



**CAPACITY BUILDING AND ITS EFFECT  
ON EMPLOYEE PERFORMANCE: A CASE OF  
ACCRA TECHNICAL UNIVERSITY, GHANA<sup>i</sup>**

**Gifty Awuku<sup>1ii</sup>,**

**Mabel Korankye Danso<sup>2</sup>,**

**Faustina Nana Yaa Boatemah<sup>3</sup>,**

**Patience Adjetey<sup>4</sup>**

<sup>1</sup>Human Resource Directorate,  
Accra Technical University,  
Ghana

<sup>2</sup>Business Development Directorate,  
Accra Technical University,  
Ghana

<sup>3</sup>Hostel Department,  
Accra Technical University,  
Ghana

<sup>4</sup>Procurement and Supply Chain Management Department,  
Accra Technical University,  
Ghana

**Abstract:**

Every institution or organisation must now deal with the capacity building because the quality of human resources is helpful to any firm. Due to variables like the degree of external change, such as new markets or processes, the compliance of existing employees, and most importantly, the degree to which the organisation supports the idea of internal career development, the quantity and quality of training carried out greatly varies from organisation to organisation. Unlike some businesses, which start by recognising their training needs, then plan training activities logically, and then assess the results of training, most organisations satisfy their training needs in an ad hoc and random manner. Therefore, this study used Accra Technical University as a case study to examine the effects of capacity building on employee development in public sector firms. The goal of the study was to ascertain the function of staff capacity building, with a special focus on administrators who were arbitrarily chosen. The study evaluated Accra Technical University's training and development programme and examined whether employee performance has increased as a result of training. To gather primary data from university

<sup>i</sup> LE RENFORCEMENT DES CAPACITÉS ET SES EFFETS SUR LA PERFORMANCE DES EMPLOYÉS : UN CAS DE UNIVERSITÉ TECHNIQUE D'ACCRA, GHANA

<sup>ii</sup> Correspondence: email [gawuku@atu.edu.gh](mailto:gawuku@atu.edu.gh)

personnel, a questionnaire was created using structured questions. The findings suggested that employees were not properly informed about the organization's training and development programmes. The majority of employees believed that personal and organisational success could be achieved through training and development. The results showed that, in terms of the generally accepted planned and methodical structure of the training process, training techniques, methodologies, and activities were the best practises. The university should assist its workers by developing structured programmes for training and development of its employees, among other things, as well as ensuring that the procedures involved in training are properly followed.

**Keywords:** capacity building, employee performance

**Abstract :**

Chaque institution ou organisation doit désormais s'occuper du renforcement des capacités car la qualité des ressources humaines est utile à toute entreprise. En raison de variables telles que le degré de changement externe, tels que de nouveaux marchés ou processus, la conformité des employés existants et, surtout, le degré auquel l'organisation soutient l'idée de développement de carrière interne, la quantité et la qualité de la formation dispensée grandement varie d'une organisation à l'autre. Contrairement à certaines entreprises, qui commencent par reconnaître leurs besoins de formation, puis planifient les activités de formation de manière logique, puis évaluent les résultats de la formation, la plupart des organisations satisfont leurs besoins de formation de manière ponctuelle et aléatoire. Par conséquent, cette étude a utilisé l'Université technique d'Accra comme étude de cas pour examiner les effets du renforcement des capacités sur le développement des employés dans les entreprises du secteur public. L'objectif de l'étude était de déterminer la fonction de renforcement des capacités du personnel, avec un accent particulier sur les administrateurs qui ont été choisis arbitrairement. L'étude a évalué le programme de formation et de développement de l'Université technique d'Accra et a examiné si les performances des employés avaient augmenté grâce à la formation. Afin de recueillir des données primaires auprès du personnel universitaire, un questionnaire a été créé à l'aide de questions structurées. Les résultats suggèrent que les employés n'étaient pas correctement informés des programmes de formation et de développement de l'organisation. La majorité des employés estimaient que le succès personnel et organisationnel pouvait être atteint grâce à la formation et au perfectionnement. Les résultats ont montré qu'en termes de structure planifiée et méthodique généralement acceptée du processus de formation, les techniques, méthodologies et activités de formation étaient les meilleures pratiques. L'université devrait aider ses travailleurs en développant des programmes structurés de formation et de développement de ses employés, entre autres, ainsi qu'en s'assurant que les procédures liées à la formation sont bien suivies.

**Mots-clés :** renforcement des capacités, performance des employés

## 1. Introduction

Employee output is influenced by both how long they are physically present at their jobs and how well they are able to "mentally be there" or work effectively while doing so. To sustain high worker productivity, tertiary institutions must address both of these problems. This can be done by implementing a range of policies that prioritise staff happiness, well-being, and morale [1].

Organizations face a constant requirement for employee learning and development as a result of the current expansion of the global economy and the rapidly changing evolution of technology and innovation [2]. According to the resource base approach, a business can only gain a lasting competitive advantage if its operations add value in a special way that rivals find difficult to replicate. Once someone has gained the expertise, required abilities, and understanding of their industry, they are difficult to replace.

According to Gallup, highly pleased groups of employees frequently display above-average levels of the following traits: profitability (33%), staff retention (50%), productivity (50%), and safety records (50%). (www.gallup.com). According to a Watson Wyatt Worldwide study, maintaining a flexible, collegial workplace is linked to the second-largest growth in shareholder value (nine percent), indicating a direct link between employee satisfaction and financial success. When the appropriate goals are chosen and accomplished, the effectiveness of any organization is established. Organizations must create an organizational structure that facilitates the achievement of goals in order to fulfill their set objectives. The emphasis is on creating settings that support employees, which necessitates creating a human resource management system that is goal-oriented. The Human Resource Management System (HRMS) consists of performance evaluation, training and development, recruitment and selection, and human resource planning. Based on the evaluation of the organizations' existing and future needs, each of the factors has a backward and forward relationship. It is a known reality that public organizations, including departments, autonomous, semi-autonomous, and authorities, have antiquated organizational structures, protocols, legal requirements, and, most importantly, "non-enabling attitudes." None of these support development or public-private partnerships. The public bureaucracy's seeming slowness is evident in how slowly it reacts to changes in the outside environment.

Compared to institution building, the capacity building covers a wider range of issues since it also takes into account the total environment in which organizations function and interact. The functioning of the labor market, which determines how effective human resources are distributed among alternative uses, is one of these. Another is a concern for the capacity of public sector institutions to finance recurrent budgets and to offer adequate levels of salary to hire and retain qualified and trained staff. Although the capacity-building strategy appears to be specialized, it must take into account the organization's entire operating environment and the requirement to make rules, regulations, and procedures consistent with goal achievement.

The ability to consistently accomplish the particular task that has been allocated in an effective and efficient manner is referred to as capacity. "Capacity" is comparable to a container with a certain volume. The container can be stuffed as full as it will hold. The human potential to complete assigned specific activities successfully and efficiently, however, is not fixed. Through instruction, engagement, exposure to new ideas, and the chance to put newly gained abilities to practice, it can be strengthened and developed.

According to Management Development and Governance Division/United Nations Development Programme (MDGD/UNDP), building public service capacity necessitates strengthening the capacity to recognize issues requiring public action, evaluate potential solutions, create policies that constructively address these issues, carry out the required policy-required activities, and sustain such activities for long enough to have an effect on economic conditions. The aim of the Weberian School and Taylorism (classical school of management) has been to increase effectiveness and efficiency (structuralist). The maximization of profits in the case of private businesses and the maximization of service in the case of public organizations have been the ultimate aims of efficiency improvement for both classical and structuralist schools [3].

Professionals and academics have long argued that an organization's performance can be affected by the way its employees are managed [4]. Employee involvement and empowerment, job redesign with an emphasis on based production processes, intensive employee training at work, and performance-based incentive pay are particularly thought to boost organizational performance.

It has been suggested that team-based production systems Denka [6], internal labor markets that provide employees with the chance to progress within a firm, and employee involvement systems [5] are all effective ways to organize the workplace. Additionally, it has been stated that giving employees job stability motivates them to work harder.

To improve employee abilities, organizations can implement numerous HRM strategies. First, efforts are focused on increasing the caliber of new hires, current employees' skills and competencies, or both. This can be achieved by offering thorough on-the-job training and development activities following selection.

There is a lot of data to support the idea that training investments have positive organizational effects. Therefore, firms need to be concerned about the shortcomings of their staff and devoted to providing education and training to workers on the job to improve their perspectives, abilities, and competences.

## **2. Statement of the Problem**

The government of Ghana has made capacity building in education, research, leadership, information technology, and other areas a priority [7]. The problems that African higher education institutions are facing are made worse by poor leadership, management, and governance [8]; [9]. Ineffective management diverts scarce resources from the core goals of expanding access, quality, and relevance and unevenly distributes human and

financial resources. Underutilization of resources, duplication of programs, low student-staff ratios, high dropout and repetition rates, unfeasible procurement practices, and the allocation of a sizable portion of the budget to non-educational expenses are largely attributable to management and leadership inefficiencies and capacity constraints [10]. Rarely are academic leaders schooled in the administration of institutions of higher learning.

In general, institution leaders at all levels lack proficiency in partnership development and networking, financial planning and management, human resource management, research management, market research and advocacy, and strategic planning. As a prestigious academic institution, Accra Technical University is not exempt from the issues mentioned above. This project aims to investigate how Accra Technical University staff performance is impacted by capacity-building initiatives.

