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Enhancing academic's performance: Exploring the interaction of innovative work behavior, intrinsic motivation, and self-efficacy in public universities

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ABSTRACT

This study investigates the factors influencing the performance of academics in public universities in Bangladesh, focusing on the relationships between innovative work behavior, intrinsic motivation, and self-efficacy. Grounded in the Theory of Planned Behavior (TPB), the research also examines whether self-efficacy mediates the effects of innovative work behavior and intrinsic motivation on academic performance. Adopting a quantitative research design, data were collected from 410 academics through a simple random sampling technique using a structured survey questionnaire. The data were analyzed with SPSS for demographic, and Smart PLS was employed for measurement and structural model evaluation. The findings confirm that both innovative work behavior and intrinsic motivation play a significant role in enhancing academic performance, particularly within the context of a developing country. These insights are valuable for higher education institutions and policy-makers, highlighting the importance of fostering innovation and motivation among educators to improve teaching standards. Furthermore, the study outlines theoretical and practical implications, acknowledges limitations, and suggests avenues for future research.

1. Introduction

With the recent and growing awareness of the impact of teaching creativity on a faculty member's professional quality in a developing nation such as Bangladesh, public universities occupy an important place in shaping the future of nations, which involves the production of intelligent and qualified human resources able to contribute to society in various spheres. The performance of academics in these institutions is

important to the success of programs and the overall mission of the institution. Hence, it is important to examine the performance-influential variables to make sure these academics are effective.

There is a notable lack of performance among academics in public universities in Bangladesh, posing a significant challenge currently. This hinders the overall quality of education and research being conducted in these institutions (Paul, 2021). Further, it leads to a negative impact on the students and the competent status of the public universities of

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Bangladesh as a whole. As a result, the government of Bangladesh is now prioritizing the enhancement of teachers' performance through various initiatives (Chowdhury & Sarkar, 2018, pp. 1–18). According to Gálvez Suarez and Milla Toro (2018), effective teaching performance can significantly improve students' academic achievements. In this context, teachers should critically evaluate their pedagogical practices. In other words, engaging in self-reflection allows educators to develop a deeper understanding of their teaching effectiveness (Gálvez Suarez & Milla Toro, 2018). This process further enhances their self-awareness, critical thinking, self-reflection, and self-esteem in relation to curriculum design, teaching methodologies, and student learning outcomes, ultimately contributing to their professional growth and overall performance (Khosa et al., 2023).

Innovative work behavior refers to the extent to which individuals engage in activities that involve creativity, problem-solving, and the generation of new ideas (Sajiwo, 2015). Academics who exhibit high levels of innovative work behavior are more likely to come up with novel solutions to challenges, contribute to the advancement of knowledge, and ultimately enhance the reputation of their institution (Purwanto, 2020; Shafait & Huang, 2023). In addition to innovative work behavior, intrinsic motivation and self-efficacy are also important factors that can influence academics' performance. Intrinsic motivation is the inner urge and passion psychologists feel for their work, while self-efficacy is one's belief in their potential to attain goals successfully (Fishbach & Woolley, 2022; Waddington, 2023). Intrinsically motivated academics are expected to be engaged reasonably in work, handle hurdles, and meet targeted goals due to a high measure of self-efficacy.

Notably, there is little empirical studies on the role of innovative work behavior and intrinsic motivation in expanding the performance of academics in public universities in a developing country like Bangladesh. While earlier research works on the matter in different other contexts or industries are notable (Al Wali et al., 2023; Bataineh et al., 2022; Jankelová & Joniaková, 2021; Van Zyl et al., 2021). Considerably, in most cases, the research works had rather focused on traditional facets like job satisfaction, motivation, administrative support, organizational culture, and resource constraints. It is, thus, in consideration to this it becomes significantly relevant and considered necessary to explore exactly how innovativeness in work behavior and intrinsic motivation buoyed the performance of academics of Bangladesh. In a way, addressing some of these gaps may provide valuable guidelines that educational institutions and policymakers can follow for improving education and research in Bangladesh.

The present research aims to examine innovative work behavior together with intrinsic motivation and self-efficacy quintessence in public universities, thereby postulating their influence over performance. This is something regarding how each factor increasingly blooms over others, assigning useful prescriptions of what universities could do to help boost academics' efficacy, thus bolstering quality education and consequently research within their institutions.

2. Literature review

2.1. Academic performance

Performance is defined by Sonnentag, and Frese (2002) as executing or presenting something, such as an activity, a task, or even an event. Sometimes, it refers to the quality or level of effectiveness of someone's performance or behavior that is exhibited on a particular occasion. Performance on various dimensions was considered to evaluate speed, accuracy, quality, efficiency, productivity, and effectiveness. In the study context, academic performance refers to the effectiveness and efficiency with which educators fulfil their professional responsibilities, including teaching, research, mentoring, and administrative tasks within an academic institution. Performance evaluation plays a crucial role in identifying strengths and weaknesses in various areas, thereby opening avenues for both development and recognition. Performance is

also important for the individual. Completing tasks and achieving at a superior level can bring feelings of fulfilment, with a sense of mastery and pride (Amin, 2022; Ismail et al., 2021). Experiencing dissatisfaction or even perceiving it as a personal failure can result from low performance and failure to achieve goals. In the realm of academic performance, it includes creating innovative teaching strategies, research methods, and academic partnerships that challenge current knowledge boundaries and contribute to the progress of their discipline. (Ehido et al., 2019).

