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# Job Rotation as a Human Capital Strategy and Perceived Employee Performance in the Ghana Armed Forces

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## Abstract

**Objectives**: Job rotation is widely promoted as a human capital strategy, yet survey evidence from African armed forces is scarce. Anchored in Human Capital Theory, this study examines how three rotation-related dimensions of career mobility in the Ghana Armed Forces (GAF), namely military education and training, personnel transfers and peacekeeping deployments, are associated with perceived employee performance (productivity), and which implementation challenges are perceived by personel.

**Methods:** A cross-sectional questionnaire survey was administered to 390 serving personnel drawn from the Army, Navy and Air Force

**Results**: Personnel rated training and education most favourably (M = 4.04), peacekeeping missions moderately (M = 3.39), and personnel transfers at the scale midpoint (M = 2.95), with items on the transparency and fairness of transfers rated below neutral. In a multiple regression the three dimensions jointly accounted for 34.7 percent of the variance in perceived performance ($R^2 = .347$). Only training and education were significantly associated with performance ($\beta = .57$, $p < .001$); personnel transfers ($\beta = -.04$, $p = .469$) and peacekeeping deployments ($\beta = .07$, $p = .184$) were not. Insufficient career counselling (M = 3.89), long periods in a single role and the priority of institutional needs over personal career growth were the most strongly endorsed implementation challenges. The findings indicate association rather than causation, and the practical implications are presented as options for further evaluation.

**Conclusions**: The study contributes disaggregated, dimension-specific survey evidence on human resource practices in an African defence institution.

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## 1. Introduction

Organisations increasingly rely on structured mobility of personnel, commonly termed job rotation, to build a versatile workforce capable of responding to changing operational demands. In structured, hierarchical environments such as national militaries, where adaptability, skill diversification, and continuous operational readiness are not optional but existential requirements, the deliberate movement of personnel across roles, units, and geographic postings carries particular significance. The Ghana Armed Forces (GAF), a tri-service institution comprising the Army, Navy, and Air Force under a Joint Service General Headquarters and numbering approximately 15,000 to 16,000 active personnel (Aubyn & Aning, 2015; Karim et al., 2021), has participated in United Nations peacekeeping since the early 1960s and has been among the top ten contributors of uniformed personnel for more than two decades (Aubyn & Aning, 2015). Sustained participation in regional and international peacekeeping operations requires a force capable of deploying flexibly across specialties, geographic locations, and operational contexts. Movement between courses, postings, and missions is therefore a prominent feature of GAF careers, and it is commonly justified as a means of ensuring that personnel accumulate varied experience over the course of a career.

The movement of personnel in the GAF is closely connected to the institution's peacekeeping identity. Ghana's sustained and internationally recognised contribution to United Nations and regional peace operations has been documented in descriptive institutional accounts (Aubyn & Aning, 2015), and comparative work on peacekeeping contingents shows that the operational outlook of Ghanaian units in the field is shaped by prior experience (Ruffa, 2014). In this study, rotation-related career mobility in the GAF is examined along three principal dimensions. The first is military education and training, delivered through institutions such as the Ghana Armed Forces Command and Staff College (GAFCSC), a constituent college of the National Defence University that runs Junior and Senior command and staff courses (GAFCSC, n.d.), and the Kofi Annan International Peacekeeping Training Centre (KAIPTC), which trains military, police, and civilian personnel for multidimensional peace operations (Karim et al., 2021). The second dimension is personnel transfer, operationalised here as movement between command, staff, and training appointments and between unit assignments and duty stations. The third dimension comprises peacekeeping deployments, which, in the GAF, involve a nomination and selection process, pre- deployment training, and financial incentives, and which form part of the military's internal rewards system (Aubyn & Aning, 2015).

These three dimensions are conventionally justified with reference to Human Capital Theory (HCT), which conceives of investment in training, mobility, and experience as generating long- term productivity returns in a manner analogous to the economic models advanced by Becker (1964) and Schultz (1961). Within military organisations specifically, HCT frames training expenditure as a cost incurred today in exchange for future defence capability (Asch et al., 2007). Economic and management research has examined rotation as a learning and career mechanism (Campion et al., 1994; Ortega, 2001), has tested why firms adopt it (Eriksson & Ortega, 2006), and has estimated its association with performance ratings using longitudinal personnel data (Kampkötter et al., 2018). In a naval context, Shahiri et al. (2023)analyse personnel records of 1,686 Royal Malaysian Navy officers and report that job rotation is positively associated with education, training, and experience and

has a significant but small association with wages, with work experience outweighing educational attainment in the wage premium.

Notwithstanding this conceptual richness, empirical scholarship linking job rotation specifically to measurable performance outcomes within African defence institutions appears to be scarce. Existing GAF-focused material tends to be descriptive or institutional, for example the contributor profile of Aubyn and Aning (2015) or the Measuring Opportunities for Women in Peace Operations (MOWIP) assessment of the GAF (Karim et al., 2021), rather than based on primary survey data on the statistical relationship between rotation-related practices and performance. This creates a structural tension: rotation-related mobility is officially endorsed as a vehicle for capability-building, yet the conditions under which it translates into performance gains, and the barriers that erode those gains, remain empirically under-specified.

This paucity of quantitative evidence constrains evidence-based human resource policymaking at a moment when Africa's security landscape is becoming markedly more volatile, encompassing violent extremism in the Sahel, maritime insecurity in the Gulf of Guinea, and an expanding portfolio of peace-support commitments. Ghana, as a leading troop-contributing country, has a direct institutional interest in understanding whether its career-mobility architecture is functioning as intended and where it requires recalibration.

Accordingly, this study addresses three specific and interrelated gaps. First, it provides disaggregated, dimension-specific evidence, examining training and education, personnel transfers, and peacekeeping deployments as distinct constructs rather than treating job rotation as an undifferentiated whole. Second, it estimates the association between each dimension and perceived employee performance using multiple regression, rather than descriptive or anecdotal accounts. Third, it documents the implementation challenges that personnel perceive as constraining the benefits of rotation-related practices, generating options for policy grounded in the perceptions of serving personnel rather than in policy aspiration alone.

Accordingly, three specific objectives guided the inquiry: first, to examine the principal dimensions of rotation-related career mobility as practised within the GAF; second, to evaluate the association between these dimensions and employee performance; and third, to identify the implementation challenges that may constrain the realisation of rotation's intended benefits. Corresponding hypotheses tested the significance of each dimension's association with performance. The results are intended to inform discussion of strategies for strengthening operational readiness and institutional effectiveness across Ghana's tri-service defence establishment, although readiness itself is not measured directly (see Section 3.4).

The remainder of the article is organised as follows. Section 2 reviews the theoretical and empirical literature on job rotation, Human Capital Theory, and military performance, culminating in a conceptual framework and formal hypotheses. Section 3 details the study's methodology, including instrument development, sampling, and analytical procedures. Section 4 presents the empirical findings, supported by tabulated descriptive and inferential statistics. Section 5 discusses these findings in relation to existing theory and literature, and Section 6 concludes with theoretical and practical implications, study limitations, and directions for future research.

## 2. Literature Review

### 2.1 Theoretical Foundation: Human Capital Theory

Human Capital Theory (HCT) provides the principal theoretical lens for this study. Developed originally by Becker (1964) and Schultz (1961), HCT conceives of expenditure on education, training, and employee wellbeing as an investment that yields returns in the form of enhanced productivity and organisational value, in a manner directly analogous to investment in physical capital. Human capital, in this formulation, comprises the accumulated stock of a worker's experience, skills, training, cognitive capacity, and health, all of which are valued and rewarded by employers. The World Economic Forum's Human Capital Report situates human capital as central to twenty-first century innovation and national competitiveness, advocating data-driven approaches to workforce development (World Economic Forum, 2015).

Within military organisations specifically, the economics of military manpower treats training, education, and accumulated experience as investments whose returns accrue over an extended career horizon (Asch et al., 2007). Rotation connects to this logic through learning. Ortega (2001) models job rotation as a learning mechanism, and Eriksson and Ortega (2006) distinguish three explanations for why organisations adopt it: employee learning, in which rotation makes employees more versatile; employer learning, in which rotation reveals individual strengths and weaknesses; and employee motivation, in which rotation mitigates boredom. Their analysis of Danish private-sector firms supported the learning explanations but not the motivation explanation. In the specific context of naval human resource management, Shahiri et al. (2023) report that job rotation among Royal Malaysian Navy officers is associated with education, training, and experience, that it carries a significant but small wage association in a fixed-wage setting, and that the association is larger for lower-ranking officers than for Captains. Taken together, this literature supports treating job rotation and related career-mobility practices as a potential vehicle of human capital accumulation, while also indicating that the strength of that link depends on context and implementation.

### 2.2 Conceptualising Job Rotation

Job rotation refers to the systematic and planned movement of employees across departments, tasks, or roles with the intention of building versatility, preventing skill stagnation, and broadening organisational understanding. Organisations deploy rotation as a deliberate performance- enhancement mechanism, typically involving same-level task or role changes that do not entail a change in compensation (Kampkötter et al., 2018). Campion et al. (1994) studied rotation as a career-related practice with consequences for employees' skills and career progression, and the economics literature treats rotation as a means by which employees and employers learn about skills and job fit (Eriksson & Ortega, 2006; Ortega, 2001). From the employee's perspective, rotation allows for the synthesis of previously acquired knowledge into a more holistic understanding of organisational operations. From the employer's perspective, rotation performs a diagnostic function, revealing competencies that might otherwise remain latent within a single role.