### **2.1 Research Question**

The study's major goal is to answer the question: How can Accra Technical University's organizational procedures be made more effective and efficient through capacity building? The following are the sub-questions:

- 1) What are the practices adopted by the University to enhance employee capabilities?
- 2) What are the levels of improvement in efficiency as a result of capacity building efforts?
- 3) To identify how improved process deliverables due to capacity building has affected cost cutting efforts currently being implemented in the University?

### **2.2 Objectives of the Study**

The main objectives of the study are as follows:

- 1) To evaluate the practices adopted by the University to enhance employee capability.
- 2) Assess the level of improved efficiency as a result of capacity building efforts.
- 3) To identify how improved process deliverables due to capacity building has affected cost cutting efforts currently being implemented in the University.

### **2.3 Significance of the Study**

The study aims to inform the management of Accra Technical University and other enterprises that having and keeping motivated, well-trained personnel is essential to increasing production. Additionally, it aims to foster and uphold a great work environment that will allow for employees' self-actualization and job happiness. Once more, adopting pertinent strategies and policies to deal with capacity building in an organization would be helpful to academia, and governments of developing countries, among others. The study's findings could be used by other researchers since they will make it easier for them to determine the best methods for Accra Technical University and other organizations to enhance their capability. Last but not least, it will help the

management of Accra Technical University provide cutting-edge training and development programs so they may prepare for the difficulties of change in the future.

### **3. Methodology**

In order to determine the relationships between factors, particularly the relationship between capacity building and staff productivity on organizational performance, this study was directed by a descriptive survey methodology. Accra Technical University would host the study.

In order to obtain information for case studies, Yin (1994) offers six possible methods: documentation, archival records, interviews, direct observation, participant observation, and physical artifacts. Yin (1994) asserts that the triangulation of these three ways of data collection improves the reliability of the study.

Archives and documentation will be employed as methods in this thesis. To improve the subject's validity and comprehension, these many sources would be utilised.

#### **3.1 Scope and Limitations of the Study**

The researcher focused on Accra Technical University since capacity building research is a broad field of study. Due to respondents' reluctance to complete the questionnaire before the deadline, there were some initial difficulties in administering the questionnaire.

#### **3.2 Organization of the Study**

The research work has been organised in the following ways:

- The first session focused on the background of the research and statement of the problem, the main objectives and research questions relevant to the study, the methodology, the limitation and scope of the study, and the organisation of the study.
- Session two deals with a review of related literature, such as successful employee work performance, some observation on the psychosocial seen in basic training and others.
- The third session forms the methodology of the study. This session gives details of how the research was conducted; the tools and the research design used the sampling procedures, data collection and procedures adopted.
- session four gave details of the presentation of the analysis and the discussion of the data collected.
- Finally, session five also dealt with the summary, conclusion and recommendation of what came out of the study. This dissertation ended with a conclusion which focused on the possible interpretation of the findings made in the research recommendations and summary which would be useful to the University community, corporate organisations as well as policymakers.

## 4. Literature Review

There is currently a dearth of research on performance management, capacity development, and public management in Africa. The recurring themes in the existing commentary, however, also place a strong emphasis on developing human resource capabilities as a crucial strategic tool for the continent's development agenda, in addition to the potential benefits of adopting a systematic approach to performance management in reforming public services. The common implication for managerial attention appears to be the adoption of a comprehensive and holistic approach that acknowledges the equal importance of input, process, and output to management systems, if governmental decision-makers and implementers alike are to succeed in reforming public services in developing or transitional economies. This is true even though authors have adopted a variety of theoretical frameworks.

### 4.1 Overview of Training

Training and development are key component of the human resource management function that is especially important for the efficient use of human resources. Nowadays, few people would contest the significance of training as a key factor in an organization's success. Although pricey, employees are a valuable resource.

Optimizing employee contributions to organizational purposes and goals is crucial for maintaining economic growth and effective performance. Leading writers have long understood the need for training as a key component of management. For instance, giving others the vision and capacity to perform is the one contribution a manager is specifically expected to provide, according to Drucker (1998).

An environment of coaching and assistance is becoming more important due to the overall tendency towards development, adaptable organizational structures, and the character of management shifting toward the devolution of power to the workforce. To ensure a sufficient supply of employees who are socially and technically adept and capable of career advancement into specialized areas or management roles, training is required. As a result, the process of employee growth is constantly required, and training plays a crucial role in it. As a result, training ought to be seen as a crucial step in the whole quality management process.

### 4.2 Human Resource Management

Any business needs money, materials, supplies, equipment, knowledge of the services or goods it can provide potential customers, and finally, people, or human resources, to manage the operation. Human resource management is an effective method for overseeing personnel at work [10]. A broad discussion on the nature of modern employment relationships is centered on human resource management, which has become a key function in the majority of firms. One of the major components in the coordination and administration of work organizations is the management of human resources.

Modern economies rely on a number of innovative technologies to assure the production and distribution of products and services. The ability of management to properly utilise such a resource is crucial to the interests of both the employee and the business, regardless of the methods employed. Recruitment, selection, placement, training, remuneration, and industrial relations are some of the traditional issues of human resource management [10].

According to Beer et al. (1984), human resource management refers to all managerial choices and activities that have an impact on the nature of the interaction between an organization's personnel and its human resources. General management, according to Beer et al. [6], makes significant decisions every day that impact this relationship, which results in a map of the territory of human resource management, the core of which they refer to as the four "Cs" and which are;

- **Competence of employees:** High competence creates a positive attitude towards learning and development;
- **Commitment of employees:** High commitment means that employees will be motivated to hear, understand and respond to management's communication relating to the organization of work;
- **Congruence between the goals of employees and those of the organization:** Higher congruence reflects policies and practices which bring about a higher coincidence of interest among management, shareholders and workers alike; and
- **Cost-effectiveness of Human Resource Management practices:** means that the organization's human resource cost, that is wages, benefits, training and indirect costs such as strikes, turnover and grievances, have been kept equal to or less than those of competitors.

### 4.3 Human Resource Management and Training

According to Beardwell and Holden [11], the recent increase in competitiveness and the comparative success of businesses that place a high priority on staff development have had a significant impact on people's perceptions of the value of training. They continue by saying that organizational and technical advancements have progressively made some businesses realize how important it is to invest heavily and consistently in employees' training and development if they want to succeed.

According to Beardwell and Holden [11], senior management teams have come to understand the increased necessity of training, employee development, and long-term education as a result of HRM principles like commitment to the organization and the expansion of the quality movement. Such ideas necessitate not only meticulous preparation but also a stronger focus on personnel development.

### 4.4 Training

In his book *Personnel and Human Resource Management*, Cole [12] argues that training is a learning activity aimed at acquiring certain information and abilities for a job or task. The focus of training is on the work or task, such as the requirement for efficiency and



safety when using specific tools or equipment, or the requirement for an efficient sales force, to name a few examples.

Through learning events, activities, and programs, training is the deliberate and systematic alteration of behavior that leads to individuals attaining the levels of knowledge, skills, competencies, and abilities needed to do their jobs effectively [13]. According to Pheesey [13], training is the systematic process of changing employees' behavior and/or attitudes in a way that will promote the attainment of organizational goals. This means that for any firm to be successful in realizing the goals of its training program, the design and implementation must be well thought out, systematic, and geared toward boosting performance and productivity.

Training is a planned process to change attitude, knowledge, or skill behavior through learning experiences to achieve effective performance in an activity or range of activities, according to the Manpower Services Commission of the United Kingdom, which was established by the 1973 Employment and Training Act. They contend that training in the workplace should focus on enhancing an employee's abilities as well as meeting the needs of the organization's present and future.

The majority of businesses have long understood how crucial training is to worker growth. More emphasis is being placed on the necessity for a professional and highly trained workforce as new technology advances and eliminates some jobs and talents. Unskilled and semi-skilled positions have made up a large portion of those that machines have taken over, which underlines the importance of higher education and specialized training for individuals looking to find employment in the future.

According to Armstrong [10], conveying an understanding of training highlights that if the training is to be well understood, it should be produced and run within an organization by valuing learning theories and practices. Sherman et al. confirmed this as well (1996:13). They explicitly said that a training program's effectiveness is more dependent on the organization's capacity to recognize training needs and the care with which it is prepared, such that if the learners fail to absorb the material they are expected to, the training is unsuccessful. Additionally, they stated that according to training specialists, failure to learn is most likely the result of some crucial learning principle being disregarded.

A training program's success or failure has repeatedly been correlated with the understanding and use of fundamental psychological concepts of learning. This claim may not always be true. What use are the trainees to the organization if they don't learn anything? The wrong applicant may have been chosen for the training program even if the organization may have taken all the required steps to ensure a successful training program if learners return empty-handed and without anything to give.

According to a study by McGhee et al. [14] on the nature of learning, learning is a phrase used to describe the process through which experience leads to a change in behavior. They added that the only way to determine whether learning had taken place was to compare a person's behavior before and after doing particular types of tasks.

This is not to suggest that if there is no obvious behavioral change, learning has not taken place. Organizational training should adhere to the learning principle since training is typically designed to offer learning experiences that will help individuals execute their jobs more effectively.

Therefore, training can be defined as a deliberate and systematic attempt by management to change employees' behavior in a way that will help the organization achieve its goals. A structured training program is an effort by the employer to give the employee chances to learn things related to their job [14].