2.2. Innovative work behavior

Innovative work behavior means individuals can create and put into practice new ideas, processes, or solutions that enhance the effectiveness and efficiency of their work (De Spiegelaere & Van Gyes, 2012). Several researchers are working to clarify IWB, with the most common definition given by Janssen (2000) stating that it involves employees intentionally creating, introducing, and executing new ideas within a group or organization to improve performance, as seen in studies conducted by Linh et al. (2020), and Bawuro et al. (2019). Innovative work behavior is a multifaceted phenomenon that includes both creativity and dynamism. Mumford and Gustafson (1988) view creativity as the generation of new ideas and the implementation of new methods and procedures. To this effect, innovative work behavior summarizes creative and/or innovative dimensions (Janssen, 2000). Correspondingly, innovative work behavior among may improve the performance of a Bangladesh Public University-based on the view expressed by Dörner (2012).

2.3. Intrinsic motivation

Intrinsic motivation denotes motivation or drive towards doing something that is rewarding or fulfilling to an individual personally. According to various authors, intrinsic motivation has been referred to by several people in different ways (Rheinberg & Engeser, 2018). Unlike extrinsic motivation, which emanates from without because of rewards or punishment, intrinsic motivation emanates from within an individual. Intrinsically driven employees are more likely to enjoy the activities they are involved in, finding satisfaction and accomplishment in them (Fila et al., 2023; Urban et al., 2024). In the case of an intrinsically driven employee, on the other hand, motivation to engage in a particular activity is sparked by interest, curiosity, or passion. Intrinsic motivation will most often be associated with higher levels of creativity, resilience, and better performance due to full engagement and focus on the task at hand. This may also give greater long-term satisfaction and well-being because the person is pursuing activities that are meaningful and fulfilling for the individual. Intrinsic motivation forms the very basis of performance and productivity, especially for academics.

2.4. Self-efficacy

Self-efficacy is the individual's perception of his or her capability to complete tasks, attain certain ideals, or overcome problematic situations effectively. Self-efficacy shall be a very important determinant of motivation, behavior, and hence success in general. Those who possess high self-efficacy will view challenging goals as tasks they must fulfil, be quite determined to deal with any obstacle that may be in their way and take failures as opportunities for learning. In contrast, individuals who experience low self-efficacy doubt their capabilities, avoid challenges and quickly give up in the face of failure. In building self-efficacy, developing goal setting and mastery attainment in small matters, experience and mastery in certain areas, and positive feedback and support given by people facilitate building high self-efficacy. Self-efficacy is an important form of human capital for the development of positive intentions toward becoming a reliable entrepreneur. Self-efficacy plays a huge role in academia, especially when it comes to the performance of academics.

2.5. Relationship between innovative work behavior and performance

Innovative work behavior is an important part of business success, where employees develop and apply new ideas to enable performance improvement and competitive advantage. The previous literature has already related innovative work behavior to individual and organizational performance, as can be seen in the work of Novitasari et al. (2022), Nguon (2022) and Vuong (2023). The Theory of Planned Behavior is one of the psychological theories commonly employed in research to understand and predict the behavior of individuals (Ajzen & Schmidt, 2020). According to the Ajzen (1991), an individual's intention to engage in a specific behavior is shaped by their attitude toward the behavior, social norms, and their perceived control over the action.

The Theory of Planned Behavior (TPB) can explain how faculty members in Bangladesh's public universities engage in innovative work behavior, driven by their attitudes, social norms, and perceived behavioral control. When educators view innovation as beneficial for personal and professional growth, they are more likely to adopt innovative practices. Likewise, support from colleagues and superiors strengthens their motivation to innovate. A strong belief in having the necessary skills, resources, and opportunities further enhances their likelihood of engaging in innovative actions. Empirical studies, including those by Yusof et al. (2018), Alshebami (2021), and Ang et al. (2023), confirm that employees' intention to innovate is influenced by their perceptions of innovation's value, workplace support, and confidence in their abilities. Cognitive and social theories also suggest that individuals are more likely to participate in innovation when they are convinced of its benefits and feel empowered to contribute. This study finds that innovative work behavior significantly impacts both individual and organizational performance in Bangladesh's public universities. Employees who embrace innovation contribute creative solutions, enhance processes, and drive institutional success. Understanding the factors that influence innovation can help organizations foster a culture of continuous improvement, ultimately enhancing performance. Based on these insights, the following hypothesis is derived.

H1. *There is a positive relationship between innovative work behavior and performance*

2.6. Relationship between intrinsic motivation and performance

Herzberg's theory, also referred to as the Motivation-Hygiene theory (Herzberg et al., 1959), examines the factors affecting motivation and job satisfaction in the workplace. Herzberg theorizes that employee motivation arises due to two classes of factors: hygiene factors and motivators. Hygiene factors are the external ones surrounding their absence would lead to unhappiness at work. These factors include pay, benefits, job security, work environment, and relations with colleagues. Though these factors significantly contribute to reducing dissatisfaction, they do not impact either motivation or job satisfaction. In contrast, motivators are an internal factor that contributes in job satisfaction as well as motivation.

They are recognition, achievement, responsibility, personal growth, as well as the work itself (Herzberg et al., 1959). The motivators positively contribute to performance because their relationship with intrinsic motivation is direct. Hygiene factors and motivators influence their workplace. According to many studies, intrinsic motivation - that is strongly related to motivators proposed by Herzberg's theory - influences academic success. If perceive intrinsic motivation, then they would be more likely to get involved, be committed and become satisfied, thus leading to an increasing performance level. Different studies have focused on intrinsic motivation relating it to academic performance. Kuvaas et al. (2020), and Yusuf (2021) focus on other research that established the facts that intrinsic motivation was positively related to academic performance as well as job satisfaction.

