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Learn in Order to Innovate: An Exploration of Individual and Team Learning as Antecedents of Innovative Work Behaviours in Ghanaian Technical Universities

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Abstract: Ghanaian higher education is continuously transforming, and teachers are constantly encouraged to innovate and change. We test a mediated-moderation model that assesses interplays among individual learning (IL), team learning (TL), gender, and innovative work behaviours (IWB) in a sample of 487 lecturers from six technical universities in Ghana. Results suggest that team learning mediates the influence of individual learning on IWB, and gender moderates the remaining direct association between individual learning and IWB such that individual learning appears conducive to IWB among men but not women. This study encourages focusing on team learning to drive knowledge-sharing within and across faculties to generate sustainable innovative outcomes, and it points to ways in which higher education managers and human resources practitioners can invest in human resources to enhance IWB and, subsequently, performance in higher education.

Keywords: higher education institutions; individual learning (IL); team learning (TL); gender; innovative work behaviours (IWB)

1. Introduction

Innovation in all forms (e.g., goods, services, market strategies, processes, and work methods) [1] is indispensable in contemporary, knowledge-based environments and economies [2–4]. Fostering employee innovativeness is thus paramount to management practices, and practitioners agree that it is essential to attaining organizational innovation, adaptability, and success [5,6]. In knowledge-intensive industries such as higher education, innovative work behaviours (IWBs) lie at the core of organizational success [7], and particularly in the developing economic context of Ghana, IWBs in higher education are essential to the viability and success of higher education institutions [8]. Educators, especially in universities, face important pressures nowadays to improve the educational content they use as well as their educational approach in order to help students keep up with the digital transformation and the fast changing nature of the labour market. In such a volatile context, lecturers' innovative work behaviours (creating innovative ideas to improve education, mobilising support for educational changes, and implementing educational innovations) [2,4] become paramount for educational effectiveness. Ghanaian universities must intensify their understanding of innovative behaviours and promote an innovation culture that foster faculty's innovative behaviours [8,9], thereby enhancing

Ghanaian higher education's ability to produce a competitive generation of graduates that possess the acumen to contribute both locally and globally to sustainable development.

IWBs relate closely to creativity [1,10], and are ultimately the result of the accumulated knowledge repertoire, including tacit and procedural knowledge, and information processing, that unfold in the human cognitive system. Learning is the process through which cognitive systems (i.e., individuals, groups, and organizations) acquire, store, and use knowledge, and is thus an important driver of IWBs. Learning is treated and studied traditionally as a process that unfolds at the intersection of an individual mind (i.e., a cognitive system) and its environment, but the social nature of learning has gained increasing attention. Team learning has been assessed extensively as an antecedent to innovation [11,12] because social interactions enrich knowledge repertoires that are deployed during innovative projects, increasing innovation acceptance and acquisition of the resources necessary for innovation. This study builds on the cognitive, knowledge-based perspective of innovation to assess individual and team learning as antecedents of IWBs in the context of Ghanaian higher education.

This study contributes to the exploration of IWBs in two ways. First, it tests individual and team learning directly as antecedents of IWBs in a higher education context. In addition to the ability to generate novel ideas, innovative individuals must acquire support and resources for them, and ultimately implement these ideas in the organization [2]. Innovation is thus inherently social as social interactions are essential in all stages of the innovation process. Sharing information among colleagues supports creativity and the identification of novel ideas. Moreover, social interactions and collective learning processes support innovation implementation and enforce the viability of innovations. This study treats team learning as a mechanism through which cognitive resources that are acquired through individual learning translate into IWBs. Second, this study explores a learning-based model of IWBs in a context in which innovation is rarely studied. In Ghana, technical university lecturers are expected to be facilitators of knowledge sharing; researchers; capacity-builders in terms of skills, theories, and models; and developers of professional competencies in students, industry partners, and themselves [8,13]. Various factors influence the extent to which knowledge acquired through learning materialises as innovative behaviours. Of particular interest is the individual agency that fosters the translation of learning in innovation. We aim to explore the role of gender disparities in terms of agency and the extent to which they moderate the association between individual learning and innovative behaviours. In traditional contexts such as Ghana, gender disparities play a role in IWBs, and thus it is paramount to examine team learning, individual learning, and the extent to which gender influences their translation into IWBs among Ghanaian technical university lecturers [8].

