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**Development of Human Resources Through Training By Using ADDIE Model
A Case of Janata Bank Ltd.**

Dr. Mihir Kumar Roy*

Abstract

Training is a continuous process to improve the caliber of employees. The main objective of this study is to assess and investigate the impact of training by using the ADDIE Model. This study used a qualitative as well a descriptive approach to gather data from secondary sources. The study revealed that the results of the model have a positive impact on the training process of Janata Bank ltd. The study recommended that the application of Model Process in Janata Bank should be followed to make the training process effective and fruitful. The study concluded that by proper training and development process employees became more efficient and could contribute well in the organization.

Key Words: Training, Development, Motivation, Employees, Efficiency

1. Introduction

Training is the most basic function of human resources management. It is the systematic application of formal processes to help people to acquire the knowledge and skills necessary for them to perform their jobs satisfactorily, speedily and efficiently (Armstrong, Citation2020). The research defines training and development as the main contributing factors to business efficiencies and effectiveness (Schuler & MacMillan 1984). The increase in Employees and corporate competitiveness compensate for the high expenditure on training and development programs (Bartel, 2000). Moreover, earlier study finds a relationship between training and development with the competencies and efficacy of the firm (Blundell et al., 2005). These activities have become widespread human resource management practices in organizations worldwide (Hughes et al., Citation2019). In today's business world, training is the main strategy to perform the institutional objectives. It helps to improve employee and employer performance (R. A. G. Khan et al., Citation 2011; Rutledge & Cath cart, Citation 2019). Employees are the most precious asset for any organization in building up or destroying its reputation and profitability (Elnaga & Imran, Citation 2013). Some of the factors that determine the performance of employees are training of employees, organizational policies, working situations, job satisfaction, interactions with in the organization (Akhtar et al., Citation 2012;). Thus, training is one of the most effective tools to enhance the employee performance and to achieve the organizational objectives and goals effectively and efficiently (Afroz, Citation 2018; Caravan et al., Citation 2020).

Several studies and research findings indicate that training has a positive effect on the business outcomes through increased productivity, improved management skills, reduced production

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costs, easy access to profitability, and expanded market (Kessy&Temu, Citation2010). Similarly, studies in the case of industries in Karachi, Pakistan (Hafeez & Akbar, Citation2015), in the case of banking sector in Lesotho (Motlokoa et al., Citation2018) and in the case of Arusha Municipality in Tanzania (Nassary, Citation2020) show a positive relationship between training and employee performance. Most of the empirical studies on the training on employee for human resources development focused on the private sector and companies that are profit-oriented and foreign countries. Therefore, limited studies are conducted in the case of development of Bangladesh Banking sector by using ADDIE Model which consisted of five stages like analysis, design, develop, implement and evaluate. The proposed study is a modest attempt to throw light on the issue of training and development of employees of Janata Bank, a public sector Bank of Bangladesh

1.2 Rationale of the Study

Banking system played an important role in the Financial sector of Bangladesh which holds more than 60 percent share in the Gross Domestic Product (GDP) As in Bangladesh fifty percent of people who are dependent on bank for the management of their financial resources, this sector is developing for the purpose of serving people in the best possible way for which it needs skilled and motivated human resource. So, this paper is an attempt to analyse the effect of training and development program on the employees of Janata Bank Ltd.

1.3 Significance of the study

The significance of this study is that it will provide benefit to the banking organization (GB) in understanding the importance of employee training. It will help the JB to know about the aspect that trainings play a vital role in developing employee's working performance and it will also help in developing the relation between the employee's qualitative aspect and employee trainings. In this research, it has been observed that it will also help identify the lapses in the employee human resources development due to the lack of adequate training. Its findings will provide data for further research in training not only at Janata Bank but also in the other banks of Bangladesh.

1.4 Objectives of the study

The specific objectives of the study are as follows:

1. To evaluate and analyses the training and development process of Janata Bank and its impact on the employees.
2. To assesses the application of the ADDIE Model on the training process as well as employees of Janata Bank Ltd.
3. To suggest policy implications arising out of the study

1.5 Literature review

1.5.1. Training

Training is consists of an organization's planned efforts to help employees acquire job-related knowledge, skills, abilities, and behaviors, with the goal of applying on the job (Noe & Hollenbeck, Citation 2019). Training is the systematic modification of behavior through learning processes, which enable individuals to upgrade the levels of knowledge, practice, and qualification needed to carry out their tasks efficiently. It improves the performance of both employees and employers (R. A. G. Khan et al., Citation 2011). In addition, according to A. Khan et al. (Citation 2016), training helps the workforce adapt flawlessly to new technology thereby increasing the efficiency and productivity of individuals and organizations. As cited on Abegha and Bartha(Citation 2012), while considering a training process it is essential to know who is to be trained, the method and program of training and also whether the main goals of the trainings are being achieved or not. Formal training is indeed only one of the ways of ensuring that learning takes place (Armstrong, Citation 2014).

1.5.2 Training and Development

The firm's HR practices will immediately influence the employees' skills which will add to the organization. Furthermore, they will foster employees' development to get involved and committed to the business (MacDuffie, 1995; Wright et al., 1998). Training and development are necessary for any firm, and they are an organizational subsystem derived from two independent yet interrelated words that work together to increase the individual's global productivity (Salas et al., 2012). Previous studies find that the most popular term for "training and development" is "lifelong learning." It takes into account how individuals continue learning (Field, 2008), develop competencies (Shandler, 2000), add value, are intelligent and experienced (Jarvis, 2012), fit, adjust to changes (Nolfi&Parisi, 1996), improve as they grow, and, in sum, accommodate with the stream (Sartori et al., 2018). According to Kadiresan et al. (2015), "development is setting up and making employees ready for potential vacancies and issues." Moreover, when organizations communicate with employees about their skills gap, they decide whom to train, which areas they need training, and when to do it; only training can be introduced appropriately (Kum et al., 2014). Hence, training becomes a joint action between an expert and an employee leading to the efficient transfer of information, know-how, skills, and attitudes, consequently allowing an efficient output from the employee on the job. Training activities are focused on and evaluated against an individual's recent work (Lerner, 2018).

1.5.3 Training and Development with Competitive Advantage

One scholar states that development and growth are usually the objectives and goals of organizations (Goldberg, J., 2018). During a constantly changing environment, organizations realize that they must adopt a new strategy to empower their competitive advantage to survive. Thus they focus on their employee's performance as a significant resource to improve competitiveness (Diamantidis & Chatzoglou, 2019).