From the findings, internal drive is critical in the performance of

academics. Academic institutions can promote the intrinsic motivation and performance of their faculties through aspects including recognition, achievement, and personal growth. Boosting intrinsic motivation and good performance supports the claims of faculties in literature, according to Malek et al. (2020) and Mendoza et al. (2023). Based on this study, the hypothesis is that.

H2. *There is a positive relationship between intrinsic motivation and the performance of academics.*

2.7. Relationship between innovative work behavior and self-efficacy

According to TPB, "individual behavior is a function of three major factors: attitude toward the behavior, subjective norms, and perceived behavioral control" (Ajzen, 1991). Whereas self-efficacy describes the belief that one can perform a certain task or behavior. The authors prove that innovative behaviors may have a significant effect on people's self-confidence by stimulating growth in skills and experience, achievement of expertise, and establishing a culture of trying things and exploring. The success and progress of individuals in innovative endeavors serve to enhance their belief in their capability to engage in and successfully surmount future challenges, thus enhancing their levels of self-efficacy accordingly. Several studies have highlighted the positive impact of self-efficacy on innovative work behavior (Mielniczuk & Laguna, 2020; Teng et al., 2020; Usmanova et al., 2023). Research by Zahra et al. (2017), Sarwoko (2020), and Javed et al. (2021) also supports this relationship. When individuals successfully implement new ideas, they receive encouragement, which boosts their confidence in overcoming challenges and achieving their goals. Based on this, the study proposes the following hypothesis.

H3. *There is a positive relationship between innovative work behavior and self-efficacy.*

2.8. Relationship between intrinsic motivation and self-efficacy

The theory of TPB suggests that people are most likely to perform a behavior in which they have been very capable of doing it well. Lee and Lina Kim (2018) and Hiranrat et al. (2021). In contrast, intrinsic motivation may be viewed as an inner drive or pleasure when taking part in an activity.

There are several studies that establish a good relationship between intrinsic motivation and self-efficacy, including Shin and Bolkan (2021), Faraz et al. (2021), and Lakanen and Isomöttönen (2023). People who intrinsically have the drive to do something may believe in themselves and their ability to execute it. This blend of personal motivation and self-confidence might yield greater determination and effort, with even higher levels of success in achieving goals. Intrinsic motivation in public universities can also act to facilitate the growth of self-efficacy. For example, intrinsically motivated people tend to set more challenging goals and look for opportunities to learn and improve. Similarly, when faced with failure, they would not easily give up effort but continue striving. Such an experience may build a sense of proficiency and competence, enhancing their belief in their capability to perform that behavior.

The findings indicate that the perception of intrinsic motivation and self-efficacy influence each other, with each reinforcing the other. Individuals possessing high self-efficacy levels along with intrinsic motivation are more likely to take part in an activity likely to result in success and personal growth too (Shengyao et al., 2024; İnce, 2023). A hypothesis has been advanced below about the findings from the research.

H4. *There is a positive relationship between intrinsic motivation and self-efficacy.*

2.9. Relationship between self-efficacy and performance of academics

A person's performance is based on one's confidence in his capability to complete a task or attain a goal, as stated by Albert Bandura's self-efficacy theory (Bandura, 2006). Self-confidence is what determines the success and achievement of scholars in various academic pursuits. Scholars who feel this strong belief in their capability are the ones who are more likely to set challenging goals for themselves, persist through obstacles, and put in the required efforts to successfully attain their respective academic pursuits. They feel capable of mastering the challenges and succeeding; this, as a result, produces better performance results. Contrarily, less confident researchers doubt their capabilities, do not accept challenges, and thus cannot perform to the best of their ability.

At that time, lack of belief in their competencies may lead to low motivation, less commitment, and poor performance. Various studies evinced a positive correlation between self-efficacy and the performance of scholars among academics, such as those by Bonghawan and Macalisang (2024) and Ye et al. (2024). Who feel confident about their capabilities are argued to outperform their colleagues, especially in higher grades, with increased research outputs and enhanced teaching outcomes, as compared to those who feel mostly incompetent (Ndiango et al., 2024). The hypothesis will be as follows, according to the research.

H5. There is a positive relationship between self-efficacy and the performance of academics.

2.10. Self-efficacy as a mediator

Self-efficacy, defined as an individual's belief in their ability to successfully complete a task, may also serve as a mediator in the relationship between innovative work behavior, intrinsic motivation, and academic performance. In other words, self-efficacy may have the potential to influence how innovative work behavior and intrinsic motivation eventually influence academic performance. A variety of research has been provided to establish that individuals possessing high self-efficacy tend to be more creative at the workplace and innovative in their behaviors (Newman et al., 2018; Zainal & Lata, 2021). This is based on the fact that highly confident individuals tend to be those who remain open toward risk, learning new ideas, and challenges with the aim of finding innovative solutions. Self-efficacy was reported in the studies to mediate the relationship between innovative work behavior and the performance of, as argued by Vitapamoorthy et al. (2021) and Sofiyani et al. (2022). When individuals develop a positive belief in their capability for creativity and taking risks, they will be more motivated toward actions that lead to higher performance outcomes.