2. Literature Review

2.1. Innovative Work Behaviours

Innovative behaviours represent an employee's intentional introduction or application of novel ideas, products, processes, and procedures to his/her work role, work unit, or organization [14]. Such behaviours consequently have both knowledge and social antecedents because employees must generate innovation through creative combinations of existing knowledge and insights, and simultaneously garner support for novel ideas in the organization [15]. Yu et al. [16], Radaelli et al. [17], and Akhavan et al. [18] evidence that individual knowledge-sharing creates and brings into action a process of knowledge recombination and re-elaboration that triggers IWBs, enhancing employees' innovative and learning potential [19,20] through a culture that acquires, transfers, and tunes its character to new knowledge and insights [21]. Organizations that strive to promote employees' innovative behaviours must develop effective personnel empowerment strategies that foster continuous learning and development of their human resources [8,22–25]. According to Wang and Wang [26], knowledge-sharing contributes to innovation both tacitly and

explicitly, and, subsequently, to performance. Sung and Choi [27] and Yang et al. [28] argue that learning at all levels fosters IWBs.

Knowledge-based organizations, such as higher education institutions, require continuous development of faculty members who have the ability to pre-empt and be current with new developments, work in teams, shape ideas in practice, and constantly self-improve [8,29]. This is especially important in education since higher education institutions operate in dynamic environments due to expanding knowledge fields, diverse student populations, new responsibilities, and greater social expectations of schools [30]. Teachers' innovative behaviours should thus be central to the teaching and learning profession to promote both the profession and its management [31,32]. A systematic review of teachers' IWBs from Thurlings et al. [32] found only one study conducted in Zimbabwe [33]. Although a strong emphasis on learning and IWBs is evident in the literature, research is sparse in some contexts; these topics have received much attention in organizations in developed countries [28,34–38], but little research has been conducted in Africa.

2.2. Learning and Innovative Work Behaviours

Recent studies on learning from disparate perspectives and across management fields [39] have drawn attention to new understandings of the nature of learning in relation to other concepts across organizational contexts [22,26,40,41]. Individual learning not only encompasses the totality of an individual's knowledge, competences, and capabilities, but it reflects the way people construct meaning in their personal and shared organizational lives, and how they change their behaviour accordingly [42]. Individual learning is therefore essential to the human cognitive system that promotes adaptation, change, and, ultimately, innovation. Groups as socio-cognitive systems [43] also learn, and research commonly emphasises the role of individual cognitive structures during the emergence of team learning. As individuals interrelate in groups, members alter their cognitive structures and competencies, effectuating collective, group-level cognitive structures and competencies [43–46]. The current study explores the complex interplay between individual and team learning as antecedents of IWBs.

Interdisciplinary attention on team learning fosters rapid growth and diversity of viewpoints [47], yet the dominant view on team learning focuses on collective information processing and the development of shared cognitions as core features of team learning [48]. Edmondson [49] argues that team learning is achieved when teams explore, reflect, discuss errors and unexpected outcomes of actions, seek feedback, and experiment. Group diversity literature acknowledges the production of creative solutions due to varied backgrounds and experiences [50–53]. Although little research assesses lecturers' team learning collaboration in higher education [54], Vos et al. [55], Koeslag-Kreunen et al. [56], and Chawla and Lenka [57] illustrate how integrative teams among Dutch and Indian lecturers facilitate acquisition and sharing of knowledge, constructive conflict and co-construction, personal development, and interdisciplinary research. Cooperation, coordination, and collective approaches regarding work are characteristics of knowledge creation, sharing, and overall collective learning [8,23,58–61].

Acquiring knowledge through experience leads to enduring changes to behaviour [62]. Beyond promoting strategic renewal in organizations, learning also enables exploration and acquisition of new ways of doing things at individual, group, and organizational levels [63,64], helping organizations adapt to major internal and external environmental shifts and challenges [65–67]. Organizations must thus synergise complementary knowledge of employees with other individual and team capabilities/resources in order to discover and utilise employees' full innovative potential [68–70]. Learning opportunities in teams, therefore, complement employees' capabilities, even tacit components, and build their resource endowments [8,22,23]. While working in teams that are engaged in cognitive tasks, individuals' cognitive structures co-evolve during interactions, and novel, group-level cognitive structures emerge [43,71]; individual learning is thus an antecedent of team learning. As organizations operating in fast changing contexts in which digital transformation and

the volatility of the labour market create important innovative challenges, higher education institutions [72,73] must leverage lecturers' characteristics and abilities through teams [74] and influence team learning for development [75].