#### **4.5 Benefits of Training**

The major goals of the training are to increase knowledge and skills as well as to alter attitudes or behavior. It is one of the most significant potential motivators and has a wide range of positive potential outcomes for both people and the organization. Employees must have the knowledge, skills, and aptitudes necessary to deal with new procedures and manufacturing techniques as a result of evolving technology. Cole [12] asserts that training can result in:

- High morale - employees who receive training have increased confidence and motivation;
- Lower cost of production – training eliminates risks because trained personnel are able to make better and economic use of material and equipment thereby reducing and avoiding waste;
- Lower turnover – training brings a sense of security to the workplace which reduces labour turnover and absenteeism is avoided;
- Change management - training helps to manage change by increasing the understanding and involvement of employees in the change process and also provides the skills and abilities needed to adjust to new situations;
- Provide recognition, enhanced responsibility and the possibility of increased pay and promotion;
- Give a feeling of personal satisfaction and achievement, and broaden opportunities for career progression; and
- Help to improve the availability and quality of staff.

Derrick et al. [16] examined the organizational structure and training environment, focusing on how internal political and cultural issues affect training and development. According to Sherman et al. [17], the majority of new hires can be provided with the information, abilities, and attitudes necessary to begin working, but others may need in-depth training to ensure their productive contribution to the business. The majority, though, will at some point need training of some kind to continue performing their jobs effectively.

No matter how well job applicants are vetted, according to Krietner [15] in his book *The Good Manager's Guide*, there usually remains a gap between what the employee actually knows and what they should know. An organization needs effective and

extensive training of its human resources, among other things, if it wants to gain a competitive edge in its industry.

Because it raises the level of both individual and organizational competencies, training is therefore a crucial component of better organizational performance. Between desired targets or standards and actual levels of work performance, it aids in bridging the competency gap between what should happen and what is happening. The growth of skills has been acknowledged as a vital element in enhancing competitiveness, despite the fact that many companies still have concerns about the price and scope of concrete business returns from training. In Cascio's [16] words: "*The pace of innovation, change, and development is accelerating every year, and as a result, it is abundantly evident that training and development are of such importance that both companies and individual stakeholders must pay substantial attention to them.*"

#### **4.6 Principles of Training**

Since the goal of training is to help a learner develop the behaviors required for good job performance, it is crucial to have a clear understanding of how learning theories are used when creating training programs. There are four fundamental prerequisites for learning, according to Bryan & Leslie [17]. The initial one is drive. It is impossible to overstate the wisdom that a horse can be led to the river but not forced to drink since it holds a crucial lesson for trainers. If people accept the need for training and make a commitment to it, they can learn. No matter how carefully their training is planned and carried out, its effectiveness will be constrained if their motivation is low, as it might be if they have little confidence in their capacity to learn.

The more strongly motivated the student, the quicker and more fully a new skill or knowledge is taught, according to Edwin Flippo [20]. This means that training ought to be relevant to the trainee's interests. This may be cash, a raise at work, recognition, and other things.

Cue is the second prerequisite. Through training, the learner becomes adept at identifying pertinent cues and connecting them to the desired actions. The response is the third. Positive reinforcement should be given right after training to let the learner feel the effect. Positive, timely, and enduring reinforcement is required [17]. Finally, feedback is the knowledge that the learner receives about the caliber of his response. To enable the most efficient learning possible, it should be made available as soon as possible.

Despite the fact that these learning concepts are sound, they neglect to mention practice, which is when a student actively applies the knowledge and abilities they have learned. Additionally, it omits to state that every person differs in terms of aptitude and intelligence, which could have an impact on training approaches.

#### **4.7 The Training Process**

Numerous pieces of training literature indicate that, historically, training in an organization has involved a systematic approach that typically involves the establishment of a training policy, followed by the identification of training needs, the

design and implementation of training plans and programs, evaluation, and training feedback for further action.

#### **4.8 Training Policies and Resources**

According to Kenney et al. [18], businesses should have varied training policies depending on the class, level of employment, or level of people that need to be trained.

They emphasized the need for training policies for the following reasons:

- To provide guidelines for those responsible for planning and implementing training;
- To ensure that a company's training resources are allocated to pre-determined requirements;
- To provide for equality of opportunity for training throughout the company; and
- To inform employees of training and development opportunities

Despite how correct these regulations appear to be, they are quiet on the topics of budgetary assistance and top management backing for training. In his book, *A Handbook for Personnel Management Practice* [21], Armstrong [10] claims that training policies are manifestations of an organization's training philosophy. He also supports the claim made by Kenny et al. [22], but went on to say that the training policy demonstrates the percentage of turnover that ought to be allotted to training.

He argued once more that a company needs a training philosophy to show how much value it places on training. This will lessen the laissez-faire approach to training, if not completely eliminate it. Despite the importance and advantages of training, creating policies can be challenging for directors, especially if they are doing it for the first time and without the guidance of a training officer with expertise at the level.

#### **4.9 Determination of Training Needs**

Establishing goals for these needs and identifying training needs is the first step in managing training. Cole [12] asserts that if a company must provide a justification for its investment in training, it must do it on the basis of organizational necessity. Companies that take a systematic approach to training and development will typically start by defining their training needs using a methodical process. Such a process entails considering training requirements from a variety of angles.

Organizational, departmental or functional, job, and employee perspectives are among them. **Organizational need:** The organizational analysis examines the organization's effectiveness and the achievement of its objectives to identify any deviations or discrepancies. This makes deciding what program to implement simple. **Organization analysis,** according to Kaufman [21], examines differences between success and failure to determine which one training could help with. **Functional need:** at this level, training managers examine the unique ability requirements dictated by the job descriptions and job specifications of the positions within the work area or work unit.

A survey of job holders, managers, and training committees as well as observation of work groups' performance on the job can also be used to identify the need. Any

shortcomings in their effectiveness and efficiency assist identify the need for training. Individual need - Kaufman goes on to say that the individual performance of each employee can be used to gauge the training needs of the workforce. He claimed that interviews, observations, attitude surveys, or objective records of their performance are used to compare effectiveness and efficiency to the necessary requirements.

The researcher believes that these three levels of differences—organizational, functional, and individual—between anticipated and actual results can point to the need for training. According to the researcher, the active solicitation of ideas from staff members, managers, and training committees can also present training need ideas. The situation will determine the specific viewpoint picked. A corporate or organizational perspective is required, for instance, if changes in the organization's external environment are placing pressure for change internally. However, if it is necessary to improve the abilities of a certain group of employees, the focus of the effort will be on that occupation or job group.

Any performance or potential performance gap that can be filled by suitable training is considered to be a training need. Training is just one of several strategies for addressing gaps in human performance at work. It is crucial to be aware of this aspect because occasionally, training professionals are asked to address requirements that should be handled in another way, such as improving salary, changing equipment, or streamlining procedures. However, Armstrong [10] contends that a training requirements analysis should take into account both the issues that need to be resolved and potential future demands based on whether the business needs to develop new competences or enhance its current ones.

#### **4.10 Determining Training Objectives and Training Plan**

It is simpler to define training objectives and to know what learners must be able to achieve after the training program after these analyses have been completed. According to McKenna and Beech [19], *"It is important that a sound basis is established for other associated elements of Human Resource Management practice such as performance management (appraisal), reward management (motivation), combined with training and development,"* in their book *"Human Resource Management-A Concise Analysis."* This indicates that without the addition of employee appraisal and incentives, training and development alone cannot aid in the overall development of employees.

When creating a training program, one of the factors to take into account is what the objectives of the program are. In other words, it is impossible to develop a training program without first knowing what it would aim to achieve. Organizations must understand how crucial it is to take into account what the trainees should know or be able to perform when the training is finished when establishing a training program. However, training goals should be measurable and attainable. A training program is deemed successful if its goals are met. Zaccarelli [20] describes the training planning approach thus;

- i. **Develop a training plan:** A training plan can be created once realistic and quantifiable training objectives have been taken into account. This planning tool gives others a documented, step-by-step guide to follow. An individual task or an entire training program can both be included in a training plan. The training plan includes information about the training approach, resources needed, course material, and who should receive training.
- ii. **Design a training lesson:** The company will need to focus on certain plan segments after developing a training plan that outlines overall program requirements. A training lesson is used to accomplish this. Each training session typically includes one training lesson. In other words, if ten sessions are scheduled, ten training materials must be created. The following are the objectives of a training lesson:
  - a) It provides a content outline for the lesson;
  - b) It suggests activities/specific instructions which will help to make training easier;
  - c) It defines the suggested time to be spent on each segment within the segment.
- iii. **Select the trainer(s):** Who will practice? Who is a skilled communicator who possesses the knowledge and abilities to train? What steps should the trainer take to prepare the students for the training? When choosing a trainer, these are the issues to be considered.
- iv. **Prepare the trainer(s):** One of the most crucial activities for any firm is training. As a result, the individuals in charge of training must receive sufficient training and be provided with the necessary equipment. In tangential connection with this, students must be concerned about and ready for the learning process.

#### 4.11 Types of Needs Analyses

There are numerous needs analyses that can be used in various work scenarios. The sources listed below might assist you in deciding which needs analysis is right for your circumstance.

**Organizational Analysis:** an examination of the needs of the business or other factors that warrant the training. analysis of the strategies, objectives, and goals of the organization. What does the company as a whole want to achieve? Who made the decision that training should be conducted, why a training program is seen as the suggested solution to a business problem, and what the organization's history is with regard to employee training and other management interventions are the key questions that this analysis seeks to address.

