

Effects of polychronicity and job embeddedness on productivity of Nigerian University lecturers

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Abstract

Purpose: The objective of this study was to examine the effect of polychronicity on university lecturer productivity. Additionally, the mediating role of job embeddedness in the relationship between polychronicity and productivity was explored.

Research Methodology: This quantitative study adopted a cross-sectional design. A questionnaire was used to collect data from 300 lecturers at the University of Joseph. Multiple regression analysis was performed to test the research hypotheses using the Analysis of Moment Structures (AMOS-v23).

Results: Polychronicity and job embeddedness were significantly related to productivity. In addition, this study indicates that embeddedness is a partial mediator between polychronicity and productivity.

Limitations: This study focuses only on lecturers at the university of Jos, rather than all tertiary institutions in the plateau state. However, due to contextual factors, the findings may not apply entirely to all university lecturers in the country. Hence, the model should be tested in other contexts for its reliability and validity. The study was also limited to a time frame of measurement due to the cross-sectional survey design, since the perceptions and beliefs of lecturers could change over time; thus, a longitudinal study should be considered.

Contribution: This study provides valuable insights for university management to understand employee polychronic time behavior to improve their fit to jobs and organizations, which could help improve productivity.

Novelty: This study explored how job embeddedness mediates the relationship between lecturers' polychronicity and productivity. Similarly, job embeddedness played a conduit role in sustaining consistent findings between the polychronicity and productivity of lecturers at the University of Joseph.

Keywords: *polychronicity, job embeddedness, productivity, Lecturers, University*

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1. Introduction

Globally, university education is considered a vehicle for delivering critical developmental goals. Their significant contribution to the growth and development of society and the global economy as a whole has attracted attention (Abad-Segura & González-Zamar, 2021; Breznitz, 2014; Popkova & Sergi, 2023; Sevinc, 2014). This contribution is tied to the productivity of academic staff, which is seen in terms of graduates produced, publication of research outputs, and attainment of high national and global university rankings (Jameel & Ahmad, 2020; Ryazanova & Jaskiene, 2022). Additionally, from a management perspective, productivity always indicates whether it is successful or unsuccessful in

producing goods and services in sufficient quantities, of high quality, and with efficient use of resources (Darko et al. 2022). Thus, universities need to be highly productive to survive, grow, and maintain a competitive edge globally.

The productivity of lecturers in the university is seen as the output of the three main tasks of teaching, research, and community service, with direct impacts on the university system and the community (Cadez, et al. 2017). Thus, lecturers are critical in actualizing a university's goal of providing quality teaching, research, and societal growth. Quality is measured in terms of publications in scholarly and internationally recognized index databases and books published locally or internationally that are thought to be accepted by scholarly journals with high impact factors (Hue et al., 2022; Ngoc & Tien, 2023). Similarly, university ranking is based on indicators including academic reputation, citations, employer reputation, faculty/student ratio, ratio of international faculty members, and ratio of international students (THE, 2023). Hence, many factors such as research excellence, innovation, internationalization, and teaching excellence drive the global ranking of universities (Frenken et al. 2017).

Moreover, universities contribute to national development when lecturers conduct quality research relevant to national development, and their results are disseminated to both government and industry (Ogunode, 2020). This affects the global university rankings (Muñoz-Suárez et al. 2020; Piro & Sivertsen, 2016). According to Ogunode and Musa (2020), the challenges confronting university education in Nigeria are attributable to inefficiencies. These challenges, including lack of sound strategic plans, poor leadership, ineffective teaching and learning, poor research activities, inadequate infrastructure facilities, poor funding, unfavorable internal and international outlook or reputation, academic corruption and fraud, and low international ranking, all affect the productivity of lecturers (Ladipo et al. 2022; Wahyudi, 2022). Therefore, academic staff is necessary for university productivity, which varies from country to country, and with output impacting student employability skills, their capacity to attract research grants and funding, and publication in reputable journals, all of which affect their ranking (Bright & Ogbonna, 2021).

Based on global statistics, Times Higher Education (THE, 2023) analyzed universities in 104 countries and regions across areas of teaching, research, knowledge transfer, and internationalization. The rankings obtained are as follows: Oxford University ranked 1st, Harvard University ranked 2nd, Cambridge University ranked 3rd, Stanford University ranked 4th, and Massachusetts Institute of Technology ranked 5th. This positive outlook for developed countries is attributed to the government's presence in the areas of technology, infrastructure, compensation packages, and a good workload. In view of the above rankings, a tenable student/lecturer ratio in universities has been achieved, such as Harvard University (1:4), Massachusetts Institute of Technology (1:9), Yale University (1:4), and Cambridge University (1:3) (IOM, 2014).

Conversely, the Nigerian context portrays a negative picture, such that none of its universities are close to the 100 best universities in the world, despite efforts to address challenges affecting university education in Nigeria through rolled-out policy programs such as the National Policy on Education (Nigeria, 2004), NUC (1962), and TETFund (2022), established to contribute to national development in the areas of quality teaching, research, development, and community services (Ikutal & Edet, 2018; IOM, 2014). Consequently, it becomes difficult for lecturers to conduct quality research (Odediji et al., 2023).