Team learning advances awareness of tasks and enables understanding of respective roles, participation during problem-solving, and expectations during innovation [76,77]. Edmondson et al. [78] found that learning teams are better at implementing innovative technologies during cardiac surgery. Sun et al. [77] corroborate that team members' ability to learn new knowledge fosters innovative performance. In cognitive terms, results of the coevolution of individual cognitive structures during team learning is that individual cognition changes due to group processes [35], novel insights are developed, and thus, individual innovation is fostered.

Although extant research explores relationships among diversity, individual learning, and team learning [77,79,80], little research assesses the extent to which team learning mediates the influence of individual learning on IWBs. We use two arguments to support such mediation. First, building on the group cognition as emergent phenomenon [71], we argue that individual learning is an antecedent of team learning, and as cognitive structures coevolve during social interactions, team learning generates novel insights among individual members [35] that ultimately translate into greater IWBs. Second, a group-learning context creates a pool of resources from which individual employees can gather valuable resources to support their innovative intentions. Social interactions through team learning enrich knowledge deployed during innovation, and thus, team learning mediates the influence of individual learning on IWBs. Therefore:

Hypothesis 1 (H1). *Team learning mediates the positive relationship between individual learning and innovative work behaviours.*

2.3. Individual Learning, Gender, and Innovative Work Behaviours

Gender has been explored extensively in the context of innovation. In a comprehensive literature review, Alsos et al. [81] identify three research directions—gender differences in innovation and innovative behaviours, gendered construction of innovation, and gendering of innovation (p. 243)—with all three pointing to a gender imbalance in innovation-related behaviours and outcomes. Research suggests that women underestimate their competencies, skills, and expertise [82], and they consequently engage in fewer innovation-related behaviours and take fewer risks to mobilise resources to implement innovation [8]. Gender differences related to learning styles [83–85], vocational education, and training [86], and disparities in perceptions of higher education [87], favour men as innovators. Research also suggests that women have less agency in organizational contexts and, thus, experience greater difficulties with mobilising the resources necessary to support innovation, particularly the implementation of innovations in higher education. The literature points to a clear gender imbalance that favours men regarding access to research and education grants [88], which ultimately influences women's academic visibility and scholarly influence [89]. Gender discrimination and other sociocultural factors limit both the agency of women in higher education and translation of their human capital (e.g., knowledge, skills, and expertise) into innovative outcomes [8]. Thus, lack of agency among women in higher education generally and in the African context particularly [90,91] shapes the association between individual learning behaviours and IWBs. The current study uses a contingency model of learning, suggesting that individual learning triggers IWBs only to the extent to which individuals are sufficiently confident to engage in IWBs and have enough agency to seek support and acquire resources for innovation implementation. Since gender relates to both contingencies, the study suggests that gender moderates the association between individual learning and IWBs such that the positive association is stronger among men than among women. Thus:

Hypothesis 2 (H2). *The association between individual learning and innovative work behaviours is moderated by gender such that the positive association is stronger among men.*

3. Methods

A cross-sectional survey was used to collect data from respondents, using a convenience sampling to elicit responses from lecturers in six Ghanaian technical universities.

3.1. Demographic Composition of the Sample

Data were collected from 487 participants who worked in an academic environment and comprised 79.7% males and 20.3% females. Of the participants, 27.4% were between the ages of 27 and 37, 42.3% were between 38 and 47, 24.7% were between 48 and 57, and 5.5% were 58 and above. Regarding education, 3.5% held a Bachelor's degree, 86.2% a Master's, and 9.8% a doctorate.

