BEYOND MOTIVATION AND HEAVY WORK INVESTMENT: THE CRITICAL ROLE OF BEHAVIORAL-FOCUSED SELF-LEADERSHIP IN ACHIEVING ACADEMIC RESEARCH PERFORMANCE

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ABSTRACT

Many studies highlight the influence of motivation on lecturers' research performance. However, further research is needed to understand the mechanism behind this relationship better. This research aims to determine how behavioral-focused self-leadership and heavy work investment mediate extrinsic and intrinsic motivation to improve academic research performance. Based on social cognitive theory, extrinsic and intrinsic motivation enable individuals to develop strategies and expend effort to achieve expected performance. Data was collected through an online survey involving lecturers at universities in Indonesia (N = 216). The instrument used in the form of a questionnaire was developed from several measuring tools that have been widely used and have been validated. Data analysis was carried out using PLS-SEM. Research findings reveal that behavioral-focused self-leadership directly influences academic research performance and mediates the relationship between academic extrinsic motivation and academic intrinsic motivation on academic research performance. Academic extrinsic and intrinsic motivation have a positive effect on heavy work investment. However, in this study, there is insufficient evidence to suggest that there is a significant influence between heavy work investment and academic research performance. These findings indicate that more than heavy work investment is needed to influence academic research performance significantly. These results expand our understanding of the existing literature on work motivation and self-leadership. These findings have implications for higher education management. Emphasis on developing behavioral-focused self-leadership strategies for lecturers' human resources will increase the effectiveness of heavy work investments and prevent mental health problems that workaholic tendencies may cause.

Keywords: Behavioral-Focused Strategy, Self-Leadership, Academic Research Performance, Higher Education

ABSTRAK

Banyak penelitian menyoroti pengaruh motivasi terhadap kinerja penelitian dosen. Namun, penelitian lebih lanjut diperlukan untuk memahami mekanisme di balik hubungan ini dengan lebih baik. Penelitian ini bertujuan untuk menentukan bagaimana kepemimpinan diri yang berfokus pada perilaku dan investasi kerja yang berat memediasi motivasi ekstrinsik dan intrinsik untuk meningkatkan kinerja penelitian akademik. Berdasarkan teori kognitif sosial, motivasi ekstrinsik dan intrinsik memungkinkan individu mengembangkan strategi dan mengeluarkan usaha untuk mencapai kinerja yang diharapkan. Data dikumpulkan melalui survei online yang melibatkan dosen di universitas di Indonesia (N = 216). Instrumen yang digunakan berupa kuesioner dikembangkan dari beberapa alat ukur yang telah banyak digunakan dan telah divalidasi. Analisis data dilakukan menggunakan PLS-SEM. Temuan penelitian mengungkapkan bahwa kepemimpinan diri yang berfokus pada perilaku secara langsung memengaruhi kinerja penelitian akademik dan memediasi hubungan antara motivasi ekstrinsik akademik dan motivasi intrinsik akademik terhadap kinerja penelitian akademik. Motivasi ekstrinsik dan intrinsik akademik memiliki pengaruh positif terhadap investasi kerja yang berat. Namun, dalam penelitian ini, tidak ada cukup bukti yang menunjukkan adanya pengaruh signifikan antara investasi kerja yang berat dan kinerja penelitian akademik. Temuan ini menunjukkan bahwa investasi kerja yang berat saja tidak cukup untuk mempengaruhi kinerja penelitian akademik secara signifikan. Hasil ini memperluas pemahaman kita tentang literatur yang ada mengenai motivasi kerja dan kepemimpinan diri. Temuan ini memiliki implikasi bagi manajemen pendidikan tinggi. Penekanan pada pengembangan strategi kepemimpinan diri yang berfokus pada perilaku untuk sumber daya manusia dosen akan meningkatkan efektivitas investasi kerja yang berat dan mencegah masalah kesehatan mental yang mungkin disebabkan oleh kecenderungan kerja berlebihan.

Kata kunci: Strategi Berfokus pada Perilaku, Kepemimpinan Diri, Kinerja Penelitian Akademik, Pendidikan Tinggi

1. INTRODUCTION

Research plays a critical role in driving innovation and contributing to a country's economic growth and societal transformation (Cauwels & Sornette, 2022; Ioannidis, 2018). Many emerging countries, including Indonesia, are focused on achieving excellence in this area (Diop & Asongu, 2023; Fachriansyah & Wulandari, 2022; Heng et al., 2020; Sukoco et al., 2023; Tuan et al., 2022). Currently, based on the Country Ranking of the Asian region (1996-2023) (Scimago Lab, 2024), the quantity and quality of research in Indonesia, as measured by the number of documents and citations, are still not optimal compared to other countries. This situation needs improvement in both quantity and quality.