Porter (1980) defines 'competitive advantage' as the capacity to perform better than rivals in the same sector or market due to resources and personal qualities (Chaharbaghi & Lynch, 1999). Moreover, studying competitiveness draws researchers' attention due to current concerns regarding organizations' higher performance levels in today's competitive market. A firm achieves a competitive advantage when applying a benefit-maximizing approach not implemented concurrently by existing or future rivals (Clulow et al., 2003). Much of the research supports the idea that businesses that use effective human resource methods, those with the proper recruitment process, training and development program, good benefits, etc., will be more competitive over rivals. (Byrnes & Cascio, 1984; Steffy & Maurer, 1988; Barney & Wright, 1998).

In addition to their competitive position, organizations will benefit from training and development at different levels. They will react effectively to changes and the latest unpredictable external factors in the industry (Beaver & Hutchings, 2005)

1.5.4 Training and Development with Innovation

Development and growth are usually the objectives and goals of organizations (Goldberg, 2014). In all the organization theories, from the classical view that values work to the human relations theory that values human resources in organizations, the critical factor in any organization is the human element; humans make the job done, and the organizations' goals and objective met (Ónday, 2016). Furthermore, innovation is fundamental for business achievement in the market because innovative companies are more open and compliant to new situations and variations (NARANJO-VALENCIA et al., 2018). Academics and experts try to identify innovation-influencing factors. Previous research found that human resource (HR) methods improve innovation, emphasizing the position of training (Laursen, 2002; Laursen & Foss, 2003).

1.5.5. Systematic approach to training process

Organizations need to exercise a systematic training approach to ensure the outcome of the training. A systematic approach to training often includes identifying training needs, training design, delivery style and training evaluation (Mathis & Jackson, Citation2016). Careful implementation of each element of the training process determines its success. From the employee perspective, training can be effective if it is related to a high level of motivation, create better ability to perform their job, and also makes them feel positive toward their work (Balogun, Citation2011). Armstrong (Citation2014) explained that training should be systematic in that it is specifically designed, planned, and implemented to meet defined needs. It is provided by people who know how to train and the impact of training is carefully evaluated. According to Mondy and Mustachio (Citation2016) and Mathis and Jackson (Citation2016), a systematic training process is made up of four phases, namely, training needs assessment, training design, training delivery style and training evaluation.

1.5.6. Training needs assessment

Since training is a need-oriented effort, determining the level, type and duration of the training is the prime importance at this stage of the process. Consequently, assessing organizational training

need shows the diagnostic phase of planning training aims. As cited on Khan and Masrek (Citation2017); Priyadarshini and Dave (Citation2013), training needs assessment is a strategic process that involves identifying the organization, industries goals, competency gathering, and analyzing the information, determining the gaps between the present situation and the future condition. The assessment phase includes employee and employer performance issues to know if training is needed. During the assessment, it is important to consider non-training factors such as compensations, organizational structure, job design, and physical work plans. According to Mondy and Martocchio (Citation2016), a systematic approach of training needs assessment activity focuses on the firm's strategic mission, goals and corporate plans are studied, along with the results of strategic human resource planning. A training needs assessment helps companies or organizations determine whether training is necessary. Similarly, Training needs assessment is the process of analyzing the difference between what is currently occurring within a job or jobs and what is required either now or in the future-based on the organization's operations and strategic goals (Lussier & Hendon, Citation2020). There are three training needs analysis (organizational analyses, task /job analysis, person analysis (Armstrong, Citation2014; Lussier & Hendon, Citation2020; Mathis & Jackson, Citation2016; Mondy&Mustachio, Citation2016; Noe & Hollenbeck, Citation2019), and (Harty&Effendi, Citation2017).

1.4.7. Training design

Once the training needs assessment is identified, it is required to develop the training design that includes learning concepts and a wide range of different approaches to training (Mathis & Jackson, Citation2016) Researchers reported the major independent variables affecting the training. One of the factors is training design (Abegha&Bartha, Citation2012). Effective training design considers the learners and instructional strategies, as well as how to maximize the transfer of training from class to the job site (Mathis & Jackson, Citation2016). According to Mondy and Mustachio(Citation2016); Noe and Hollenbeck (Citation2019); Mathis and Jackson (Citation2016) and Lussier and Hendon (Citation2020) and Abu Dakar and Constantinovits, (Citation2021), training methods as include instructor-led training, e-learning, case study, behavior modeling, role-playing, training games, in-basket training, on-the-job training, and apprenticeship training.

1.4.8 Training delivery style

According to Mathis and Jackson (Citation2016), once training has been designed, the actual delivery of training can begin. It is generally agreed that the training is pilot-tested or delivered on a trial basis to ensure that the training meets the needs assessed. The delivery style is vital because it is the method of changing an employee, which is expected of the trainee. The delivery style will facilitate the type of training, many approaches and methods can be used to deliver:- adult learning principles, learning styles, and training materials. According to Mondy and Mustachio(Citation2016), the corporate training institution's focus is on creating organizational change that involves areas such as company training, employee development, and adult learning.

It aims to achieve its goals by conducting activities that foster individual and organizational learning and knowledge.

1.4.9. Evaluation of training

Evaluation is the final phase of the training program. It is a means to verify the success of the program, i.e. whether employees in the program do their jobs effectively for which they have been trained. As Balogun (Citation2011) noted, the concept of evaluation is most commonly interpreted in determining the effectiveness of a program to its objectives. Mathis and Jackson (Citation2016), also reported that training evaluation compares post-training results to the pre-training objectives of managers, trainers, and trainees. Human resource development is an investment in people. The major reason for investing in the training program is to help employees to perform better in the achievement of organizational objectives. Hence, evaluation is a means to assess the cost/benefit of the training program to the organization. However, evaluation is like brushing teeth after every meal. Even though everyone advocates evaluation, only a few do it. Evaluation is an integral feature of training activities. Evaluation compares the change after training with the set objectives of training (Armstrong, Citation2014). Mondy and Mustachio (Citation2016) explained the possible metrics for evaluating training. These include participants' opinions, the extent of learning, behavioral change, the accomplishment of training objectives, return of investment from training and benchmarking. Generally, there are four levels of evaluation such as reaction, learning, behavior, and results (Kirkpatrick and Kirkpatrick (Citation2016); Lussier and Hendon (Citation2020); Mondy and Mustachio(Citation2016); Noe and Hollenbeck (Citation2019); Mathis and Jackson (Citation2016),(Dessler, Citation2020) and (Kirkpatrick, Citation2020).