3.2. Measures

A nine-item scale from Janssen [92] was used to measure IWBs across three dimensions—idea generation, promotion, and realisation. Items from the scale included “I create new ideas for improvements,” “I mobilise support for innovative ideas,” and “I transform innovative ideas into useful applications.” The Cronbach's alpha coefficient for the scale was 0.94. To account for heterogeneity of items (i.e., the three subscales), a principal component analysis was performed, including calculation of Bartlett's dominant factor score as a true indicator of the underlying construct [93]. Individual learning was measured using a ten-item scale from Bontis et al. [94], which was scored using a Likert-type scale that ranged from strongly disagree (1) to strongly agree (5). Items included “I am current and knowledgeable about my work,” “I am aware of the critical issues that affect my work,” “I feel a sense of pride of accomplishment in what I do,” and “I am able to break out of traditional mind-sets to see things in new and different ways.” The Cronbach's alpha coefficient for the scale was 0.85, and was similar to the scale for IWBs, in which both mean item scores and Bartlett's dominant factor score were used for further analyses.

Perceptions of team learning was measured using Savelsbergh et al.'s [95] 28-item team learning scale, comprising co-construction of meaning (3 items), exploring different perspectives (4 items), error analysis (4 items), error communication (4 items), reflection on processes (4 items), reflection on outcomes (3 items), feedback-seeking behaviours (3 items), and experimenting (3 items), and this was used to measure the construct and validate the scale in an African context. Items included “Information from team members is complemented with information from other team members,” “Team members elaborate on each other's information and ideas,” “After making a mistake, the team tries together to analyse what caused it,” “Team members communicate their mistakes to prevent that others make the same mistake,” “We often discuss our team's work methods,” “In our team, we check what we can learn from our achievements,” “We seek feedback on our methods,” and “In our team, we experiment with other working methods.” The Cronbach's alpha coefficient for the scale was 0.95. Since the scale is multidimensional, we calculated both the mean item score and Bartlett's dominant factor scores for further analyses. The dominant factor score was particularly important because it indicates the underlying factor in scales with a multidimensional structure [93]. Respondents' education was used as a control because it relates to both the independent (i.e., individual learning) and dependent (i.e., IWBs) variables [96]. Education was coded categorically as 1 = first degree or equivalent, 2 = Master's degree, 3 = doctorate, and 4 = post-doctorate. Gender was coded as a dummy variable (0 = female; 1 = male) and entered as a mediator in the model. Age was coded as a categorical variable 1 = 27–37 years old, 2 = 38–47 years old, 3 = 48–57 years old, and 4 = above 58 years old.

4. Results

Table 1 reports means, standard deviations, and correlations. To test the hypotheses, we used stepwise OLS regression and estimation of indirect effects based on the resampling procedure described by Preacher and Hayes [97]. The results of the stepwise OLS regression are reported in Table 2. In the first model, we entered age and education as control variables, and gender and individual and team learning as predictors. In Model 2, we included the interaction of gender and individual learning. We ran analyses using mean scores and scores derived from the principal component analysis, during which variable scores (i.e., IWBs and individual learning and team learning) were computed as Bartlett dominant factor scores.

Table 1. Means, standard deviations, and correlations.

	Mean	SD	1	2	3	4	5	6	7	8
1. Gender	0.80	0.40	–							
2. Age	2.08	0.86	0.08	–						
3. Education	2.08	0.39	−0.01	0.16 **	–					
4. IL mean	4.39	0.42	0.15 **	0.07	0.06	–				
5. TL mean	3.86	0.49	−0.05	0.02	−0.01	0.21 **	–			
6. IWB mean	4.84	1.10	−0.02	0.06	0.05	0.17 **	0.31 **	–		
7. IL Bartlett dominant factor score	0.00	1.00	0.16 **	0.07	0.06	0.99 **	0.21 **	0.16 **	–	
8. TL Bartlett dominant factor score	0.00	1.00	−0.05	0.02	−0.01	0.20 **	0.99 **	0.31 **	0.20 **	–
9. IWB Bartlett dominant factor score	0.00	1.00	−0.02	0.06	0.05	0.17 **	0.31 **	1.00 **	0.16 **	0.31 **

Note: gender was coded as a dummy variable 0 = women and 1 = men; age was coded as a categorical variable 1 = 27–37 years old, 2 = 38–47 years old, 3 = 48–57 years old, and 4 = above 58 years old. ** $p < 0.01$.

Table 2. Results of OLS regression for innovative work behaviours.