This deplorable condition can be tied to the lecturer's academic workload, which is evidenced by the high lecturer/student ratio in the NEED assessment survey (2012), revealed as untenable. For example, 1:363 at the National Open University, 1:144 at Lagos State University, and 1:122 at the University of Abuja. This is against the NUC Benchmark Minimum Academic Standards (BMAS) of 2007, which stipulated a ratio of 1:20 in science; 1:15 in engineering and technology; 1:10 in medicine, veterinary medicine, and pharmacy; and 1:30 in education, management science, social sciences, law, and the arts, which are provided based on carrying capacity. However, the reverse is the case in which students are admitted above carrying capacity, which increases the lecturer's workload and affects productivity

(Kelvin, 2021). In addition, poor funding of the university hampers human capital development in the areas of staff training and participation in local and international conferences, seminars, and workshops, which affects the quality of teaching and research activities.

Consequently, as a remedy to the shortfall of the programs above, this study suggests other factors to address the issues affecting the lecturer's productivity by presenting a model of how polychronicity and job embeddedness influence the productivity of lecturers. This is further explained that polychronic lecturers can execute and manage a variety of tasks at the same time while dealing with interruptions and accomplishing their objectives optimally (Anser, Yousaf, Majid, & Yasir, 2020).

Polychronicity is concerned with how an individual chooses to undertake work; in particular, the preference to work on two or more tasks simultaneously. Polychronicity provides a platform for lecturers to initiate creativity and innovative performance (Madjar & Oldham, 2006). Thus, polychronicity emphasizes the preferences of lecturers who wish to do several things at the same time by changing their focus from traditional to innovative work behavior (Pachler et al., 2018).

Similarly, job embeddedness (JE) is viewed as the "totality of forces that keep a person on a job rather than the negative attitudes that prompt the person to leave the job (Mitchell, Holtom, Lee, Sablinski, & Erez, 2001). JE is crucial for explaining productivity. Empirical studies have established that job embeddedness is related to productivity. Mitchell et al. (2001) and Lee et al. (2004) explored the role of job embeddedness as a significant predictor of productivity. As a result, it could be said that when lecturers integrate their job-embedded factors and attitudes towards performance, they increase their productivity.

Furthermore, existing studies, such as Arndt, Arnold, and Landry (2006) and Ampofo, Coetzer, and Poisat (2018), found a positive relationship between polychronicity and job embeddedness. Also, Akhtar, Syed, Husnain, and Naseer (2019) found that polychronicity positively affects job embeddedness. This is consistent with Yousaf, Majid, and Yasir (2021), whose study revealed a positive relationship between polychronicity and job embeddedness. In view of the similarities in the findings of extant studies, scholars have paid less attention to the mechanism between polychronicity and productivity. Hence, this study seeks to fill a knowledge gap by introducing job embeddedness as a mediator, anchored on self-determination theory. This study is relevant in advancing existing debates on polychronic time behavior and productivity through the mediating role of job embeddedness.

This paper is structured as follows: literature review and hypothesis development, procedures for testing, and hypotheses, including details on the sample, research instruments, and methodology. Finally, the results are presented. We conclude by discussing the contributions, limitations, and potential directions for future research.

2. Literature Review

2.1 Polychronicity and Productivity

Hall, an anthropologist, was the expert who first introduced the terms polychronic and monochronic time behaviors in 1959 to describe the culture or orientation of individual psychology, which is more inclined to change and flexibility in the use of time (Hall, 1984). Polychronicity is seen as a personality trait that is considered a critical factor in achieving productivity in organizations (Butt & Warraich, 2022). Therefore, it refers to the degree to which individuals enjoy switching between many tasks at the same time (Amoah, Gyamfi, & Mensah, 2023; Andriani & Disman, 2023). The concept refers to the ability or tendency of someone to engage in many activities in the same period (Hall, 1984). Thus, people referred to as polychronic engage in a variety of related tasks at once and have effective task-switching skills. This is because of the emergence of polychronic/multitasking behavior in today's work environment, which reflects the capabilities of individuals to manage multiple things simultaneously to attain the desired efficient work output (Butt & Warraich, 2022). They maintained engagement with their work since they are satisfied when completing multiple activities at once (Asghar, Gull, Tayyab, Zhijie, & Tao, 2020). Similarly, we defined polychronicity as an individual's habitual preference for performing several activities simultaneously. This is consistent with Wu, Yuan, Yen, and Xu (2019)

and Wu, Gao, Wang, and Yuan (2020), who asserted that polychronicity is the preference of some individuals to structure their time in order to deal with multiple tasks simultaneously in a short period of time.

Empirically, studies have examined the effect of polychronicity on performance outcomes, suggesting that polychronicity has a significant relationship with job outcomes like productivity (Ahmad, Liu, Akhtar, & Siddiqi, 2022; Baliga, Chawla, Ganesh, & Sivakumaran, 2021; Mullins, Agnihotri, & Hall, 2020). Polychronicity is positively associated with productivity. Peifer and Zipp (2019) explored the polychronic phenomenon by examining the connection between polychronic behavior and productivity and discovered that the findings had a considerable impact on job outcomes. This is in agreement with an earlier study by Sanderson, Bruk- Lee, Viswesvaran, Gutierrez, and Kantrowitz (2013), which looked into the relationship between polychronic behavior and productivity. These findings imply that employees are able to multitask and prefer to do so will perform their duties productively. Karatepe (2016) and Wu et al. (2020) advanced the arguments in their studies, which examined the effect of polychronicity on productivity. The results revealed that polychronicity positively affected productivity. These findings are consistent with those reported by Asghar et al. (2020). Further, Twaissi, Alhawtmeh, and Al-Laymoun (2022) revealed that polychronicity leads to job productivity. Therefore, employees who prefer moving between different tasks may have a good fit for their job requirements. This study explores the effect of polychronicity on lecturers' productivity at the University of Jos, a clear contextual gap from the existing literature. In addition, the literature focuses mainly on sectors such as hospitality and manufacturing, and neglects the education sector. Therefore, we hypothesize the following:

