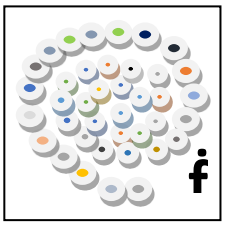

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On the performance of Nigerian security agencies: a learning rate and learning curve perspective

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Abstract

Effective management of workforce is one of the most critical functions affecting the performance of security agencies. The development of an agency is dependent on the degree of performance of the workforce. The performance of workforce is the resultant effect of the learning curves, learning rates and level of teamwork of the personnel. Considering that security is key in the wellbeing of any economy and bearing in mind that learning curves and rates of Corps affects the performances of the agency, this work seeks to assess the Performance of security agencies considering their learning differences. A conceptual framework model for security agencies' workforce was proposed and formulated for assessing the learning differences of personnel. The findings reveal that the higher the rank of Personnel, the lesser the amount of time required to recover as a result of experience compared to the low rank Corps. That, Corps have a chance to observe breaks which is always stated in the Corps condition of service like off duty, annual leave, tea breaks. Performance depends on Corps' traits and skills acquired, on-the-job trainings, different learning rates, learning curves and the operational strategies employed for recruitments, trainings, identification of Corps' experiences and productivity.

***Keywords*:** learning curve; process; rate; performance.

1. Introduction

The growth and development of any organization or industry is dependent on the degree of performance or productivity of the workforce. Meanwhile, the performance of a workforce or productivity of any industry is measured based on the learning curves, learning rates and level of teamwork of the personnel. Considering the different operations regarding airlines, Wright in 1936 brought to limelight the development of learning curves by assembling the costs of airlines' decrement through repeated operations ([32], [4]). The work of [11] cited in [4] defined a learning curve as a mathematical description of workers' performances in repetitive tasks while [1] revealed that learning curves, rates and skills of personnel contributes to the efficient operations and performance of security agencies. Research conducted by [29], [16], [10] defined learning curve as an efficient weapon that assesses workers' performance in repetitive tasks, leading to reduced process loss due to workers' inability in the first production cycle [4]. That

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learning curves depend on some variables like the time of the first operations, unit numbers produced at each time interval, production costs and the percent of non-conforming units [12]. In another development, [10] revealed that repetition leads to less time demand because of due familiarity with working tools, strategies and operational procedures or processes. The work carried out by [17] as cited in [28] opined that there exist a binding force and relationship between workers' personality characteristics/traits and their academic motivation with different effective teaching strategies. The workers' experiences, forgetting processes, workers' assignment strategy and trainings contribute to the wellbeing and productivity of any industry or security agency. In the light of the above, this paper seeks to assess the performance of Corps of the Nigerian Security Agencies using their learning rates and learning curves.

Effective management of labor resources and workforce is one of the most critical functions affecting performance of manufacturing systems. An agency or industries' growth and development is hinged on the performance and productivity of her workers. Inefficient skills regarding learning rates, learning curves and teamwork had contributed to the poor performances of security agencies. This further reveal that the security agencies are either not been equipped or prepared to cope with the demanding technological changes, trends and developments of the present economy and security challenges. Different security agencies have failed in performing or exercising their duties to the citizens and the nation generally. This is owing to the fact that Corps' individual differences in terms learning curves, rates and lack of teamwork is not adequate to bring desired performance. In the light of the above, the aim of the study is to formulate and propose a conceptual framework model for security agencies' learning differences, learning curves and learning rates.

Objectively, this will be achieved by:

i. Assessing the factors that contribute to the differences in learning curves of the personnel.
ii. Identifying the determinants of learning rates of Corps that motivate their agility and top performances.
iii. Formulate a Conceptual framework model for learning curves and learning rates of the Nigerian Security Agencies' workforce using the determinant factors of learning curves and rates.

