infrastructure, the presence of ethical policies, and the availability of research funding
(Vinluan, 2012)	Economic indicators, the local orientation of many social science research studies, funding, individual characteristics of researchers, and the epistemic culture of knowledge production

METHODOLOGY

The objective introduced in this paper is to identify factors that affect faculty research productivity. This study is a literature review and findings were based on the review and analysis of the existing related literature. The final results were drawn by compiling critical factors that affect research productivity. Nonetheless, Khan *et al.* (2003) stated a systematic review could be done based on five steps: framing questions for a review, identifying relevant work, assessing the quality of studies, summarizing the evidence, and interpreting the findings. The review question was: “What are the factors that affect faculty research productivity?”

The search strategy was comprehensive and articles were collected from Google and Google Scholar. We used “faculty research productivity” and “Literature review on factors that affect research productivity” as keywords. According to Khan, *et al.* (2003), there are two filters to enter into the systematic review. The first filter was a set of the inclusion and the exclusion criteria such that the literature review, which were related and able to address the issues were taken into the second filter. This study included only empirical evidence from various researches in the research productivity in higher education.

RESULTS AND DISCUSSION

A proposed conceptual framework was designed based on critical success factors of faculty research productivity in higher education. The framework was designed by compiling critical success factors from 46 articles.

Table 2. Imported Data from Different Databases

Databases	Total articles	Duplications	Relevant	Inclusion criteria passed	Quality criteria passed
Google	135	98	37	16	12
Google Scholar	285	197	88	51	34
Total	420	295	125	67	46

Figure 1 shows the proposed framework based on four independent variables (individual factor, institutional factor, leadership factor, ascriptive factor) and dependent variable (faculty research productivity).

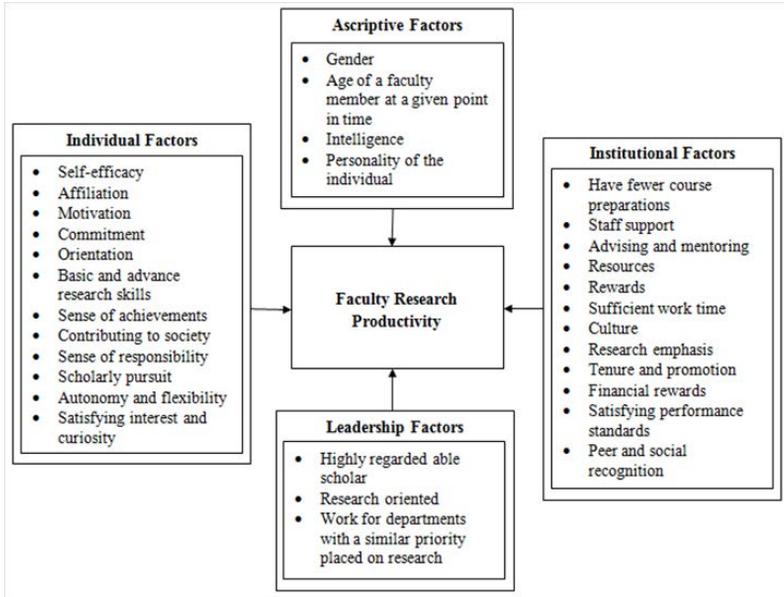


Figure 1. Conceptual Framework for Faculty Research Productivity

The main objective of this study was to identify the critical factors that affect faculty research productivity. The methodology was designed based on a systematic review process: framing questions for a review; identifying relevant work; assessing the quality of studies; summarizing the evidence; and interpreting the findings. In the quality appraisal criteria, the study met all the necessary five steps. Two databases (Google and Google Scholar) were used to import articles and a total of 67 articles were imported. This study designed by analyzing 46 articles which were passed by the quality criteria and all the critical factors were included to design a framework. Our results lead to four groups of factors that influenced faculty research productivity:

- i. Individual factors have a significant effect on faculty research productivity.
- ii. Institutional factors have a significant effect on faculty research productivity.
- iii. Leadership factors have a significant effect on faculty research productivity.
- iv. Ascriptive factors have a significant effect on faculty research productivity.

In knowing what critical factors affect the faculty research productivity, it was possible to offer a conceptual framework based on those critical factors. However, there is a need for the future research to validate this framework.

CONCLUSION

The analysis of literature reviews indicated critical factors influencing the faculty research productivity. The results shows that faculty research productivity is influenced by individual factors (self-efficacy, affiliation, motivation, commitment, orientation, basic and advance research skills, sense of achievements, contributing to society, sense of responsibility, scholarly pursuit, autonomy and flexibility, satisfying interest and curiosity), institutional factors (have fewer course preparations, staff support, advising and mentoring, resources, rewards, sufficient work time, culture, research emphasis, tenure and promotion, financial rewards, satisfying performance standards, peer and social recognition), leadership factors (highly regarded able scholar, research oriented, work for departments with a similar priority placed on research), ascriptive factors (gender, age of a faculty member at a given point in time, intelligence, personality of the individual).

This conceptual framework is crucial in higher education institution administrators regarding managing faculty members' research performance. Effort should be encouraged, and faculty members rewarded for effort invested, not just for immediate (or short-term) measures of productivity. Institution's policies that keeping teaching load to a minimum when research productivity is expected would promote faculty productivity.

TRANSLATIONAL RESEARCH

The output of the study will be used as inputs in the improvement of the Cotabato City State Polytechnic College faculty research productivity. It also supports the acquiring of facility and equipment, faculty development, research, and community extension. The output of the study offers the solutions for the perennial problem that confronts every researcher not only at CCSPC but also in the halls of various universities in the country. This critical review of the findings from the literature on faculty research productivity has enabled the institution to establish priorities, identify initiatives, and allocate resources that support the College in the accreditation processes. This research study adds to the literature on faculty research and the role of higher education institutions in facilitating research.

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