Various approaches have been implemented and numerous research studies have been conducted to predict the improvement in academic research performance. Predictors are in the form of national policies: institutional support, collaboration, funding and individual factors such as motivation (Heng et al., 2020; Huang et al., 2023; Ocampo et al., 2022; Wahid et al., 2022). The human resources approach is one of the compelling methods (Ocampo et al., 2022; Perdomo-Ortiz et al., 2021; Ryazanova & Jaskiene, 2022).

In human resources management, there has also been a lot of research, including incentives, motivation, and behavioral factors (Ballestar et al., 2019; Henry et al., 2020; Stupnisky et al., 2023). However, research that highlights the internal mechanisms that influence motivation and, at the same time, continuously encourages researchers' efforts and strategic behavior to increase their research productivity has not been explored in depth. Knowing the critical predictors within lecturers that influence behavior is essential, so managers know which support programs are more targeted and sustainable.

In this study, we utilize the concept of behavioral-focused self-leadership to predict academic research performance. This concept has been used to predict performance in other fields (Kalyar, 2011; Knotts et al., 2022; Lin, 2017; Park et al., 2016). Then, behavioral-focused self-leadership will be explored to determine its influence on mediating academic extrinsic and intrinsic motivation with academic research performance. Along with this concept, heavy work investment will also be implemented, as lecturers typically dedicate significant time to fulfilling their duties, including research (Shkoler & Kimura, 2020; Tabak et al., 2021; Taris et al., 2020). Thus, the purpose of this research is to address the following research questions:

1. To what extent do behavioral-focused self-leadership and heavy work investment influence academic research performance?
2. How do behavioral-focused self-leadership and heavy work investment mediate the effect of extrinsic and intrinsic motivation on academic research performance?

2. LITERATURE REVIEW

The study is based on Bandura's social cognitive theory. This theory suggests that personal, behavioral, and social/environmental factors interact. Individuals use processes such as observing others, using symbols, and regulating their behavior to gain a sense of control over their lives. Important motivational processes include setting goals, evaluating progress, expecting outcomes, holding values, making social comparisons, and having self-belief. Progress towards goals helps maintain self-belief and motivation. Individuals act based on their values and work towards

desired outcomes (Schunk & DiBenedetto, 2019, 2021).

2.1 Academic Research Performance

The concept of academic research performance has been defined and measured through various approaches by researchers. Tartari et al. (2020) define academic research performance as the quantity of research output measured through the total number of journal articles published by a researcher at a particular time. Furthermore, Heng et al. (2020) adopted a broader definition by considering academic research performance as the total number of published works, including journal articles, book chapters, conference papers, research grants, and patents. Fauzi et al. (2019) adopted a subjective perspective, defining academic research performance as academics' perceptions and assessments of their success and contribution to the field of research. The definition of Perceived Academic Research Performance variable in this study refers to academics' perceptions and assessments of their success and contribution to the field of research.

2.2 The Effect of Academic Extrinsic Motivation on Perceived Self-Leadership and Perceived Academic Performance

The definition of academic extrinsic motivation is operationalized from the definition of extrinsic motivation, generally the encouragement within an individual to carry out activities because of the belief that his efforts will produce performance that leads to rewards, which are valuable to him (Vroom, 1964). Vroom found that workers' performance levels were related to how their performance helped them obtain higher wages, promotions, and acceptance from coworkers. This relationship is most potent among workers who highly value these outcomes.

In this research, the Academic Extrinsic Motivation variable is defined as the drive to carry out research activities, which is influenced by the belief that his efforts will result in research performance that leads to rewards which are valuable to him. Based on the social cognitive theory, academic extrinsic motivation drives motivational processes, such as goal-setting, self-evaluation, outcome expectations, and values. Individuals set goals, develop strategies to achieve them and then evaluate their progress towards those goals (Schunk & DiBenedetto, 2019). Another study that has predicted the relationship between Extrinsic motivation was conducted by Shkoler & Kimura (2020), which reports that Extrinsic motivation is positively associated with heavy work investment. Garas et al. (2023) also reported that extrinsic motivation influences the level of heavy work investment. Thus, the following hypothesis is proposed:

H_1: Academic Extrinsic Motivation has a significant positive influence on Behavioral-focused Self-Leadership

