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Determinants of Nursing Faculty Research Productivity in Three Saudi Public Universities; a Literature Review

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I. Review Of Litereture

Saudi Public Universities

Saudi Arabia's public universities are one of the most rapidly growing higher education systems in the Middle East. Higher education contributes to the country's knowledge economy through learning, creativity, effective international partnership, and the use of current developing technologies. There has been an 86% growth in the number of universities during the last decade, which accommodate over 1.5 million students (Ministry of Education Reports). Nowadays, there are 24 public universities covering different disciplines that serve the requirement of national growth to accomplish the excellence in science and technology (Ministry of Education Reports).

In 1958, health education in Saudi Arabia started with male candidates as a collaboration between the Ministry of Health (MOH) and the World Health Organization (WHO). In 1961, nursing schools were launched that offered a two-year diploma degree for female candidates. After seven years, MOH established the Department of Health Education and Training (DHET) to supervise and upgrade the training of students at the health institutes. In 1976, the first female-only bachelor's degree in nursing was offered at the King Saud University (KSU) in Riyadh, whereas the Master of Science degree in Nursing began to be offered in 1987 by the same university. In 1978, new guidelines on student enrollment were implemented, and the length of study increased to a minimum of three (Almalki, M., et al 2011). Apart from KSU, in 1977, the King AbdulAziz University (KAU) in Jeddah began to offer a female-only bachelor's degree in nursing. Additionally, in 1983, the degree began to be offered at Umm Al-Qura University (UQU) in Makkah (Almalki, M., et al 2011).

Then, a series of nursing schools and health institutes were launched in various regions of Saudi Arabia. By 1992, there were a total of 48 health institutes and branches providing health education, including nursing education (Alhusaini, 2006). All of these bachelor's degrees in nursing were limited to female candidates. However, in 2004, the need for male nursing led to male candidates being admitted to nursing education at King Khalid University in Abha and Jazan University. In 2005, the "King Abdullah Scholarship Program" was started to cover the shortage of Saudi faculty members and to meet the labor market requirements in Saudi Arabia. In 2008, the Ministry of Education (MOE) was assigned to oversee all these educational institutions, while the MOH focused on its primary role, which is healthcare services. The MOE implemented many programs, including enhancing quality education, promoting more scientific research, increasing scholarships to attend international universities, and planning the proper financing of universities (Pavan, A. 2015). The MOE is responsible for guiding and monitoring university education based on the adopted policy, rules, and regulations across all sectors. The Ministry participates in the development and coordination of universities in terms of scientific departments and degrees. Additionally, encouraging research is one of the main responsibilities of the Ministry (Alamri. M 2011). The Ministry was founded to upgrade the nation's growth and improve the well-being of Saudis. All the nursing diploma programs were closed, and the nursing certificate became limited to the bachelor's degree to enhance the healthcare services and upgrade the healthcare systems. In addition, few programs provide bridging programs or RN-BSN, with a limited number of seats reserved for nurses who hold diplomas in nursing (Alamri. M 2011). As a result, Saudi Arabia has witnessed improvements in nursing practices and professionalism in recent years. In 2002, the Saudi Arabian Council of Ministers mapped out a national science and technology policy. Commensurate with this initiative, the MOE started a project with the objective of assessing and identifying the actual needs of scientific research at public universities, in addition to estimating the quality and effectiveness of the universities' research outcomes (Gallarotti & Al-Filali, 2012). The target of this project is to improve research performance at public universities by hiring competent faculty and researchers (Onsman, 2010; Smith & Abouammoh, 2013). However, there are obstacles, given that all available resources are still not being appropriately utilized.