Different scholars have studied Learning processes which generally, are used in choice menu configuration, job scheduling, job rotation, production development, estimation of lot conclusion time, evaluation of production cost reduction, optimization of tasks allocation to workers based on learning profiles, mitigating or checking of production losses after interruptions, breaks and fatigues. [8], [30] states that learning processes are affected by some factors like structure of the training programs. Workers' motivations in performing their duties or tasks given to them were assessed by [21], [3] as another teething problem of learning processes. [23], [24] [22] revealed that prior or previous experiences gained in the duty or assignment given to a worker affects his/her learning process. However, [22] added that the respective task or assignment complexities affect the workers' learning processes. The research of [5] states that mass customization popularity, a production strategy in manufacturing, service industry is an advantage of workers' learning curves. [9], [15], [7] believes that learning curves are used in analyzing and controlling the companies productivity and operations. Learning curves are

also seen as a way to allocate responsibilities or tasks to workers according to their experiences or histories of learning profiles ([23], [6]). Research conducted by [20] sees learning curves as a means of measuring production costs as workers gain experiences while [26], [27] believes that learning curves estimates cost consulting and technology implementation.

2. Brief history of learning curves

The Wright (1936) log-linear model was the first organizational learning curve given as

$$y = C_1 x^b \qquad (1)$$

where, y is the average time or cost needed per unit production; C is the time (cost) for the first unit production; x is the number of units and b is the slope of the learning curve that describes the learning rates of workers ([10], [31]). [14] modified Wrights model by monitoring the process with high percentage of non-conforming and reworked units as:

$$y = C_1 (x + B)^b \qquad (2)$$

where B is the number of units of prior experiences. [23] developed the exponential learning curve as

$$y = C_1 x^b e^{dx} \qquad (3)$$

where d is a second constant; e is the exponential value and other parameters are as defined above. In another development, [4] modified equation (3) above resulting to a multivariate learning curve analyzed using surface graphs stated as:

$$y = k \prod_{i=1}^{n} C_i x_i^{b_i} \qquad (4)$$

where C_i is the coefficient for the independent variable x_i; k is the performance cost to producing the first unit.

Recall that:

$$\text{Total Factor Productivity} = \frac{Price \times Output}{Wage \times Input} \qquad (5)$$

The power form or traditional model for experience and performance by [18] is given as

$$Cp = C_1 q^{-b} \qquad (6)$$

where Cp is the cost of performance or production; C_1 is the unit cost to produce first units; b represents the learning rates and q is the number of units.

3. Proposed models

3.1. Proposed model for learning curves of Nigerian security agencies workforce

According to [23], the support for counter terrorism operations is sustained and effectively maintained with the help of understanding the learning abilities and capabilities of the workforce. From (4) above, modifying [4] model by introducing other parameters of Nigerian Security Agencies we have the following proposed model.

$$\min y = \sum_{i=1}^{n} k[\prod_{i=1}^{n} U_i x_i^{b_i}]; U = \{a, c, d, f, h\} \qquad (7)$$

$$y = ka_i x_i^{b_i} + kc_i x_i^{b_i} + kd_i x_i^{b_i} + kf_i x_i^{b_i} + k\, h_i x_i^{b_i} (8)$$

$$y = k[a_i x_i^{b_i} + c_i x_i^{b_i} + d_i x_i^{b_i} + f_i x_i^{b_i} + h_i x_i^{b_i}] (9)$$

From equations (9) and (10), "y" is the average time or cost needed per unit performance or production. "k" is the performance cost of producing the first unit; "U" is a multi-objective function comprising of the learning curve, learning rate, fatigue, interruptions and breaks. "U" is the coefficient for the independent variable x_i; "a" is the learning rate deviation; "c" is the learning curve deviation; "d" is the breaks deviation; "f" is the fatigue deviation; "h" is the interruptions deviation; "x" is the independent variable representing the number of units in the production process; "b" is the slope of the learning curve that describes the learning rates of workers.

3.2. Proposed conceptual model for learning curves and learning rates of Nigerian security agencies workforce

In order to develop the conceptual model for the learning curves and rates of Nigerian Security Agencies' Workforce, the [19] organizational learning curve was modified. [2] defined the learning curve of a workforce as the constituent of the performance, capabilities, learning abilities and responses of a security agency's workforce. Meanwhile, learning curve consists of the movement from an individual action (personal experiences got) to organizational action (actions taken by Corps dependent on the agencies' vision and mission statements) to environmental responses and finally individual beliefs. This is represented in a circular form below.