Another role of self-efficacy is that it has been found to act as a mediator between intrinsic motivation and performance (Lestari, 2022; Sari, 2015). Self-efficacy provides a useful framework for examining the relationship between motivation (intrinsic and extrinsic motivation) and their performance in the job (Chowdhury & Shahabuddin, 2007). A study found that intrinsic motivation positively predicts self-efficacy, which in turn influences critical thinking and self-regulation, ultimately affecting academic achievement (Stavropoulou et al., 2025). An empirical study found that intrinsic motivation was a positive significant on academic performance through the mediating effects of self-efficacy (Wu et al., 2020). In other words, those people who intrinsically want to perform well are most likely to be those who have the highest levels of self-efficacy, thus translating into better performance outcomes. This is because people with confidence in their capabilities are likely to set challenging goals, show persistence in surmounting barriers, and eventually achieve higher levels of performance. Research has found that academics who have a high level of self-efficacy are likely to exhibit creative work behavior and experience higher intrinsic motivation, hence better performance by the academics in their jobs. The two

hypotheses developed are based on the study.

H6. Self-efficacy mediates positively the relationship between innovative work behavior and the performance of academics.

H7. Self-efficacy mediates positively on the relationship between intrinsic motivation and the performance of academics.

2.11. Research framework

Based on the above discussion, to address the research question and attain the study objectives, the following framework has been developed and proposed in Fig. 1 below.

3. Research methodology

This study employed a quantitative research approach with a cross-sectional, correlational design to examine the relationship between innovative work behavior and performance among academics in Bangladesh's public universities. The target population comprised 16,399 academics from 53 public universities, including lecturers, assistant professors, associate professors, and professors, as reported in the 49th annual report of the University Grant Commission (UGC) of Bangladesh (2022). A simple random sampling technique was used to ensure an unbiased selection, enhancing the generalizability of findings. Data were collected through an online questionnaire survey via Google Forms and email over six months, with additional distribution through WhatsApp for accessibility. Participants provided online consent, and ethical approval was obtained from the ethical committee of Department of Business Administration, University of Asia Pacific, Dhaka, Bangladesh (Ref# DBARC/UAP/0024). Out of 550 distributed surveys, 455 responses were received, with 410 valid responses, yielding a 74.5 % response rate. The study utilized validated five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Innovative work behavior measurement items were adapted using a 10-item scale from De Jong and Den Hartog (2008) and Janssen (2000), intrinsic motivation with 10 items (Guay et al., 2000; Pintrich et al., 1993), self-efficacy with 8 items (Rigotti et al., 2008; Schwarzer et al., 1997), and performance with a 10-item scale (Kazan & Gumus, 2013; Werner, 1994). The data collected were analyzed using Smart PLS for model evaluation and SPSS for demographic analysis.

4. Results and discussion

4.1. Results

The respondents in this study are full-time academics from public universities of Bangladesh who have been working for more than one year. The demographic profile of the respondents (N = 410) reveals that the majority were male academics (326; 79.6 %), while female participants accounted for 84 (20.4 %). In terms of age, the largest group consisted of respondents aged 27–32 years (157; 38.3 %), followed by those aged 33–38 years (147; 35.9 %). A smaller proportion were aged 39–44 years (84; 20.4 %), and only 22 respondents (5.4 %) were above 45 years. Regarding professional designation, more than half of the participants were lecturers (210; 51.3 %), while assistant professors made up 138 (33.7 %). In contrast, only 40 (9.8 %) were associate professors and 21 (5.2 %) were professors, indicating that most of the sample represented early-to mid-career academics. With respect to work experience, a substantial proportion had 1–5 years of experience (170; 41.4 %), followed by 6–10 years (124; 30.3 %). Additionally, 89 respondents (21.8 %) reported 11–15 years of experience, while 27 respondents (6.6 %) had 16–20 years of academic experience. These distributions suggest that the sample is dominated by younger and early-career academics, which may influence the interpretation of the findings in terms of career stage and professional development. The following Table 1 shows the demography of the participants.

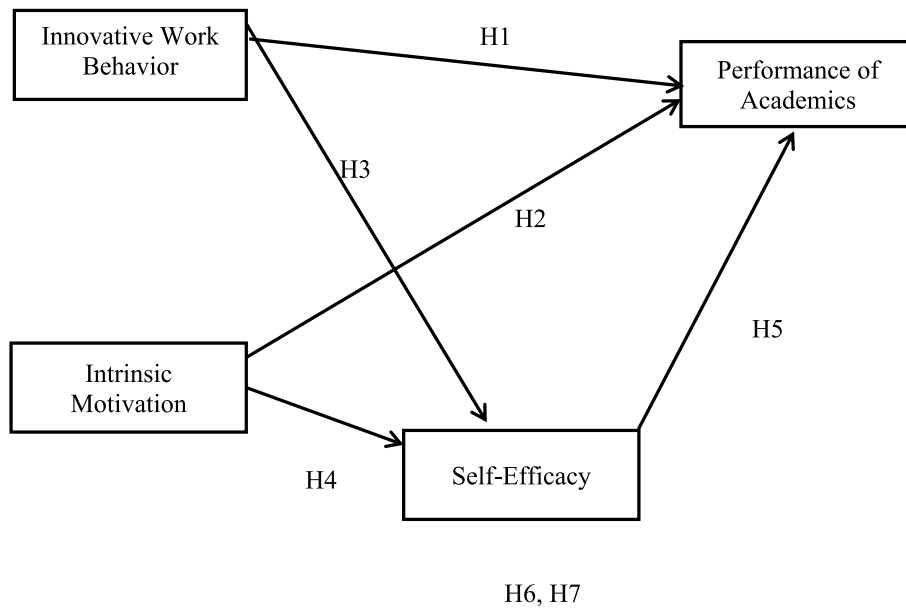


Fig. 1. Research framework.