H_2: Academic Extrinsic Motivation has a significant positive influence on Heavy Work Invesment

H_3: Academic Extrinsic Motivation has a significant positive influence on Academic Research Performance

The Academic Extrinsic Motivation measurement scale was adopted from Vallerand, Pelletier, Blais, & Brière (1992) and Vallerand, Pelletier, Blais, Briere, et al. (1992) called the Academic Motivation Scale (AMS-C 28). Measurement indicators in academic research utilize extrinsic motivational factors identified in previous studies (Lambovska & Yordanov, 2020) in order to adapt to the research context. The study identified extrinsic motivation factors in

the research context, including collaboration, research funding, researcher's recognition, financial assets (salary, fair bonuses, rewards) and career promotion.

2.3 The Effect of Academic Intrinsic Motivation on Perceived Self-Leadership and Perceived Academic Performance

In this study, Academic Intrinsic Motivation variable is defined as the drive to conduct research because of the enjoyment derived from the research activity itself (Ryan & Deci, 2000). Based on the social cognitive theory, academic intrinsic motivation drives motivational processes, such as goal-setting, self-evaluation, outcome expectations, and values. Individuals set goals, develop strategies to achieve them and then evaluate their progress towards those goals (Schunk & DiBenedetto, 2019).

Previous studies predicted the relationship between intrinsic motivation and heavy work investment, including Shkoler & Kimura (2020) who reported that intrinsic motivation is positively associated with heavy work investment. A study by Garas et al. (2023) also shows that intrinsic motivation influences employee heavy work investment levels. Thus, the following hypothesis is proposed:

H_4: Academic Intrinsic Motivation has a significant positive influence on Behavioral-Focused Self-Leadership

H_5: Academic Intrinsic Motivation has a significant positive influence on Heavy Work Invesment

H_6: Academic Intrinsic Motivation has a significant positive influence on Academic Research Performance

The Academic Intrinsic Motivation measurement scale was adopted from Vallerand, Pelletier, Blais, & Brière (1992) and Vallerand, Pelletier, Blais, Briere, et al. (1992) called the Academic Motivation Scale (AMS-C 28). Measurement indicators in academic research utilize intrinsic motivation factors identified in previous studies to adapt to the research context (Lambovska & Yordanov, 2020). This study identifies and separates intrinsic motivation factors in the research context: contribution to society/dissemination of knowledge, contribution to science, personal development, enjoyment of science, and challenging/creative work.

2.4 Behavioral-Focused Self Leadership

Behavioral-focused Self-Leadership is part of the concept of Self Leadership, which is defined as a comprehensive self-influence perspective that concerns leading oneself toward the performance of naturally motivating tasks as well as managing oneself to do work that must be done but is not naturally motivating (Manz, 1986). Behavioral-focused strategy focuses on increasing self-awareness to manage behavior related to tasks, including unpleasant tasks. These behaviors include self-goal setting, self-observation, self-goal setting, and self-feedback (Harari et al., 2021; Houghton et al., 2012; Knotts et al., 2022). Self-goal setting, determining specific targets that are considered to improve performance. Self-observation, increasing self-awareness, and determining evaluation standards for performance results. Self-feedback, including giving rewards or self-correcting feedback or punishment. Referring to Social Cognitive Theory, the behavioral-focused strategy is enabled by the ability of self-regulation to control thoughts and actions using self-determined standards. It also involves the ability to self-reflect to assess the adequacy of actions by evaluating the results (Bandura, 2001).

Previous research shows that behavioral-focused self-leadership strategies increase job satisfaction and have a positive effect on performance (Politis, 2006). Lin (2017) also reported that behavioral-focused strategy positively affects individual creativity. This research also confirms the role of behavioral-focused strategy as a mediator between promotion and prevention-focused variables and individual creativity.

H_7: Behavioral-Focused Self-Leadership has a significant positive effect on Academic Research Performance

H_8: Behavioral-focused Self-Leadership significantly mediates the effect of Academic Extrinsic Motivation on Perceived Academic Research Performance

H_9: Behavioral-focused Self-Leadership significantly mediates the effect of Academic Intrinsic Motivation on Perceived Academic Research Performance

2.5 Heavy Work Investment

The concept of heavy work investment was originally coined by (Snir & Harpaz, 2012) to describe the behavior of employees who work long hours, surpassing 48-50 hours per week (Acosta-prado et al., 2021; Snir, 2018; Snir & Harpaz, 2012). This behavior, known as heavy work investment, involves some employees dedicating more time and energy to their work than others (Astakhova & Hogue, 2014). heavy work investment serves as the foundation for various psychological constructs, such as work addiction, work engagement, passion for work, and workaholism (Acosta-prado et al., 2021). Tziner et al. (2019) have noted that heavy work investment encompasses not only working long hours but also investing more physical and mental energy in the workplace. This indicates that heavy work investment is a type of employee behavior that allocates more time, energy, and mental effort than other employees.