Nursing Research

Nursing research is a systematic inquiry designed to develop knowledge about issues that are important to nursing practice, education, and nursing administration, as stated by Polit and Beck (2006). The nursing specialization has been established in various regions of Saudi Arabia, with the expectation of empowering nursing as a profession at the central level of the Ministry of Health and of facilitating its professional development and presence (Al-Ghamdi, S., & Tight, M. 2013). Moreover, AlGennaro et al. stated that the application of nursing research results in practice is beneficial for patient care and that it promotes the development of nursing as an independent discipline. One of the objectives of the Saudi National Development Plans is to increase research productivity in higher education and thus to achieve the social and economic aspirations of the country. Fueled by the increase in government funding for research, the productivity of academic research at public universities has vastly grown over time (Alzahrani, J. A. 2011). Today, the nursing role has expanded to a wide range of settings: patient care, classrooms, radiology, laboratory and much more, which should be enhanced with evidence-based practice (Tingen, M. et al 2009). However, few studies have analyzed the scientific production in Saudi Arabia, mostly in medical and biomedical areas. Most of these studies analyze medical research in the entire country without specifically analyzing the contribution of each academic institution. Thus, there is an inconsistency in the literature on the current research productivity of Saudi universities (AlMutairi, K. A., & AlShami, S. A. 2015). A previous study that examined Saudi universities' scientific production over six years showed that scientific production could be categorized into two groups. The first group consists of six universities that have produced more than 1500 papers during the last six years, and the second group consists of 19 universities where each university produced less than 1500 papers (figures 1&2). Based on the study, it showed that strong research areas for the past 6 years in Saudi universities are engineering, physics, astronomy and medicine (AlMutairi, K. A., & AlShami, S. A. 2015).

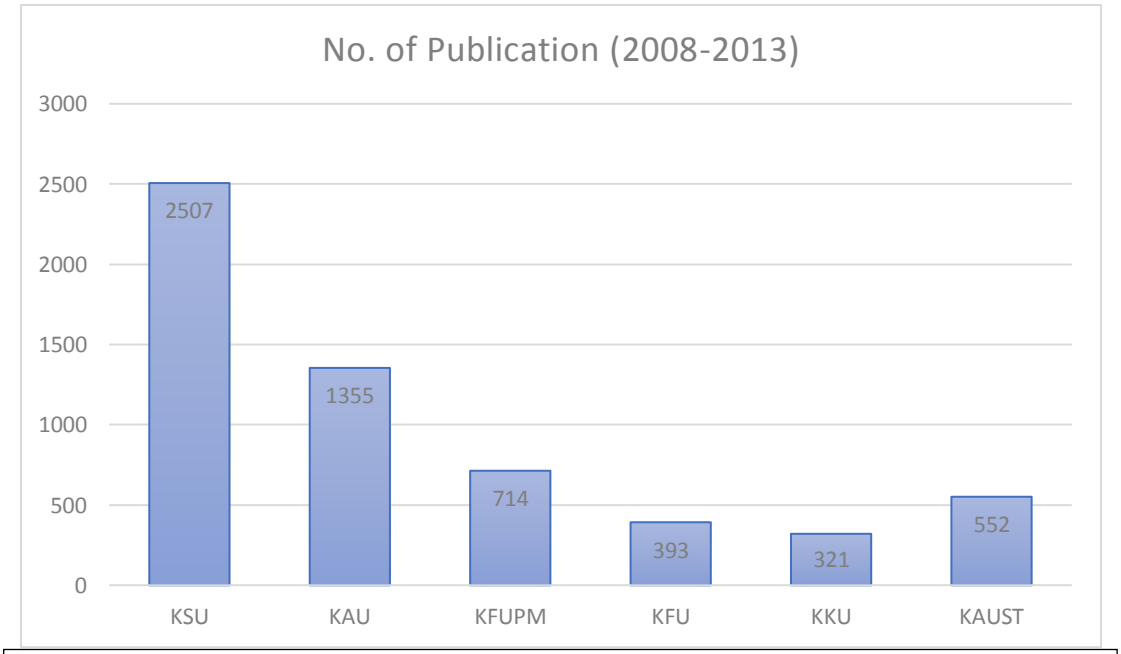

Figure 1. Total number of publications based on Scopus index from 2008 to 2013 in top Saudi universities. KSU: King Saud University (established 1957), KAU: King Abdul Aziz University (established 1967), KFUPM; King Fahd University of Petroleum and Minerals (established 1963), KFU: King Faisal University (established 1975), KKU: King Khalid University (established 1999), KAUST; King Abdullah University of Science and Technology (established 2009). The numbers inside the bars indicate the average number of publications per year.