Table 1 Demographic information.

Variables	Category	Frequency	Percent
Gender	Male	326	79.6
	Female	85	20.4
Age	27–32	157	38.3
	33–38	147	35.9
	39–44	84	20.4
	More than 45	22	5.4
Profession	Lecturers	210	51.3
	Assist. Professors	138	33.7
	Assoc. Professors	40	9.8
	Professors	21	5.2
Experience	01–05 Years	170	41.4
	6–10 Years	124	30.3
	11–15 Years	89	21.8
	16–20 Years	27	6.6

4.2. Validity and reliability test results

The measurement model results show that all constructs meet the recommended thresholds for reliability and convergent validity

Table 2 Validity and reliability test results.

Constructs	Items	Factor Loadings	CR	AVE
Intrinsic motivation	IM4	0.729	0.855	0.542
	IM5	0.640		
	IM7	0.696		
	IM8	0.786		
	IM9	0.816		
Innovative work behavior	IWB10	0.788	0.841	0.570
	IWB 2	0.728		
	IWB 4	0.765		
	IWB 5	0.738		
Self-Efficacy	SE2	0.834	0.866	0.683
	SE3	0.849		
	SE4	0.795		
Performance	P10	0.749	0.793	0.560
	P3	0.771		
	P9	0.725		

(Table 2). According to Hair et al. (2019), factor loadings should ideally exceed 0.70, CR should be above 0.70, and AVE should be greater than 0.50. In this study, the factor loadings range from 0.640 to 0.849, with most items above the recommended level, while CR values range from 0.793 to 0.866, and AVE values range from 0.542 to 0.683. To achieve acceptable AVE and composite reliability levels, items with low outer loadings were removed, which recommend a minimum loading of 0.6. Items below this threshold were excluded only when necessary to improve AVE or composite reliability. Consequently, the following items were removed due to low loadings: IWB1, IWB3, IWB6, IWB7, IWB8, IWB9; IM1, IM2, IM3, IM6, IM10; SE1, SE5, SE6, SE7, SE8; and P1, P2, P4, P5, P6, P7, P8. These results indicate that the constructs of Intrinsic Motivation, Innovative Work Behavior, Self-Efficacy, and Performance demonstrate acceptable internal consistency and convergent validity, confirming that the measurement model is reliable and valid. The following Fig. 2 shows the PLS-SEM generated measurement model.

Additionally, the following Table 2 demonstrates the results from the reliability and validity test.

4.3. VIF (Variance Inflation Factor)

The results of the collinearity test presented in Table 3 shows that all Variance Inflation Factor (VIF) values ranged between 1.165 and 1.825, which are well below the commonly accepted thresholds. According to Hair et al. (2019), a VIF value lower than 5.0 indicates that multicollinearity is not a serious concern, while some stricter scholars suggest a cutoff value of 3.3 for ensuring robustness (Kock, 2015). Since all the indicators in this study fall far below these thresholds, the results confirm that collinearity among the constructs is not problematic. Table 3 below represents the VIF values of this study.

4.4. HTMT (Heterotrait-Monotrait) criterion

Utilizing the HTMT (Heterotrait-Monotrait) ratio, known for its superiority over cross loadings and the Fornell Larcker criterion. To adhere to this method (Henseler et al., 2015), recommended keeping HTMT values below 0.90. In our study, the highest HTMT value was determined to be 0.865 (Table 4), which comfortably met the discriminant validity criterion, as it fell below the specified threshold of 0.90. Table 4 below shows the results from HTMT ratio test.

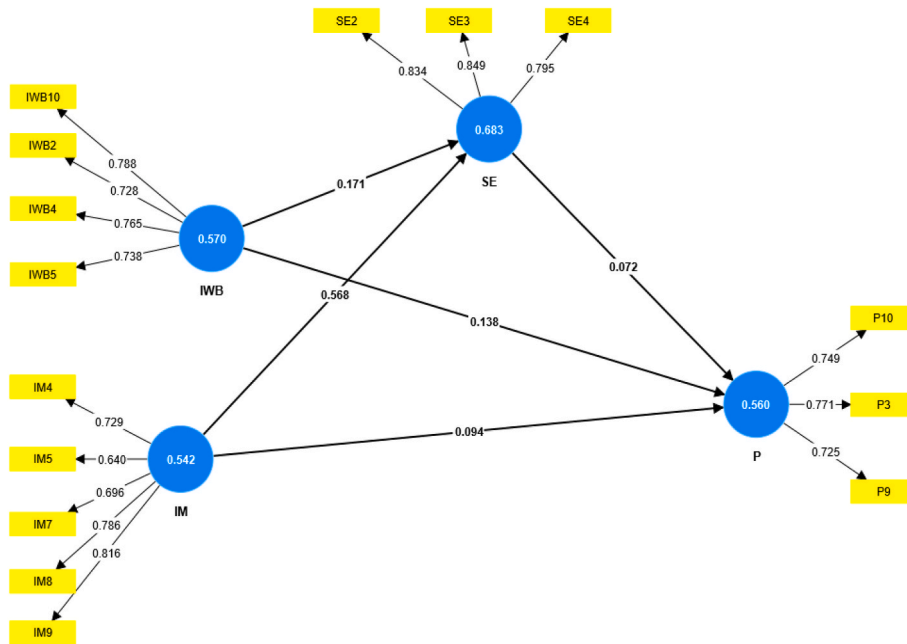


Fig. 2. Measurement model.

Table 3
VIF (variance inflation factor).