H1; there is a significant relationship between polychronicity and productivity of university of Jos lecturers

2.2 Polychronicity and Job Embeddedness

Job embeddedness (JE) is a construct developed to explain why people remain in their jobs (Mitchell et al., 2001). It measures the extent to which employees feel stuck, connected, attached, or embedded in their jobs (Agrawal and Singh, 2018). The evolution of job embeddedness lies within the history of turnover research. Long ago, the most comfortable answer to the question of 'why people leave' may have been because they aren't satisfied with their jobs and have some other place to go (William Lee, Burch, & Mitchell, 2014). Mitchell et al. (2001) proposed the construct of 'Job Embeddedness' (JE) and made a valuable addition to turnover theories. JE has shifted the focus of turnover research from 'why employees leave' to 'why employees stay' in an organization. Therefore, when a person continues to work for an organization without quitting, this is referred to as being "job embedded," and it can firmly bind workers to the business and their responsibilities (Agrawal & Singh, 2018; Yu, Ariza-Montes, Giorgi, Lee, & Han, 2020). Thus, a high degree of job embeddedness indicates that an employee may form stronger social links and live in society with others. Akkaya, Panait, Apostu, and Kaya (2022) refer to job embeddedness as the pressure that prevents one from quitting a job, and these forces become stronger as one's career advances, making it even more difficult to leave.

Therefore, job embeddedness is defined as the combined force that keeps employees at their jobs and consists of on-the-job embeddedness and off-the-job embeddedness (Mitchell et al., 2001). On-the-job embeddedness refers to how bound the employee is to the organization, and off-the-job embeddedness relates to how grounded the employee is in the community. Further, Yao, Lee, Mitchell, Burton, and Sablinski (2002) define job embeddedness as "the combined forces that keep a person from leaving his or her job" (p. 159). In addition, according to William Lee et al. (2014), job embeddedness refers to "the extent of an employee's enmeshing, within a broader social system, and it results from numerous external (or contextual) forces, which are labelled links, fit, and sacrifice, in the organization and community that operate on a focal employee' (p. 201). According to Heritage, Gilbert, and Roberts (2016), job embeddedness is a construct that describes the manner in which employees can be enmeshed in their jobs, thereby reducing their turnover intentions and increasing their retention (Hossain, Khatun, & Shanjabin, 2023).

Scholarly studies have established the effects of polychronicity on job embeddedness. Jang and George (2012), who studied 609 hotel employees in the United States, found that polychronicity has a significant effect on job embeddedness of employees, and suggested that polychronicity has increased job embeddedness. This study is similar to that of Zhang (2015), whose study of 251 restaurants in the United States found that polychronic has a significant effect on employees' embeddedness. This finding is strengthened by Yousaf et al. (2021), who explored the healthcare sector in the context of Pakistan and found that job embeddedness is determined by polychronicity. This implies that employees' tendency to leave their jobs has reduced.

In a related study, Khan et al., (2021) investigated polychronic behaviors and job embeddedness, leading to positive job outcomes. The study also returned consistent findings, which pave the way for job embeddedness as a polychronicity outcome to be investigated as a mediating factor between polychronicity and productivity of lecturers at the University of Jos based on person-environment fit theory. Thus, we propose the following hypotheses:

H02; there is a significant relationship between polychronicity and job embeddedness of university of Jos lecturers

2.3 Job Embeddedness and Productivity

Productivity is a measure of the efficiency of production, usually expressed as the ratio of output to inputs used in the production process, which could indicate success or failure from a management perspective (Darko et al., 2022). Similarly, employee productivity is related to a wide range of measurement perspectives, such as economic and non-economic (Wijayadne & Widjaja, 2022). Employee productivity can also be explained by absence/attendance, quality/quantity of work, task productivity, and innovation (Muchsinati, Oktalia, & Priscilla, 2024). Thus, the principal criterion for measuring lecturers' research productivity is research output and publications in national and international journals (Ladipo et al., 2022). Therefore, the definition of productivity is concerned with the relationship between input and output, which does not cover issues that many people have in mind when discussing public sector productivity (Parham, 2014). Furthermore, a number of studies have shown that job embeddedness predicts unique outcomes, such as productivity (Mitchell et al., 2004; Mitchell et al., 2001). For instance, Khan, Aziz, Afsar, and Latif (2018) conducted a cross-sectional, descriptive study with 427 hotel employees who had worked for more than 6 months in nine three-star hotels in Pakistan using a self-reported questionnaire. The results show that job embeddedness significantly influences employee productivity.

In a related study by Yu et al. (2020), investigated the impact of hotel employees' perceived job embeddedness on job performance, The results showed that job embeddedness, which comprises fit, links, and sacrifice, improves active employee financial and non-financial performance. The findings corroborated Liu (2018), where JE was found to be significantly related to employees' productivity. This implies that an employee's attitude towards voluntarily remaining rather than leaving the organization improves organizational performance in terms of employee productivity. Similarly, job embeddedness is a variable that improves active employee performance and is an important means of improving an organization's financial and nonfinancial performance.

H03; there is a significant relationship between job embeddedness and productivity of lecturers in university of Jos

2.4 The Mediating Role of Job Embeddedness

The necessary factor that retains or keeps employees attached to an organization is job embeddedness (JE). Thus, job embeddedness is the whole gamut of things that make a firm irrational, unproductive, and undesirable (Chijioke et al., 2021). According to Ooi and Teoh (2021) and Bhayo, Shah, and Chachar (2017), job-embedded organizations have motivational factors that are capable of reducing the intention to leave.