From the review of the literature, it is observed that the studies are performed on training in general and in some cases banking sector in particular. There is dearth of studies on the development of human resources through training of Janata Bank (JB) based on the research data. The Training institute and research wing of Janata Bank (JB) published simply training and statistical reports as their routine documentation work and arranges different training courses for their employees in different tiers. Some academic studies have been done by both native as well foreign students in different universities as part of Masters/Doctoral thesis specially on the Banking sector of Bangladesh. But no such academic studies on the development of human resources through training are found to exist till now which could be a reference for the future researchers. The proposed study on the training HR activities of JanataBank (JB) by usingAD-DIE Model is a new addition to fill up the gap in this area and it is hoped that the future researchers in this line will be benefitted from this study.

2.0 Methodology of the study

This study is a descriptive one, which was administered by collecting secondary data. Descriptive research has an important objective: gives description of characteristics of function and also the description of phenomenon or characteristic associated with an object population. The

theoretical part of this study was prepared with the help of different Human Resources Management/ personnel Management text books/Training text book. The main focus of this study is training and development practices in Janata Bank. and theoretical discussions are done only to fulfill the objectives. Data have collected data from Annual report of Janata Bank, website sources, Academic Books to the related fields, Journal on training program of the organization and other training related journal, online News Magazine Daily Sun and many research reports related to the training program on Janata Bank. The main focus of the article is ADDIE Model and its different components which are analysed from the viewpoint of qualitative data collected from the JB, contents and observation of the researcher.

3.0 Limitations of the Study

There were some major limitations that were encountered to complete the research.

1. One of the major constraints of the study was insufficiency of information that was highly required for the study. Sufficient books, publications, facts and figures are not available.
2. Every bank has maintained its confidential matter. It is not possible to get all the sorts of information due to official confidentiality from the employee throughout detail questionnaires.
3. This study covered only the Janata bank, therefore due to inadequate resource and time issues, there encountered a few limitations that would not include in any other part of the country where this type of trouble existed.
4. The study dealt only with the banks only; it faced a problem to collect data from other type of organizations where training seemed as a part of strategy.

In spite of all limitations made, data used in the study can hopefully attain an acceptable level of reliability in the context of the study.

4.0 Results and Discussions

4.1 An Overview of Training and Development Activities of Janata Bank:

Training and development become one of the most critical aspects of human resources management (HRM) effectiveness. Since the training & development (T&D) process involved cost, many of the employers seem that it is the possible sources of fund outflow. But the views have been changed over time in modern competitive business environment especially for the JB. They try to develop their own through "training & development". Since there is no specialized degree thought in the higher education curriculum, so there is shortage or no supply of such knowledgeable manpower for the JB in Bangladesh, the potential sources of "employees" by producing skilled manpower through proper training that should be based on JB banking activities.

4.1.1: Company profile

Janata Bank Limited is one of the 2nd largest state-owned commercial bank in Bangladesh. It was formed under the Bank Nationalization Ordinance of 1972 (President's order 26) which had taken over 2 other commercial bank, United Bank Limited and Union Bank Limited according

to the (“Janata Bank Limited”,). It was named then as Janata Bank. After the liberation war of Bangladesh in 1971, Janata bank was newly formed for mass banking with so many outstanding facilities from the government as a nationalized commercial bank in the country. Working as nationalized commercial bank, its responsibility increased and it turned into the 2nd largest commercial bank throughout the country with 906 branches which also includes 4 overseas branches in United Arab Emirates for its better performance within few years. This bank is connected with 1239 foreign delegates around the world. The location of this bank is at Motijheel Janata Bhaban in Dhaka. It has started its new journey as a public limited company in 15th November, 2007 with the name of Janata Bank Limited by getting registered with Joint Stock of Registrars and changes its structures according to the “Human Resource Practices of Janata Bank Ltd” (2021). It serves many banking services which includes deposit, loan, and financing, facilities of remittances in national and international boundaries

4.1.2 Human Resource Management Practice in Janata Bank

Human resource management is the systematic method of finding right employee for the right position. This method is used in worldwide as it has many benefits to the organization. Almost every large, medium and small organization is using this technique. In the Janata Bank, they also have HR policy. Their functions of HR are Training and Development, Recruitment and Selection, Manpower Planning, Compensation Packages, industrial Relations. And Performance Appraisal.

4.1.3 Training Institution of Janata Bank

To develop employee’s interpersonal, decision making, leadership and communication skills for the employee Janata Bank established 3 training centers in Dhaka, Comilla, and Rajshahi. These training centers form many types of training program which cover many aspects of banking related topic. Such as for probationary employees it covers ‘credit management course, manager’s induction course, credit management course, credit risk analysis, money laundering, and manager’s induction training program and many more. Training program is a continuous process of developing human resource of the Janata Bank. So, by these 3 training institution employees get the opportunity to improve and develop their knowledge, skills and attitudes for the purpose organization and the employee’s growth and development.

4.1.4 Training and Development Process of JBL

Janata Bank provides training and development program after the recruitment and selection of the employees. There are two types of methods are used in Janata Bank. They are on the job training and off the job training. On the job training refers to the training that conducts on the working site. Janata Bank uses this method to make employee more productive. Off the job training refer to the training that conducts outside the organization like classroom training, case study etc. Janata Bank prefers training needs analysis to evaluate training and development process. They prefer in house and out house training.. In the Janata Bank, they also focus on training and development process for the enhancement of skills, knowledge and abilities of employees. Their main focus is to increase the

employee's skills and employee's growth. Janata Bank management focused more on future and educating the managerial employees rather than focusing on individual performance improvement. It will be clearer if their objective regarding training and development process are shown. Janata Bank has some objective regarding both organization and individual training and development accomplishment. So, this objective can be dividing into two ways. Firstly, bank related objectives, viz a. It will help the Janata Bank to enhance its competency in organization functions; b. It helps to achieve new way of improving knowledge ;Janata Bank management should be aware of the new policy ;d. Training and development helps the Janata Bank to decrease employee turnover ;e. It increasing organizational growth and makes it 2nd largest public bank;f. It increase organizational productivity and serving quality; g.It also helps to decrease the cost of the functions of Janata Bank. Secondly, individual related objective: viz; a.Helps employees to get self-actualization; b.Training and development help the employees to become the better performer.Due to the training and development employee's behavior have changed toward the job, d.it reduces the inheritance policy; e. provide opportunity for self-assessment.