Indicators	VIF (Variance Inflation Factor)
IM4	1.504
IM5	1.292
IM7	1.375
IM8	1.687
IM9	1.825
IWB10	1.552
IWB2	1.311
IWB4	1.466
IWB5	1.441
P10	1.253
P3	1.234
P9	1.165
SE2	1.59
SE3	1.624
SE4	1.501

Table 4
Discriminant validity- HTMT (Heterotrait-Monotrait) Ratio.

	IM	IWB	P	SE
IM				
IWB	0.865			
P	0.348	0.360		
SE	0.676	0.535	0.311	

4.5. Model fit

These values are results from a structural equation model (SEM) analysis. Each value represents a different statistic that helps evaluate the model's overall fit and the relationships between variables. The model fit was assessed using several key indicators. The SRMR (Standardized Root Mean Square Residual) value of 0.074 suggests a relatively good fit, as a lower SRMR indicates minimal differences between observed and expected correlations. Similarly, d_uls (Unweighted Least Squares Dispersion) and d_G (Geodetic Discrepancy) values, which measure discrepancies between observed and predicted covariance matrices, confirm a better fit when lower. The Chi-Square statistics,

which evaluate the overall model fit by comparing observed and predicted data, resulted in a value of 487.449, indicating reasonable alignment. Lastly, the NFI (Normed Fit Index), which compares the proposed model to a baseline model, yielded a value of 0.765, suggesting a relatively good fit, as higher values (closer to 1) indicate better model performance. Moreover, the values of Fitness were all found to be within the acceptable range for model fitness as recommended by Hair et al. (2019). The following Table 5 represents the result from this study's model fitness test.

4.6. Coefficient determination (R² value)

The explanatory power of the structural model was assessed using the coefficient of determination (R²), which indicates the proportion of variance in an endogenous construct explained by its exogenous variables. Hair et al. (2019) considered R² values of 0.75, 0.50, and 0.25 for the dependent variables as substantial, moderate, and weak, respectively. In the current study, the R² value is 0.072 (7.2 %) and 0.486 (48.6 %). It means that performance is explained 7.2 % by innovative work behavior among academics in the public universities of Bangladesh. The R² result results indicates weak. Self-Efficacy appears to have a moderate explanatory power with an R-squared value of 0.486 (48.6 %). The following Table 6 demonstrates the R² values.

4.7. Structural model assessment

The structural model is evaluated by assessing the path coefficients, which are estimated using bootstrapping with 5000 resamples through the replacement method. Hypothesis testing is conducted to determine the relationships between the variables included in the model. This

Table 5
Model fitness analysis.

	Estimated model
SRMR	0.074
d_uls	0.656
d_G	0.206
Chi-square	487.449
NFI	0.765

Table 6
R² results.

Construct	R-square
Performance	0.072
Self-Efficacy	0.486

evaluation relies on the T-statistic value, where a value greater than 1.96 indicates statistical significance. Additionally, the following Fig. 3 demonstrates the PLE-SEM generated path model.

The findings indicate that the relationship in H1 is supported, as the positive Beta value suggests a beneficial effect on performance. The T-statistic of 2.241 is significant at a p-value of 0.013, confirming statistical significance. However, H2 is not supported, despite a positive Beta value, as it is lower than other relationships. The T-statistic of 1.179 and p-value of 0.119 indicate that the relationship is not statistically significant. For H3, the relationship is supported, with a positive Beta value demonstrating a positive impact on self-efficacy. The T-statistic of 2.776 is significant at a p-value of 0.003, confirming statistical significance. Similarly, H4 is strongly supported, with a high Beta value indicating a substantial positive effect on self-efficacy. The T-statistic of 4.166 is highly significant at a p-value of 0.000, reinforcing the strength of the relationship. On the other hand, H5 is not supported, as the Beta value, while positive, remains relatively low. The T-statistic of 1.030 and p-value of 0.152 indicate that the relationship lacks statistical significance. Table 7 below shows the results from direct hypotheses test.

Hypothesis 6. suggests that the indirect path between innovative work behavior (IWB) and performance (P) through self-efficacy (SE) is significant. The beta coefficient of 0.052 indicates a positive relationship between IWB and SE, and the T statistics of 2.858 with a p-value of 0.001 suggest that this relationship is statistically significant. Therefore, H6 is supported.

On the other hand, Hypothesis 7 proposes an indirect path between intrinsic motivation (IM) and performance (P) through self-efficacy (SE). However, the beta coefficient of 0.041 is relatively small and the T statistics of 1.033 with a p-value of 0.151 indicate that this relationship is not statistically significant. Therefore, H7 is not supported. The following Table 8 shows the results of indirect hypotheses test.

Table 7
Direct effect analysis.

Hypotheses	Paths	Beta (β)	Standard Deviation	T Statistics	P Values	Decision
H1	IWB -> P	0.138	0.062	2.241	0.013	Supported
H2	IM -> P	0.094	0.080	1.179	0.119	Not Supported
H3	IWB -> SE	0.171	0.062	2.776	0.003	Supported
H4	IM -> SE	0.568	0.056	4.166	0.000	Supported
H5	SE -> P	0.072	0.070	1.030	0.152	Not Supported

Note: Research Hypotheses Significant at $p < 0.01$, $p < 0.05$.

4.8. Discussion

In this study, the hypotheses were tested using path analysis, which allows for the examination of direct and indirect relationships between variables. The results indicate that 4 out of the 7 hypotheses were supported, while 3 were not.