Job embeddedness (JE) has been examined as a mediating variable in several studies. For instance, between work-life conflict and turnover intention (Karatepe, 2016), human resource management strategies and employee job performance (Lan & Chen, 2020), as well as between transformational

leadership and career achievement (Tian, Cordery, & Gamble, 2016); similarly, although studies acknowledge that job embeddedness (JE) increases productivity and job-related outputs, such as organizational commitment and intention to stay (Akgunduz & Sanli, 2017; Lee et al., 2004).

However, the mediating role of job embeddedness in the relationship between polychronicity and productivity has not been studied, which offers a knowledge gap in this study. Therefore, polychronicity is expected to enhance lecturer productivity through job embeddings. Lecturers with high levels of job embeddedness may increase their productivity directly, and polychronicity may play a key role in enhancing job embeddedness and productivity. Hence, job embeddedness is expected to act as a mediator between polychronicity and productivity (Akkaya et al. 2022). Furthermore, job embeddedness created by polychronicity provides specific benefits that make employees feel more charming and attractive for attaining freedom. Such perceptions of freedom and secure future enable employees to think and behave innovatively (Ampofo et al. 2018).

Further, from a person-environment theory point of view, an employee's behavior and all the various forces in the workplace exert their influence on him. Employees' fitness for their job, organization, and others increases their embeddedness, which improves their ability to create new ideas and novel work attitudes that increase productivity (Akgunduz & Sanli, 2017). This means that if there is a job embeddedness between polychronicity and productivity, then, in that case, lecturers will perform multiple tasks in a more appropriate way. Job embeddedness minimizes the chances of employee turnover in the teaching profession; consequently, it connects polychronicity with productivity (Holtom, Burton, & Crossley, 2012). Similarly, polychronicity offers several reasons for workers to hold their current positions by enabling them to do different things simultaneously. Job embeddedness improves employees' abilities to create new ideas and novel work attitudes (Akgunduz & Sanli, 2017).

Moreover, polychronicity offers a detailed mechanism by which job embeddedness can increase productivity. Hence, it is reasonable to theorize that job embeddedness positively mediates the relationship between polychronicity and productivity. Job embeddedness ensures that the lecturer gives full time with due attention to performing multiple tasks simultaneously, and for that, they tend to perform better (Akgunduz & Sanli, 2017; Lee et al., 2004). In view of the above review and the knowledge gap created in the extant literature, we hypothesized the following:

H4: Job Embeddedness has a significant mediating role in the relationship between polychronicity and the productivity of lecturers at the University of Jos.

3. Methodology

3.1 Research Design, Population, Sample and Sampling Techniques

To examine the mediating role of job embeddedness in the relationship between polychronicity and productivity of university lecturers, this study adopted a cross-sectional, quantitative, and descriptive design. While a cross-sectional design involves looking at data from a population at a specific point in time, unlike the longitudinal research design that examines data over an extended period of time, descriptive statistics are mostly used to outline the key features of the data in a study (Dakung et al., 2022). The individual unit of analysis was adopted using lecturers from the University of Jos, so that every participant (lecturer) would be asked to respond to an instrument concerning their polychronic time behavior, job embeddedness, and productivity. This study employed Krejcie and Morgan's (1970) sample size selection model to generate a sample size of 300 lecturers, given a population of 1598 lecturers. In this study, stratified sampling techniques (probability) were used to collect data. This means that the population was divided into strata (or subgroups), and a random sample was taken from each subgroup. The subgroups in this study are the different faculties in which the sampled lecturers are drowned. Stratified sampling is often used when there is a great deal of variation within a population.

3.2 Operationalisation and Measurement of Variables

Polychronicity (POLY) ($\alpha = .77$)

This study used a 5-point Likert scale for responses (5 = strongly agree to 1 = strongly disagree), with ten items used to measure the construct of the study (polychronicity). The items were adapted from an existing scale by Bluedorn, Kalliath, Strube, and Martin (1999) and Poposki, Oswald, and Brou

(2009) to measure the level of polychronicity of lecturers in the university. The sample items consist of “I like to juggle several activities at the same time” and “I believe people do their best work when they have many tasks to do.”

Job Embeddedness (JE)

The concept of JE was measured using ten items adapted and modified from the scale developed by Mitchell et al. (2001). Examples of the items are: I feel personally valued by the University of Jos; and my values are compatible with my professional growth and development in accordance with the organization’s values. My job utilizes my skills and talents well.

Productivity (PR)

The productivity ten-item scale was adapted and modified from Asio (2021); Pahuja (2015) and Hawlader, Rana, Kalam, and Polas (2022). The sample of questions included the following: Over time, I have increased students’ satisfaction with the quality service delivered. I always keep in mind the work results I need to achieve. I have steadily increased my research and teaching output.