Several studies have found that high levels of heavy work investment in employees can impact work engagement, performance, job satisfaction, and productivity (Pătărlăgeanu et al., 2020; van Beek et al., 2014). Thus, the following hypotheses proposed:

H_{10}: Heavy Work Investment has a significant positive effect on Academic Research Performance

H_{11}: Heavy Work Investment significantly mediates the effect of Academic Extrinsic Motivation on Perceived Academic Research Performance

H_{12}: Heavy Work Investment significantly mediates the effect of Academic Intrinsic Motivation on Perceived Academic Research Performance.

depicts the research framework or conceptual structure used in this study.

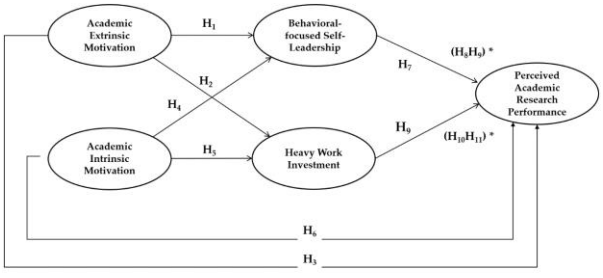

Figure 1. *Research framework*

The research model described above was developed to investigate the correlation between two independent variables, Academic Extrinsic Motivation and Academic Intrinsic Motivation, and their influence on Perceived Academic Research Performance, the dependent variable. This model introduces Behavioral-focused Self-Leadership and Heavy Work Investment as mediators between the independent and dependent variables. The underpinning theory for explaining these relationships is social cognitive theory, which incorporates elements from expectancy theory, self-determination theory, and goal setting. These theories provide a basis for understanding the impact of motivation and effective goal-setting through self-leadership on overall performance. This model offers a comprehensive view of the factors affecting academic research performance and provides a structure for identifying effective strategies for academic development in higher education and research institutions.

3. RESEARCH METHOD

The study employs a quantitative research method and a survey research design. The target population are lecturers affiliated with specific cluster universities in Indonesia. The selection criteria for research participants required them to be permanent lecturers, not currently on study assignments, and not at the professor level. The study's sample size was determined using power analysis (Hair et al., 2022; Hair, Risher, et al., 2019).

The research instrument was developed by adapting the Short Multidisciplinary Research Performance Questionnaire (SMRPQ) (Daumiller et al., 2019), the Academic Motivation Scale (AMS-C 28) (Vallerand, Pelletier, Blais, & Brière, 1992), the Research Questionnaire Model (Klieme & Schmidt-Borcherding, 2023), and the Abbreviated Self-Leadership Questionnaire (ASLQ) by Houghton & Neck (2002). The questionnaire underwent content validity assessment by expert judgment, and its reliability and validity were confirmed through a pilot study involving 43 participants. Data for this study were collected using a cross-sectional approach

The research uses the multivariate analysis technique called Partial Least Square - Structural Equation Model (PLS-SEM) (Bougie & Sekaran, 2019; Hair et al., 2022) for data analysis. PLS-SEM is chosen for its suitability in achieving the study's causal-predictive-oriented, exploratory, and explanatory objectives.

4. RESULTS AND DISCUSSION

Table 1 shows the demographic profile of respondents of this study. According to the data in , more than 60% of the respondents are women.

Table 1. Respondents demographic profile

Description	Category	N	Percentage (%)
Gender	Male	77	36
	Female	139	64
	Total	216	100
Age	30 - 40 years	69	32
	41 - 50 years	78	36
	51 - 60 years	54	25
	> 61 years	13	6
	22 - 30 years	2	1
	Total	216	100
Domicile	Bali, Kalimantan, Sulawesi	15	7
	Jawa	174	81
	Sumatera	27	13

Table 1. Respondents demographic profile

Description	Category	N	Percentage (%)
	Total	216	100

Table 2. Variable descriptive statistics (standardized)

Variable	Mean	Median	Observed min	Observed max	Standard deviation	Excess kurtosis	Skewness
Academic Extrinsic Motivation	0.000	0.115	-4.294	1.366	1.000	1.735	-1.087
Academic Intrinsic Motivation	0.000	0.181	-3.995	1.023	1.000	0.971	-0.942
Behavioral-focused Self-Leadership	0.000	0.088	-3.122	1.649	1.000	0.090	-0.493
Heavy Work Investment	0.000	0.005	-3.112	2.073	1.000	-0.085	-0.346
Perceived Academic Research Performance	0.000	-0.097	-2.442	2.238	1.000	-0.324	0.207

In terms of age, the respondents were distributed as follows: the largest group falls within the 41-50 years category, followed by the 30-40 years category, and then the 51-60 years category.