Hypothesis 1. predicted a direct positive relationship between innovative work behavior and performance, which was thus supported by a standardized beta coefficient of 0.138. This infers that Innovative Work Behavior of employees is positively and significantly related to their performance. As a result, this finding confirms the earlier research proposal that innovating work behavior is positively correlated with academics' performance. It is evidenced by Jaiswal and Tyagi (2020), Musneh and Roslin (2021), Trivedi and Pattusamy (2022). Hypothesis 2 explained the direct relation between intrinsic motivation and performance, which could not be supported.

Thus, this path was statistically insignificant, with a standardized beta coefficient of 0.094. Hypothesis 3 was that innovative work behavior is directly associated with self-efficacy; accordingly, it had support, having a beta coefficient of 0.171. That means that innovative work behavior provides ways for the individual to enhance his belief in the ability to do something. Further supported by previous studies supported by Mielniczuk and Laguna (2020), and Kumar et al. (2022) Hypothesis 4 stated that there was a direct relationship between

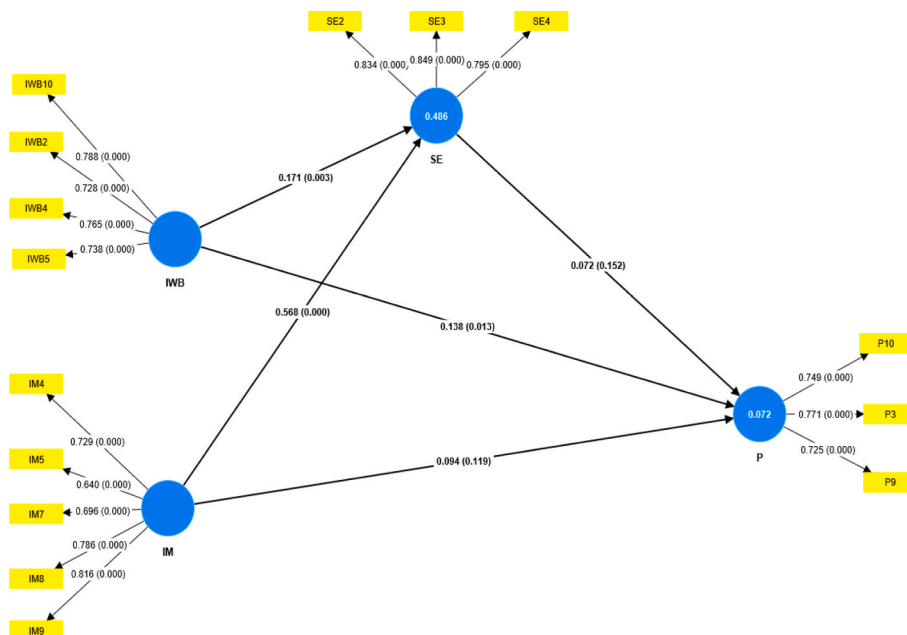


Fig. 3. Path model.

Table 8

Indirect effects analysis.

Hypotheses	Indirect Paths	Beta (β)	Standard deviation	T statistics	P values	LL 2.5 %	UL 97.5 %	Decision
H6	IWB -> SE -> P	0.052	0.021	2.858	0.001	0.012	0.045	Supported
H7	IM -> SE -> P	0.041	0.040	1.033	0.151	-0.037	0.121	Not Supported

Note: Research Hypotheses Significant at $p < 0.01$, $p < 0.05$.

intrinsic motivation and self-efficacy, supported with a high Beta coefficient of 0.568 and further supported by Gan et al. (2023), and Xu et al. (2022).

It means that intrinsically motivated people have the likelihood of having high levels of self-efficacy. Hypothesis 5 was the direct relationship between self-efficacy and performance. The result of this path was not significant, having a beta coefficient of 0.072, which indicates that no significant relationship exists between individuals' self-efficacy and their actual performance. Results supported Hypothesis 6, which was that Innovative work behavior influences Performance indirectly through Self Efficacy. This implies that the more innovative behavior employed by an academician, the higher their self-efficacy level and thus, better at performance. The current study found support from various studies previously conducted by Santoso et al. (2019); Vitapamoorthy et al. (2021); Al Wali et al. (2023). Hypothesis 7, where intrinsic motivation in turn exerts its influence on performance through self-efficacy, was not significant. In this regard, it is possible that there might have been other mediation variables which were not measured or considered in the context of the study. In addition, it is worth noting that everyone might differ from one another in terms of intrinsic motivation levels, thus creating a difference in terms of output about performance.

The demographic variables of age, position, and working period can act as control variables, as they influence the relationships among innovative work behavior, intrinsic motivation, self-efficacy, and academic performance. Younger academics or those in junior position demonstrate stronger motivation and innovative behavior, whereas senior faculty with longer tenure are more likely to demonstrate strong self-efficacy and institutional knowledge, which also affect performance outcomes. Recognizing the impact of these variables enhances the robustness of the study and provides a more comprehensive understanding of the determinants of academic performance in higher education.

The adoption of a quantitative method is, in fact, a significant strength of the study. The quantitative research design provides several advantages. First, it enables the collection of data from a large number of academics across public universities, ensuring findings that are more objective, reliable, and generalizable. Second, through the use of advanced statistical techniques such as Structural Equation Modeling (SEM), the study is able to rigorously test direct and indirect effects, including the mediating role of self-efficacy in the relationship between intrinsic motivation and performance. This strengthens the internal validity of the study by confirming that observed outcomes are not random but statistically meaningful. Third, the standardized nature of quantitative instruments enhances measurement reliability, while the replicability of the procedures allows future researchers to verify or extend the findings.