**Person Analysis:** analysis of prospective students and teachers participating in the process. This analysis provides critical answers to the questions of who will receive the training, their level of prior knowledge, their preferred learning style, and who will deliver the training. Do the personnel possess the necessary skills? Does training need to be updated because of changes to policies, practices, software, or equipment?

**Work analysis / Task Analysis:** a review of the tasks being carried out. This appraisal of the task at hand and the necessary conditions for carrying it out. This study, sometimes referred to as a task analysis or job analysis, aims to identify the primary responsibilities and necessary skill level. This makes it more likely that the training that is created will include pertinent references to the job's content.

**Performance Analysis:** Are the staff meeting the established standard of performance? When performance falls short of expectations, can training assist to raise it? Does the performance gap exist?

**Content Analysis:** Analysis of official records, regulations, and working practices. What knowledge or information is used in this work is clarified by this analysis. Manuals, papers, or rules provide this information. The training material must not conflict with or go against the demands of the job. In their capacity as subject matter experts, seasoned employees can help choose the right material.

**Training Suitability Analysis:** Analyze whether or not training is the ideal solution. One of the many remedies to employment issues is training. It might not always be the greatest option, though. It is crucial to ascertain whether training will be useful in its application.

**Cost-Benefit Analysis:** analysis of the training's return on investment (ROI). An organization receives a return on investment from effective training that exceeds the cost of creating or delivering the training.

#### 4.12 Presenting the Training

##### a) Kinds of Training

Depending on the primary objectives of training, an organization may adopt one of the different training methods listed below;

- i. **Refresher Training:** In this case, the employer mandates that the employees undergo refresher training at particular training facilities like the Ghana Institute of Management and Public Administration (GIMPA), Institute of Management Studies, Technical Universities, and the like. The employee is exposed to contemporary business trends as a result. In other words, it entails updating skills to suit employee job requirements.
- ii. **Orientation Training:** This largely focuses on introducing new staff to the company. This training aims to educate all new hires with the organization's objectives, structure, culture, work standards, and other employment requirements.
- iii. **Career or Development Training:** This kind of training attempts to get workers ready for the future. Employees are now able to assume more responsibility.
- iv. **Job Training:** This entails training the individual in the position for which they were engaged or employed. This will aid workers in gaining the knowledge and expertise required for particular vocations.

## b) **Methods of Training**

The method of instruction must be chosen based on the stated training needs, the training objectives, the trainees' comprehension, the resources available, and their awareness of learning concepts. According to DeCauza et al. [21], the two types of training and development methods most frequently utilized by firms are on-the-job training and off-the-job training. DeCauza et al. [21] state that managers can employ a range of training strategies, including:

- i. **On-the-job Training:** This is the most popular training technique since operating the on-the-job training technique is easier and less expensive. The training sets the individual in actual work scenarios and makes them appear to be immediately productive, according to a critical analysis of this strategy. Here, the trainer and the learner work closely together. On-the-job training typically employs three techniques: learning by doing, mentoring and shadowing, and work rotation.
  - a. **Learning by doing:** This approach is widely used to train staff members in new techniques and skills. Here, a rookie employee watches an experienced senior worker in action and picks up tips. The fact that this approach has been tried and tested and works for the company is an advantage. The senior worker is typically not schooled in the techniques and skills of training, therefore it can be a lengthy process while a new employee attempts to understand the senior worker's explanations. Utilizing a senior or experienced worker with training in instruction or training methodology, whose teaching abilities are synchronized with a defined program connected to off-the-job courses, is far more successful.
  - b. **Mentoring:** This is a different system where a senior or experienced employee oversees the onboarding and training of a new hire. This implies a far deeper relationship than master-apprentice, with characteristics of a father-son relationship where the mentor serves as the trainee's advisor and protector.
  - c. **Shadowing and Job Rotation:** This often aims to offer aspiring managers a sense of the company by allowing them to work in several divisions. If the training is to be effective, it must be made so that the trainees don't feel like they are wasting their time, and the individuals in the various departments where they are temporarily employed must feel a sense of dedication and involvement. Unfortunately, trainees are not frequently welcomed and are perceived as a disruption to the department's regular operations by both managers and employees. This approach can be a beneficial educational opportunity if well-structured and organized with the cooperation of all departmental supervisors.

Another type of training that gained popularity in the 1970s to assist in combatting boredom and ultimately boost shop floor workers' productivity was job rotation. It is a management strategy used to move employees from one position to another, from one department to another, or from one facility to another in various geographic locations. In



order to expose the executives and trainees to fresh difficulties and issues, the rotation is carried out in concert. Additionally, it aims to provide executives with a broad perspective and a variety of talents.

If properly implemented, this may be a terrific learning opportunity for employees and fits in well with the teamwork and empowerment concepts of human resource management, which enable people to take more ownership of their work and the work of the team. On the downside, it has been said that workers are not provided enough organized training to enable them to perform these occupations successfully. However, the researcher thinks there is a drawback to the on-the-job training approach. Despite the fact that employees learn on the job, a critical analysis of the approach reveals that productivity is typically low because employees lack the information and skills necessary to be productive and efficient. With on-the-job training, the focus is mainly on learning specialized, local information in a practical setting. Off-the-job training places more emphasis on prior information, comparable concepts and methods, and building an understanding of general principles than on-the-job training.

- ii. **Vestibule Training:** In this type of training, the employee learns how to operate equipment or carry out a task that will be encountered in the workplace. This training approach involves doing the training course off-site, away from the workplace, under the guidance of a qualified instructor. When the trainees are assigned to their actual job after completing the vestibule training for a predetermined amount of time, they are expected to put their newly learned abilities to use.
- iii. **Behaviour Modelling:** To help the trainee learn the behaviors needed for the work through role-playing, some of the methods utilized in the assessment centers include business games, in-basket, simulation, problem-centered cases, and many others. Based on social theory, behavior modeling is a useful technique for teaching interpersonal or social skills in particular. Videos are used in this training method to explicitly show how things should be done and what behaviors should be avoided. Trainees are given the opportunity to practice this since behavior modeling frequently relies on exemplifying proper and efficient behavior. According to Bryn [20], behavior modeling is the process of choosing target behaviors and producing movies on each behavior that show competent people succeeding by according to predetermined rules. Key ideas are highlighted on the screen and supported by discussions lead by the trainer. Through role-playing, the trainer here enforces learning.
- iv. **Understudy Training:** A person who is being trained to take over the tasks and responsibilities of the position now held by the person they are understudying is referred to as an understudy. A person or group is tasked with helping a superior officer carry out his job-related obligations, and on occasion, the superior is left to deal with the day-to-day issues that arise while performing his duties. With or without the support of the superior, they are free to resolve them. When the

- superior is transferred, retires, or is promoted to a higher position, the understudy will take over if he exhibits talent [21].
- v. **Case Study:** Here, case studies of actual or hypothetical events in an organization are provided to trainees for study, analysis, and opinion-forming. The trainees are exposed to particular concepts, problems, approaches, and experiences that they would later confront on the job after studying a number of instances under the supervision of teachers. This approach aims to teach students how to reason rationally and cultivate the capacity to evaluate potential courses of action methodically and logically.
  - vi. **Business Exercise:** In this kind of training exercise, the trainees are exposed to reports, correspondence, and memoranda that they must manage just as in a real work setting. Employees that participate in business exercise training improve their decision-making, time-management, planning, and communication skills. Additionally, it aids in giving them a "feel" for the workplace before they begin the actual job.
  - vii. **Group Training:** Group discussions, seminars, and sensitivity training are all included in the group training process. Here, students from all backgrounds and experiences get together to discuss views on predetermined subjects with one another. If done right, it gives learners from various backgrounds the chance to exchange useful knowledge and benefit from one another's expertise. As an illustration, consider the T-group, a method of human relations that was initially emphasized as a type of group therapy. The seminars have the advantage of motivating attendees and letting trainees benefit from one another. The T-group, on the other hand, is a leaderless, unstructured group created to promote the learning room experience and group dynamics as well as to serve as a place for the exchange of private comments.

#### 4.13 Evaluation of Training

Kenney et al. [18] noted that the training program is examined by the training officer, the line manager, and, if necessary, by the trainees themselves, during and after its completion. In contrast to validation, evaluation aims to determine the entire cost-benefit of the training program rather than merely whether the set objectives were met. According to Hamlin [19], evaluation is incomplete and ineffectual until corrective actions are made to address any shortcomings that may have arisen after the training. Although evaluation is a crucial component of training, it may be challenging since it is frequently challenging to create measurable objectives.

#### 4.14 Methods of Evaluation

There are various ways to assess training. Some of these techniques have been cited by Beardwell and Holden [11] as follows:

- Questionnaires (feedback forms): this is a common way of eliciting trainee responses to courses and programs.

- Tests and exams: These are frequent in formal education, particularly in programs that lead to certification, such as a diploma in word processing proficiency. End-of-course exams can also be used to evaluate students' progress following brief non-certificate courses.
- Projects are initially seen as learning methods but they can also provide valuable information to instructors about the participants' understanding of the subject matter.
- Structured exercises and case studies also provide opportunities to apply learned skills and techniques under the observation of tutors and evaluators.
- Interviews of trainees after the course or instruction period are another technique for gathering information directly from the learners. These can be formal or informal, individual or group, face-to-face or by telephone.