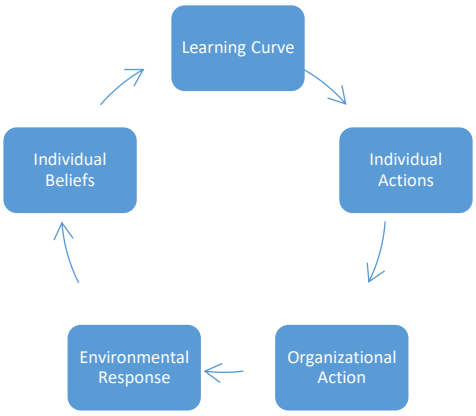

Figure 1: Organizational Learning cycle (Adopted from [19]).

Recall that, "Organizations can differ in terms of the amount of experience, the nature of experience, the ability to learn from experience, the amount of deliberate learning activities, the nature of deliberate learning activities, the ability to learn from deliberate activities, the ability to translate learning into better organizational knowledge, the ability to change behavior in response to better organizational knowledge, and the ability to obtain better organizational performance as a result of changed behavior" [18]. [13] revealed that, resources allocation is a proponent of the learning process since the personnel awareness contributes to the learning curves, rates and learning processes of an organization. Meanwhile, the elements of organizational learning processes include: the vision and mission of the organization, better knowledge acquired (on-the-job training or refresher courses), improving actions resulting from the experiences got from the in-house training or refresher courses and on-going efforts (the continuous objective processes, activities of achievements obtained from the agencies' set goals and objectives).

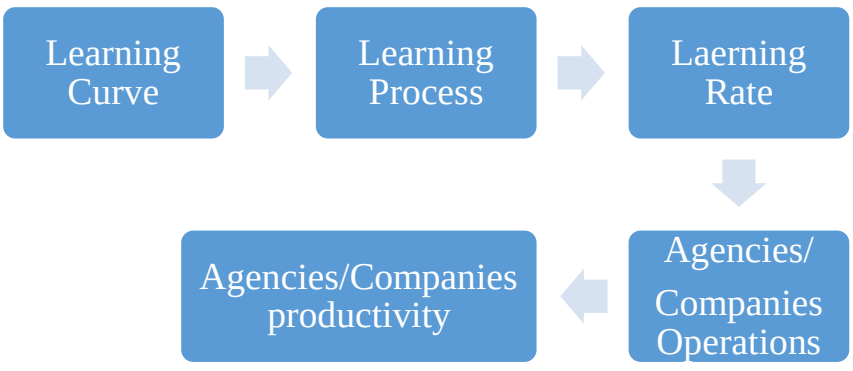

Figure 2: Proposed Conceptual framework model for the Learning Process of Security Agencies Workforce

From Figure 2, above each of the stages is represented in a conceptual model framework as shown below.

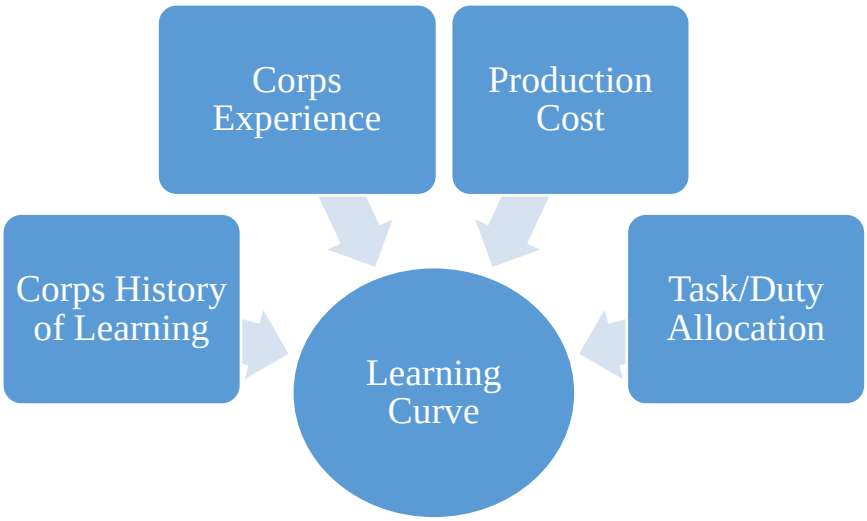

Figure 3: Proposed determinants of the Learning Curve of the Security Agencies' workforce.