4.1.5 Methods of Training and Development in JBL

a. Lectures and Demonstrations- It is one of the oldest methods where trainer present the content in a broad way and trainer explain the topic and expects trainee to participate in the discussion to learn more about the topic by using some methods. In demonstration methods trainers explain and try to show how something works in real life. To be effective demonstration should provide with lectures.

b. Case Studies- Case study presents a real-life case and asked employees to find the problems and provide the solution of those problem. It allows employees to investigate more to find more information of the topic.

c. Role-Playing- in this training methods, to get more knowledge participant are given a role play for a particular situation where they will communicate with others about how to deal specific situation. How to deal with a harsh customer and make it more effective deal.

d. Coaching and Mentoring- Coaching focus on short term way of teaching participant some particular skills and it ends when the participant develops a strong learning about those skills. It mainly comes from outside of the organization. It focuses more on technical skills. Mentoring is a long-term relationship with senior employees who will guide junior employees about the skills and knowledge and how to develop those in the better way.

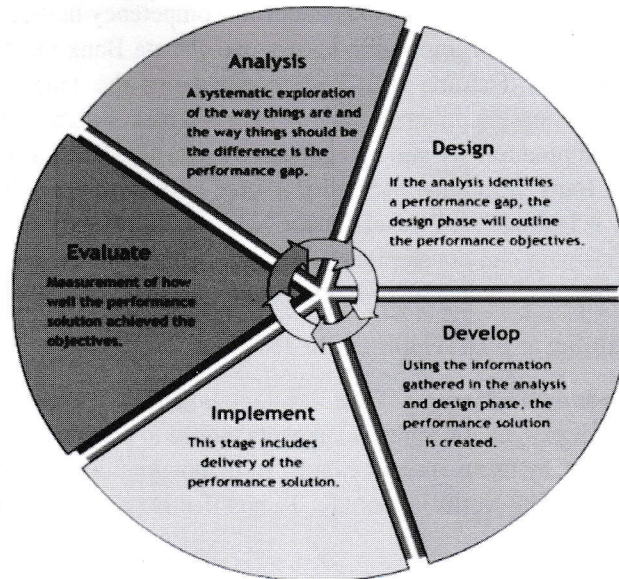
e Internship- Internship is a short-term methods of learning developing skills and knowledge where a participant works in a company with or without payment for gaining experience on a particular field.

f. On the job training- participant will get to develop their skills in the organization with help of their superior and other employees. Most skilled employee of the organization trains less skilled employees while doing job.

5. ADDIE Model and its application on the training process of JBL

The Model:

To know more about the training process, the researcher used ADDIE model where five steps describe the whole training programs (see the diagram).



The narration of five stages are given below:

- 1. Analyze:** In the analyze stage existing performance is compared with the desire future performance and try to find the gap. There can be two types of gape such as present performance gap where some problem is occurred now and need to mend it. And other one is future performance gap in which something can be created problem in the future but need to identify now to improve future.
- 2. Design:** In design phase, input will be the output of the analyze stage. It will find the gaps of occurred in the analyze stage and according to that a training program will be design. It is the best approach to convey the objective of the training. This phase determines the training objective where it will explain what will be trained and how to trained the employees.
- 3. Develop:** training programs are design to know about training materials such as manuals, lectures, slides so that actual training materials can be developed. It uses the output of design stage as input. It helps to explain instructional strategy which is consisting of time, order and relation of the methods used in the training program.

4. Implementation: Setting up the training for having the desired result with a pre-planned method is called training implementation. It is done to see the result of the training by the organization which costs money. It is the most complex function of the training program, if anything does not work can cause failure of the program. Sometimes well-planned training programs fail due to wrong steps. Here, all the things that have been learned in the training program are applied in real life to see how the training program works in the organizational perspective in real life. To find any error in the design and implementation phase, there needs to be conducted a dry run test before actual one is conducted.

5. Evaluation: In this stage, organization will evaluate the training program to see the effectiveness of the training in the real life and has it achieved its objective or not. There are two types of evaluation process. First one is process evaluation where training process will be evaluated to see that process has done according to the training plan. Second one is outcome evaluation where it will show the real benefit of the training program happening in the organization. Whether training has any improvement on organization or not. It will be compared with training result. It can be done through feedback, research and interaction.

Application of ADDIE Model Process in Janata Bank

Analysis Phase

It is a tactful way of finding out the reasons why the actual performance of individual is less than the desired performance. As Janata Bank hires people from different educational backgrounds in which everyone is not skilled in every field. Also new employees find difficulties to relate theories in practical life. Therefore, training needs analysis is required for finding out the employees who have less knowledge in a particular field. Like employees from economic backgrounds should need the knowledge accounting, finance. When Janata Bank finds out the gap between actual and expected performance, it creates a triggering event. Janata Bank ends the triggering event by: • Performance analysis ; • Job analysis and need for education. Janata Bank finds the gap by analyzing those factors which helps to design training program.

Present performance gap

There can be both present performance gap and future performance gap can be found in Janata Bank. Present performance will be occurred when new employees will have the problem in operating the new function in the organization. Like they don't know how to use MS excel sheet which are the problems of present.

Future performance gap

Future performance gap will be occurred when new policy and technology will be implementing for the organizational overall change in the upcoming year. Hence training would be needed for the use of new policy and technology. Also, when job rotation is needed employee has to know multiple tasks so that if anyone is absent in future, they can work on behalf of others employee. Thus, also creates future performance gap.

Design Phase

In design phase Janata Bank describes the training objective which defines what kind of training would be provided to the employees. This objective will help the trainers to design training program by using techniques, materials, content etc. • Training institutions- 3 institution (Dhaka, Comilla and Rajshahi); • Trainers- internal and external trainers ;• Classroom seating arrangement ;• Topic related to the banking work; • Trainees- new employees ;• Materials- slides, hand note, books. This is how Janata bank design its training progra

Cost in designing training

Materials which are used in designing training of Janata Bank mostly pen, sheet, notes, writing pads as they provide classroom training which cost money. Also, they have to leave for training institution which is located 3 different places of Janata Bank. Training institution located in Dhaka, Comilla and Rajshai. For this they had to provide food, transportation, training aids such as hiring equipment's, boards, and marker. Providing these services to the employee involves direct cost of the organization and also, they compensate the employees who are going to join the training.

Development phase

In developing the training, the Janata Bank provide many facilities like room, furniture set up, and equipment to have good learning environment. To make learning more effective they provide class room or theater style seating arrangement in the room so which is most commonly used in the training. This classroom is fully controlled by the trainer and can accommodate large number of participant as it has high seating capacity.