#### **4.15 Training, Performance and Productivity**

Long-term profitability and optimal performance of businesses are greatly influenced by the caliber of people and their growth through training. It is wise to invest in the growth of employees' skills, knowledge, and abilities in order to attract and retain excellent workers and eventually boost individual and organizational productivity. Training is typically only provided to new hires. This is a mistake because continuing education for current personnel enables them to quickly adapt to shifting job requirements. Companies that value quality spend money on staff training and development [22].

Xerox Business Products and Systems invest about \$125 million in top-notch training, according to Evans and Lindsay [22]. Every employee at Motorola and Texas Instruments receives at least 40 hours of training every three months. The need for employees to acquire new skills, knowledge, and talents has made training and development a crucial obligation of HR departments in businesses, and these needs shouldn't be cost-justified as they are in the majority of public sector firms.

Only 16% of American workers have never gotten any training from their employers, according to Neo et al. [23], who lamented the dearth of training and development opportunities provided by American firms. Organizations are just now realizing how crucial training and development are to improving performance, raising productivity, and ultimately remaining competitive. They emphasized that as a result of this insight, General Electric, Texas Instruments, and Federal Express all made large investments in training. Presently, they devote 3% to 5% of their salary to training.

According to Black and Lynch [24], quoting Bishop (1994), employer-provided training and development increase subjective productivity and performance measures by about 16% in an American study on the effects of human capital investments like this one. Once more using Bartel (1989), Black and Lynch [24] reported that returns on training and development investments boost productivity by 16%.

#### **4.16 Human Resource Development**

Managing an employee's development, which encompasses both personal and professional progress, is one of a manager's most crucial responsibilities [25]. For employees who were likely to work for a company for the whole of their lives in past business contexts, the organization handled career planning. Today's workplace, however, is constantly evolving as a result of increased worker mobility, which creates opportunities and options for virtually every employee [25].

Career development is described by Sandra Kerka (1998) as a planned strategy used to align employee objectives with the operational requirements of agency workforce development efforts. According to the author, career development serves the following purposes:

- a) Enhance each employee's current job performance
- b) Enable individuals to take advantage of future job opportunities
- c) Fulfill agencies' goals for a dynamic and effective workforce

Evans and Lindsay [22], who emphasize the value of career development, reported that the Coors Brewing Company in Golden, Colorado's extensive career development program increased employee pride and passion for their work, which translated into measurable gains in productivity, an astonishingly low turnover rate, and the provision of high-quality goods and services. The lack of career shift opportunities in the past resulted in significant losses in personal satisfaction and social output. Nowadays, employers understand that keeping workers in jobs that no longer challenge and reward them is counterproductive.

#### **4.17 Human Resource Development Advantages**

Today's growing company demands and proficiency level has enhanced the need for devoted experts. It is important to possess an expert understanding of how to handle challenging situations. Schools that focus on career development make sure that students benefit from the instruction they receive. The benefits depend on the level of quality, standardization, and methodology used. It promotes personal development, aids in boosting self-assurance, and serves as a focal point for hiring qualified personnel. In the development of any business or career, superiority is a vital concern. It includes not just the items but also the work of the specialists. The standard of performance is impacted by poor quality, but career advancement offers the chance to improve on the flaws and produce quality products.

The review has thus far highlighted the significance, function, and productivity-enhancing effects of training inside an organization. Additionally, the essence of training needs has been described. It was taken into consideration how and why training needs should be appraised. The essential criteria on which employees may be hired or chosen for training, as well as the different training methods, are stated.

In particular, for those involving cultural change and the requirement to introduce new working methods, training is viewed as a significant instrument in the execution of human resource management policies and procedures. First and foremost, the company

needs a training policy that defines what training means to the company. You can determine who needs training and the kind of training that should be provided by doing an individual analysis. The next stage is to evaluate the organization's training requirements in light of its strategy and compare them to the requirements of the people working there.

A training needs analysis could be conducted using a range of techniques. Among the often-employed techniques are job analyses, interviews with managers and supervisors, and performance evaluations. Despite the wide range of approaches that are accessible, a company must exercise caution when choosing training techniques. Utilizing training techniques wisely can be a highly economical investment. Evaluation and monitoring are one of the most crucial phases of the training process, but they are sometimes the most ignored or poorly carried out.

## **5. Methodology**

### **5.1 Introduction**

The methodology, or the research techniques utilized to compile the project's data, is the subject of this session. This means that the study's population, its scope, sample size, and sampling methodology, as well as the instrument (the questionnaire) and how it was used, are all taken into account.

### **5.2 Sample Design**

Descriptive research using a case study format was used in this study. Descriptive research that uses case studies develops in-depth knowledge about a representative case.

### **5.3 Population**

The population consist of two hundred administrative and technical staff in the Technical University.

### **5.4 Sample and Sample Technique**

- a) Sample size: The sample selected for this research was fifty (50) administrative and technical staff of the Technical University.
- b) Sampling technique: Fifty employees were selected using the convenience sampling technique, to which questionnaires were administered. The questionnaires were administered by the researcher personally to the respondents.

### **5.5 Data Collection**

#### **5.5.1 Type of Data Collected**

Both quantitative and qualitative data are used in this research project to conduct the analysis. when measuring or expressing quantitative data in terms of numbers or quantity. Measuring is done using natural language descriptions rather than numerical expressions in qualitative data.

### **5.5.2 Instrument for Data Collection**

In this study, questionnaires and content analysis were used as the primary data collection techniques to obtain information directly from the respondents. The majority of the information was gathered using questionnaires that were given to respondents at the university.

### **5.5.3 Instrument Validity and Reliability**

Based on the goals of the study, the questionnaires were designed to properly analyze and precisely measure what they were intended to test. In order to make sure that respondents understood what was necessary to ensure suitable and acceptable feedback during and after the training, an expert was used to assess the relevance of the contents of the instruments.

### **5.5.4 Procedure for Data Collection**

To gather the research data, the researcher went to the respondent in person. Both primary and secondary data were used to acquire the study's data. The main and crucial way for gathering the original data in social science research is fieldwork. Use of questionnaires allowed for the collection of primary data. There were both open-ended and closed-ended questions. This was done to ensure that respondents provided a range of objective responses.

### **5.5.5 Methods of Data Analysis**

To provide context, the research's data were cleaned, categorized, and tabulated. The data analysis tool employed was the Excel software application. Descriptive statistics in the form of percentages and frequency distributions are used in the data analysis process, which is both quantitative and qualitative in character. The table was used to explain the findings and connections between the findings that the Excel application would produce.

### **5.5.6 Limitations**

Data collection in Ghana is particularly challenging. The study's drawbacks included issues with the respondents' disinterest and the taking of an oath of confidentiality. The scope of the research investigation was restricted by the lack of trustworthy records and reports on the topic or their accessibility.

### **5.5.7 Ethical Consideration**

Social, cultural, and emotional issues that complicated or hampered the process were addressed. Prior to each interview, the respondent's consent to be interviewed and the confidentiality of the information being obtained from them were both ensured. No names were recorded so order to maintain their anonymity, but each participant was given an identification number instead.

## **6. Presentation and Analysis of Findings**

The history, functions, and administration of Accra Technical University are discussed in this session. It also covers the presentation and analysis of data gathered, discussed, and related to building capacity and its effects on worker performance.

### **6.1 History of Accra Technical University**

In order to train artisans and craftsmen, Accra Technical University was founded in 1949 as a Technical School with a focus on practical courses including painting, cooking, sewing, block laying, and plumbing. Accra Technical Institute was established in 1957 to train technicians for Ghana's developing industrial sector. Following that, the institute was officially recognized as a polytechnic in 1963 according to a piece of legislation signed by Ghana's first president. The Polytechnic PNDC Law 321 of 1992 granted Accra Technical University tertiary status. Since then, the Polytechnic's infrastructure has undergone significant renovation, and its academic programs in engineering, applied sciences and art, and business studies have expanded appropriately. The Polytechnic was given tertiary status in 1992 so that it could provide middle-level manpower programs to improve the performance of employees across the nation.

When the Polytechnic Law was revised in 2007 (ACT 745) the institution was also required to grant degrees. The Bachelor of Technology (B-Tech) degree programs were thus established to provide university graduates with the chance to advance their careers. Due to its advantageous location in Accra's Central Business District, Accra Technical University has earned the distinction of being Ghana's only "Inner-City Polytechnic." The Kotoka International Airport, which has excellent transportation options to all areas of Ghana, is 4 kilometers away. Both domestic and foreign students will find a warm and supportive learning atmosphere at the university.

Accra Technical University's mission is to give students life-changing opportunities and experiences through teaching, research, practical training, and the development of entrepreneurial skills in the fields of Applied Sciences, Engineering, Technology, Applied Arts, and Business for the benefit of society. Its vision is to be a "Centre of Excellence for Teaching, Practical Training, Learning, and Research."

### **6.2 The Role of Accra Technical University**

In addition to producing middle-level workers for the nation and beyond to supplement the labor force already in place, the university's mission is to instill in its students the skills necessary to succeed in the business world.

### **6.3 Administration of the Accra Technical University**

The vice-chancellor of the university, who is supported by the pro vice-chancellor, registrar, and finance officer, oversees the authority with the help of a council of 18 members, including representatives from the government, business, alumni, and unions.

The Authority retains a staff of roughly 700 people, which includes both teaching and non-teaching personnel.