4. Result and discussions

Table 1. Demographic Characteristics of the Respondents

	Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AGE RANGE				
	Under 35 Years	132	44.3	44.3	44.3
	36-40 YEARS	93	31.2	31.2	75.5
	41-45 YEARS	65	21.8	21.8	97.3
	46-Above YEARS	8	2.7	2.7	100.0
	Total	298	100.0	100.0	
Valid	GENDER				
	MALE	139	46.6	46.6	46.6
	FEMALE	159	53.4	53.4	100.0
	Total	298	100.0	100.0	
Valid	WORK EXPERIENCE				
	1-5 Years	37	12.4	12.4	12.4
	6-10 Years	75	25.2	25.2	37.6
	11-15 Years	111	37.2	37.2	74.8
	16-20 Years	69	23.2	23.2	98.0
	21-Above	6	2.0	2.0	100.0
	Total	298	100.0	100.0	

The findings in Table 1 reveal that out of the 298 returned responses, 46.6% were male and 53.4% were female. A total of 44.3% fell below 35 years, 31.2% fell between 36 and 40 years, 21.8% fell between 41 and 45 years, and 2.7% fell above 46 years of age. Similarly, in terms of respondents’ work experience, 12.4% had 1 to 5 years, 25.2% had 6–10 years, 37.2% had 11–15 years, 23.2% had 16–20 years, and 2.0% had at least 20 years of work experience.

Table 2. Convergence validity

Variable	Factor Loading	AVE	CR
Polychronicity:			
POL1	0.75		
POL2	0.74		
POL3	0.73		
POL4	0.69		
POL5	0.70		

POL6	0.75		
POL7	0.69		
POL10	0.62		
POL11	0.62		
POL12	0.62	0.500	0.902
Job Embeddedness:			
JEM1	0.80		
JEM2	0.76		
JEM3	0.87		
JEM4	0.80		
JEM5	0.82		
JEM7	0.55	0.600	0.898
Productivity:			
PRD8	0.55		
PRD9	0.65		
PRD10	0.75		
PRD11	0.79		
PRD12	0.78	0.504	0.833

AVE =Average Variance Extracted, CR=Composite Reliability

Table 2 shows the average variance extracted (AVE) of all constructs falls between 0.51 and 0.60, according to Fornell and Larcker (1981). The convergent validity of the construct was sufficient when the AVE was at least 0.5, and the composite reliability was greater than 0.6. With a composite reliability of all constructs over the threshold of 0.6 (Hair, Anderson, Babin, & Wiliam, 2010) and AVE for all constructs above 0.5, the internal reliability of the measuring items for this study is acceptable.

Table 3. Discriminant Validity

Variable	Mean	Std. Deviation	POLY	JE	PRD
POLY	55.9832	10.53852	0.707		
JE	60.6678	8.49363	.101	0.775	
PRD	54.7852	7.25631	-.092	.557**	0.710

Productivity (PRD), Job embeddedness (JE), Polychronicity (POLY)

Table 3 is based on Fornell and Larcker's (1981) method of assessing discriminant validity. The rule of thumb is that the square root of the AVE must be greater than the corresponding correlation between constructs. Therefore, Table 3 shows that all squared correlations are lower than AVE's square root, indicating diversity among the concepts. The values (0.101, -0.092, and 0.557) represent the correlation coefficients, whereas the bold values (**0.707**, **0.775**, and **0.710**) indicate the AVE based on the factor loading values. In addition, all AVE values exceed the correlation coefficients and exceed the 0.5 threshold, which is both required and sufficient for discriminant validity (Hair et al., 2010).