Implementation phase

After completing analyze, design, develop phase, it needs to see whether these things have any effectiveness or not in the training. For an effective implementation it needs good trainer and the physical set up of the training program. As it was discussed above it has class room facilities and trainers of Janata Bank are skilled person who deliver their lectures very proficiently. As they run the training institutions. Employees can achieve strong skills, knowledge and attitudes from the training. So, it can be said that its implementation on real life has great impact on the organization as it is 2nd largest public bank in Bangladesh with overseas branch. From this it can be said that its implication of training was successful. It will help participant to have good communication with other participants.

Evaluation Phase

Evaluation is the process by which employee's performance is evaluated. Are the training program benefits in the real life or not? If it is done successfully the whole bank will be benefited and achieve their organizational goal by applying each employee's efforts in the organization. Evaluation mostly comes from the feedback given by the top-level management. In Janata bank employee's performance is being evaluated and if there is any lacking in their performance, they are sent to training and development program. In Janata Bank evaluation are done through observation where it is seen that how employees doing in handling the situation with customers. Whether

the training is successful or not they provide a particular unit under which they have been evaluated. This unit will observe the performance of the employees across the whole year. They decide action plan if it is needed to apply.

6. Summary of Findings of the Study

Training program is conducted for developing employee's abilities to perform the job but their process of training is endowed with some problems. While doing the research, the researcher has found some problems in Human Resource management department and in their management policy. The findings are a. Their training and development process are not well planned. They don't use any structured way of training process; b. Supervisors and other managers of different departments have interpersonal conflict which causes deficiency in interpersonal skills. Training and development process are not maintained properly and their policy to use classroom training to present video, slides which does not make a good result of training to the employees; c. In classroom training, there is lack of communication among the participant and they have problems to interact with instructors as participants; d. They use traditional training and development process which is getting faded today and less productive to the listeners/trainees. e. Janata Bank has problems in evaluating employee performance in maintaining neutrality; f. Some employees think training process is nothing but wasting their time as they have to be in training program for long time; g. Janata Bank employees are not valuing organizational goal as their own so they are not tense about training that are given to the employees.

7. Recommendations

The recommendations based on the findings of the study revealed that organization should invest more to attract employees to join training program and consider organizational goal as their own. Janata Bank should try to know what types of training methods were followed in parallel banks (both in private, public, foreign) and attempted to make a standard training policy for the bank (JB). The managers and supervisors should maintain a good interpersonal communication rather than conflicts among themselves. The study also recommends that though training had a greater influence on employee engagement, employee motivation and employee job satisfaction, training should have to provide more focus on improvement of employee engagement other than motivation and satisfaction. The Janata Bank authority should give technological as well as ethical training. The study also recommended that the application of ADDIE Model Process in Janata Bank should be followed to make the training process effective and fruitful. The study also recommended that Training and development programs should be associated with the employee's career development, so that the performance and engagement level of employees could be enhanced along with achieving organizational goal.

8. Conclusion

The success of one bank depends on the better service from the bankers to customers. Successful training and development program can create highly trained bankers who could serve the customer well, and to achieve customer satisfaction for the organization. By proper training and development process employees became more efficient and could contribute well in the organi-

zation ..So, this is the right time for the HR department of JB to start effective training and development programs for the employees by implementing effective Human Resource Management Policy. JB hasfacedsome limitationslike lack of funds, lack of initiatives in creatingnew financial product , absence of regulatory frame work, lack of conceptual clarity. The study model could help to bridge the gap in the areas of T&D in Janata Bank limited.

References

- Abeeha, B., & Bariha, B. (2012). Effect of employees training on the organizational competitive advantage in private sector of. *Far East Journal of Psychology and Business*, 6(1), 59–18.
- Abu Daqar, M., &Constantinovits, M. G. (2021). The impact of training on banks employee performance. *Hungarian Agricultural Engineering*, (39), 22–28.
<https://doi.org/10.17676/hae.2021.39.22>
- Adeyi, A., Okere, W., Apansile, E., & Okafor, L. I. (2018). Training and development and organizational performance: Standpoint from private tertiary institutions in Nigeria. *Journal of Economics, Management and Trade*, 21(12), 1–10.
<https://doi.org/10.9734/JEMT/2018/44895>
- Afroz, N. (2018). Effects of training on employee performance - A study on banking sector, Tangail Bangladesh. *Global Journal of Economic and Business*, 4(1), 111–124.
<https://doi.org/10.12816/004815>
- Aidan, N. (2013). *Effects of training on employee performance in Uganda, Vaasanammatto korkeakovlu vasa yrkeshogskola*. University of applied science international business.
- Aktar, S., Sachu, M. K., & Ali, M. E. (2012). The impact of rewards on employee performance in commercial banks of Bangladesh: An empirical study. *IOSR Journal of Business and Management*, 6(2), 9–15. <https://doi.org/10.9790/487X-0620915>
- Al-Omari, Z., Alomari, K., &Aljawarneh, N. (2020). The role of empowerment in improving internal process, customer satisfaction, learning and growth. *Management Science Letters*, 10(4), 841–848. <https://doi.org/10.5267/j.msl.2019.10.013>
- Ali-Hamad, B. G., and Zahir , I., Professor ZahirIrani. (2014). Training needs analysis: An empirical study of the Abu Dhabi police. Brunel University. [PhD-Doctoral]. (oai:ethos.bl.uk:629964).
- Alwadaei, S. A. (2010). Employee's perception and satisfaction with, performance appraisal Unpublished Research Report. Kuala Lumpur: Open University Malaysia.
- Alyahya, M. S., &Norsiah, B. M. (2014). Evaluation of effectiveness of training and development: The Kirkpatrick model. *Asian Journal of Business and Management Sciences*, 2(11), 14–24