Shows the descriptive statistical results of standardized PLS-SEM output for variables. For standardized data, the mean value will show a value of 0.000, while the standard
deviation value will show a value of 1. The data shows that the distribution of standardized median values is greatest at Academic Intrinsic Motivation 0.181, which shows the distribution value is above the median. The largest minimum observed value was found for Academic Extrinsic Motivation at -0.4294, while the smallest maximum observed value was also found for Academic Extrinsic Motivation at 1.023. The excess kurtosis values for all variables do not exceed -2 and +2, which indicates that the data distribution tends to be normal. The skewness values for all measured variables are between -1 and +1, indicating that the data tends to be symmetrical. Therefore, it can be concluded that the distribution of this research data tends to be normal.

Table 3 displays the results of the outer model evaluation. Reliability indicators measured by outer loading should be higher than 0.7, but indicators between 0.4 and 0.7 should also be considered.

Table 3. Outer model evaluation results

Variable	Indicator	Outer Loadings	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Academic Extrinsic Motivation	AEM2	0.711	0.835	0.856	0.877	0.546
	AEM3	0.795				
	AEM4	0.664				
	AEM5	0.663				
	AEM6	0.800				
	AEM8	0.785				
Academic Intrinsic Motivation	AIM1	0.799	0.936	0.940	0.947	0.690
	AIM2	0.862				
	AIM3	0.845				
	AIM4	0.854				
	AIM5	0.820				
	AIM6	0.859				
	AIM7	0.816				
	AIM8	0.787				
Perceived Academic Research Performance	ARP1	0.746	0.892	0.894	0.916	0.609
	ARP1	0.765				
	ARP1	0.798				
	ARP2	0.849				
	ARP3	0.820				
	ARP4	0.773				
	ARP6	0.704				
Behavioral-focused Self-Leadership	BFS1	0.923	0.863	0.866	0.917	0.788
	BFS2	0.929				
	BFS3	0.806				
Heavy Work Investment	HWI1	0.685	0.870	0.910	0.892	0.480
	HWI2	0.745				
	HWI3	0.698				
	HWI4	0.639				
	HWI5	0.659				
	HWI6	0.656				
	HWI7	0.816				
	HWI8	0.667				
	HWI9	0.654				

Construct reliability is indicated by Cronbach's alpha and composite reliability values should be higher than 0.7. Construct/convergent validity is measured by the AVE value, which should be higher than 0.5 (Hair, Risher, et al., 2019; Ringle & Sarstedt, 2016). Results in show that the outer loadings are mostly higher than 0.7, and several indicators below 0.7 but above 0.5 are maintained, considering they still have a good contribution. All Cronbach's alpha and composite reliability values were higher than 0.7, which meets the reference value. Meanwhile, the AVE value, which shows construct/convergent validity, is higher than 0.5 and meets the reference value. Hence, the measurement is reliable and valid. This study utilizes the heterotrait-monotrait ratio (HT-MT ratio) to assess discriminant validity. HT-MT ratio provides a better estimation

Table 4. HTMT ratio

Variable	AEM	AIM	BFSL	HWI	ARP
Academic Extrinsic Motivation					
Academic Intrinsic Motivation	0.667				
Behavioral-focused Self-Leadership	0.446	0.479			
Heavy Work Investment	0.341	0.294	0.261		
Perceived Academic Research Performance	0.481	0.421	0.640	0.215	