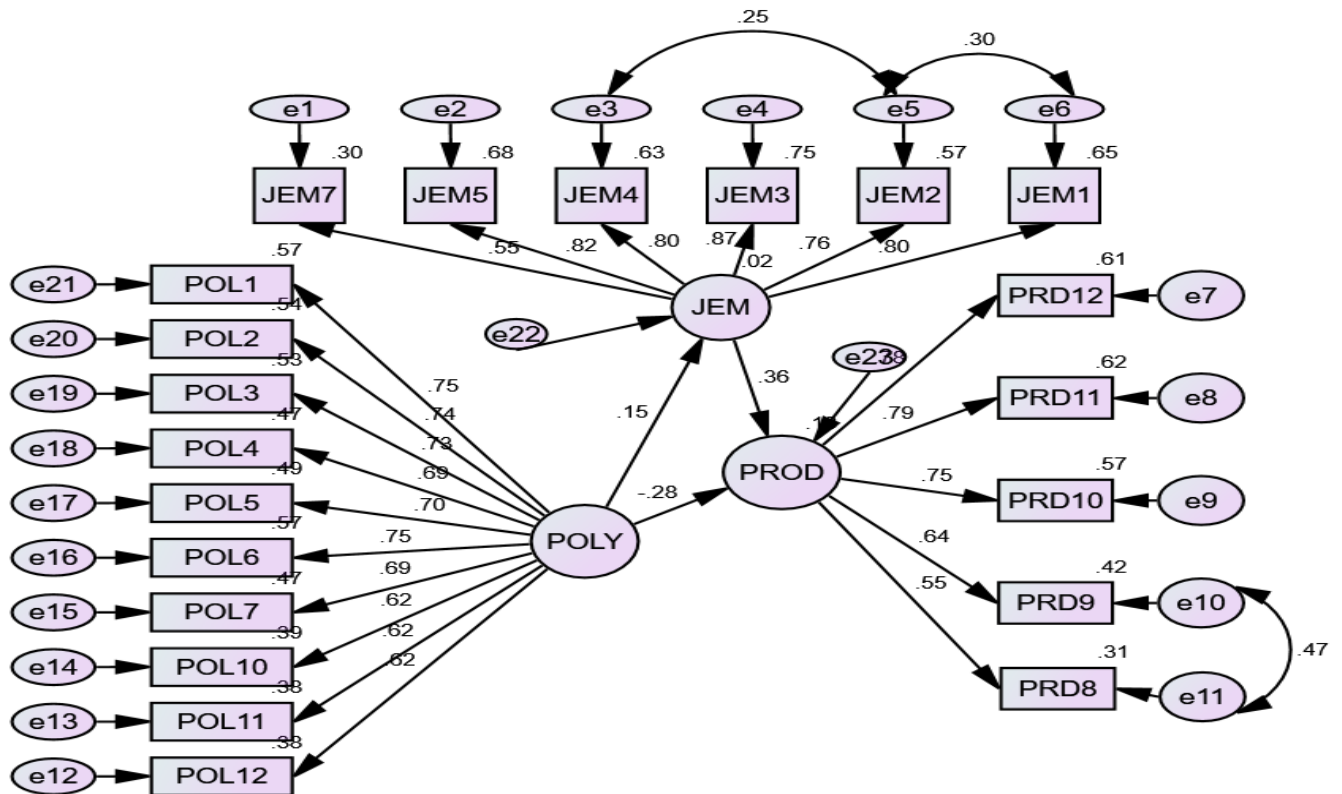


Figure 1: Structural Model

Chi-square (CMIN) 272.898; P 0.000; RMR 0.044; RMSEA 0.041; GFI 0.921; AGFI 0.900; TLI 0.966; CFI 0.971

Figure 1 describes a fitting model with a chi-square score of 272.898, Goodness of Fit Index (GFI) score of 0.921, AGFI score of 0.900, RFI score of 0.966, Comparative Factor Index (CFI) score of 0.971, Root Mean Square Error of Approximation (RMSEA) score of 0.041, and RMR score of 0.044 calculated using structural equations. In comparing the structural fit indices with the standards adopted, goodness of fit was achieved as all values were above the threshold.

4.1 Test of Hypotheses

Table 4. Underlying hypotheses

	Hypotheses	Hypothesized Path
H1	There is no significant relationship between polychronicity and productivity of lecturers in University of Jos	POL → PRD
H2	polychronicity does not have a significant influence on the job embeddedness of lecturers in university of Jos	POL → JEM
H3	Job embeddedness does not have a significant influence on the productivity of lecturers in University of Jos	JEM → PRD
H4	Job embeddedness does not mediate between polychronicity and productivity of lecturers in University of Jos	POL → JEM → PRD

POL=polychronicity; JEM=job embeddedness; PRD=productivity

This study tested three (3) direct relationships: polychronicity and productivity, polychronicity and job embeddedness, and job embeddedness and productivity. Similarly, the indirect relationship tested was the mediating role of job embeddedness between polychronicity and productivity.

Table 5. Results of direct relationship

Relationship	Beta	S. E	T	P-Value	Decision
Ho1: PRD \leftarrow POL	-0.277	0.56	-0.389	0.000	Accepted
Ho2: JEM \leftarrow POL	0.155	0.44	2.389	0.017	Accepted
Ho3: PRD \leftarrow JEM	0.362	0.53	4.975	0.000	Accepted

Interpretation of results

Table 5 presents the results of the hypotheses, which revealed that Hypothesis 1 has a negative and significant ($\beta = -0.277$, t-value = -0.389, $p.000 < .05$) relationship between polychronicity and lecturer productivity. This implies that increases in polychronicity reduce lecturer productivity by 27.7%. Additionally, a t-statistic greater than 1.96 in absolute value (Hair Jr., Howard, & Nitzl, 2020) supports the significance of the p-value. Therefore, the null hypothesis is rejected, meaning that there is a significant relationship between polychronicity and lecturer productivity at the University of Jos. Thus, we conclude that the alternative hypothesis is valid.

Similarly, the result of hypothesis two reveals that there is a positive and significant ($\beta = 0.155$, t-value = 2.389, $p.017 < .05$) relationship between polychronicity and lecturers' job embeddedness. This implies that an increase in polychronicity also increases the job embeddedness of lecturers by 15.5%. Likewise, a t-statistic greater than 1.96 in absolute value (Hair Jr. et al., 2020) supports the significance of the p-value. Consequently, the null hypothesis was rejected, implying that polychronicity significantly influences the job embeddedness of lecturers at the University of Jos.. Thus, we conclude that the alternate hypothesis is supported.

Furthermore, the results of Hypothesis 3 demonstrate a positive and significant relationship ($\beta = 0.362$, t-value = 4.975, $p.000 < .05$) between polychronicity and job embeddedness of lecturers. In other words, an increase in job embeddedness leads to an improvement in lecturer productivity. In addition, the t-statistic greater than 1.96 in absolute value of the t-statistic (Hair Jr et al., 2020) aligns with the significance of the p-value. Accordingly, the null hypothesis is rejected, suggesting that job embeddedness has a significant influence on lecturers' productivity at the University of Jos. Therefore, an alternative hypothesis remains elusive.

Test of mediation

This study examines the mediating role of job embeddedness in the relationship between polychronicity and productivity. The results revealed a significant indirect effect of polychronicity on productivity as positive and significant at $b = 0.056$, $p = 0.006$, hence rejecting Ho. Similarly, the direct effect of polychronicity on productivity in the presence of the mediator (job embeddedness) was also found to be negatively significant (-0.277). This suggests that an increase in polychronicity reduces lecturer productivity by 27.7%.

Testing for mediation using AMOS requires that the indirect effect (0.056) be greater than the direct (-0.277). In this case, polychronicity can influence lecturers' productivity through job embeddedness. However, Hayes (2017) advanced the need for further validation of the existence of mediation in a relationship by employing the bootstrapping test. The results of this process are shown in the bootstrapping table below.