- Anam, A., Rashi, S., Lodhi, R. N., Mizana, Simra, & Anam, I. (2013). The impact of employees training on the job performance in education sector of Pakistan. *Middle-east Journal of Scientific Research*, 17(9), 1273–1278.
- Armstrong, M. (2014). *Handbook of human resource management practice* (13 ed.). Kogan Page Limited.
- Balogun, A. (2011). Evaluation: The first step in training cycle. *Journal of Economics and Behavioral Studies*, 2(2), 50–56. <https://doi.org/10.22610/jeps.v2i2.22>
- BDU-HRM. (2019). Bahir Dar university human resource management annual report. Bahir Dar University.
- Bhatti, M. K., Soomro, B. A., & Shah, N. (2021). Predictive power of training design on employee performance: An empirical approach in Pakistan's health sector. *International Journal of Productivity and Performance Management*, ahead-of-print (ahead-of-print). 17.
- Borate, N., Gopalkrishna, Shiva Prasad, H. C., & Borate, S. (2014). A case study approach for evaluation of employee training effectiveness and development program. *The International Journal of Business and Management*, 2(6), 201–210. <https://doi.org/10.2139/ssrn.2486212>
- Buchanan., & Badham. (2020) . *Power, politics, and organizational change*. SAGE Publications Limited.
- Dessler, G. (2020). *Human resource management* (16th. Edition. ed.). Florida International University.
- Elnaga, A., & Imran, A. (2013). The effect of training on employee performance. *European Journal of Business and Management*, 5(4), 137–147.
- Febriani, V., & Derek, S. S. (2014). Analyzing the influence of training and development on organizational performance. *Jurnal EMBA*, 2(4), 55–64.
- Garavan, T., McCarthy, A., & Carbery, R. (2020). Training and organisational performance: A meta-analysis of temporal, institutional and organisational context moderators. *Human Resource Management Journal*, 31(1), 93–119. <https://doi.org/10.1111/1748-8583.12284>
- Hafeez, U., & Akbar, W. (2015). Effect of training on employees performance” (evidence from pharmaceutical companies in Karachi, Pakistan). *Business Management and Strategy*, 6(1), 49–64. <https://doi.org/10.5296/bms.v6i1.7804>
- Hartoyo, R., & Efendy, H. (2017). Development of training needs analysis in organization. *Journal of Management Research*, 9(4), 140.
- Hughes, A. M., Zajac, S., Woods, A. L., & Salas, E. (2019). The role of work environment in training sustainment: A meta-analysis. *Human Factors*, 62(1), 166–183. <https://doi.org/10.1177/0018720819845988>

- Israel, G. D. (2013). *Determining Sample Size* (Vol. PEOD-6, pp. 1–5). Institute of Food and Agricultural Sciences (IFAS), University of Florida.
- Kashif, A. R., & Tahir, A. H. (2020). Impact of on job training, training design and training delivery style on organizations performance. *Fujbe*, 5(2), 31–41
- Kenny, V., & Nnamdi, S. O. (2019). Employee productivity and organizational performance: A theoretical perspective, 1–10.
- Kessy, S., & Temu, S. S. (2010). The impact of training on performance of micro and small enterprises served by microfinance institutions in Tanzania. *Research Journal of Business Management*, 4(2), 103–111.
- Khan, R. A. G., Khan, F. A., & Khan, M. A. (2011). Impact of training and development on organizational performance. *Global Journal of Management and Business Research*, 11(7), 63–68.
- Khan, A., Abbasi, S., Waseem, R., Ayaz, M., & Ijaz, M. (2016). Impact of training and development of employees on employee performance through job satisfaction: A study of telecom sector of Pakistan. *Business Management and Strategy*, 7(1), 29.
- Khan, A., & Masrek, M. N. (2017). Training needs analysis based on mismatch between the acquired and required levels of collection management skills of academic librarians. *Collection Building*, 36(1), 20–28. <https://doi.org/10.1108/cb-06-2016-0012>
- Kirkpatrick, J. D., & Kirkpatrick, W. K. (2016). *Kirkpatrick's four levels of training evaluation*. atd press.
- Kirkpatrick. (2020). The Kirkpatrick model. Kirkpatrick
- Kuruppu, C. L., Kavirathne, C. S., & Karunarathna, N. (2021). The impact of training on employee performance in a selected apparel sector organization in Sri Lanka. *Global Journal of Management and Business Research: A Administration and Management*, 21(4), 5–12.
- Landa, E. (2018). Influence of training on employees performance in public institution in Tanzania. *International Journal of Human Resource Studies*, 8(2), 324.
- Lombard. (2010). practical resource for assessing and reporting inter-coder reliability in content analysis research project.
- Luo, X. (2000). *The rise of personal development training in organizations: A historical and institutional perspective on workplace training programs in the U.S. perspectives* (Vol. 1). BeTru Wellness.
- Luo, Z., Ma, E., & Li, A. (2021). Driving frontline employee's performance through mentorship, training, and interpersonal helping: The case of upscale hotels in China. *International Journal of Tourism Research*, 23(5), 846–857.

- Lussier, R. N., & Hendon, J. R. (2020). *Fundamentals of human resource management functions, applications, skill development* (Second Edition ed.). SAGE Publications Ltd.
- Mahmud, K. T., Wahid, I. S., Arif, I., & Martinez, J. B. (2019). Impact of training needs assessment on the performance of employees: Evidence from Bangladesh. *Cogent Social Sciences*, 5(1), 1705627. <https://doi.org/10.1080/23311886.2019.1705627>
- Mathis, R. L., & Jackson, J. H. (2016). *Human resource management* (Fifteenth ed.). Cengage Learning. Mathis, R. L., & Jackson, J. H. (2016). *Human resource management* (Fifteenth ed.). Cengage Learning.
- Melian Gonzalez, S., & BulchandGidumal, J. (2017). Information technology and front office employees performance. *International Journal of Contemporary Hospitality Management*, 29(8), 2159–2177. <https://doi.org/10.1108/IJCHM-10-2015-05>
- Mishra, S., & Panda, G. (2018). Impact of competency based training need assessment on individual performance: a study on employees of essel mining industries. *International Journal of Engineering & Technology*, 7(4), 157–159. Mondy, R. W., & Martocchio, J. J. (2016). *Human resource management* (14th ed.). Pearson Education.
- Motlokoa, M. E., Sekantsi, L. P., & Monyolo, R. P. (2018). The impact of training on employees' performance in the case of banking sector in Lesotho. *International Journal of Human Resource Studies*, 8(2), 16. <https://doi.org/10.5296/ijhrs.v8i2.12812>
- Nassary, R. P. (2020). The effects of training on employees' performance in public institutions: A case of arusha municipality, Tanzania. *International Journal of Research and Innovation in Applied Science (IJRIAS)*, V(IX), 1924–1930. <https://doi.org/10.21275/27101703>
- Naveed, A., Nadeem, I., Aryam, S., Zeesham, H., & Naqui, H. (2014). The impact of training and development on employee performance. *Arabian Journal of Business and Management Review*, 2(4), 19–24. [https://www.arabianjbm.com/VOL_2_\(4\)_NG.php\(open in a new window\)](https://www.arabianjbm.com/VOL_2_(4)_NG.php(open%20in%20a%20new%20window))
- Noe, R. A., & Hollenbeck, J. R. (2019). *Fundamentals of human resource management* (8th ed.). McGraw-Hill Education.
- Nzowa, G. (2020). Assessment of teachers' nonmonetary motivational factors on job satisfaction among public secondary schools in Arusha district, Tanzania. *East African Journal of Education and Social Sciences*, 1(2), 1–10.