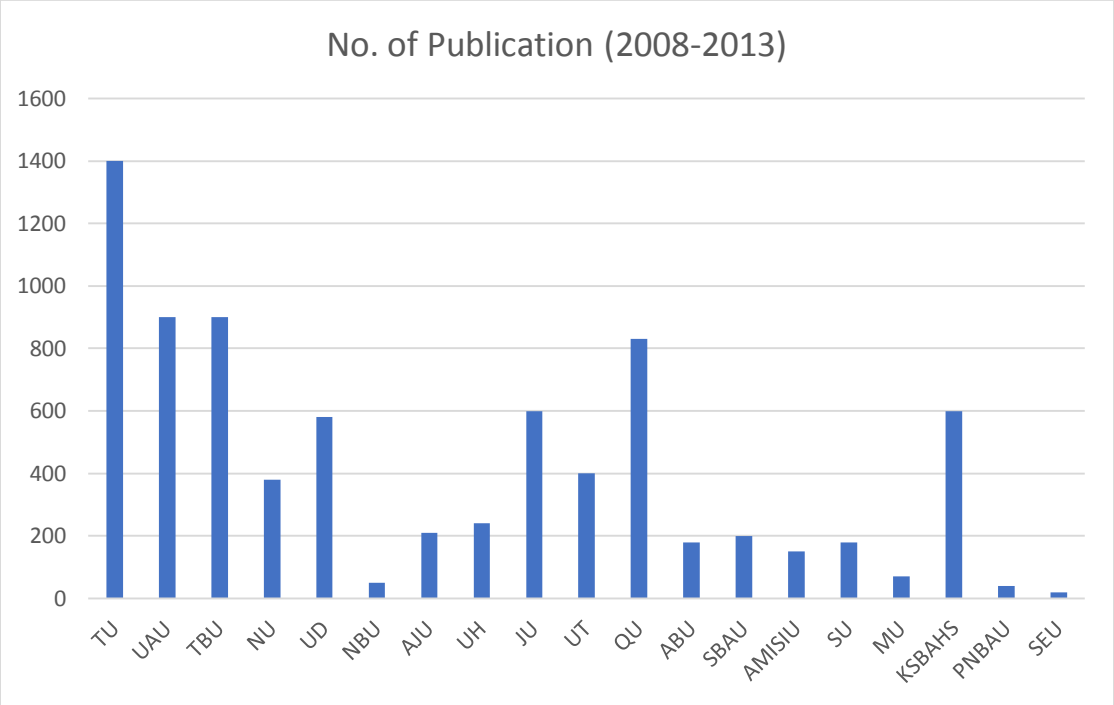

Figure 2. number of publications based on Scopus index from 2008 to 2013 in top Saudi universities. TU: Taif University (established 2003), UAU: Umm Al-Qura University (established 1949), TBU: Taibah University (established 2003), QU: Qassim University (established 2002)

II. Nursing Faculty Members' Role

Faculty members at a Saudi public university are expected to teach, carry out research, and contribute to community service activities (alzuman, 2015). The nursing faculty faces moderate to high levels of role strain due to high job demands and the pressure to conduct research and obtain external funding. Currently, Saudi universities such as KSU have placed emphasis on reputation, image, and pursuit of research-level status (specht, 2013). To sustain a significant link between the faculty's work and the discipline of nursing, nurse faculty are required to prioritize their work role to meet these changes (specht, 2013). Faculty recognition and reputation is gained through research productivity locally and internationally. Moreover, publications have always been used as a method of assessing the performance of faculty members, especially in terms of promotions and salary increases. Many studies have linked high research productivity of faculty at the earlier stages of their careers to promotion motivation (Al-Ghamdi, S., & Tight, M. 2013).

Variation in teaching and research productivity at universities is greatly attributed to the goals of the program. Among nursing faculty, the commitment to academic research influences the outcome of the research in the workplace.

Saudi public universities have invested in establishing modern technology infrastructures and solutions to promote education and research productivity. Few studies have been conducted to explore the structural and organizational obstacles to faculty research productivity at Saudi Arabian universities. Alzahrani argued that to enhance faculty research performance, public universities have to automate all research publishing activities, make periodic updates to databases, offer free research services to researchers, and encourage faculty members to publish their work in internationally reputable journals. Currently, public universities account for approximately 75% of all the scientific publications in Saudi Arabia (Al-Ohali & Shin, 2013). Table 1 shows the research outcomes of Saudi public universities in 2013.