Table 6. Bootstrap Mediation Results

Point estimate	S. E	BootsLower Bounds	BootsUpper Bounds	T	P-value	Decision
0.056	0.023	0.019	0.112	2.435	0.006	Not supported

Source: Author's Computation (2023)

Type of mediation = Partial ($\beta=0.056$, $p=.006$)

Table 6 shows the assessment of the lower and upper limit confidence intervals (LLCI and ULCI). The rule of thumb for the existence of mediation is when there is no zero (0) between the lower (0.019) and upper (0.112) confidence intervals (Hayes, 2017); Kwek et al., 2022). Similarly, the beta value of 0.056 lies within LLCI and ULCI, confirming the presence of mediation. These results confirmed that job embeddedness partially mediates the relationship between polychronicity and productivity. Thus, it can be concluded that job embeddedness plays a partial mediating role because the direct relationship is significant (0.000) and the indirect effect remains significant (0.006). Thus, the null hypothesis 4 was rejected.

4.4 Discussion of Findings

It is commonly observed that polychronic people tend to accomplish several tasks simultaneously (Mullins et al., 2020). This study aimed to test the effects of polychronicity on lecturer productivity through job embeddedness. This encompasses a research gap that has not been previously mentioned in other studies, such as that of Wu et al. (2020). This study focuses on polychronicity regarding lecturers' use of time and how it influences their productivity based on the tenets of person-environment fit theory (P-E fit theory) and self-determination theory (SDT).

The results of Hypothesis 1 affirmed that polychronicity significantly affects lecturer productivity. This demonstrates that a self-determined polychronic lecturer can deliver within a set deadline (Twaissi et al. 2022). This finding is consistent with the existing findings. Asghar et al. (2020); and Wu et al. (2020), provided insight regarding the relationships between polychronicity and productivity. In this study, we found that polychronicity has a significant negative effect on productivity. This implies that an increase in polychronicity results in decreased productivity. However, lecturers with a polychronic tendency are self-determined and can proffer creative solutions to problems despite being faced with competing tasks. This is in agreement with self-determination theory, anchored on the tenets of autonomy, competence, and relatedness, thereby making them eager and capable of maximizing their productivity in carrying out both teaching and research tasks.

The findings of Hypothesis 2 revealed that polychronicity has a positive and significant influence on the job embeddedness of University of Jos lecturers. According to these results, polychronic lecturers tend to be more flexible in response to changing work environments. This suggests that polychronicity effectively improves the productivity (Mullins et al. 2020). The extent to which people fit their work environments has significant effects on productivity, indicating that better fit is associated with better outcomes (Ikoni, Onwuchekwa, & Okolie-Osemene, 2018).. Khan et al. (2021), who investigated polychronic behaviors in terms of workplace interruptions and job embeddedness, also returned consistent findings. This is in line with the self-determination theory (SDT), which assumes the possession of three basic traits: autonomy, competence, and relatedness. Employees are the most driven to the extent that these three traits are addressed in the work environment. (Legault, 2017; Ryan & Deci, 2002).

Hypothesis 3 explored the relationship between job embeddedness and job productivity, and the results demonstrated a positive and significant relationship between polychronicity and job embeddedness. This is in line with Layul et al. (2021), who revealed that lecturers are motivated when they feel a fit with the organization in which their talents and skills are fully utilized; hence, JE is a good job motivation. Liu (2018) expands the understanding of job embeddedness by revealing its multi-dimensionally significant effects of job embeddedness on productivity. Furthermore, organizations can be proactive about job embeddedness: links can be increased through teams and long-term projects; sacrifice can be increased by connecting job and organizational rewards to longevity; and fit can be increased by matching employees' knowledge, skills, abilities, and attitudes with a job's requirements.

Similarly, Shah et al. (2020) further strengthened the multidimensional arguments of job embeddedness (JE), where person-job, person-organization, and person-team fits were examined, and the findings revealed a positive effect on productivity. Additionally, June and Mahmood (2011), Khan et al. (2018), and Yu et al. (2020) revealed a significant positive relationship between job embeddedness and job performance. Thus, it is suggested that when fit exists between employees and their job, they tend to

exert more effort in carrying out their duties, which may lead to greater output. Impliedly, when lecturers are fit to their jobs due to the working environment, with favorable compensation, they increase their embeddedness in the job, thereby reducing their tendency to leave their jobs. This finding agrees with Vizano et al. (2021), who explored how compensation and career influence turnover intention. Demonstration of such behavior is based on the P-E fit theory, which emphasizes that individuals will engage in good working behavior if they are able to interact well with their job environment. P-E fit is the level of compatibility between personal and situational variables that play an important role in producing significant output (Shah et al., 2020).

Additionally, Hypothesis 4 established a partial mediation effect of job embeddedness on the relationship between polychronicity and productivity. This study establishes a significant negative relationship between polychronicity and productivity. This means that the more lecturers behave polychronically, the lower the productivity. Similarly, the relationships between polychronicity and job embeddedness and between job embeddedness and productivity revealed significant findings that satisfied the condition for testing mediation (Baron & Kenny, 1986). This finding suggests that polychronicity is directly related to productivity, partly through job embeddedness. Furthermore, lecturers who believe in and are comfortable doing more than one activity at the same time are productive if they find a conducive and enabling work environment. Thus, participating in polychronic behaviors only increases productivity in the presence of the forces embedded in the job, which helps lecturers develop their competence, autonomy, and relatedness. This fits well with the self-determination theory. Furthermore, job embeddedness ensures that the lecturer gives full time with due attention to performing multiple tasks simultaneously, and for that, they tend to perform better (Akgunduz & Sanli, 2017; Lee et al., 2004).