- Priyadarshini, R. R. G., & Dave, D. (2013). Competency-based training needs assessment model. *Management and Labour Studies*, 37(3), 195–207.
- Raja, F., & Mohammed. (2011). impact of training and development on organizational performance. *Global Journal of Management and Business Research*, 11(7), 63–68.
- Raza, H. (2014). Training and development impact on organizational performance: Empirical evidence from oil and gas sector of Pakistan. *IOSR Journal of Business and Management (IOSR-JBM)*, 16(1), 67–72
- Rosemarie, & Wacheke. (2019). Systematic approach to training and employee performance of murang'a county government, Kenya. *International Academic Journal of Human Resource and Business Administration (IAJHRBA)*, 3(7), 318–331.
- Rüttledge, & Cathcart. (2019). An evaluation of sensory processing training on the competence, confidence and practice of teachers working with children with autism. *Irish Journal of Occupational Therapy*, 47(1), 2–17.
- Safitri, & Lathifah. (2019). The effect of training, discipline, motivation, and satisfaction on employee achievement. *Article in SSRN Electronic Journal*, 5(3), 1–13.
- Sasidaran, S. (2018). Impact of training on employee performance: A case study of private organization in Sri Lanka. *Journal of Business and Management (IOSR-JBM)*, 2, 13–21.
- Sekaran, U. (2003). *Research methods for business: A skill builder approach* (4th ed. ed.). John Wiley & Sons, Inc.
- Sendawula, K., Kimuli, S. N., Bananuka, J., & Muganga, G. N. (2018). Training, employee engagement and employee performance: Evidence from Uganda's health sector. *Cogent Business & Management*, 5(1), 1470

Microfinance as a Catalyst for Socio-Economic Transformation in Former Enclaves of Bangladesh: A Critical Appraisal

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Abstract

This study mainly endeavors to meticulously evaluate the role of microfinance interventions on the socio-economic metamorphosis of people of the former enclaves of Bangladesh. Post-integration, enforced identities, and rigid borders intensified enclave inhabitants, plight, amplifying economic ruin, job scarcity, substandard living, and developmental exclusion. Striving to integrate sequestered communities into the developmental framework, several NGO-MFIs instigated microfinance interventions within some former enclaves. This study deployed a multifaceted methodological framework, anchored in inductive reasoning, to delineate the profound ramifications of microfinance interventions rigorously. The findings of this study delineated microfinance borrowers, economic trajectory, showcasing amplified income, expenditure, and savings, alongside enhanced employment prospects. The escalating utility and travel costs of borrowers reflect augmented financial liquidity. Borrowers prioritized liquid assets over immovable wealth, with savings surging. However, infrastructural advancements in sanitation remained lackluster, highlighting microfinance's uneven efficacy in driving holistic socio-economic upliftment. In essence, the comparative evaluation elucidates that microfinance beneficiaries in the former enclaves of Bangladesh demonstrated a moderate escalation in household income and expenditure, coupled with enhanced fulfillment of basic needs and a pronounced supremacy in accrued savings and transport assets. Conversely, non-borrowers demonstrated elevated expenditures on travel and utilities, superior access to sanitary infrastructure and potable water, greater land tenure, and a heightened prevalence of mobile phone ownership, livestock, and poultry. The inferential analysis unveils a statistically significant correlation between microfinance participation and household income elevation, utility affordability, and asset valorization. Conversely, non-borrowers exhibited superior land tenure and infrastructural access. The findings of this study necessitate policy recommendations toward holistic socio-economic elevation (e.g., training opportunities, improving infrastructure, fostering entrepreneurship) beyond mere financial integration.

Key Words: Enclaves, Microfinance, Borrower, Economic, Asset.

1. Introduction

Every citizen holds a distinct national identity, evoking intrinsic pride in their sovereignty. However, enclave dwellers grapple with an existential identity crisis, perennially deprived of state-endowed privileges. Politically, an enclave denotes a territorial fragment wholly ensnared

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within an alien jurisdiction. These anomalous landmasses, geographically designated as enclaves yet colloquially termed ‘Chitmahals,’ epitomize geopolitical paradoxes (Whyte, 2002). As of 1996, global enclave configurations comprised 223 enclaves, 32 counter-enclaves, and a singular counter-counter enclave. Asia harbors the preponderance, with India and Bangladesh hosting 178 enclaves, 25 counter-enclaves, and the world’s sole counter-counter enclave—an Indian fragment engulfed by Bangladesh, paradoxically encasing Bangladeshi land (Roy, 2019). The Indo-Bangladeshi borderlands, once beset by labyrinthine territorial intricacies, rendered their denizens stateless—ostracized from legal frameworks, branded as “ChiteerManush” (people of the enclaves) in vernacular discourse. Their anomalous existence underscores the pernicious ramifications of fragmented sovereignty and geopolitical entropy.

2. A Brief Idea about Enclaves

An enclave is a segment of a nation’s mainland that is entirely detached from the primary landmass, situated within the borders of a neighboring country. Within India and Bangladesh, three distinct types of enclaves exist, such as:

- i. First-order enclave (a part of the mainland of a country).
- ii. Second-order enclave or counter-enclave (another enclave within an enclave).
- iii. Third-order enclave or counter-counter-enclave (another enclave within a counter-enclave).

3. Historical Background of the Enclaves of Bangladesh and India

The Land Boundary Agreement (LBA) aimed to resolve long-standing territorial disputes along the India-Bangladesh border, particularly concerning 162 enclaves completely surrounded by foreign land. These enclaves originated in 1713 following peace treaties between the Kingdom of Cooch Behar and the Mughal Empire, which failed to establish clear territorial demarcations. Before the rise of modern nation-states and stringent border controls, these enclaves posed minimal challenges. However, following the dissolution of British India in 1947 and the subsequent creation of Pakistan and India, enclave residents faced growing hardships (Hemlay, 2018).

The root of these disputes traces back to Cyril John Radcliffe, a British lawyer unfamiliar with India, who was tasked with delineating the India-Pakistan border in 1947. His miscalculations led to discrepancies, including the inadvertent exclusion of an Indian police station from official maps, enabling Pakistan to claim it. Though the Nehru-Noon Agreement (1958) proposed a resolution, political and legal complications delayed its implementation (Pandey, 2011). The creation of Bangladesh in 1971 further complicated matters, prompting fresh negotiations and leading to a new land boundary agreement in 1974. Despite mutual consensus on an enclave exchange, political resistance in India stalled progress (Hemlay, 2018). Indian nationalists opposed the agreement, citing an imbalance in land cession—India relinquished 17,160.63 acres to Bangladesh while receiving only 7,110.02 acres. Although a protocol was introduced in 2011 to finalize the exchange, it lacked a definitive timeline. The deadlock persisted until Prime Minister Narendra Modi’s government secured political support for a constitutional amendment, enabling India to ratify the LBA on May 6, 2015. The official exchange of 162 enclaves occurred

on July 31, 2015, granting enclave residents formal citizenship and resolving a seven-decade-long territorial dispute (Hemlay, 2018; Pandey, 2011).