### 2.3 Rotation in Military Career Systems: Scope of the Construct

In the strict sense used in the economics and management literature, job rotation denotes lateral movement between tasks or positions at the same level. Two of the three dimensions

examined in this study, attendance at military education and training institutions and participation in peacekeeping deployments, are more commonly classified as training and operational deployment than as rotation, and they could legitimately be treated as separate human resource practices. They are nevertheless grouped here under a broader heading of rotation-related career mobility for three reasons. First, in a military career system, both a course and a mission take the individual out of the substantive post for a defined period and return him or her to a post that may differ from the one left, so that each constitutes a planned, temporary assignment in a sequence of assignments rather than a permanent change of role. Second, the GAF's own selection arrangements for peacekeeping deployments treat a mission as a nominated, time-bound assignment drawn from across the service headquarters (Aubyn & Aning, 2015). Third, the human capital logic that motivates rotation, namely the accumulation of varied experience and skills over a career, applies equally to all three assignments.

This choice has consequences for interpretation. The study does not estimate the effect of rotation in the narrow, same-level, lateral sense. It examines how personnel evaluate a bundle of planned assignments (courses, transfers, and missions) that jointly constitute the GAF's rotational career architecture, and how those evaluations relate to perceived performance. The training and peacekeeping coefficients, in particular, may reflect the learning content of courses and missions as much as, or more than, the movement itself, and cannot be attributed to rotation in the strict sense. Only the personnel-transfer dimension corresponds closely to the narrow definition. The dimension labels used below therefore refer to rotation-related practices, and the interpretation of the findings (Section 5) is restricted accordingly.

### 2.4 Military Education and Training

This study proceeds from the premise that military career systems combine prolonged assignment within a Military Occupational Specialty (MOS) with periodic, structured exposure to formal education and training, intended to cultivate both deep specialisation and broader operational versatility. Within the GAF, GAFCSC offers Junior and Senior command and staff courses for officers from Ghana and allied armed forces, and is accredited by the Ghana Tertiary Education Commission (GAFCSC, n.d.). KAIPTC, established in 1998 and commissioned in 2004, was created to train military, police, and civilian personnel for multidimensional peace operations, and it provides specialised training for some military observers and staff officers, whereas the GAF itself delivers pre-deployment training (Karim et al., 2021). The questionnaire also referred to service-specific training institutions, including the Army Combat Training School and the Naval Training Command, and to other GAF schools (Appendix A). Through the lens of HCT, such programmes are investments in general and specific human capital whose returns are expected to appear in the performance of those trained (Becker, 1964; Asch et al., 2007). On this basis, favourable evaluations of the training dimension are expected to be positively associated with performance.

### 2.5 Personnel Transfers

Personnel transfers constitute the second dimension of rotation-related mobility and correspond most closely to the narrow definition of job rotation: reassignment across units, branches, and geographic locations in the interest of organisational responsiveness and the dissemination of institutional knowledge. Horizontal transfers are understood to serve adaptive functions, whether responding to changing job requirements or providing

a source of intrinsic motivation through novelty (Kampkötter et al., 2018). Learning explanations of rotation suggest that exposure to varied posts broadens skills and allows the organisation to learn about its personnel (Eriksson & Ortega, 2006; Ortega, 2001). Evidence from a naval setting indicates that the likelihood of rotation rises with education, training, and experience (Shahiri et al., 2023). In this study, transfers are operationalised as movement between command, staff, and training appointments and between unit assignments and duty stations. Transfers are expected to be positively associated with performance to the extent that they are perceived to broaden operational exposure and to be administered in a timely and transparent manner.

### 2.6 Peacekeeping Deployments

Peacekeeping deployment constitutes the third dimension, providing structured international assignments in complex, multinational operating environments. In the GAF, shortlisted personnel nominated through the service headquarters undergo a written examination and a medical examination, followed by pre-deployment training (Aubyn & Aning, 2015). Deployment brings financial benefits, including a UN mission subsistence allowance, and participation in UN peacekeeping forms part of the military's internal rewards system, including promotion (Aubyn & Aning, 2015). The same source notes that the selection process is competitive and that allegations of corruption and favouritism have been made, although the GAF command has denied them and they have not been substantiated (Aubyn & Aning, 2015). In the MOWIP survey of GAF personnel, 66 percent of respondents thought that those selected for deployment were selected because they had the right skills, whereas 25 percent thought they were selected because of favours (Karim et al., 2021). Research on Polish forces suggests that participation in missions is regarded by soldiers as a verification of previously learned skills and abilities (Sińczuch et al., 2009), and comparative work shows that previous experience shapes how contingents, including Ghanaian units, interpret and act in the operational environment (Ruffa, 2014). Deployment experience is therefore expected to be positively associated with performance, and perceptions of the fairness of access to deployments are likely to condition how the dimension is evaluated.

### 2.7 Employee Performance in Military Contexts

Employee performance refers to behaviour and outcomes that contribute to organisational goals, and it is conventionally treated as multidimensional (Campbell, 1990; Borman & Motowidlo, 1993). In military settings, performance integrates individual task outputs with broader mission accomplishment, and productivity is commonly used as the label for the outcome. In this study, employee performance (productivity) is measured through respondents' ratings of seven statements about how rotation relates to skills, monotony and burnout, disruption of routines, adaptability and readiness, collaboration, job satisfaction, and short-term learning curves (Appendix A, Section D). The measure is therefore perceptual, and it asks respondents about the productivity consequences of rotation rather than recording individual appraisal results. Because objective performance records in armed forces are rarely available for research, studies commonly rely on self-reports, which are subject to social desirability and common-method bias (Donaldson & Grant-Vallone, 2002; Podsakoff et al., 2003). The implications of this for the present study, including the conceptual overlap between the predictors and the outcome, are addressed in Sections 3.4 and 6.3.

### 2.8 Implementation Challenges

The implementation of rotation-related mobility within hierarchical structures such as the GAF can encounter barriers that erode its intended benefits. Published GAF-focused material identifies perceived favouritism in selection for peacekeeping deployments as a concern, albeit one denied by the command (Aubyn & Aning, 2015), and the MOWIP assessment of the GAF identifies an eligible pool, gender roles, and social exclusion as the top barriers to women's meaningful participation in UN peace operations (Karim et al., 2021). Beyond these sources, the literature that directly addresses implementation barriers in African militaries is thin. The challenges examined in this study (limited frequency of rotation opportunities within a Military Occupation Specialty, an institutional focus on single-field expertise, complex or unclear procedures for changing role or specialty, the priority of military needs over personal career growth, insufficient career-counselling support, long duration in a single role, and the lack of frequent rotation options) were therefore developed for this study (Section 3.4) and are treated descriptively. Whether they condition the association between rotation-related practices and performance is a question for future research, because the present data do not permit a test of moderation (Section 6.3).

### 2.9 Conceptual Framework and Hypotheses

Drawing on the literature reviewed above, this study conceptualises rotation-related career mobility as a set of three dimensions, training and education, personnel transfers, and peacekeeping deployments, each measured as the perceived effectiveness of the corresponding GAF practice. These dimensions are hypothesised to be positively associated with employee performance (productivity), the dependent variable. Consistent with Human Capital Theory, the framework posits that investment in each dimension enhances the stock of human capital available to the institution, which is expected to be reflected in higher performance. Implementation challenges are assessed separately and descriptively.

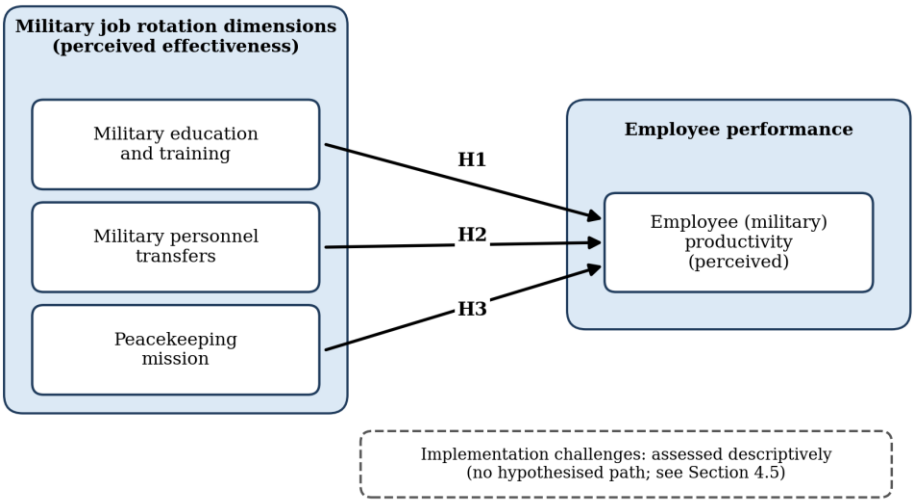



**Fig. 1. Conceptual Framework Linking Rotation-Related Dimensions to Employee Performance**

Source: Authors' own elaboration.

Figure 1 depicts this relationship schematically: arrows from each of the three dimensions converge upon employee performance (H1 to H3), and implementation challenges, shown with a dashed outline, are described separately without a hypothesised path. On the basis of this framework, the study tested the following hypotheses:

**H1:** Training and education, as a dimension of rotation-related career mobility, is positively associated with perceived employee performance in the GAF.