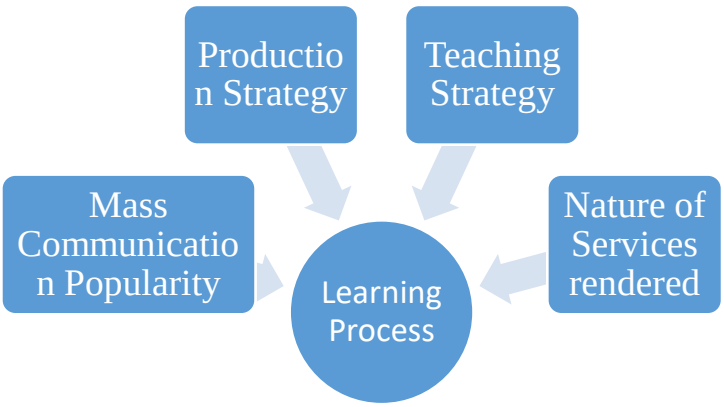

Figure 4: Proposed determinants of the Learning Process of the Security Agencies' workforce.

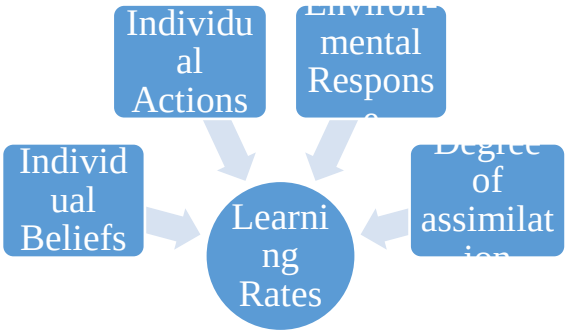

Figure 5: Proposed determinants of the Learning Rate of the Security Agencies' workforce.