#### 6.4 Students Population and Programmes Offered by the University

11,000 students have been accepted into the university's various academic programs. There are 14 academic departments spread over the University's three schools, which include the schools of engineering, applied sciences and art, and business studies. The University offers non-tertiary certificate programs in addition to its three (3) year Higher National Diploma (HND), one and a half (1 1/2) year Diploma of Business Studies (DBS), and one and a half (1 1/2) year Bachelor of Technology (BTECH) top-up programs. The University's website provides the necessary details about the individual departments and programs offered as well as the admission requirements.

### 7. Results and Discussion

Fifty (50) university employees were given questionnaires to complete in order to learn more about how the capacity building was being done. Microsoft Excel was used to analyze the collected data. The respondents' interpretations are listed below.

**Table 1:** Distribution of Respondents by Age

Age	Frequency	Percent
20 – 25	8	16.0
26 – 35	15	30.0
36 – 45	11	22.0
46 – 55	9	18.0
56 – 60	7	14.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

Source: Field Data August 2013.

Distributions of respondents by age groups are presented in Table 1 above. The respondents' ages ranged from 20 to 60 years old. This shows that the majority of responders, or 30%, are between the ages of 26 and 35, while 22% are between the ages of 36 and 45. Respondents aged 46 to 55 makeup 18% of the sample, while those aged 20 to 25 and those aged 55 to 60 make up 16% and 14%, respectively. This indicates that a sizable portion of respondents across all age categories completed the survey.

**Table 2:** Distribution of Respondents by Gender

Gender	Frequency	Percent
Male	18	36.0
Female	32	64.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

Source: Field Data August 2013.



The distribution of respondents by gender is seen in Table 2 above. The table reveals that while there were 36% more men than women among all responders, women made up 64% of the total. This indicates that more women participated in the study and are engaged in topics that affect them.

**Table 3:** Distribution of Respondents by Educational Background

Educational Background	Frequency	Percent
Higher National Diploma	9	18.0
First Degree	23	46.0
Master's Degree	13	26.0
Others (ICA etc)	5	10.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

**Source:** Field Data August 2013.

As noted in the above table, respondents have a variety of degrees under their belts, ranging from a Higher National Diploma (HND) to a master's degree. With 46% of senior personnel in the administration who are not instructors having earned their first degree, it appears that the bulk of them are raising their academic credentials. Nine of the respondents have an HND, thirteen have a master's degree, and five have further professional credentials. This suggests that the staff may be given training at various levels to raise their caliber.

**Table 4:** Distribution of Respondents by Position

Position	Frequency	Percent
Accountant	2	4.0
Secretary	7	14.0
Administrator	28	56.0
Engineer	5	10.0
Others (Snr. Acct. Assistants)	8	16.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

**Source:** Field Data August 2013.

The positions held by the employees who answered to the survey are listed in Table 4. The majority are administrators, with 28 representing 56% of the total, 7 representing 14%, 2 representing 4%, 5 representing 10%, and 8 representing 16% of the total. According to this analysis, Accra Technical University uses a variety of work groups that are meant to complement one another.

**Table 5:** Years of Service in the University

Years of Service	Frequency	Percent
1 – 5 yrs.	12	24.0
6 – 10 yrs.	15	30.0
11 – 15 yrs.	9	18.0
16 – 20 yrs.	9	18.0
20 yrs. and above	5	10.0

<b>Total</b>	<b>50</b>	<b>100.0</b>
--------------	-----------	--------------

Source: Field Data August 2013.

The respondents have worked for the university for one to twenty years or longer. This indicates that the company employs a mix of young and seasoned professionals who need ongoing development and refresher training to maintain their job-related abilities.

**Table 6:** Awareness of Training Programme in the University

Awareness	Frequency	Percent
Yes	33	66.0
No	17	34.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

Source: Field Data August 2013.

When asked if the university had a training policy, the respondents responded in one of two ways: 33, or 66%, said yes, and 17, or 34%, said no. The analysis revealed that most respondents were aware of the training policy and had a good understanding of it. But it's disappointing that not all of the employees were aware of the policy.

The majority of 30 respondents (60%) said yes to the question of whether they had received any training since joining the university, while 20 respondents (40%) said no. This demonstrates that not all university workers may have received the information, which is a sign of inadequate communication.

**Table 7:** Respondents Who Have Had Any Form of Training

Had Any Form of Training	Frequency	Percent
Yes	20	40.0
No	30	60.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

Source: Field Data August 2013.

According to Table 7 above, 60% (30) of the respondents have not received any training, whereas 40% (20) have, in one way or another, whether it be through short courses or on-the-job training. This can be inferred from the fact that needs assessments are not carried out to determine the needs of specific employees within the University and that appraisals are only completed for promotions when an employee has been in a grade for three years.

**Table 8:** Type of Training Received

Had Any Form of Training	Frequency	Percent
Employee Orientation	30	60.0
Mentoring	-	0.0
Refresher	7	14.0
On-the-job-Training	8	16.0
External Training	5	10.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

Source: Field Data August 2013.

Determining the types of training that take place at the University was crucial for the study. The 30 respondents who got orientation training were asked what type of training they had received over the course of the study, while the rest stated a variety of programs, the most important of which are outlined above as a percentage of the total of each type.

**Table 9:** Methods Used for the Facilitation

Had Any Form of Training	Frequency	Percent
Seminar	15	30.0
Understudy Training	-	0.0
Formal Lectures	35	70.0
Case Study	-	0.0
Total	50	100.0

**Source:** Field Data August 2013.

According to Table 9 above, the bulk of respondents (70%) got formal training, whereas just 30% attended seminars to hone their skills. Over half of the respondents, or 70% of the respondents, had formal training, which is obviously a significant portion of the respondents. It indicates that they had the chance to receive financial support for their schooling.

### 7.1 Training Evaluation

It was acknowledged that there hasn't been much done in terms of training evaluation, which is only restricted to a post-training review of the trainers and the training program. The respondents also stated that they are unaware of the evaluation process for training.

**Table 10:** Respondents' Opinion on Planned and Systematic Nature of Training and Development at Accra Technical University

Response	Frequency	Percent
Yes	15	30.0
No	28	56.0
Not sure	7	14.0
Total	50	100.0

**Source:** Field Data August 2013.

Given that the majority of respondents (56%) gave unfavorable responses, it is clear from the above table that training at Accra Technical University is unorganized and disjointed. While 14% of respondents were unsure whether training was unplanned or unsystematic, 30% of respondents believed that training was planned.

### 7.2 Respondent as to Whether Training at Accra Technical University Was Planned and Systematic

Because no staff appraisals were undertaken to identify their weaknesses before the training was organized, the respondents believed that the program was not

systematically designed. Others agreed that there was no assessment of training needs to determine whether an employee needed training.

**Table 11:** Respondents Who Are Motivated and Satisfied with the Training Programme

Response	Frequency	Percent
Yes	14	28.0
No	10	20.0
Not sure	26	52.0
Total	50	100.0

Source: Field Data August 2013.

Training is a deliberate, systematic effort used by management in organizations to encourage people to change their behavior and advance organizational objectives. The motivation that training gives its recipients is one of its most important and well-known advantages. Indeed, Cole [12] asserts that trained workers exhibit greater motivation and confidence. In other words, training can boost an organization's morale. It is well established that training improves employee availability and quality. Therefore, the survey asked respondents if they felt inspired and satisfied with their training and how it was put into practice at the university. An overwhelming majority of respondents (52%) do not believe they are motivated by the university's training activities, as shown by the replies in Table 11 above. This is essential since motivation normally aims to raise employees' spirits so they will work hard and produce more.

**Table 12:** Response Opinions of Training Effect on Employee Performance

Response	Frequency	Percent
Yes	15	30.0
No	30	60.0
Not sure	5	10.0
Total	50	100.0

Source: Field Data August 2013.

With the 5 respondents who are unsure of any connection and the 30 respondents who do not link their performance to training, it is obvious from Table 12 that 35 respondents out of 50 do believe that training had any impact on their performance. This is important since the goal of training at the University is to enhance both individual and organizational performance; therefore, if a large percentage of respondents believe that training has no bearing on their performance, then the entire training process has to be examined.

Those who said "yes" went on to explain how training had helped them learn how to utilize computer software programs since they could now operate quickly and effectively. Some also admitted that they could pass on their expertise to other workers who required it.

**Table 13: Employee Potential for Development Through Training**

Response	Frequency	Percent
Yes	17	34.0
No	33	66.0
Total	50	100.0

Source: Field Data August 2013.

When asked if training had given them the chance to spot any areas where they could have room for improvement, the respondents said yes. The responses are shown in the table above. The respondents felt that training had not provided any opportunities for growth. 33 respondents, or 66%, indicated "no" in response to the question. Given that it was mentioned earlier that training at the University is partially planned, this may not come as a surprise.

**Table 14: Sponsorship for Further Studies or Personal Development**

Response	Frequency	Percent
Yes	36	72.0
No	14	28.0
Total	50	100.0

Source: Field Data August 2013.

The majority have obtained support from the university, according to Table 14 above. Employees have so always funded their own education in order to advance both their own expertise and that of the company.

Some of the "yes" respondents said they had partial or complete financial support for their studies. Some individuals also received complete sponsorship for short courses that would help them perform their duties.

**Table 15: Career Development Plans for Employees**

Response	Frequency	Percent
Yes	14	28.0
No	36	72.0
Total	50	100.0

Source: Field Data August 2013.

It is clear from the above chart that the majority of respondents were not aware that there was a development program for them. Those who are even aware, however, do not know how to proceed with establishing their careers because they lack the necessary credentials.