**H2:** Personnel transfers are positively associated with perceived employee performance in the GAF.

**H3:** Peacekeeping deployments are positively associated with perceived employee performance in the GAF.

For each hypothesis, the corresponding null hypothesis (H0) proposed no statistically significant association. Multiple regression analysis, reported in Section 4, was used to test H1 to H3.

## 3. Methodology

### 3.1 Research Philosophy and Design

This study is situated within the positivist research paradigm, which holds that social and organisational phenomena, including the relationship between human resource practices and employee performance, can be objectively measured and analysed through the systematic collection and statistical treatment of numerical data (Saunders et al., 2019). A positivist orientation was considered appropriate given the study's objective of testing pre- specified hypotheses concerning the directional and quantifiable association between rotation- related practices and performance, rather than exploring the subjective meaning that personnel attach to rotation experiences.

A quantitative, descriptive, cross-sectional research design was accordingly adopted. The descriptive component of the design facilitated systematic characterisation of rotation

dimensions, their perceived effectiveness, and implementation challenges among GAF personnel, while the regression component enabled the statistical estimation of the strength and direction of association between rotation dimensions and employee performance. This design was selected over qualitative alternatives, such as in-depth interviews or focus group discussion, because the study's primary objective required population-level estimates of association rather than a rich but non- generalisable account of individual experience. A purely qualitative approach would also have constrained the capacity to formally test the study's a priori hypotheses using inferential statistics. The discussion of findings draws on published literature rather than on primary qualitative data collected for this study, a limitation that is acknowledged in Section 6.3 and addressed through a recommendation for future mixed-methods research (Section 6.4).

### 3.2 Study Area and Population

The study area encompassed the tri-service structure of the GAF, comprising the Army, Navy, and Air Force under the Joint Service General Headquarters, with headquarters at Burma Camp in Accra and installations distributed across Ghana. This scope was selected to capture the diversity of rotational experience across the three services. The target population comprised all active GAF personnel, taken in this study to number about 16,000, spanning all ranks, all of whom are subject to the institution's rotation-related policies. Published figures for GAF strength are approximate: the International Institute for Strategic Studies *Military Balance* figure of about 15,500 is reproduced in Aubyn and Aning (2015), and the GAF's strength is described as approximately 15,000 as of December 2018, with about 10,000 in the Army, 2,700 in the Navy, and 2,300 in the Air Force (Karim et al., 2021). Exact personnel numbers are not publicly released by the GAF, and the Karim et al. (2021) distribution is used below as the reference for the service-branch composition. The sampling frame was limited to personnel of varying ranks and units who had undergone some form of job rotation in the preceding five years, so that the findings relate to rotation-experienced personnel and not to every serving member of the GAF.

### 3.3 Sampling Technique and Sample Size

A stratified sampling design was adopted, with service branch (Army, Navy, and Air Force) as the stratifying variable, and respondents were to be selected at random within each branch. The achieved allocation was 200 Army, 105 Navy, and 85 Air Force respondents (Table 1). This allocation is not proportional to the reference distribution: the Navy and Air Force are over-represented, and the Army is under-represented, relative to their share of GAF strength. A chi- square goodness-of-fit test confirmed that the achieved distribution differs from the reference distribution, $\chi^2$ (2) = 41.7, $p < .001$. The study records do not document the number of units and installations visited, how units were chosen, or how random selection within branches was operationalised, and the sample cannot therefore be regarded as a verified probability sample. Questionnaires were completed by respondents at their convenience (Section 3.6), which further limits the claim to random selection. The results are accordingly interpreted as describing the surveyed personnel, and generalisation to the whole GAF is made cautiously. Because service branch and rank were not recorded on the questionnaire (Section 3.4), the data cannot be weighted to the reference distribution, and analyses by branch or rank were not possible.

**Table 1 Reference Distribution of GAF Personnel, Proportional Allocation, and Achieved Sample by Service Branch**

| Service branch | Reference strength | Reference % | Proportional allocation (n) | Achieved (n) | Achieved % |
|---|---|---|---|---|---|
| Army | 10,000 | 66.7 | 260 | 200 | 51.3 |
| Navy | 2,700 | 18.0 | 70 | 105 | 26.9 |
| Air Force | 2,300 | 15.3 | 60 | 85 | 21.8 |
| Total | 15,000 | 100.0 | 390 | 390 | 100.0 |

Source: Authors' own elaboration.

Note. Reference strengths are approximate figures for December 2018 reported by Karim et al. (2021). Proportional allocation = 390 × reference %, rounded. The goodness-of-fit test of the achieved distribution against the reference distribution gave $\chi^2(2) = 41.7$, $p < .001$.

The sample size was determined using Yamane's (1967) formula for finite populations:

$$n = N / (1 + N(e)^2)$$

where N represents the target population of 16,000 and e represents the acceptable margin of error, set conventionally at 0.05 (5 percent) for a 95 percent confidence level. Applying this formula yields n = 390.2, and the study accordingly used a sample of 390 respondents. The result is insensitive to the uncertainty in the population figure, since the same formula gives 389.6 for a population of 15,000 and 389.9 for 15,500. Yamane's formula is best suited to estimating a proportion at the 95 percent confidence level with a population proportion of 0.5, and it determines precision for a single proportion; it does not, by itself, establish power for the regression analysis reported below.

A sensitivity analysis showed that, with N = 390 and three predictors at $\alpha = .05$, the regression has 80 percent power to detect an increment in explained variance corresponding to Cohen's $f^2$ of about 0.02 for a single predictor and 0.03 for the three predictors jointly.

### 3.4 Research Instrument and Measurement

Data were collected using a structured, self-administered questionnaire comprising four sections. Section A captured demographic information: gender, age, religion, education, and number of years in service. Section B measured the three rotation dimensions using five-point Likert-type scales (1 = Strongly Disagree to 5 = Strongly Agree): training and education (seven items), personnel transfers (seven items), and peacekeeping missions (seven items). Section C measured implementation challenges using a seven-item scale, and Section D measured employee performance (productivity) using a seven-item scale. All questions were closed-ended. The items were developed for this study from the literature and the GAF context; they were not adapted from a previously validated instrument, and no source scales are therefore cited. The complete 35-item questionnaire is provided in Appendix A. Service branch and rank were not recorded on the questionnaire.

The items in Section B ask respondents to evaluate GAF courses, transfer practices, and deployment arrangements (for example, whether GAFCSC programmes prepare officers for joint operations, or whether the criteria used for transfers are transparent and fairly applied). The rotation scales therefore measure *perceived effectiveness and quality* of the three sets of practices, not the respondent's frequency of exposure to them, which was not recorded.

Several items, notably those on fairness and transparency of transfers and on standardised access to missions, also overlap conceptually with the implementation-challenges construct, and two peacekeeping items refer specifically to the deployment of female soldiers; this is addressed as a limitation (Section 6.3). The performance items ask respondents whether rotation enhances skill sets, reduces monotony and burnout, disrupts routines, improves adaptability and readiness, fosters collaboration, raises job satisfaction, and creates short-term learning curves. The performance measure is thus a perception of the productivity consequences of rotation, and it is conceptually close to the predictors; two of its items (items 3 and 7) are negatively worded. Only one performance item refers to adaptability and readiness, and readiness as an institutional outcome was not measured directly; the word has therefore been dropped from the title.

Table 2 summarises the constructs measured, the number of items per construct, and the reliability coefficients obtained during the main data collection exercise.

**Table 2. Study Constructs, Number of Items, and Reliability**

| Construct | Number of items | Cronbach's α |
|---|---|---|
| Training and education | 7 | 0.90 |
| Personnel transfers | 7 | 0.79 |
| Peacekeeping missions | 7 | 0.83 |
| Employee performance (productivity) | 7 | 0.73 |
| Implementation challenges | 7 | — |

Source: Authors' own elaboration.

*Note.* Total items = 35. Reliability coefficients were computed from the full analytic sample (N = 390). Cronbach's α was not computed for the implementation-challenges scale in the original analysis.

### 3.5 Instrument Validation and Reliability

Internal consistency reliability was assessed using Cronbach's alpha, calculated separately for each rotation dimension and for employee performance using data from the full sample of 390 respondents. All four coefficients exceeded the conventional acceptability threshold of 0.70 recommended by Nunnally and Bernstein (1994), ranging from 0.73 (employee performance) to 0.90 (training and education) (Table 2). The value for employee performance is the lowest and is only modestly above the threshold. Reliability was not computed for the implementation-challenges scale, which is therefore interpreted descriptively and at the level of individual items.

No exploratory or confirmatory factor analysis was conducted, and no common-method test (for example, Harman's single-factor test or a latent method factor; Podsakoff et al., 2003) was performed. Convergent and discriminant validity of the scales, including the distinctness of the rotation scales from the performance scale, have therefore not been established statistically, and no formal pre-test of the instrument is documented. These are important limitations of the study (Section 6.3). They bear on the interpretation of the regression results in particular, because predictors and outcome were measured with the same instrument and the outcome is conceptually close to the predictors.