Several studies have argued that research productivity represents the extent to which a faculty engages in research activities such as publishing in refereed journals, attending conferences, writing books or chapters, gathering and analyzing original evidence, working with postgraduate students on dissertations and class projects, obtaining research grants, carrying out editorial duties, obtaining patents and licenses, writing monographs, developing experimental designs, producing works of an artistic or a creative nature, and engaging in public debates and commentaries (Creswell, 1985; Iqbal & Mahmood, 2011; Okiki, 2013). A considerable body of literature on research productivity has been largely quantitative, focusing on institutional, behavioral, and nonbehavioral contributors to research productivity and using published records to measure faculty research performance (Hesli & Lee, 2011). Combining various quantifiable measures of research productivity, such as

publications, grants, and conference presentations, into one single measure has been another way of measuring research productivity (Kim, D., Wolf-Wendel, L., & Twombly, S. 2011).

Other studies have asserted the importance of measuring the quality in addition to the quantity of the research productivity, suggesting the use of measurements such as peer recognition, citation score, curriculum vitae, weighted indices, grant awards, and having fewer coauthors with higher authorship positions in publications (Townsend, B. K., & Rosser, V. J. 2007).

In recent years, Saudi Arabia has maintained a leading position in the field of medical research in all Arab states. Over the last two decades, the government has taken strong steps to motivate education and develop research through the implementation of the National Science Technology and Innovation Program, whose aim is to deliver the infrastructure necessary to develop an advanced knowledge-based economy (Jahan, S., & Al-Saigul, A. M., 2017).

Health services and medical and scientific research have improved and clearly advanced along with the growing number of medical institutions. The research publications of the teaching staff, researchers, and students at any university constitute a fundamental measure of the achievements that are frequently regarded as the index of university prestige. There was a gradual increase in nursing publications during the first five years, but the amount of research had seen rapid growth in the last three years (Jahan, S., & Al-Saigul, A. M., 2017).

Table 1: Research Outcome at Saudi Public Universities in 2013

No.	Public university	Number of published researches	Number of faculty members
1	King Saud University	2,594	7,353
2	King Khalid University	443	2,212
3	King AbdulAziz University	432	6,865
4	King Faisal University	332	1,432
5	Dammam University	310	1,990
6	Taif University	221	1,934
7	Taibah University	175	1,040
8	King Saud University for Health Specialists	130	406
9	Prince Noura University	86	1,511
10	Almajmaa University	70	676
11	Prince Salman University	65	1,521
12	Imama Mohammad bin Saud University	63	3,768
13	Aljouf University	58	962
14	Najran University	52	1,026
15	Umm Alqura University	51	3,799
16	Albaha University	42	1,042
17	Jezan University	40	2,187
18	Islamic University	32	644
19	Tabouk University	20	1,102
20	Shaqra University	11	931
21	Hail University	10	1,632
22	Northern Borders University	10	525
23	Qaseem University	0	3,152
24	King Fahd University of Petroleum & Minerals	NA	1,078
Total		5,247	48,788

Source. Saudi Ministry of Education Report (2013).

Benefits of research productivity include:

Faculty research productivity recompenses the university by receiving higher grants and more funds for research, increasing the institution's prestige and reputation, and by attracting more students (Angaiz, D. 2015). Grants received by faculty members to undertake research, new findings, the development of new knowledge or an international contribution to science increase an institution's prestige and reputation. Similarly, these achievements may entice students to attend and attract more funds for research. Moreover, the faculty members' tenure and promotion are associated with their research productivity (Angaiz, D. 2015). The quality and quantity of research is linked to the success of the field and the university itself.

Conceptual Model

Many conceptual models can be employed to investigate faculty research productivity, though no specific theory explains faculty research productivity due to several obstacles, such as limited empirical testing and methodological rigor (Jung 2012).