	Team Learning		IWB DFS		IWB Mean Score	
	Mean Score	DFS	Model 1	Model 2	Model 1	Model 2
Age	0.011	0.011	0.032	0.033	0.030	0.032
Gender	−0.085 †	−0.087 †	−0.046	−0.035	−0.047	−0.037
Education	−0.035	−0.034	0.032	0.046	0.031	0.045
Individual learning (IL)	0.210 ***	0.200 ***	0.130 *	−0.105	0.131 *	−0.102
Team learning			0.295 ***	0.304 ***	0.296 ***	0.305 ***
ILxGender				0.265 **		0.263 **
R ²	0.05	0.04	0.12	0.14	0.12	0.14
F change	4.72 **	4.33 **	10.14 ***	6.85 **	10.28 ***	6.81 **

Note: IWB = innovative work behaviours; IL = Individual learning; DFS = Bartlett's dominant factor score. Values are standardised regression coefficients. Gender was coded 0 = female, 1 = male. † $p < 0.10$. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

In the model that predicts team learning, the only significant predictor was individual learning. For the model that used mean construct scores, $B = 0.25$, $SE = 0.06$, $p < 0.001$, and for the model that used Bartlett dominant factor scores, $B = 0.20$, $SE = 0.05$, $p < 0.001$. Gender had a marginally significant effect, suggesting that women report lower scores for team learning than men do. For the model that used mean construct scores, $B = -0.10$, $SE = 0.06$, $p = 0.093$, and for the model that used Bartlett dominant factor scores, $B = -0.21$, $SE = 0.12$, $p = 0.088$. For the next regression analyses, we used IWBs as a dependent variable, with results suggesting that when using both the mean construct scores and the Bartlett dominant factor, team learning, individual learning, education, and gender are significant predictors. In the first model (Table 2), both individual learning and team learning had a positive and significant relationship with IWBs. For the model that used mean construct scores, the effect of individual learning was positive ($B = 0.38$, $SE = 0.15$, $p = 0.01$), and for the model that used Bartlett dominant factor scores, $B = 0.14$, $SE = 0.06$, $p = 0.01$. Similarly, the effect of team learning was significant in both models; for the model that used mean

construct scores, the effect was positive and significant ($B = 0.70$, $SE = 0.12$, $p < 0.001$), and for the model that used Bartlett dominant factor scores, $B = 0.31$, $SE = 0.05$, $p < 0.001$.

The second model included, in addition to those in Model 1, the cross-product term between gender and individual learning. Results suggest that the model is significant, with the change in F also being significant. Thus, inclusion of the cross-product term increased the variance explained in IWBs. Since the interaction between gender and individual learning was significant (mean construct scores model: $B = 0.87$, $SE = 0.33$, $p = 0.009$; Bartlett dominant factor model: $B = 0.33$, $SE = 0.13$, $p = 0.009$), the second hypothesis was supported. Shown in Figure 1, and as hypothesised, the regression slope was positive for men but not for women. We further report results of the simple slope analysis in additional bootstrapping analyses used to test mediation.

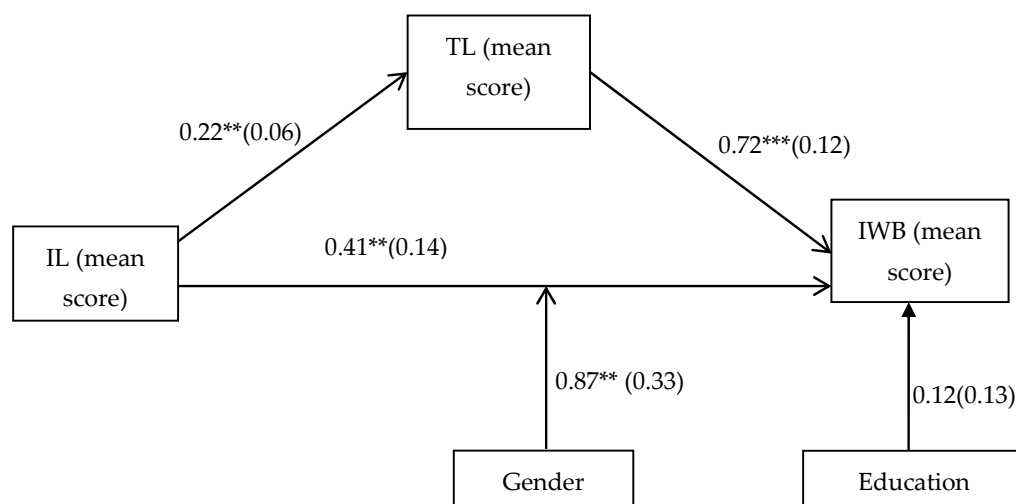


Figure 1. Results of a mediated-moderation model of innovative work behaviours. Note: IL = individual learning, TL = team learning, IWB = innovative work behaviours. ** $p < 0.01$, *** $p < 0.001$.