### 3.6 Data Collection Procedures

The study adopted primary data only. In collecting the primary data, a formal request was made to the three branches of the GAF (the Ghana Army, the Ghana Navy, and the Ghana Air Force). After the request had been accepted by the three branches, a week was set aside to collect data from the respondents. The questionnaires were self-administered and were completed at the respondent's convenience, which was intended to enhance participation and to minimise disruption to operational duties. Questionnaires that were not properly completed, or in which parts had been cancelled, were removed, and the final analytic sample comprised 390 questionnaires. The number of questionnaires initially distributed and the corresponding response rate were not recorded, and non-response bias cannot therefore be assessed.

### 3.7 Ethical Considerations

Formal permission to conduct the study was obtained from the three branches of the GAF. Participants were guaranteed privacy, and the confidentiality of their personal details was maintained in line with Ghana's Data Protection Act, 2012 (Act 843). Participation was voluntary, participants were free to withdraw from the research at their convenience and were not asked to justify their decision, and the questionnaire asked for no names or service numbers. The study does not have an approval reference from a research ethics committee, due to the non-existence of such committee at the National College of Defence Studies where this study was conducted initially as a thesis and this is acknowledged as a limitation. This limitation was addressed by conducting the study in accordance with high ethical research principles as indicated earlier.

Completing a questionnaire in a hierarchical setting could create perceived pressure to participate or to respond favourably. The anonymity of the instrument and the self-administered format reduce, but cannot eliminate, this risk.

### 3.8 Data Analysis

Quantitative data were coded, cleaned, and analysed using IBM SPSS Statistics version 26. Descriptive statistics, including frequencies and percentages, were computed to summarise respondent demographics. The rotation dimensions and the implementation challenges were first analysed with one-sample t-tests in SPSS, which return the mean of each item or dimension (the mean difference from a test value of zero) and its t statistic. Because a test against zero is uninformative on a scale that runs from 1 to 5, standard deviations, 95 percent confidence intervals, and tests against the neutral midpoint of the scale (3 = Neutral) were derived algebraically from these reported means and t statistics, using $SE = M/t$ and $SD = SE \times \sqrt{N}$, and Cohen's d was computed as $(M - 3)/SD$. Because the item-level and dimension-level tests form a family of 31 comparisons, Holm's (1979) sequential correction was applied to their p-values. These derived quantities are labelled as such in the tables.

The primary inferential procedure was multiple linear regression, used to test Hypotheses H1 through H3, in which the three rotation dimensions were entered simultaneously as predictors of employee performance (productivity). The model is specified as:

$$\textbf{Performance} = \beta_0 + \beta_1(\textbf{Training}) + \beta_2(\textbf{Transfers}) + \beta_3(\textbf{Peacekeeping}) + \varepsilon$$

Unstandardised coefficients (B) with standard errors, standardised coefficients (β), t statistics, p-values and $R^2$ are those produced by the SPSS analysis. Adjusted

$R^2$, the omnibus F test, 95 percent confidence intervals, and Cohen's (1988) $f^2$ (for each predictor, $f^2 = t^2/df$ of the residual) were derived from these quantities, and variance inflation factors (VIF) were derived from the relationship between the standard error of each standardised coefficient ($\beta/t$), the residual degrees of freedom, and $R^2$ ($VIF = SE(\beta)^2 \times 386/ (1 - R^2)$). The mean and standard deviation of the performance scale were derived from the regression intercept and coefficients and from the predictor standard deviations and are approximate. Statistical significance was set at $p < .05$, and effect sizes are reported alongside significance levels in line with contemporary reporting standards (American Psychological Association, 2020). Because the design is cross-sectional and the outcome is a self-reported perception, regression coefficients are interpreted as conditional associations, not as causal effects. Rank, service branch, and the demographic variables were not included as covariates, and the interaction (moderation) analyses suggested by the conceptual literature were not conducted; the reasons and consequences are set out in Section 6.3.

### 3.9 Methodological Limitations

Notwithstanding the procedures described above, several methodological limitations warrant acknowledgement. First, the cross-sectional design captures respondent perceptions at a single point in time and cannot establish causal precedence between rotation-related practices and performance; the possibility of reverse or reciprocal causation, whereby higher-performing personnel may be preferentially selected for rotational opportunities, cannot be ruled out on the basis of this design alone. Second, the reliance on self-reported perceptual measures, rather than independently verified objective performance metrics such as supervisor ratings or operational readiness indicators, introduces the possibility of common-method variance and social desirability bias, notwithstanding the anonymity protections built into the data collection procedure. Third, the sampling procedure cannot be verified as a probability sample, the allocation across branches departs from the reference distribution, and branch and rank were not recorded. Fourth, the measurement properties of the scales were examined only through Cronbach's alpha. These limitations are discussed further in Section 6.3, with corresponding directions for future research in Section 6.4.

## 4. Findings

### 4.1 Introduction to Findings

This section presents the empirical results derived from the quantitative analysis of rotation-related practices and employee performance among 390 GAF personnel. Findings are organised around the study's three specific objectives: characterising the dimensions of rotation-related career mobility as practised within the GAF, evaluating their association with employee performance, and identifying implementation challenges. Demographic characteristics, reliability, descriptive statistics with tests against the scale midpoint, the regression analysis, and the implementation challenges are reported in turn, supported by tabulated data. All results describe associations among self-reported perceptions and should not be read as causal effects. Statistics that were not produced directly by the original SPSS output but derived from it are identified as such (Section 3.8).

### 4.2 Demographic Characteristics of Respondents

Table 3 summarises the demographic composition of the achieved sample. By service branch, the sample comprised 200 Army, 105 Navy, and 85 Air Force respondents (Table 1). Of the 390 respondents, 288 (73.8 percent) were male and 102 (26.2 percent) were female. The age distribution was concentrated in the 28–37-year band (163 respondents, 41.8 percent), followed by the 38–47-year band (141, 36.2 percent), the 48 years and above band (76, 19.5 percent), and the 18–27-year band (10, 2.6 percent). The sample was predominantly Christian (362 respondents, 92.8 percent). In terms of education, 155 respondents (39.7 percent) held a master's degree and 139 (35.6 percent) a first degree, so that 294 respondents (75.4 percent) held a degree or higher, while 57 (14.6 percent) had a senior high school certificate and 39 (10.0 percent) a diploma. In terms of years in service, 112 respondents (28.7 percent) had served 16–20 years, 104 (26.7 percent) had served 21 years or more, and 29 (7.4 percent) had served five years or less.

The sample therefore consists mainly of experienced and highly educated personnel, and relatively few respondents were young or recently enlisted. Only 10 respondents fall in the youngest band (18 to 27 years), and the questionnaire did not record rank, so it is not possible to say how many were junior soldiers. Because recruits are typically admitted in their late teens or early twenties (Karim et al., 2021), the small share of respondents with five years of service or less (7.4 percent) and in the youngest age band suggests that recent entrants are under-represented, which is a possible source of selection bias (Section 6.3). Women are also over-represented relative to their estimated share of about 15 percent of GAF personnel in 2020 (Karim et al., 2021). Percentages in Table 3 were computed from the frequencies and agree with them.

**Table 3. Demographic Characteristics of Respondents (N = 390)**

| Variable | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Gender | Male | 288 | 73.8 |
| | Female | 102 | 26.2 |
| Age group (years) | 18–27 | 10 | 2.6 |
| | 28–37 | 163 | 41.8 |
| | 38–47 | 141 | 36.2 |
| | 48 and above | 76 | 19.5 |
| Religion | Christian | 362 | 92.8 |
| | Muslim | 13 | 3.3 |
| | Traditionalist | 5 | 1.3 |
| | Other | 10 | 2.6 |
| Education | Senior high school | 57 | 14.6 |
| | Diploma | 39 | 10.0 |
| | Degree | 139 | 35.6 |
| | Master's degree | 155 | 39.7 |
| Years in service | 1–5 years | 29 | 7.4 |
| | 6–10 years | 47 | 12.1 |
| | 11–15 years | 98 | 25.1 |
| | 16–20 years | 112 | 28.7 |
| | 21 years and above | 104 | 26.7 |

Source: Authors' own elaboration.

Note. Service branch (Army 200, Navy 105, Air Force 85) is reported in Table 2; branch and rank were not recorded on the questionnaire. Percentages may not sum to exactly 100 because of rounding.

### 4.3 Rotation-Related Dimensions in the GAF

As reported in Table 2, Cronbach's alpha coefficients for the three rotation dimensions and for employee performance exceeded the 0.70 threshold, ranging from 0.73 (employee performance) to 0.90 (training and education). Table 4 summarises the three dimensions. Training and education was rated most favourably (M = 4.04, 95% CI [3.96, 4.12], d = 1.30 against the scale midpoint), peacekeeping missions moderately favourably (M = 3.39, 95% CI [3.31, 3.47], d = 0.50), and personnel transfers at the scale midpoint (M = 2.95, 95% CI [2.87, 3.02]), a value that does not differ from neutral (t = −1.37, Holm-adjusted p = .341). The mean of the three dimensions was 3.46.