5. Conclusions

The findings of this study identified innovative work behavior and intrinsic motivation as vital factors for improved performance of or educators in public universities in Bangladesh. Among many other aspects, it was identified that those who indulge in innovative behavior tend to be much more productive, creative, and effective performers of their roles. Innovative behavior and intrinsic work motivation at academia were found to relate positively to better performance. It means creating an environment of creativity in public universities results in higher performance at both the levels of individual academics and the

institution. The study also confirmed that self-efficacy acts as a mediating factor in the relationship between Innovative Work Behavior and the performance of academics. This would mean that Innovative Work Behavior is influenced by people who will most likely have higher levels of self-efficacy, thus driving home the point to a greater level of performance by academics. These findings from the study also reiterate the importance of developing a work-supportive and innovative environment in public universities, since it will help the performance of academics. Innovation at work, intrinsic motivation, and self-efficacy will ensure that academics do their job better and ensure more significant contributions towards academic research and teaching in public universities.

5.1. Theoretical contributions

The findings of this study underscore the significance of applying the Theory of Planned Behavior (TPB) in understanding the intricate relationships between work behavior, motivation, self-efficacy, and academic performance. Notably, intrinsic motivation and self-efficacy were not significant predictors of academic performance in this context, suggesting a more complex interplay among these factors than previously assumed. Additionally, self-efficacy did not mediate the relationship between intrinsic motivation and academic performance, indicating the potential influence of other underlying mechanisms. While prior studies have demonstrated a significant mediating effect of self-efficacy on the link between intrinsic motivation and performance in different settings (Wu et al., 2020), this study provides new insights into its limitations within the context of public universities in Bangladesh, thereby contributing to the existing body of knowledge.

This study makes a significant theoretical contribution by unpacking the nuanced relationships among these variables and advancing the understanding of how TPB can explain faculty performance in higher education. The findings offer practical implications for public universities, enabling them to develop more targeted interventions that foster innovative work behavior, motivation, and self-efficacy among academics. By refining institutional policies and support systems, universities can better enhance faculty performance and, ultimately, improve the quality of higher education in developing countries.

5.2. Practical implications

Results show that innovative work behavior, intrinsic motivation, and performance are positively related to public university. Public universities in developing countries should establish an environment that encourages and rewards innovative behavior for. This may be through assistance available in research and development, fostering a creative and exploratory atmosphere, and acknowledging and praising successful innovations. The findings of the study will show that innovative work behavior might be useful for better academic performance in public universities, which will again be useful for the growth of the education sector. Intrinsic motivation among academics will lead to job satisfaction and engagement. This would ensure a rise in productivity and quality output of work. The concept of self-efficacy among the faculty members will help them overcome the various challenges and obstacles that arise during work. This might in turn give them more confidence, motivation, and, finally, better results. According to the findings of the research, a collaborative approach is suggested for professionals and officials to ensure better academic achievements in public

universities.

5.3. Limitations of the study & directions of future research

The results of the study may not apply to all public universities in developing nations because of differences in organizational culture, management techniques, and resources. The study possibly only examined a certain area or a particular set of scholars, which could restrict the applicability of the results. The research employed a cross-sectional methodology, offering just a momentary glimpse into the correlation between innovative work behavior, intrinsic motivation, and performance. Conducting a study over time would provide a better grasp of innovative work behavior and intrinsic motivation impact on performance. Only the role of innovative work behavior and intrinsic motivation that have been used in enhancing performance is a limitation in the study. The study did not address the role of external factors that may have influenced the results. For example, institutional policies, access to resources, leadership support, workload pressures, and the broader national higher education environment may shape the innovative behavior, motivation, and self-efficacy of academics. These contextual dynamics were beyond the scope of the present research, but we recognize them as important factors that could provide a more holistic understanding of academic performance. Accordingly, we suggest that future studies incorporate such external influences to strengthen the explanatory power of the model.

This research addresses how innovative work behavior and intrinsic motivation are related to performance based on the study of academics. Moreover, further research could also try to identify the effect of participation in innovative work behavior and intrinsic motivation on academic achievement, workplace culture, teaching performance, productivity, and job satisfaction for faculty members at public universities. Further research can undertake cross-cultural studies to determine how innovative work behavior impacts the performance of across countries and different cultural backgrounds. This could allow an understanding of how culture influences academics in adopting innovative behaviors and the consequences of such innovative behaviors on academic performance. Further research needs to try and surmount these limitations to enable a deeper and better understanding of the interplay between innovative work behavior, intrinsic motivation, and self-efficacy in public universities.

CRediT authorship contribution statement

Md Ashrafal Islam: Writing – original draft, Formal analysis, Conceptualization. **Md Aminul Islam:** Writing – review & editing, Supervision, Methodology. **Mohammad Bin Amin:** Writing – review & editing, Resources, Funding acquisition. **Muhammad Muazzem Hossain:** Validation, Project administration, Investigation. **Md Sharif Hassan:** Writing – original draft, Software. **Sadia Afrin:** Visualization, Investigation, Data curation. **Judit Oláh:** Writing – review & editing, Visualization, Validation, Supervision, Resources, Project administration, Funding acquisition.

Data availability statement

Data will be made available on request.

Ethical statement

Ethical approval was obtained from the Research Committee of the Department of Business Administration (DBA), University of Asia Pacific, with the approval number DBARC/UAP/0022.

Declaration of the use of AI

During the preparation of this work the author(s) didn't use any

generative AI tools or AI-assisted technologies.

Funding statement

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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