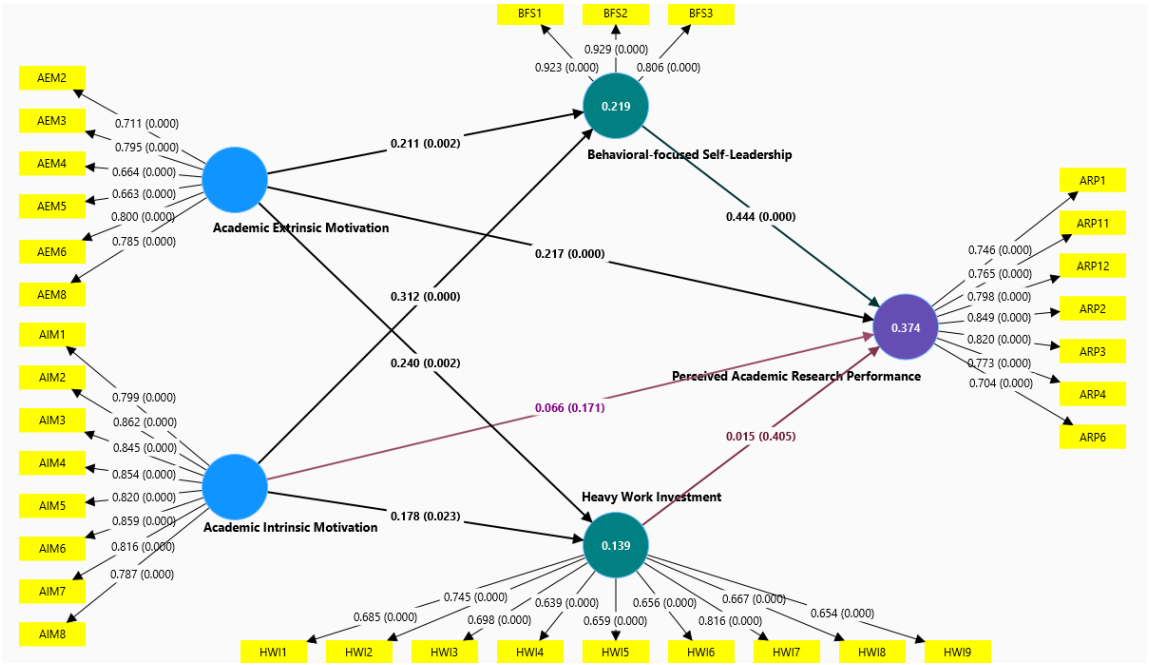

Figure 2. *Inner model (structural model)*

(Hair et al., 2022).

The ratio should be below 0.9 for similar constructs and 0.85 for the different concepts. All the HT/MT values shown in, are below 0.9 and 0.85, indicating that the measurement is valid.

This study examines the effects of extrinsic and intrinsic motivation on academic research performance mediated by behavioral-focused self-leadership and Heavy Work Investment using Partial Least Squares Structural Equation Modeling (PLS-SEM) with a bootstrapping procedure with 10,000 resamples. The study tests 12 hypotheses: 8 hypotheses for direct effects and 4 hypotheses for mediation effects.

The primary hypothesis posits that Behavioral-focused Self-leadership and Heavy Work Investment directly influence academic research performance. Then, Behavioral-focused Self-leadership and Heavy Work Investment mediate the influence between extrinsic and intrinsic motivation and academic research performance.

Figure 2 displays the inner model evaluation results. The figure illustrates the structural relationships between variables in the research model, denoted by arrows. Each path or pathway has a p-value (number in brackets). P-value < 0.05 indicates a significant relationship (Hair, Black, et al., 2019).

F^2 values of 0.02, 0.15 and 0.35 displays the direct effect hypothesis results of the inner model evaluation, including path coefficients, p-values, confidence intervals, VIF values,

Table 5. Direct effect hypothesis testing results

	Path	SC	p-value	CI 5.0%	CI 95.0%	Supported/ Not Supported	VIF	f^2
H_1	Academic Extrinsic Motivation → Behavioral-focused Self-Leadership	0.211	0.002	0.099	0.340	Supported	1.516	0.038
H_2	Academic Extrinsic Motivation → Heavy Work Investment	0.240	0.002	0.109	0.389	Supported	1.516	0.044
H_3	Academic Extrinsic Motivation → Perceived Academic Research Performance	0.217	0.000	0.118	0.330	Supported	1.627	0.046
H_4	Academic Intrinsic Motivation → Behavioral-focused Self-Leadership	0.312	0.000	0.182	0.433	Supported	1.516	0.082
H_5	Academic Intrinsic Motivation → Heavy Work Investment	0.178	0.023	0.029	0.322	Supported	1.516	0.024
H_6	Academic Intrinsic Motivation → Perceived Academic Research Performance	0.066	0.171	-0.050	0.178	Not Supported	1.663	0.004
H_7	Behavioral-focused Self-Leadership → Perceived Academic Research Performance	0.444	0.000	0.351	0.530	Supported	1.298	0.243
H_{10}	Heavy Work Investment → Perceived Academic Research Performance	0.015	0.405	-0.087	0.122	Not Supported	1.177	0.000

SC = standardized coefficient.

the decisions to support or not support and effect size value (f^2).