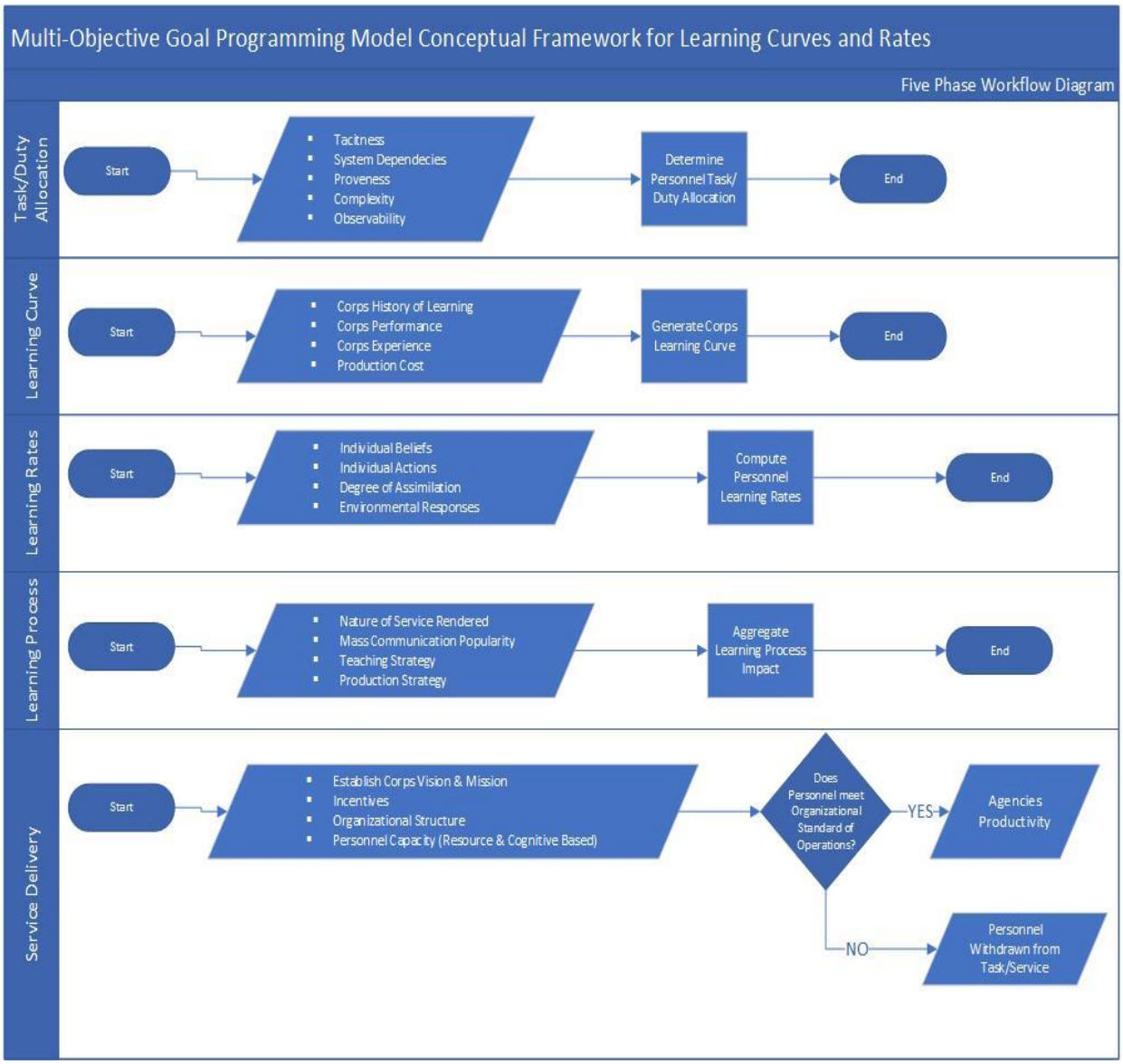

Figure 6: Conceptual Framework/Model of the Learning Curves of Personnel

4. Discussion

Task or schedules allotted to personnel on the first phase of the conceptual framework depends on their provenness, tacitness and personal observable traits. The second phase (the learning curves) handles the corps history of learning, performances, experience and demands in the course of carrying out their duties. Meanwhile, the third phase (learning rates) has proponent factors of the corps' beliefs, actions, level/degree of assimilations and environmental responses while the fourth phase called the learning process involves the nature of services rendered, teaching and production strategies with impacts of communication skills. However, the service delivery (final phase) uses the corps' vision and mission statements with operational structures to achieve the agencies' set objectives. At this stage, each personnel thrive to meet the standards of the operations of the corps, thereby evaluating the agency as either being productive (personnel is awarded) or unproductive (personnel is withdrawn from the task or service).

Generally, at every planning stage, Corps on-the-job training, skills acquired, overtime task carried out, availability to a task or scheduled duty, tea breaks or off-duties given, different interruptions, personality traits/ranks and fatigue are considered so as to inform decision makers on what, how, when to employ (hire), dismiss, sack or retrench (fire) and train personnel (induction/refresher courses and on-the-job trainings). This research work reveals that corps differences in terms of ranks, skills and handling of machines (arms) aid predictions in recruitment/employment, retrenchment (retirement /dismissal), training as well as the nature of breaks given. However, Corps on off duty (not working at regular times) do not have breaks. The findings posit that the higher the rank of Personnel (Corps) the lower or the lesser the amount of time required to recover as a result of experience gathered compared to the low ranking Corps. More Corps employed/recruited and trained at the entry point seems to have very low skills and personality level regarding the job.

5. Conclusion

From the findings, every Corp has a chance to observe break time as stated in the Corps condition of service regarding off duty, annual leave, tea breaks etc. That, Corps performance depends on the traits or skills acquired, on-the-job trainings, different learning rates and learning curves and the operational strategies employed by agencies in recruitments, trainings, identification of different Corps' experiences and productivity. The research work proposed conceptual model of learning curves, and rates of personnel of the Nigerian Security Agencies.

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