The factors explored that impact faculty research productivity are organized into models, including Finkelstein's model (1984), which describes the successful researcher; Creswell's model (1985), which addresses the importance of the institutional factors for an individual faculty's research productivity; Dundar and Lewis's model (1998), which indicates that two factors are connected to research productivity, that is,

individual (personal traits and experiences) and institutional (type, number of faculty) factors; Teodorescu's model (2000), which explains the individual and institutional variables that significantly determine faculty research productivity in addition to faculty involvement in disciplinary affiliations; and Brocato's model (2001), which provides information on the correlations between research socialization and the individual faculty's psychological and demographic characteristics and the institutional, departmental research environments for faculty research productivity (Bland, C., 2005; Angaiz, D. 2015). Finally, Bland et al.'s model (2002), which was used in this study, is developed based on these earlier models. According to the Bland et al. model, research productivity is associated with individual, institutional and leadership characteristics in a hierarchical order of these three categories. Individual characteristics include socialization, motivation, knowledge, work habits, etc., while institutional characteristics include recruitment, sufficient work time, mentoring, rewards, etc., and leadership characteristics include research-oriented leadership, participative leadership, etc (Figure3).

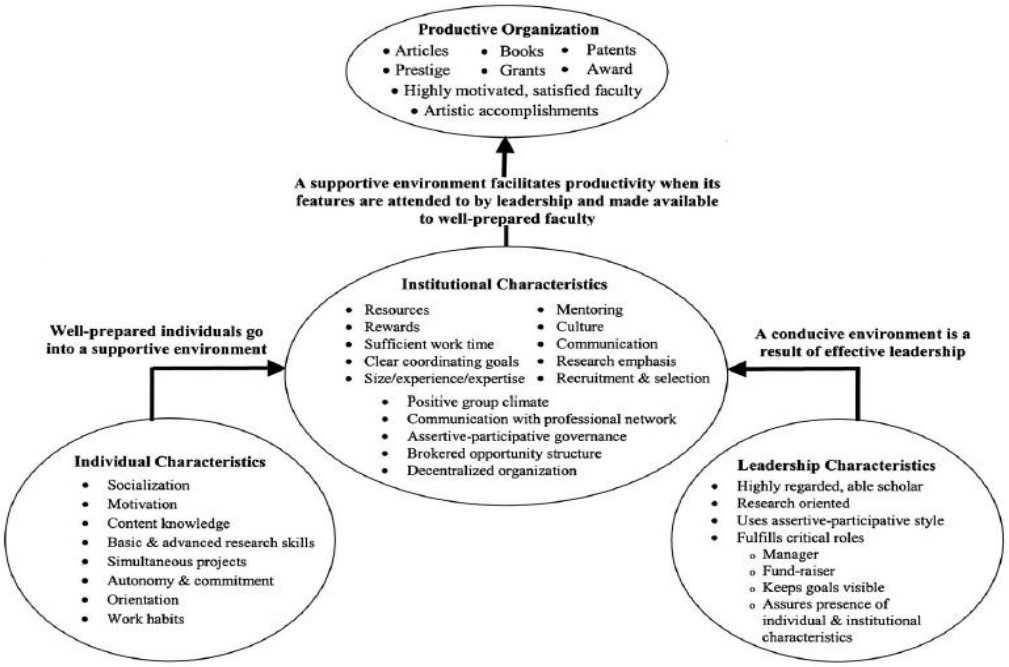

Figure 3: Productive Organization Hierarchy

III. Summary

Research productivity functions as a nation's measure of progress and modernization (Bland, A. J., Topping, 2011). Research plays a vital role in the societies that we live in and in the nation at large. A study has shown that nursing colleges in Saudi Arabia have had slow growth in research contributions for the last 16 years compared to other specialties (Meo, S. A., Hassan, A., Usmani, A. M. 2013). Enhancing the research of nursing faculty has the potential to improve productivity and gradually lead to effective competition to provide sustainable service delivery. Therefore, this study aims to identify the adequate and inadequate areas of individual, institutional, and leadership characteristics related to nursing faculty research productivity. The findings of this study will help decision-makers at nursing schools understand the present status of the research system and implement the best research systems to enhance productivity among nursing faculties in the near future (Nardi, D. 2013).

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