The VIF values should be lower than 5, the p-value <0.05, and the confidence interval (CI) does not include zero. F^2 values of 0.02, 0.15 and 0.35 indicate the predictor construct's small, medium and large effects on the endogenous construct (Hair et al., 2022). In Table 5, the results indicate that the statistical analysis of the study has provided enough evidence to support 6 out of the 8 proposed hypotheses. The direct effect is significant and positive for hypotheses H_1, H_2, H_3, H_4, H_5, and H_7. Hypotheses H_6 and H_{10} were not supported due to non-significant p-values and confidence intervals that include zero.

Table 6 presents the results of hypothesis testing for the indirect effect and mediation analysis to determine whether the type is complementary/partial or indirect only/full mediation.

Table 6. Indirect effect hypothesis testing results

	Path	SC	p-value	CI 5.0%	CI 95.0%	Supported /Not Supported	Mediation
H_8	Academic Extrinsic Motivation → Behavioral-focused Self-Leadership → Perceived Academic Research Performance	0,094	0,003	0,043	0,155	Supported	Complementary (Partial Mediation)
H_9	Academic Intrinsic Motivation → Behavioral-focused Self-Leadership → Perceived Academic Research Performance	0,138	0,000	0,077	0,200	Supported	Indirect Only (Full Mediation)
H_{11}	Academic Extrinsic Motivation → Heavy Work Investment → Perceived Academic Research Performance	0,004	0,415	-0,023	0,032	Not Supported	
H_{12}	Academic Intrinsic Motivation → Heavy Work Investment → Perceived Academic Research Performance	0,003	0,416	-0,017	0,025	Not Supported	

SC = standardized coefficient.

In Table 6, the results indicate that the statistical analysis of the study has provided enough evidence to support 2 out of the 4 mediation hypotheses. The indirect effect is significant and positive for hypotheses H_8 and H_9. The mediation of Behavioral-focused Self-Leadership is complementary on Academic Extrinsic Motivation, and Indirect Only (Full Mediation) on Academic Intrinsic Motivation. Hypotheses H_{11} and H_{12} were not supported due to non-significant p-values and confidence intervals that include zero.

The following points provide a detailed interpretation of each supported direct and indirect/mediation hypothesis:

1. Academic Extrinsic Motivation has a significant positive influence on Behavioral-focused self-leadership. Increasing academic extrinsic motivation affects the increasing of behavioral-focused self-leadership.
2. Academic Intrinsic Motivation has a significant positive influence on Behavioral-focused self-leadership. However, Academic Intrinsic Motivation does not have a noticeable positive impact on academic research performance.
3. Behavioral-focused self-leadership has a significant positive direct effect on academic research performance. The Behavioral-focused self-leadership also mediates the effect of Academic Extrinsic and Intrinsic Motivation on Perceived Academic Research Performance. The type of mediation of Academic Extrinsic Motivation is Complementary (partial mediation), while Academic Intrinsic Motivation is Indirect Only (full mediation).
4. Statistical analysis did not find significant support for the hypothesis that heavy work investment has a significant positive effect on Academic Research Performance. Heavy work investment also does not mediate the impact of Academic Extrinsic

Motivation on Perceived Academic Research Performance.

Since this study uses a causal predictive approach, it's important to report the results of model quality evaluation. The R-squared (R^2) measures the explanatory power, while the predictive power is measured by the Q-squared (Q^2) values and CVPAT. Model fit is assessed using the Standardized Root Mean Square Residual (SRMR). An R^2 value between -1 and 1 indicates the explanatory power, with a higher value indicating better explanatory power. A Q^2 predicted value between 0 and 0.25 suggests a small predictive ability, while 0.25 to 0.5 indicates a moderate ability, and more than 0.5 indicates a large predictive ability. The SRMR value indicating good model suitability is less than 0.08 (Hair et al., 2022).

In, the R^2 measurement results are as follows: 0.219 for Behavioral-focused Self-Leadership, 0.374 for Academic Research Performance, 0.139 for Heavy Work Investment, and 0.318 for Self-Leadership.