**Table 16: Training and Development Projection for Employees**

Response	Frequency	Percent
Yes	13	26.0
No	37	74.0
Total	50	100.0

Source: Field Data August 2013.

According to Table 16, the majority of respondents (74%) were not aware of any such projections. These comments support the claim made by the human resources department that the university should make its training and development policies clear so that its staff can take advantage of them to improve their skills. These omissions are crucial for an organization that has been around for a while since they have far-reaching effects on employee productivity and performance in terms of the training and development component. Those who knew indicated the intention was for them to stay informed about events involving students' activities.

### **7.3 Suggestions for Improvement of the Current Training and Development Practices at Accra Technical University**

The following were the suggestion received from respondents concerning the above question posed to them.

- Majority said that training and development should be planned according to departmental needs;
- That there should be a training needs assessment in order to offer employees the right type of training they need;
- That training needs would be identified after the appraisal has been conducted for all employees
- That training i.e., short courses should be extended to all departments within the University.

## **8. Summary Findings, Recommendations and Conclusion**

This session includes an overview of the findings, inferences made from the study, and suggestions made to help attain the study's goals.

### **8.1 General Summary**

Three objectives and three research questions served as the framework for this study, which focused on Accra Technical University and examined the capacity building and its impact on employment performance in public sector enterprises.

Five sessions made up the study's complete design. The background information, problem statement with pertinent research questions, study objectives, scope, and significance are all included in Session One (1), which serves as the study's introduction.

In the second session of the study, relevant literature was reviewed in order to examine important ideas including human resource management, training, the advantages of training, the training process, career development, and the connection between career development and worker productivity.

The third session (3), which focuses on the study's methodology, includes information on the study's population, sample, sampling strategies, methods for gathering data, design and administration of research tools, and data processing procedures.

The administration, duties, and brief history of Accra Technical University were covered in session four (4). The acquired data were then presented and examined with the research goal and the related research questions.

As a result, the study's findings are outlined below, along with suggestions, a study conclusion, and a list of recommendations.

## 8.2 Summary of Findings

A set of goals related to the research topics were used to perform the study. Although management has created a policy document to handle this element, primary data collected and backed by secondary data show that training and development efforts at Accra Technical University are on track but still have space for improvement.

The following is the summary of findings based on the three research objectives and questions:

- 1) that the university has policies and procedures in place to improve employee capacity. Building capacity is not planned, as has already been mentioned, but rather is done when the need arises. Employees who are partially sponsored by you or who you funded themselves, however, are also promoted in order to contribute their improved skills to the university.
- 2) According to several of the staff, there has been an increase in efficiency and effectiveness. Some of the employees who received on-the-job training or were given assistance by their coworkers concurred that their performance capability has increased. At the most recent holiday meeting, management expressed gratitude for the level of success the staff had achieved and pledged to support any employee looking to improve their abilities.
- 3) Additionally, it was discovered that the delivery process had undergone a significant change as a result of increased personnel capacity. At first, personnel, particularly those in the Academic Affairs Section, carry out their duties manually, wasting time, stationery, and other resources for the university. However, there has been an improved method for completing the same work in the smallest amount of time while simultaneously managing resources thanks to the knowledge of information technology supplemented by management programs. Of course, other divisions or sections carry out their responsibilities equally and efficiently.

## 8.3 Recommendations

It is indisputable that many organizations have recently realized the significance of the role that training and development programs play in raising staff productivity, efficiency, and skills. The following should be implemented at the workplace by Accra Technical University in order to maximize the benefits of a training project.

- 1) **Systematic Training:** The process of identifying training needs needs to be done more professionally, involving the departments concerned, the individuals affected, and the human resource staff. Everyone is concerned should agree on

precisely what the trainees lack, such as the skills required and the attitudes that need to be modified towards work performance. Accra Technical University's strategic plan, which should also include departmental and individual strategies, should be the source of the needs that are identified. For organizational growth and survival, Accra Technical University should view learning, training, and development as well as the objectives, design, implementation, and evaluation of training.

- 2) **Objective Should be SMART and Unambiguous:** The goals should be clear, SMART (Specific, Measurable, Achievable, Realistic, and Timely), and they should both support personal growth and the needs of the university. In addition to performance benchmarks and measurement requirements, objectives should be seen as attainable by individuals. Additionally, a foundation for extrinsic and intrinsic rewards should be offered as this will encourage commitment and boost performance.
- 3) **Provide Specific Information to Employees:** Employees should receive detailed information about their performance issues and ways they can improve it using the performance evaluation information system that the University uses to evaluate employee performance during the promotion period. By identifying the reasons for performance disparities and developing action plans to improve employee performance through training and development programs, this assessment should clearly explain the differences between present and expected performance.
- 4) **Create more Opportunities for Training:** The overall university objectives should be taken into account when determining the requirement for training. The training programs that should be organized for personnel should be based on the university's objectives. Employees should be encouraged to improve themselves.
- 5) **Career Planning and Development:** Organizational career planning is connecting a person's professional goals with the opportunities the organization has to offer. The order of the specific employment connected to these chances is called a career path. The authorities and employees must share equal responsibility for career management for it to be successful in the university. Employees must determine their skills and objectives, and via counseling, they must understand the kind of education and training needed for a specific vocation. Planning for development and succession will be crucial. Each employee should have access to projection plans for career advancement and training & development.
- 6) **Develop Employees through Formal Education:** The university should enhance its strategies for training staff members through formal education, giving staff members the chance to enroll in short courses provided by educational institutions as well as programs that typically include expert lectures, business games and simulations, adventure learning, and direct customer contact.
- 7) **Motivation and Morale:** In general, motivation aims to raise employees' spirits so they will work hard and be more productive. In response to this reality, the



researcher wants to suggest that the university implement a policy for motivational training in conjunction with the establishment of appropriate training and development programs. Extrinsic motivation includes things like higher income, allowances, and other perks, while intrinsic motivation includes things like acceptance by coworkers, recognition, appreciation, and prospects for advancement. On the other hand, high morale lowers absenteeism, accidents, employee turnover, and complaints, which indirectly boosts production. As a result, low morale and a lack of drive prevent the workforce from ever developing because these factors increase job satisfaction, which in turn promotes growth.

- 8) **Enrich Job Experience:** The majority of employee development happens on the job. The likelihood that development won't take place is highest when an employee's abilities and prior experiences fall short of what is necessary for the position. Employees at the University must develop their skill sets in order to succeed in their roles. Job experiences can be applied in a variety of ways for employee growth at the university, including job expansion and promotion to roles with larger demands.
- 9) **Improve Interpersonal Relationships:** By connecting with more seasoned members, individuals can gain knowledge about the business and its clients and build their talents through interpersonal relationships. As part of a deliberate effort to pair up effective senior University employees with less experienced ones, interpersonal bonds may develop.
- 10) **Provide Psychological Test:** Some businesses apply psychological techniques to evaluate workers' abilities, personality traits, and communication preferences. The Myers-Briggs Type Indicator is one such psychological test used to assess how well employees fit into a team (MBTI). Over 100 questions about the subject's feelings and preferred behaviors in various scenarios make up the test. The MBTI measures a person's preferences for their level of energy (introversion versus extroversion), how they receive information (sensing versus intuition), how they make decisions (thinking versus feeling), and their way of living (judging versus perceiving). Accra Technical University can use MBTI to better understand its employees' leadership, teamwork, communication, and motivational styles. However, as the MBTI does not assess how successfully employees carry out their preferred functions, it should be underlined that it cannot be used to evaluate employee performance.
- 11) **Evaluate Training for Effectiveness:** Evaluation of training is essential to determine where adjustments or changes are needed to increase its efficacy in achieving the learning outcomes established during the planning of the training intervention. When planning, it is important to think about how the data needed to assess learning events will be gathered and analyzed as well as the criteria by which each type of training will be assessed.

## 8.4 Conclusion

Overall, the study used Accra Technical University as a case study to examine capacity building and its impact on employee performance in public sector companies. It then gave findings and recommendations. Accra Technical University must take corrective action to ensure that the procedures involved in capacity building training are properly followed.

The research's conclusions showed that the primary focus of Accra Technical University's activity is serving the general population. Given the quick technical advancement in service providing adopted by competitors, this makes ongoing training and development of its human resource necessary and vital.

The study's findings support the assertion that Accra Technical University has a policy of investing in the training and development of its personnel. It does plan training sessions for its staff members in order to keep their knowledge and abilities current and to guarantee that the University operates at its highest possible efficiency. Additionally, workers who recognize the need for a mindset shift and desire to further their education formally in order to keep up with contemporary technological innovation frequently self-sponsor themselves to obtain these skills.

## Conflict of Interest Statement

There is no conflict of interest among the authors in terms of financial interests, affiliations, personal interests towards the review and subsequent publication of this paper.

## About the Authors

Ms. **Gifty Awuku** is a highly experienced and accomplished Assistant Registrar, currently serving as a member of the Human Resource and Organizational Development Directorate at Accra Technical University. With a Master's degree in Business Administration, specializing in Human Resource Management from Sikkim Manipal University, and a Bachelor's degree in Business Administration from the University of Professional Studies, Ms. Awuku possesses an excellent academic background that has enabled her to excel in her profession. Ms. Awuku is passionate about Human Resource Development, and her primary interest lies in enhancing the capacity of employees by equipping them with the necessary skills to achieve organizational goals. She believes that the key to success in any organization is a highly skilled and motivated workforce, and her work in Human Resource Development is focused on achieving this goal. Ms. Awuku's expertise in the field of Human Resource Development has been recognized by her colleagues and peers. She is well-regarded for her exceptional organizational and planning skills, as well as her ability to develop and implement effective training programs that deliver measurable results. Ms. Awuku is also known for her ability to communicate effectively with all levels of an organization, which has been critical in ensuring the success of various HR initiatives.