Additionally, the polychronic behavior that results in job embeddedness allows for certain benefits that make workers feel more enticing and desire to gain independence. Employees are more likely to think and act creatively when they feel confident about their futures (Ampofo et al., 2018). Based on the theoretical debates of (1) self-determination theory and (2) person-environment fit theory, this study seeks to shed light on polychronicity to explain lecturers' productivity at the University of Jos. Further, from the person-environment theory point of view, an employee's behavior and all the various forces in the workplace exert influence on the employee. This implies that employees' fitness for their jobs, organizations, and others increases their embeddedness, which improves their ability to create new ideas and novel work attitudes that increase productivity (Akgunduz & Sanli, 2017). Consequently, it is reasonable to hypothesize that job embeddedness mediates the link between polychronicity and productivity.

5. Conclusion

Based on the results of the analysis, there was a statistically significant effect of polychronic time behavior and job embeddedness on the productivity of lecturers at the University of Joseph. Therefore, the following conclusions were drawn: The results of the study show that there is a significant relationship between polychronic time behavior and lecturer productivity. These findings show a direct contribution to research and teaching productivity.

In line with the findings on the relationship between polychronicity and job embeddedness, we conclude that a direct relationship exists between polychronicity and job embeddedness among University of Jos lecturers. This suggests that when lecturers behave polychronically, they are capable of fitting into their work environment, according to person-environment fit theory. When lecturers perceive the usefulness of polychronic time behavior, their level of engagement increases meaningfully, thereby adapting to their work environment despite the competing forces embedded in the job.

The findings discuss the association between job embeddedness and productivity. The conclusion is that when lecturers find their job environment conducive, with embedded factors, such as compensation, benefits, training, job promotions, recognition, and a conducive work environment, they will easily adapt to the environment.

Job embeddedness significantly and partially mediated the relationship between polychronicity and productivity. This suggests that, although polychronicity is directly associated with productivity, part of it is felt through job embeddedness. This justifies the fact that job embeddedness plays a conduit role between polychronicity and productivity. This means that polychronic lecturers tend to be more productive when job-embedded forces are motivating.

5.1 Recommendations

Based on the literature review and results of this study, the following recommendations were made. First, the university should identify productive polychronic lecturers whose culture aligns well with the organization's values and motivates them with good minimum wage, improved earned academic allowances, and training grants) to improve job performance. This is in line with Andriani and Sembiring (2019), who suggested that the minimum salary or work wage received by an employee affects a person's polychronicity.

Second, comprehensive training should be conducted by the organization to develop a better fit between employees and the organization. An organization that successfully measures the ideal condition and actual situation of culture and values will be able to develop an action plan to narrow the gap and improve employee job embeddedness. Thirdly, the university should provide a work environment that increases employees' embeddedness. This is based on Farooqui and Nagendra (2014), who opined that lecturers would like to work in universities whose values align with their own. Importantly, organizations can increase off-the-job embeddedness by providing people with information about the community surrounding their workplace and social support for local activities (Mitchell et al., 2004; Mitchell et al., 2001).

5.2 Implications of The Study

This study has several theoretical, practical, and methodological implications. Theoretically, the implication can be drawn on the basis of whether the findings support the assumptions of the existing theory and whether the findings have filled the theoretical questions and gaps. Therefore, we have significantly contributed to the academic literature on polychronicity, job embeddedness, and productivity of lecturers at the University of Joseph. First, we examined lecturers' polychronicity in the academic productivity context as a phenomenon that illustrates how university academics perceive multitasking. Therefore, we examined polychronicity through job embeddedness to fill a research gap in the existing literature.

Integrating P-E fit and self-determination theories facilitates the academic productivity of lecturers, which has been supported by this study. The P-E fit theory was reviewed to provide a theoretical explanation for addressing job embeddedness from the perspective of person-job and person-organization fit. This suggests that lecturers who demonstrate their autonomy and competence to behave polychronically in performing tasks, according to the self-determination theory, would be able to achieve high productivity given a supportive environment that is embedded with forces. To this extent, the findings validate the theoretical assertion of P-E fit theory.

Methodologically, this study provides an accurate methodological process that clearly defines each underlying construct. Reliability and validity tests were conducted to purify the measurement scales using confirmatory factor analysis. The results confirm the correspondence rules between empirical and theoretical concepts. Therefore, by combining these methodologies with the measurement items, this study provides a useful direction for future empirical research into multidimensional approaches to the study constructs of polychronicity, job embeddedness, and productivity. The quantitative approach employed contributes to the development of the literature related to the productivity of lecturers.

This study also offers managerial and policy implications by focusing on the application of job embeddedness in the relationship between polychronicity and lecturer productivity. Universities in the twenty-first century are responsible for identifying lecturers who are resourceful and have the skills and competence demanded by the university's culture and values. Another managerial implication relates to providing an enabling environment that fosters lifelong mutual impact between lecturers and the

work environment, which is one of the tenets of P-E fit theory. Similarly, lecturers can become more productive if their work environment is supportive (Mittal and Bienstock, 2019).

5.3 Limitations and Directions for Future Studies

This study satisfied all the stated objectives in its evaluation. It has several limitations it is limited in some ways. First, it focused only on lecturers at the University of Joseon. Hence, the model should be tested in a wider context for its reliability and validity. Second, because the study had a cross-sectional survey design, it was limited to a time frame of measurement. The perceptions and beliefs of lecturers can change over time, and due to uncertainties embedded in the work environment, a longitudinal study should be considered. Finally, the study variables were measured unidimensionally. Future research should consider a multidimensional approach. In addition, polychronicity and monochronicity should be studied to discuss time-use culture.

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