When using the DFS, the results from bootstrapping analysis suggest an indirect effect of individual learning on IWB, mediated by team learning (effect size = 0.06, $SE = 0.02$, $CI [0.02, 0.11]$). The remaining effect of individual learning on IWB was moderated by gender, such that the effect was positive and stronger for men (effect size = 0.23, $SE = 0.06$, $t = 3.67$, $p = 0.003$) than for women (effect size = -0.11 , $SE = 0.11$, $t = -1.01$, $p = 0.31$); among women, the effect was negative but non-significant. Simple slope analysis supported the moderation suggested in H2. When using the mean scores for the variables included in the analyses, the indirect effect of individual learning (mediated by team learning) on IWB was 0.16, $SE = 0.06$, $CI [0.05; 0.29]$, while the conditional effects for gender revealed that the association between individual learning and IWB was positive and significant for men (effect size = 0.58, $SE = 0.16$, $t = 3.54$, $p = 0.0004$, $CI [0.26; 0.90]$) and negative and not significant for women (effect size = -0.29 , $SE = 0.30$, $t = -1.00$, $p = 0.32$, $CI [-0.87; 0.29]$). The interaction between gender and individual learning using the mean score results is shown in Figure 2, and a summary of the mediation analyses using PROCESS is shown in Figure 1.

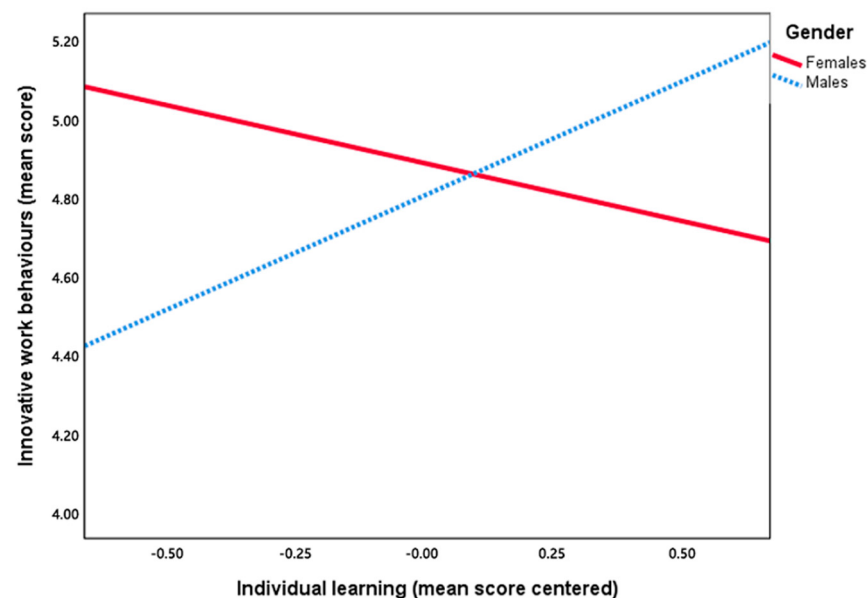


Figure 2. Interaction among innovative work behaviours, gender, and individual learning.

5. Discussion

IWBs focus on the initiation, institution, and implementation of concepts, procedures, products, and activities that are novel and, next to that, applicable to the particular unit that needs it [14]. This study tests the relationship between individual learning and IWBs, examining the extent to which team learning mediates the relationship. We also test the extent to which gender moderates the remaining positive relationship between individual learning and IWBs. Mediation emphasises cognitive and resource-based mobilisation of IWBs that emphasise the social mechanisms and dimensions necessary for innovative behaviours to emerge. Results from this study are in line with the ones reported by Decuyper et al. [47], suggesting that team learning creates a social context in which individual ideas, opinions, and insights are shared, garner support, and are ultimately refined to generate innovative outcomes. Our study brings into sharp focus the importance of team learning in accelerating IWBs in higher education institutions and directs managerial efforts towards overcoming aspects that limit team learning and female faculty's innovative work behaviours.