**Table 4. Descriptive Statistics, Reliability, and Tests Against the Scale Midpoint for Study Constructs (N= 390)**

| Construct | Items | M | SD | 95% CI | t (vs. 3) | d | Holm p | A |
|---|---|---|---|---|---|---|---|---|
| Training and education | 7 | 4.04 | 0.80 | [3.96, 4.12] | 25.76 | 1.30 | < .001 | .90 |
| Personnel transfers | 7 | 2.95 | 0.74 | [2.87, 3.02] | −1.37 | −0.07 | .341 | .79 |
| Peacekeeping missions | 7 | 3.39 | 0.78 | [3.31, 3.47] | 9.82 | 0.50 | < .001 | .83 |
| Mean of the three rotation dimensions | 21 | 3.46 | — | — | — | — | — | — |
| Employee performance (productivity) | 7 | ≈ 3.56 | ≈ 0.63 | — | — | — | — | .73 |
| Implementation challenges | 7 | 3.53 | — | — | — | — | — | — |

Source: Authors' own elaboration.

Note. Dimension means and t statistics are from the SPSS one-sample t-tests; SD, 95% CI, t (against 3), d, and Holm p are derived as described in Section 3.8. The mean and SD of employee performance are approximate values derived from the regression intercept and coefficients (Section 3.8). The mean of the challenges scale is the average of its seven item means; its SD and α were not available.

#### 4.3.1 Training and Education

Training and education emerged as the most positively rated dimension. Table 5 presents the item-level results. All seven items were rated significantly above the midpoint, with means between 3.90 and 4.29 (Holm-adjusted p < .001, d between 0.91 and 1.36). The item concerning KAIPTC training in peacekeeping, good governance, and gender rights received the highest rating (M = 4.29, 95% CI [4.19, 4.38]), followed by the item on GAFCSC tri-service training for joint operations (M = 4.14) and the item on GAFCSC master's, postgraduate diploma, and certificate programmes (M = 4.08). The items on the accessibility and inclusiveness of MATS programmes and on the preparation provided by the Leadership Training School and the School of Supply and Secretaryship received the lowest, though still favourable, ratings (both M = 3.90). These are respondents' evaluations of the programmes, not measures of skills acquired.

**Table 5 Descriptive Statistics and Tests Against the Scale Midpoint for Training and Education Items**

| Item | M | SD | 95% CI | t (vs. 3) | d | Holm p |
|---|---|---|---|---|---|---|
| GAFCSC tri-service training prepares officers for joint operations | 4.14 | 1.08 | [4.03, 4.24] | 20.86 | 1.06 | < .001 |
| Service-specific training (e.g., Naval Training Command, Army Combat Training School) equips personnel with specialised skills | 4.00 | 0.97 | [3.91, 4.10] | 20.39 | 1.03 | < .001 |
| GAFCSC master's, postgraduate diploma, and certificate programmes support professional development and career progression | 4.08 | 1.04 | [3.97, 4.18] | 20.38 | 1.03 | < .001 |
| KAIPTC provides valuable training in peacekeeping, good governance, and gender rights | 4.29 | 0.95 | [4.19, 4.38] | 26.85 | 1.36 | < .001 |
| Variety of training institutions (e.g., Jungle Warfare School, SMOPS) ensures comprehensive training opportunities | 4.04 | 0.94 | [3.95, 4.13] | 21.79 | 1.10 | < .001 |
| MATS and other GAF training programmes are accessible and inclusive for officers and enlisted personnel | 3.90 | 0.99 | [3.80, 4.00] | 18.03 | 0.91 | < .001 |

Source: Authors' own elaboration.

Note. N = 390 (df = 389). Items rated 1 = Strongly Disagree to 5 = Strongly Agree. Means and t statistics (against the neutral midpoint of 3) are derived from the one-sample *t*-test output as described in Section 3.8; SD = M√N/t; d= (M − 3)/SD. Holm p = p-value adjusted across the 31 item-level and dimension-level comparisons. Full item wording is given in Appendix A. GAFCSC = Ghana Armed Forces Command and Staff College; KAIPTC = Kofi Annan International Peacekeeping Training Centre; MATS = Military Academic and Training Schools; SMOPS = School of Maritime Operations.

### 4.3.2 Personnel Transfers

Personnel transfers received the lowest overall rating, with a mean of 2.95, indistinguishable from the neutral midpoint (Table 4). The item-level results in Table 6 show that this reflects a split between aspects that were rated favourably and aspects that were rated below neutral. Inter-service transfers providing opportunities for joint training and collaboration (M = 3.77), the transfer process supporting professional growth through diverse assignments (M = 3.45), and advance notification and planning (M = 3.19, Holm-adjusted p = .008) were rated above the midpoint. By contrast, four items were rated significantly below the midpoint: whether the transfer process balances organisational needs with personal and family circumstances (M = 2.48), whether transfer criteria are transparent and fairly applied (M = 2.49), whether support systems minimise disruption (M = 2.59), and whether appeal and review procedures are accessible and effective (M = 2.67); all Holm-adjusted p < .001, d between −0.31 and −0.50. On average, respondents therefore did not agree that transfer criteria are transparent and fairly applied, although the item measures perceived transparency and not the actual transparency of the process.

**Table 6 Descriptive Statistics and Tests Against the Scale Midpoint for Personnel Transfer Items**

| Item | M | SD | 95% CI | t (vs. 3) | d | Holm p |
|---|---|---|---|---|---|---|
| Transfer process supports professional growth through diverse assignments | 3.45 | 1.09 | [3.34, 3.56] | 8.15 | 0.41 | < .001 |
| Advance notification and planning prepare personnel and families for relocation | 3.19 | 1.21 | [3.07, 3.31] | 3.13 | 0.16 | .008 |
| Transfer criteria are transparent and fairly applied | 2.49 | 1.03 | [2.38, 2.59] | −9.88 | −0.50 | < .001 |
| Support systems (housing, logistics, orientation) minimise disruption | 2.59 | 1.27 | [2.46, 2.71] | −6.40 | −0.32 | < .001 |
| Inter-service transfers provide opportunities for joint training and collaboration | 3.77 | 0.96 | [3.68, 3.87] | 15.93 | 0.81 | < .001 |
| Transfer process balances organisational needs with personal and family circumstances | 2.48 | 1.07 | [2.37, 2.59] | −9.60 | −0.49 | < .001 |
| Appeal and review procedures are accessible and effective | 2.67 | 1.07 | [2.56, 2.78] | −6.12 | −0.31 | < .001 |

Source: Authors' own elaboration.

Note. N = 390 (df = 389). Items rated 1 = Strongly Disagree to 5 = Strongly Agree. Means and t statistics (against the neutral midpoint of 3) are derived from the one-sample t-test output as described in Section 3.8; SD = M√N/t; d = (M − 3)/SD. Holm p = p-value adjusted across the 31 item-level and dimension-level comparisons. Full item wording is given in Appendix A.

### 4.3.3 Peacekeeping Missions

Peacekeeping missions recorded an overall mean of 3.39 (Table 7). Table 7 shows that the highest- rated items were that missions provide more cross-training opportunities than regular duties in Ghana (M = 3.93), that deploying female soldiers contributes to women's representation and success in leadership roles (M = 3.86), and that returning soldiers have skills and experience exceeding the requirements of their primary roles (M = 3.45). The item on the fairness of the rotation mechanism for missions was rated at the midpoint (M = 3.03, Holm-adjusted p = .635), and the item stating that deployment enhances military skills that are considered for promotion was rated slightly below it (M = 2.83, Holm-adjusted p = .014, d = −0.14), so that respondents were, on average, not persuaded that mission experience carries weight in promotion decisions. The two items referring to female soldiers were rated above the midpoint (M = 3.32 and 3.86).

**Table 7 Descriptive Statistics and Tests Against the Scale Midpoint for Peacekeeping Mission Items**

| Item | M | SD | 95% CI | t (vs. 3) | d | Holm p |
|---|---|---|---|---|---|---|
| Rotation mechanism for missions ensures fairness by standardising opportunities | 3.03 | 1.21 | [2.91, 3.15] | 0.48 | 0.02 | .635 |
| Missions provide more cross-training opportunities than regular duties in Ghana | 3.93 | 0.99 | [3.83, 4.03] | 18.69 | 0.95 | < .001 |
| Returning soldiers have skills and experience exceeding primary-role requirements | 3.45 | 1.08 | [3.34, 3.56] | 8.22 | 0.42 | < .001 |
| Commanders fairly evaluate soldiers' performance on the basis of positive mission reports | 3.29 | 0.95 | [3.20, 3.39] | 6.09 | 0.31 | < .001 |
| Deployment enhances military skills that are considered for promotion | 2.83 | 1.18 | [2.71, 2.95] | −2.84 | −0.14 | .014 |
| Missions give female soldiers forward roles not typically available in Ghana | 3.32 | 1.23 | [3.19, 3.44] | 5.08 | 0.26 | < .001 |
| Deploying female soldiers increases women's representation and success in leadership roles | 3.86 | 1.07 | [3.76, 3.97] | 15.96 | 0.81 | < .001 |

Source: Authors' own elaboration.

Note. N = 390 (df = 389). Items rated 1 = Strongly Disagree to 5 = Strongly Agree. Means and t statistics (against the neutral midpoint of 3) are derived from the one-sample t-test output as described in Section 3.8; SD = M√N/t; d = (M − 3)/SD. Holm p = p-value adjusted across the 31 item-level and dimension-level comparisons. Full item wording is given in Appendix A.