Overall, Ms. Gifty Awuku is an accomplished Assistant Registrar who is passionate about enhancing the capacity of employees through Human Resource Development. Her extensive knowledge and experience in this field, combined with her exceptional organizational and communication skills, make her an asset to any organization.

Orcid ID: <https://orcid.org/0009-0005-06502-1798>

Ms. **Mabel Korankye Danso** is a highly skilled and dedicated Assistant Registrar currently serving in the Business Development Directorate at Accra Technical University. With a Master's degree in Business Administration, specializing in Human Resource Management from Wisconsin Int. University College, and a Bachelor's degree in Business Studies from the same institution, Ms. Danso has a strong academic background that has enabled her to excel in her profession. Ms. Danso is passionate about the contemporary Recruitment and Selection processes of human resources, and she believes that improving these processes is key to enhancing employee retention in organizations. She is committed to exploring and implementing innovative HR strategies that ensure the best talent is recruited and retained in organizations, which in turn leads to higher productivity and organizational success. Ms. Danso's expertise in the field of human resources has been recognized by her colleagues and peers. She is known for her exceptional organizational and planning skills, as well as her ability to develop and implement effective HR policies and procedures. Ms. Danso is also well-regarded for her excellent communication and interpersonal skills, which have been critical in ensuring the success of various HR initiatives. Overall, Ms. Mabel Korankye Danso is an accomplished Assistant Registrar with a strong interest in the contemporary Recruitment and Selection processes of human resources. Her extensive knowledge and experience in this field, combined with her exceptional organizational and communication skills, make her an asset to any organization.

Orcid ID: <https://orcid.org/0009-0000-1280-8064>

Ms. **Faustina Nana Yaa Boatemaa** is a highly skilled and motivated Assistant Registrar, currently serving at the New Hostel. With a Master's degree in Business Administration, specializing in Human Resource Management from the Ghana Institute of Management and Public Administration (GIMPA), and a Bachelor of Science in Management from Central University College, Ms. Boatemaa has a strong academic background that has prepared her for her role as an Assistant Registrar. Ms. Boatemaa has a keen interest in the impact of organizational change on employee performance in achieving organizational goals. She firmly believes that organizational change can be a catalyst for improving employee performance and achieving organizational success. She is committed to exploring and implementing innovative strategies that ensure a smooth transition during periods of organizational change, while also ensuring that employees are equipped with the skills and resources they need to perform at their best. Ms. Boatemaa's expertise in the field of Human Resource Management and organizational change has been recognized by her colleagues and peers. She is known for her exceptional organizational and planning skills, as well as her ability to develop and implement effective HR policies and procedures. Ms. Boatemaa is also well-regarded for her

excellent communication and interpersonal skills, which have been critical in ensuring the success of various HR initiatives related to organizational change. Overall, Ms. Faustina Nana Yaa Boatemah is an accomplished Assistant Registrar with a strong interest in the impact of organizational change on employee performance. Her extensive knowledge and experience in this field, combined with her exceptional organizational and communication skills, make her an asset to any organization.

Orcid ID: <https://orcid.org/0009-0004-3608-2922>

Ms. **Patience Adjetey** is an experienced and dedicated Assistant Registrar currently serving in the Procurement and Supply Chain Management Department at Accra Technical University. She holds a Master's degree in Business Administration, specializing in Human Resource Management from Sikkim Manipal University, and a Bachelor's degree in Business Studies from the University of Cape Coast. Ms. Adjetey's academic background and professional experience have enabled her to excel in her role as an Assistant Registrar. Ms. Adjetey is passionate about Records Management, and she firmly believes that having up-to-date information on employees within an organization is crucial to making informed decisions about human capital. She is committed to developing and implementing effective Records Management systems that ensure the accurate and timely storage, retrieval, and dissemination of employee data. Ms. Adjetey's expertise in the field of Records Management has been recognized by her colleagues and peers. She is known for her exceptional organizational skills and attention to detail, as well as her ability to develop and implement effective policies and procedures related to Records Management. Ms. Adjetey is also well-regarded for her excellent communication skills, which have been critical in ensuring the success of various initiatives related to Records Management. Overall, Ms. Patience Adjetey is an accomplished Assistant Registrar with a strong interest in Records Management. Her extensive knowledge and experience in this field, combined with her exceptional organizational and communication skills, make her an asset to any organization.

Orcid ID: <https://orcid.org/0009-0000-3111-4586>

## References

- 1) Ankomah Y., Koomson J., Bosu R., with Oduro G. K.T. (2005). Implementing quality education in low income countries (edqual) Institute for Educational Planning & Administration (IEPA) University of Cape Coast literature review Ghana
- 2) Armstrong, M. (1996). A Handbook on Personnel Management Practice, 5<sup>th</sup> ed. London: Kogan Page
- 3) Beardwell, N. and Holden, B. (1993). Managing for Success, 2<sup>nd</sup> ed. England: Prentice Hall Publisher
- 4) Bryan, Leslie A. (1990). An Ounce of Prevention for Workplace Accidents, Training and Development Journal, NY: USA Vol. 44, No.7

- 5) Cascio, Wayne F. (1989). *Managing Human Resources*, 2<sup>nd</sup> ed. New York: McGraw-Hill Book Company
- 6) Cole, G. A. (2002). *Personnel and Human Resource Management*, 5<sup>th</sup> ed. Continuum London: York Publishers
- 7) Commission for Africa (2004). *Our Common Interest: Report of the commission for Africa*. 450 pp
- 8) DeCauza, David A. and Robbins, Stephen P. (1996). *Human Resource Practice*, 5<sup>th</sup> ed. New York: John Wiley & Sons Inc.
- 9) Evans, J. R. and Lindsay, W. M. (1999). *The management and Control of Quality* 4<sup>th</sup> ed. Cincinnati, Ohio: South-Western College Publishing
- 10) Gordon, McBeath (1992). *The Handbook on Manpower Planning*, 1<sup>st</sup> ed. UK: Blackwell Publishers
- 11) John T. Delaney, Mark A. Huselid (1996). *The Impact of Human Resource Management Practices on Perceptions of Organizational Performance*.
- 12) Kenney et al. (1992). *Management Made Easy*, 1<sup>st</sup> ed. South Carolina: Omron Publishers
- 13) Krietner, S. (1995). *The Good Manager's Guide*, 1<sup>st</sup> ed. London: Synene Publishers
- 14) Linda, G. (1998). "Happy workers, high returns: Investors and CEOs take note: Our ranking reveals that high morale and outstanding performance emphatically go together. But which causes which?" *Fortune Magazine* (January)
- 15) Linda Maund (2001). *An Introduction to Human Resource Management, theory and practice*, New York: Palgrave Macmillan Publishers
- 16) McGhee et al. (1996). *Nature of Learning*, 1<sup>st</sup> ed. Boston: McGraw-Hill Book Company
- 17) McKenna, E. and Vic Beech (2002). *Human Resource Management-A Concise Analysis*, 1<sup>st</sup> ed. UK: Date Publishing Company Ltd
- 18) Neo et al. (2000). *Human Resource Management: Gaining Competitive Advantage*, 3<sup>rd</sup> ed. Boston, McGraw-Hill
- 19) Ron G, Ronald O (2002). "Health Productivity Management Assists Benefits Business Strategy" Bill P Publishers.
- 20) Sandra E. Black, Lisa M. Lynch. (1996), *Human-Capital Investment and Productivity*. *American Economic Review*, American Economic Association, vol. 86(2), pages 263-267, May.
- 21) Sharitz, M. Jay, and Ott. Steven J. (1987). *Classics of Organisation Theory*. Pacific Grove, California: Brook/Cole Publishing Co.
- 22) Swanson R. A., Holton E. F. III (2001). *Foundations of human resource development*. San Francisco: Berrett-Koehler.
- 23) Wagner J. A., LePine J. A. (1994). *Effects of participation on performance and satisfaction: Additional meta-analytic evidence*. *Psychological Reports*. New York
- 24) World Bank (2002). *Constructing knowledge societies. New challenges for tertiary education*. 236 pp. Washington D.C.

- 25) Zaccarelli, H. E. (1997). *Improving Employee Performance: Effective Training Strategies and Techniques*. London: Kogan Page 19.

Creative Commons licensing terms

Authors will retain copyright to their published articles agreeing that a Creative Commons Attribution 4.0 International License (CC BY 4.0) terms will be applied to their work. Under the terms of this license, no permission is required from the author(s) or publisher for members of the community to copy, distribute, transmit or adapt the article content, providing a proper, prominent and unambiguous attribution to the authors in a manner that makes clear that the materials are being reused under permission of a Creative Commons License. Views, opinions and conclusions expressed in this research article are views, opinions and conclusions of the author(s). Open Access Publishing Group and European Journal of Management and Marketing Studies shall not be responsible or answerable for any loss, damage or liability caused in relation to/arising out of conflict of interests, copyright violations and inappropriate or inaccurate use of any kind content related or integrated on the research work. All the published works are meeting the Open Access Publishing requirements and can be freely accessed, shared, modified, distributed and used in educational, commercial and non-commercial purposes under a [Creative Commons Attribution 4.0 International License \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).