Table 7. Model quality evaluation

Variable	R^2	Q^2
Behavioral-focused Self-Leadership	0.219	0.200
Heavy Work Investment	0.139	0.107
Perceived Academic Research Performance	0.374	0.201

Based on previous reference value, both R^2 values indicate small to moderate explanatory power.

Additionally, the SRMR value obtained in this study was 0.067, which is below the threshold of 0.08. Therefore, the model is considered to have adequate explanatory power and a good model fit.

The Cross-Validated Prediction Ability Test (CVPAT) is recommended for regular use in PLS-SEM analysis focused on causal prediction (Hair et al., 2022; Liengaard et al., 2021; Sharma et al., 2023). CVPAT employs an out-of-sample prediction approach to compute the model prediction error, represented by the average loss value. A value below zero demonstrates the PLS-SEM model's strong predictive capabilities. In other words, a negative difference in the average loss value between PLS-SEM and the reference value indicates good predictive performance.

Show the CVPAT results of this study. It indicates that the average loss difference value is negative

Table 8. Cross-Validated Prediction Ability Test (CVPAT) result

Variable/ Model	Compare to IA (Indicator Average)				Compare to LM (Linear Model)			
	PLS loss	IA loss	Average loss difference	p-value	PLS loss	LM loss	Average loss difference	p-value
Behavioral-focused Self-Leadership	0.765	0.907	-0.142	0.004	0.765	0.798	-0.033	0.267
Heavy Work Investment	1102	1144	-0.042	0.198	1102	1187	-0.085	0.000
Perceived Academic Research Performance	0.944	1069	-0.125	0.001	0.944	0.995	-0.051	0.018
Overall	0.991	1079	-0.088	0.003	0.991	1055	-0.064	0.000

Table 9. PLS-POS analysis result

Variable	Original R^2 (N = 216)	R^2 Segment Segment 1 (N = 59)	R^2 Segment Segment 2 (N = 151)
Behavioral-focused Self-Leadership	0,219	0,260	0,990
Heavy Work Investment	0,139	0,172	0,985
Perceived Academic Research Performance	0,374	0,371	0,992

compared to the standard reference value. Therefore, the model has good predictive capabilities.

To determine the possibility of unobserved heterogeneity due to the complexity of phenomena in behavior-related research, the use of PLS-POS analysis is proposed (Becker et al., 2013; Hair et al., 2022). This advanced model analysis aims to reveal the segment structure and estimate specific parameters for each segment. Based on the results of this analysis, researchers can try to explain the identified heterogeneity (Sharma et al., 2021).

Table 9 shows the results of the PLS-POS analysis for this study. It shows that the data is divided into two segments. The R^2 value for all the endogenous variables increased in Segment 2, indicating that these variables have strong explanatory power. These results suggest potential variations that can be further explored to identify segment characteristics. The analysis results can help understand unobserved heterogeneity in the data and find segments with different behavioral patterns, which can be beneficial for decision-making or advanced research.

This research acknowledges limitations that need to be addressed in future studies. In this study, we made efforts to obtain more homogeneous data; however, the PLS-POS analysis revealed indications of unobserved heterogeneity within the data. The analysis suggests the potential influence of two distinct data segments on the conclusions drawn from the research. Therefore, further research is necessary to identify the specific attributes that differentiate one respondent segment from another.

5. CONCLUSION

This study aimed to evaluate the predictors of academic research performance, focusing on academic extrinsic and intrinsic motivation, behavioral-focused self-leadership and heavy work investment. Behavioral-focused self-leadership is found to have significant positive direct effects on academic research performance. Behavioral-focused self-leadership also mediates Academic extrinsic motivation. Behavioral-focused self-leadership mediation is complementary or partial because extrinsic motivation also directly influences academic research performance. In contrast, the role of behavioral-focused strategy in mediating Academic intrinsic motivation is classified as indirect only or full mediation because, in this study, the evidence did not support the hypothesis that academic intrinsic motivation directly affects academic research performance.

However, in this study, there is insufficient evidence to suggest a significant relationship between heavy work investment and academic research performance. The findings indicate that more than just a heavy work investment is required to influence academic research performance. Effective strategies are necessary to manage one's work and oneself to achieve the desired research performance.

This study's findings expand the existing literature by demonstrating that Behavioral-focused self-leadership

significantly predicts academic research performance and play a crucial role in enhancing extrinsic and intrinsic motivation. The findings of this research also have practical implications for managing human resources in higher education institutions. It emphasizes the importance of the behavioral strategy, especially in encouraging academicians to prepare specific personal performance targets, focusing on working towards achieving the targets that have been set, and regularly recording progress in achievements.

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