### 4.3.4 Overall Rotation Effectiveness

Taken together, the ratings indicate favourable perceptions of training and education, moderately favourable perceptions of peacekeeping missions, and neutral perceptions of personnel transfers (Table 7). The percentage of respondents in agreement with each dimension cannot be derived from the retained analysis output and is therefore not reported; means with 95 percent confidence intervals and effect sizes against the midpoint are given instead. Bivariate correlations among the study variables were not retained and are therefore not reported.

### 4.4 Association Between Rotation-Related Dimensions and Employee Performance

Multiple regression was used to test Hypotheses H1 through H3, with employee performance (productivity) as the dependent variable and the three rotation dimensions entered simultaneously. The model was statistically significant and explained a substantial proportion of variance in performance scores, $R^2 = .347$, Adjusted $R^2 = .342$, $F(3, 386) = 68.37$, $p < .001$, corresponding to a large Cohen's $f^2$ of 0.53. Table 8 presents the estimates. Training and education were a statistically significant positive predicto of performance (B = 0.447, SE = 0.042, β = .570, 95% CI [.464, .676], t = 10.609, $p < .001$, $f^2 = 0.29$), so that H1 was supported. Personnel transfers had a non-significant association with performance (B = −0.030, SE = 0.041, β = −.037, 95% CI [−.137, .063], t = −0.725, p = .469), as did peacekeeping missions (B = 0.055, SE = 0.041, β = .068, 95% CI [−.032, .168], t = 1.332, p = .184). H2 and H3 were therefore not supported.

**Table 8 Multiple Regression Predicting Employee Performance (Productivity) From Rotation Dimensions (N = 390)**

| Predictor | B (SE) | 95% CI for B | β | 95% CI for β | T | p | $f^2$ | VIF |
|---|---|---|---|---|---|---|---|---|
| Constant | 1.653 (0.153) | [1.352, 1.954] | — | — | 10.786 | < .001 | — | — |
| Training and education (H1) | 0.447 (0.042) | [0.364, 0.530] | .570 | [.464, .676] | 10.609 | < .001 | 0.292 | 1.71 |
| Personnel transfers (H2) | −0.030 (0.041) | [−0.111, 0.051] | −.037 | [−.137, .063] | −0.725 | .469 | 0.001 | 1.54 |
| Peacekeeping missions (H3) | 0.055 (0.041) | [−0.026, 0.136] | .068 | [−.032, .168] | 1.332 | .184 | 0.005 | 1.54 |

Source: Authors' own elaboration.

Note. Dependent variable: Employee performance (productivity). $R^2 = .347$, Adjusted $R^2 = .342$, $F(3, 386) = 68.37$, $p < .001$, $f^2$ (model) = 0.53. B, SE, β, t, p, and $R^2$ are from the SPSS output; 95% confidence intervals, $f^2$ (= $t^2/386$), adjusted $R^2$, F, and VIF are derived as described in Section 3.8. VIF values are approximate

The confidence intervals show that the non-significant results are informative about the plausible size of the associations. Holding training and education constant, the data are compatible with a standardised association of personnel transfers with performance of between about −.14 and .06, and of peacekeeping missions of between about −.03 and .17, so that associations larger than roughly .17 standard deviations are unlikely for either dimension. With N = 390, the regression had 80 percent power to detect a single-predictor $f^2$ of about 0.02 (Section 3.3). The derived variance inflation factors (1.54 to 1.71) are well below the conventional threshold of 5 and indicate that multicollinearity is not a problem for the estimates. However, formal residual diagnostics (tests of normality, homoscedasticity, and independence of residuals) were not part of the retained output and cannot be reported, so that the assumption of constant error variance could not be checked, and bivariate correlations among predictors were not retained, so that it is not possible to say whether transfers and peacekeeping are unrelated to performance or are related only through their overlap with training. These constraints are noted in Section 6.3.

### 4.5 Implementation Challenges

Implementation challenges recorded an overall mean of 3.53, the average of the seven item means, all of which were significantly above the scale midpoint (Table 9; Holm-adjusted $p < .001$, d between 0.20 and 0.83). As detailed in Table 9, "insufficient support or guidance from career counsellors" was the most strongly endorsed challenge (M = 3.89, 95% CI [3.78, 3.99]), followed by "long duration in a single role before rotation reduces motivation and engagement" (M = 3.70, 95% CI [3.61, 3.79]) and "military needs take precedence over personal career growth, limiting rotation opportunities" (M = 3.65, 95% CI [3.54, 3.75]). The remaining items, namely the lack of frequent rotation options (M = 3.54), limited frequency of rotation opportunities within a Military Occupation Specialty (M = 3.39), the focus on creating single-field experts (M = 3.36), and the complexity or lack of clarity of the process for changing role or specialty (M = 3.21), were also rated above neutral. The confidence intervals of the three highest items overlap with those of the next-highest items, so the ranking of the challenges is indicative rather than definitive. Because the data do not allow the challenges to be related to the rotation dimensions or to performance, the study does not test whether they moderate the associations in Table 8.

**Table 9 Descriptive Statistics and Tests Against the Scale Midpoint for Implementation Challenges Items**

| Item | M | SD | 95% CI | t (vs. 3) | d | Holm p |
|---|---|---|---|---|---|---|
| Limited frequency of rotation opportunities in my MOS hinders skill diversification | 3.39 | 1.02 | [3.29, 3.49] | 7.59 | 0.38 | < .001 |
| Focus on creating single-field experts restricts exploration of diverse roles | 3.36 | 1.11 | [3.25, 3.47] | 6.31 | 0.32 | < .001 |
| Process for changing roles or MOS is complex or unclear | 3.21 | 1.08 | [3.11, 3.32] | 3.89 | 0.20 | .001 |
| Military needs take precedence over personal career growth, limiting rotation opportunities | 3.65 | 1.08 | [3.54, 3.75] | 11.85 | 0.60 | < .001 |
| Insufficient support or guidance from career counsellors | 3.89 | 1.07 | [3.78, 3.99] | 16.30 | 0.83 | < .001 |
| Long duration in a single role before rotation reduces motivation and engagement | 3.70 | 0.90 | [3.61, 3.79] | 15.41 | 0.78 | < .001 |
| Lack of frequent rotation options makes adaptation to new challenges difficult | 3.54 | 0.94 | [3.44, 3.63] | 11.31 | 0.57 | < .001 |

Source: Authors' own elaboration.

Note. N = 390 (df = 389). Items rated 1 = Strongly Disagree to 5 = Strongly Agree. Means and t statistics (against the neutral midpoint of 3) are derived from the one-sample t-test output as described in Section 3.8; SD = M√N/t; d = (M − 3)/SD. Holm p = p-value adjusted across the 31 item-level and dimension-level comparisons. Full item wording is given in Appendix A. MOS = Military Occupation Specialty

## 5. Discussion of Findings

### 5.1 Dimensions of Rotation-Related Career Mobility

Training and education were the most favourably evaluated dimension (M = 4.04, d = 1.30 against the midpoint), with the highest ratings given to the KAIPTC and GAFCSC items. These institutions are tri-service or international in orientation and, in the case of KAIPTC, are designed to prepare personnel for multidimensional peace operations (GAFCSC, n.d.; Karim et al., 2021), which is consistent with HCT's treatment of education as an investment whose value is recognised by those who receive it (Becker, 1964; Schultz, 1961). No published study using a comparable instrument in a military setting was identified, so the level of the mean cannot be benchmarked against other forces or against civilian rotation studies, and the favourable ratings should not be read as evidence of superior performance relative to them.

Personnel transfers received a neutral overall rating (M = 2.95) that conceals two different patterns. Respondents were positive about the learning and collaboration opportunities that transfers provide, in particular inter-service transfers (M = 3.77), but, on average, did not agree that criteria are transparent and fairly applied (M = 2.49), that the process balances institutional needs with personal and family circumstances (M = 2.48), that support systems limit disruption (M = 2.59), or that appeal procedures are effective (M = 2.67). The pattern is consistent with a view that the content of transfers is valued while their administration is not, although the study contains no direct measure of the procedures themselves. Transfers are also the dimension that most closely corresponds to rotation in the strict, lateral sense (Section 2.3). That they received the lowest rating of the three, and no significant association with performance, is therefore worth noting in its own right, and any inference about rotation proper should rest on this dimension rather than on the other two.

Peacekeeping missions recorded a moderate overall rating (M = 3.39), driven by perceived cross-training and skill acquisition (M = 3.93 and 3.45). Two items were at or below the midpoint: the fairness of the rotation mechanism for missions (M = 3.03) and the consideration of mission- acquired skills in promotion (M = 2.83). Descriptive accounts describe participation in peacekeeping as part of the military's reward system, including promotion, and note allegations of favouritism in selection that the command denies (Aubyn & Aning, 2015); in the MOWIP survey, a quarter of respondents thought selection reflected favours (Karim et al., 2021). The present ratings of fairness and promotion value are in line with a mixed picture, although the items measure perception and not actual selection or promotion practice. The two items on women's deployment were rated favourably, but the study did not analyse responses by gender, and the items are not interpreted further.

Considered collectively, the three dimensions form a set of planned assignments that respondents evaluate differently, with training rated highest and transfers lowest. Because the rotation scales measure perceived effectiveness rather than exposure, these means describe how personnel regard the practices and say little about how often rotation occurs or how it affects individuals.