This finding extends extant literature on collaborative learning and innovative behaviours in (higher) education [31,56,98], and supports knowledge management research [99] and knowledge-sharing in teams [100]. Managers of higher education institutions must capitalise on the cognitive resource diversity of team learning to engage academic staff, as drivers of modernisation and development [8,91], in greater collaborative learning to sharpen individual learning skills and promote innovative behaviours. Contemporary team-oriented organizations must, therefore, create such learning opportunities for employees to acquire and share knowledge with colleagues [101,102], and thus improve performance through better knowledge and insights [11,103,104].

The remaining effect of individual learning on IWBs, moderated by gender, suggests a positive, stronger effect among men versus women. These results corroborate the argument that the lower agency women have in an organization prevents them from translating individual learning into innovative behaviours. One explanation is women's predisposed communal behaviours toward building strong social ties in comparison to men [105], especially in traditional contexts such as Ghana [8]. These results suggest that gender disparities play an important role in African higher education [91], further suggesting that although women's enrolment in education is increasing, traditional roles and social ties inhibit women's commitment and ascendancy to higher education in comparison to men [106]. The current study adds a gender perspective to learning and IWBs literature and the gender gap in higher

education institutions from a Ghanaian perspective [8,90,106,107], and offers directions for future research on gender, learning, and innovativeness in Ghanaian academia.

To encourage women's visibility during socioeconomic development [108], understanding heterogeneous cultural issues that relate to gender in higher education is paramount to human resources development of higher education institutions in Ghana. Such development leads to policies that not only lower gender attrition in academia [109], but generate female interest in male-dominated disciplines. This study contributes to learning and innovation literature in higher education from a Ghanaian/African perspective.

5.1. Limitations

This study uses a cross-sectional design, and thus, no causal claims can be derived from findings. Data were collected from a single source, and inferences are therefore subject to common method bias [110]. As Siemsen et al. [111] and Evans [112] suggest, common method bias is less of a concern when testing interactions, and estimated interaction effects are unlikely to reflect overestimation. We argued that the lower of agency of women, especially in traditional cultures, explains moderation by effect of gender in the relationship between IL and IWB, yet we did not directly evaluate agency in our study. Finally, we have used team learning as a mediator, yet we did not include intact teams in our study in order to be able to directly estimate the team learning effects at the aggregate level, and we also focused on individual perceptions of team learning. Future studies could replicate these findings using team level data, in order to capture the true nature of team learning as a social process emerging at the team level.

5.2. Future Research

As argued in the theoretical framework and as the results from this study suggest, research on team learning and innovation in Ghana remains important, but topics remain for future research regarding this relationship. Examining students' team learning capabilities and their effects on innovation and academic performance is highly recommended. More research is also needed with respect to gender disparities in such cultural contexts as Ghana, and future research should explore the mechanisms that explain the stronger association between human capital and innovation in the case of men rather than women. Moreover, research could explore how specific policies could help women to capitalise on their human capital, or help to foster team learning, and build innovative work behaviour capabilities among both academic and non-academic staff members to discover employees' full aptitudes and assess new perspectives when promoting the sociocultural benefits of higher education institutions in Ghana.

5.3. Conclusions

This study tests and advances understanding of the IWBs, individual learning, team learning, and gender of technical university lecturers in Ghana. Drawing on data from lecturers in six Ghanaian technical universities, results support a mediated-moderation model in which the remaining direct association between individual learning and IWB is moderated by gender (such as that only for men this relationship was positive and significant) and team learning mediated individual learning and IWBs. The relevance of these variables in a Ghanaian education context cannot be overemphasised, as reflected in the results. They not only represent the potential of an organization's human resources, but ultimately aim to propel organizations toward increased and sustained innovative performance [113]. Findings cannot be generalised although they reflect results of a large, heterogeneous sample across six higher education institutions. Results support extension to further integrative research on disparate factors that relate to learning, gender, and innovation. Using longitudinal research designs, and group level analyses, future research should collect data from employees and immediate supervisors who work in higher education institutions to reduce concerns with common method bias.

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Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy reasons.

Conflicts of Interest: The authors declare no conflict of interest.

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