### 5.2 Association with Perceived Employee Performance

Training and education were strongly and significantly associated with perceived employee performance ($\beta = .57$, $f^2 = 0.29$), whereas personnel transfers ($\beta = -.04$) and peacekeeping missions ($\beta = .07$) were not (Table 8). The positive association for training is in the direction predicted by HCT, in that the dimension most closely tied to formal education and skill formation showed the association, which is consistent with the foundational logic of Becker (1964) and Schultz (1961). The study cannot, however, validate HCT. It shows that personnel who evaluate GAF training more favourably also rate the productivity consequences of rotation more favourably, an association that is equally consistent with other mechanisms: for example, that higher-performing personnel are selected for courses and view them more positively, that a general positive response tendency inflates both ratings, or that the two scales overlap conceptually, since the performance items ask about the productivity effects of rotation itself (Section 3.4).

The size of $R^2$ (.347) is large for a model of three attitudinal predictors and one outcome from the same respondents and instrument, and part of it may be shared method variance (Podsakoff et al., 2003); the study did not test for this (Section 3.5). The absence of a significant association for transfers and peacekeeping can be read in several ways, which the data cannot distinguish. First, the dimensions may genuinely carry little unique information about perceived productivity once training is accounted for; the confidence intervals (Section 4.4) rule out anything but small associations. Second, any association may operate through the variance these dimensions share with training, whose overlap with them could not be examined without the correlation matrix. Third, personnel may hold neutral or critical views of how transfers and the mission-selection process are administered, so that the learning benefits that the economics of rotation emphasise (Eriksson & Ortega, 2006; Ortega, 2001) are not perceived as reaching performance. The results are thus consistent with the learning logic of human capital accumulation for the formal education channel but not for the other two. Compared with the findings of Shahiri et al. (2023), who examined wages in Royal Malaysian

Navy personnel records and found a small rotation association, the present results are not directly comparable, because that study used administrative data, a wage outcome, and a different measurement approach.

### 5.3 Implementation Challenges

Career counselling deficits emerged as the most strongly endorsed implementation challenge (M = 3.89), followed by long duration in a single role (M = 3.70) and the priority of military needs over personal career growth (M = 3.65). Because the literature on these barriers in African militaries is limited (Section 2.8), these results are best read as descriptive indications of where personnel perceive weaknesses, not as tests of established explanations. All seven challenges were rated above neutral, and their confidence intervals overlap, so the ordering should be treated as indicative. The study could not test whether these challenges weaken the rotation–performance associations, and no claim of moderation is made.

The MOWIP assessment identifies the eligible pool, gender roles, and social exclusion as the principal barriers to women's participation in peace operations (Karim et al., 2021), but the present data do not include gender comparisons, and the study cannot show whether counselling gaps affect women's advancement differently from men's.

## 6. Conclusion

### 6.1 Theoretical Implications

The findings contribute to the application of Human Capital Theory in military organisational contexts by showing that favourable evaluations of one rotation-related dimension, training and education, are positively associated with perceived employee performance among GAF personnel, whereas evaluations of personnel transfers and peacekeeping deployments are not. The association for training and education was strong ($\beta = .57$), which is in the direction that HCT predicts for investment in education and skill formation (Becker, 1964; Schultz, 1961). These estimates come from a cross-sectional survey with a perceptual outcome, so they are consistent with HCT but do not validate it, and they cannot show that rotation or training raises performance. Their value lies in dimension-specific survey evidence from an African defence institution, a setting in which, to our knowledge, such evidence has been scarce, and in the finding that the dimensions behave differently.

The study also draws attention to a conceptual issue in the literature on military rotation. Two of the three dimensions, education and deployment, are training and operational assignments rather than rotation in the strict, lateral sense, and only the transfer dimension corresponds closely to the definition used in the economics and management literature (Kampkötter et al., 2018; Eriksson & Ortega, 2006). Treating the three together as rotation-related career mobility, as done here, is defensible in a military career system but limits what can be said about rotation proper (Section 2.3). The transfer dimension, which received neutral ratings overall and below-neutral ratings for the transparency and fairness of transfer criteria, for the balance between institutional needs and personal circumstances, for support systems, and for appeals, and which showed no association with performance, warrants the closest attention in future work.

### 6.2 Practical Implications and Recommendations

The findings are descriptive and associational, and the recommendations below are therefore offered as options for GAF leadership to evaluate, not as measures whose effects have been demonstrated. No numerical targets (for example, course quotas, counsellor ratios, deployment ceilings, rotation rates, or budget shares) are proposed, because none can be derived from these data; any such targets would need to be set through a needs and cost analysis and, where possible, justified by documented benchmarks from comparable forces.

First, because training and education received the most favourable evaluations and was the only dimension significantly associated with perceived performance, the GAF could consider whether access to GAFCSC, KAIPTC, and the service training institutions should be maintained or widened, with attention to whether access is equitable across ranks and services.

The relatively lower ratings for the accessibility and inclusiveness of MATS programmes ($M = 3.90$) are still favourable and do not by themselves indicate a problem.

Second, career counselling was the most strongly endorsed implementation challenge ($M = 3.89$), followed by long periods in a single role ($M = 3.70$) and the priority of military needs over personal career growth ($M = 3.65$). The GAF could review the adequacy of counselling and career guidance linked to postings, courses, and deployments, and could examine whether more flexible rotation schedules are feasible without compromising operational needs. The study did not test whether these challenges weaken the benefits of rotation, so the strength of this recommendation rests on the perceived importance of the challenges alone.

Third, personnel transfers were rated neutral overall, and respondents on average did not agree that criteria are transparent and fairly applied, that the process balances institutional needs with personal and family circumstances, that support systems limit disruption, or that appeals are effective. The GAF could consider a review of transfer procedures, including the publication of criteria, support for relocating families, and an accessible appeal mechanism. These ratings measure perception, not the actual transparency of the process.

Fourth, with respect to peacekeeping deployment, respondents valued cross-training and skill acquisition ($M = 3.93$ and $3.45$) but were neutral on the fairness of the rotation mechanism ($M = 3.03$) and slightly below neutral on whether mission-acquired skills count in promotion ($M = 2.83$). Descriptive accounts of the selection process note allegations of favouritism that the command denies (Aubyn & Aning, 2015). Structured debriefing and skill-transfer arrangements after deployment, and periodic audits of selection, could help to establish whether the process is perceived as fair by all ranks and whether skills gained on deployment are used on return.

Fifth, any change to rotation-related policy could be accompanied by regular, repeated surveys that include objective or supervisor-rated indicators of performance in addition to self-reports, so that the effect of changes can be assessed over time. These recommendations may be of interest to other troop-contributing countries in the ECOWAS region with comparable systems, although the evidence presented here comes from a single institution and cannot be assumed to generalise.

### 6.3 Limitations

Several limitations qualify the findings. First, the design is cross-sectional and the results are associations; the direction of any relationship cannot be established, and reverse causation, in which higher-performing personnel are selected for courses, transfers, or deployments or are more positive about them, is plausible. Second, the outcome is a self-reported perception, and it asks respondents about the productivity consequences of rotation itself, so that it is conceptually close to the predictors. Social desirability and common-method variance are threats, particularly in a hierarchical organisation, and the substantial $R^2$ may partly reflect shared method variance; no common-method test was performed, and objective or supervisor-rated indicators such as appraisal grades, course results, or readiness data were not used. Two of the seven performance items are negatively worded, the reliability of the scale is the lowest of the four reported ($\alpha = .73$), and the sensitivity of the results to the treatment of these items was not examined. Third, the rotation scales measure respondents' evaluations of courses, transfer practices, and deployment arrangements, not exposure to rotation, and some items (notably those on fairness and transparency) overlap with the implementation-challenges construct; the dimensions also extend beyond lateral rotation in the strict sense (Section 2.3), and two of the peacekeeping items refer to women's deployment.

Fourth, measurement validity was examined only through Cronbach's alpha: no exploratory or confirmatory factor analysis, no test of discriminant validity, and no reliability coefficient for the implementation-challenges scale are available, the items were developed for this study and not adapted from validated instruments, and no formal pre-test is documented. Fifth, the sampling procedure cannot be verified as a probability sample, the allocation across branches departs significantly from the reference distribution, the number of questionnaires distributed, and the response rate were not recorded, and the sample is skewed towards experienced, highly educated personnel and includes few young or recently enlisted respondents. Branch and rank were not recorded, so the data could not be weighted, and the analysis could not control for them or compare groups; the sampling frame was also restricted to personnel with rotation experience in the previous five years. Sixth, the regression model contains no control variables, bivariate correlations and residual diagnostics (including a test of heteroscedasticity) were not retained, and the moderating role of implementation challenges and differences by gender, rank, or branch could not be tested; the associations reported here are therefore unadjusted and should not be read as evidence that the challenges do or do not condition the effects of rotation.

### 6.4 Directions for Future Research

Future research could address these limitations by using longitudinal or panel designs that follow personnel through courses, transfers, and deployments; by combining survey measures with supervisor ratings and administrative performance and readiness records; by measuring actual rotation exposure (frequency, duration, and type of assignment) separately from perceived effectiveness; by separating lateral transfers from training and deployment in the analysis; by validating the scales with exploratory and confirmatory factor analysis and testing common- method variance; by recording rank, service branch, and gender so that models can include controls and test interactions, including the moderating role of implementation challenges; and by incorporating qualitative interviews with personnel and

human resource decision-makers in a mixed-methods design. Replication in other African armed forces, and in the Ghana Police Service and other security institutions, would show how far the patterns found here depend on the GAF context.

## References


American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.).

Asch, B. J., Hosek, J. R., & Warner, J. T. (2007). New economics of manpower in the post-Cold War era. In K. Hartley & T. Sandler (Eds.), *Handbook of defense economics* (Vol. 2, pp. 1075–1138). Elsevier.

Aubyn, F., & Aning, K. (2015). *Contributor profile: Ghana*. International Peace Institute. https://www.ipinst.org/wp-content/uploads/2020/05/ipi-pub-ppp-Ghana.pdf

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Borman, W. C., & Motowidlo, S. J. (1993). Expanding the criterion domain to include elements of contextual performance. In N. Schmitt & W. C. Borman (Eds.), *Personnel selection in organizations* (pp. 71–98). Jossey-Bass.

Campbell, J. P. (1990). Modeling the performance prediction problem in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., Vol. 1, pp. 687–732). Consulting Psychologists Press.

Campion, M. A., Cheraskin, L., & Stevens, M. J. (1994). Career-related antecedents and outcomes of job rotation. *Academy of Management Journal, 37*(6), 1518–1542. https://doi.org/10.2307/256796

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Lawrence Erlbaum Associates.

Donaldson, S. I., & Grant-Vallone, E. J. (2002). Understanding self-report bias in organizational behaviour research. *Journal of Business and Psychology, 17*(2), 245–260.

Eriksson, T., & Ortega, J. (2006). The adoption of job rotation: Testing the theories. *Industrial and Labor Relations Review, 59*(4), 653–666. https://core.ac.uk/works/2512317

Ghana Armed Forces Command and Staff College. (n.d.). *Military training programmes*. https://gafcscmil.edu.gh/resources/download/290

Holm, S. (1979). A simple sequentially rejective multiple test procedure. *Scandinavian Journal of Statistics, 6*(2), 65–70. https://www.jstor.org/stable/4615733

Kampkötter, P., Harbring, C., & Sliwka, D. (2018). Job rotation and employee performance: Evidence from a longitudinal study in the financial services industry. *The International Journal of Human Resource Management, 29*(10), 1709–1735. https://doi.org/10.1080/09585192.2016.1209227

Karim, S., Huber, L., Huhtanen, H., Brabant, S., Munch, I., Watson, C., Edu-Afful, F., Otoo, A., & Osei-Tutu, J. (2021). *Ghana Armed Forces MOWIP report 2020*. DCAF – Geneva Centre for Security Sector Governance. https://www.dcaf.ch/sites/default/files/publications/documents/Ghana_Armed_Forces_2020_MOWIP_Report.pdf

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Ortega, J. (2001). Job rotation as a learning mechanism. *Management Science, 47*(10), 1361–1370. https://doi.org/10.1287/mnsc.47.10.1361.10257

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioural research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Ruffa, C. (2014). What peacekeepers think and do: An exploratory study of French, Ghanaian, Italian, and South Korean armies in the United Nations Interim Force in Lebanon. *Armed Forces & Society, 40*(2), 199–225. https://hdl.handle.net/1814/37117

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Schultz, T. W. (1961). Investment in human capital. *American Economic Review, 51*(1), 1–17. https://www.jstor.org/stable/1818907

Shahiri, H., Husin, K. A., & Khain, W. C. (2023). The effect of job rotation in a fixed wage setting model. *SAGE Open, 13*(1). https://doi.org/10.1177/21582440231153846

Sińczuch, M., Kloczkowski, M., & Wachowicz, M. (2009). Polish military forces in peacekeeping missions and military operations other than war: Experiences after 2000. In G. Caforio (Ed.), *Advances in military sociology: Essays in honor of Charles C. Moskos* (Contributions to Conflict Management, Peace Economics and Development, Vol. 12A). Emerald. https://doi.org/10.1108/S1572-8323(2009)000012A014

World Economic Forum. (2015). *The human capital report 2015*.

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.

## Appendix A. Questionnaire

All items in Sections B to D were rated on a five-point scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree). Section A asked for gender (male, female), age (18– 27, 28–37, 38–47, 48+), religion (Christian, Muslim, Traditionalist, Other), education (senior high school, diploma, degree, master's), and number of years in service (1–5, 6–10, 11–15, 16–20, 21 years and above).

| No. | Item |
|---|---|
| **Section B1. Training and education** | |
| 1 | The tri-service training offered by institutions like the Ghana Armed Forces Command and Staff College (GAFCSC) effectively prepares officers from all three services to collaborate in joint operations. |
| 2 | The service-specific training provided by institutions such as the Naval Training Command and Army Combat Training School adequately equips GAF personnel with specialized skills relevant to their roles. |
| 3 | The master's programs, post-graduate diplomas, and certificate courses offered by GAFCSC enhance the professional development of GAF officers and contribute to their career progression. |
| 4 | The Kofi Annan International Peacekeeping and Training Center (KAIPTC) provides valuable training in peacekeeping, good governance, and gender rights that is relevant to both local and international military personnel. |
| 5 | The variety of training institutions, such as the Jungle Warfare School and School of Maritime Operations (SMOPS), ensures that GAF personnel receive comprehensive and diverse training opportunities. |

| No. | Item |
|---|---|
| 6 | The training programs offered by Military Academic and Training Schools (MATS) and other GAF institutions are accessible and inclusive for both officers and enlisted personnel. |
| 7 | The GAF's training institutions, including the Leadership Training School and the School of Supply and Secretaryship (SAS), effectively prepare personnel to address modern operational and administrative challenges. |
| **Section B2. Military personnel transfer** | |
| 1 | The military transfer process effectively supports my professional growth and development through diverse assignments. |
| 2 | The advance notification and planning for military transfers adequately prepare me and my family for relocations. |
| 3 | The criteria used for military transfers are transparent and fairly applied across all personnel. |
| 4 | Support systems (e.g., housing assistance, moving logistics, and orientation programs) effectively minimize disruptions during military transfers. |
| 5 | Inter-service transfers provide valuable opportunities for joint training and collaboration across military branches. |
| 6 | The military transfer process successfully balances organisational needs with my personal and family circumstances. |
| 7 | The appeal and review procedures for addressing transfer-related challenges are accessible and effective in resolving concerns. |
| **Section B3. Peacekeeping mission** | |
| 1 | The GAF's system rotation mechanism for peacekeeping missions effectively ensures fairness by standardizing opportunities for all soldiers. |
| 2 | Participation in peacekeeping missions provides GAF soldiers with more opportunities for cross-training compared to their regular duties in Ghana. |
| 3 | GAF soldiers return from peacekeeping missions with skills and work experience that exceed the requirements of their primary roles in Ghana. |
| 4 | Commanders in the GAF fairly evaluate soldiers' performance based on positive reports from peacekeeping missions. |
| 5 | Deployment to peacekeeping missions significantly enhances military skills, which are considered for promotion. |
| 6 | Peacekeeping missions provide GAF female soldiers with opportunities to take on forward roles that are not typically available in Ghana. |
| 7 | Deploying female GAF soldiers to peacekeeping missions contributes to increased representation and success of women in leadership roles within the GAF. |
| **Section C. Implementation challenges** | |
| 1 | The limited frequency of job rotation opportunities in my Military Occupation Specialty (MOS) hinders my ability to diversify my skills. |
| 2 | The military's focus on creating experts in a single field restricts my ability to explore diverse roles. |
| 3 | The process for changing roles or MOS in my branch of service is too complex or unclear. |
| 4 | The needs of the military often take precedence over my personal career growth interests, limiting job rotation opportunities. |

| No. | Item |
|---|---|
| 5 | There is insufficient support or guidance from career counselors to facilitate effective job rotation. |
| 6 | Long durations in a single role before rotation opportunities arise reduce my motivation and engagement. |
| 7 | The lack of immediate or frequent job rotation options makes it difficult to adapt to new challenges in the military environment. |
| **Section D. Employee performance (productivity)** | |
| 1 | Job rotation in the military enhances employees' overall skill sets, leading to increased productivity. |
| 2 | Frequent job rotation reduces monotony and burnout among military personnel, thereby boosting their productivity levels. |
| 3 | Job rotation disrupts established routines in military units, which can temporarily decrease employee productivity. |
| 4 | Implementing job rotation programs in the military improves adaptability and readiness, positively influencing productivity. |
| 5 | Job rotation fosters better team collaboration and knowledge sharing in the military, resulting in higher productivity. |
| 6 | Employees in the military who experience job rotation report higher job satisfaction, which correlates with improved productivity. |
| 7 | Job rotation in military settings can lead to initial learning curves that negatively impact short-term productivity. |
| **No.** | **Item** |
| 2 | Frequent job rotation reduces monotony and burnout among military personnel, thereby boosting their productivity levels. |
| 3 | Job rotation disrupts established routines in military units, which can temporarily decrease employee productivity. |
| 4 | Implementing job rotation programs in the military improves adaptability and readiness, positively influencing productivity. |
| 5 | Job rotation fosters better team collaboration and knowledge sharing in the military, resulting in higher productivity. |
| 6 | Employees in the military who experience job rotation report higher job satisfaction, which correlates with improved productivity. |
| 7 | Job rotation in military settings can lead to initial learning curves that negatively impact short-term productivity. |

*Note. Items 3 and 7 of Section D are negatively worded.*