4. Demographic Discussion on the Former Enclaves of Bangladesh

For decades, residents of 162 enclaves endured severe poverty, lacking access to healthcare, education, and law enforcement. Following nearly seventy years of negotiations, Bangladesh and India exchanged these enclaves under the Land Boundary Agreement (LBA) in 2015 (Ferdoush, 2019). The exchange, the fifth-longest international border swap, involved 111 Indian enclaves in Bangladesh and 51 Bangladeshi enclaves in India (Hemley, 2018). As a result, 37,369 residents in Indian enclaves within Bangladesh and 14,854 in Bangladeshi enclaves within India gained citizenship. Bangladesh received 17,160 acres, while India acquired 7,110 acres. Enclaves were located in Cooch Behar (India) and the northern districts of Bangladesh (Ferdoush, 2019).

Table: 01 Demographic Situation of the Former Enclaves in Bangladesh

District	Number of Former Enclaves	Upazilas		Population	Number of Unpopulated Former Enclaves	Area (in Acre)
		Number	Number of Former Enclaves			
Nilphamari	4	1	4	800	0	5155.5
Kurigram	12	3	12	11,251	1	1810.8
Panchagarh	36	3	36	20,924	21	119.2
Lalmonirhat	59	3	59	15,790	22	123.0
Total	111	10	111	48,765	44	7208.5

Source: BBS, 2018, and Field Survey

The above table highlights the varying socio-economic and demographic conditions across the districts. The total area of these 111 former enclaves is 7,208.5 acres, and they are home to 48,765 people (10,467 households), with 44 (39.6%) of the enclaves remaining unpopulated. These enclaves are distributed across 10 upazilas within these districts. All former enclaves in Bangladesh are located within the administrative boundaries of the four northernmost districts: Panchagarh, Nilphamari, Lalmonirhat, and Kurigram. Lalmonirhat has the largest number of former enclaves (59) across three upazilas and the most unpopulated enclaves (22). Panchagarh, with 36 former enclaves across three upazilas, has the highest population (20,924). Nilphamari has the fewest former enclaves (4) and the lowest population (800), with no unpopulated enclaves.

5. Significance of the Study

Nearly all residents of 73 former Indian enclaves in Bangladesh remain impoverished. Following the 2015 enclave exchange, the Bangladeshi government allocated BDT 200 million to enhance socio-economic conditions (Ferdoush, 2019). NGO-MFIs, including BRAC, ASA, TMSS, and

Grameen Bank, have launched microfinance programs, often more effectively reaching marginalized populations than the government (Hemley, 2018). However, more NGO-MFIs must engage to uplift these communities. This study assesses microfinance's impact in former enclaves, guiding policy formulation for financial and non-financial initiatives. It also establishes a foundation for addressing residents' genuine needs before implementing further development programs (Ferdoush, 2019).

6. Objective of the Study

This research endeavors to rigorously assess the role of microfinance initiatives on the socio-economic advancement of individuals dwelling in the former enclaves of Bangladesh. There are three specific objectives of this study are to:

- _ to evaluate the efficacy of microfinance in ameliorating economic conditions;
- _ to scrutinize the influence of microfinance in enhancing the standard of living;
- _ to explore the ramifications of microfinance on asset and wealth accumulation trajectories.

7. Literature Review

No comprehensive systematic study has been conducted on the impact of microfinance operations in the former enclaves of Bangladesh. Enclave dwellers have received minimal attention from researchers, with the literature scarcely addressing their political and socio-economic aspects (Rabbani, 2005). However, existing books and research provide general insights into the livelihood of former enclave residents and the impact of microfinance in Bangladesh and other countries worldwide. Karan (1966), Robinson (1959), Yunus (2015), and Whyte (2002) focused primarily on the geographical aspects of former enclaves, paying little attention to the socio-economic life of residents. Schendel (2002) analyzed the Bangladesh-India enclaves from the perspective of statehood versus individual livelihood, highlighting the significant suffering that enclave dwellers endured over the past 68 years. Despite possessing citizenship, they were treated as proxy citizens. Roy (2019) observed that enclave residents were economically impoverished, and their foreign identity exacerbated daily challenges. While the surrounding economy was also underdeveloped, host residents enjoyed the benefits of citizenship, making enclave residents even more vulnerable.

Haider (2016) examined the social capital of enclave dwellers, emphasizing their reliance on personal relationships with neighboring individuals due to their isolation. The absence of formal administration led to significant suffering, with the enclave environment following the principle of "Might is right." Enclave inhabitants generally maintained good relations with surrounding communities, although marriage between enclave dwellers and host residents was a concern. Agriculture and daily labor were the primary economic activities, with most residents relying on farming. Women were particularly vulnerable, facing frequent violence without legal recourse (Haider, 2016).

Following independence, new national identities and border controls heightened enclave residents' vulnerabilities. The primary challenges included economic hardship, social exclusion, and inadequate infrastructure (Rabbani, 2005). Studies by Barman (2007), Sen (2000, 2012), Bhattacharya et al. (2011), and Chakraborty (2016) explored issues of social exclusion in these enclaves. Studies assessing microfinance's impact on income and poverty show mixed results. Pitt and Khandker (1998) found that microfinance increased consumption by 18% for female borrowers and 11% for male borrowers. Hulme and Mosle (1996) reported that microloans increased incomes by 10-30% in Bangladesh, India, and Indonesia. Chowdhury, Ghosh, and Wright (2005) found that microfinance programs reduced objective and subjective poverty rates by 2.5% and 6.5% annually. Rahman and Khan (2013) observed improvements in borrowers' calorie intake, underscoring microfinance's positive socio-economic impact.

8. Methodology

This study adopted a mixed-method approach where both qualitative and quantitative will be employed with inductive reasoning to address the research objectives. For the successful completion of the study, data and information will be collected from both primary and secondary sources. Quantitative primary data was gathered through surveys, while qualitative primary data was collected using the Key Informant Interview (KII) method.

Sampling Design

Among the 111 former enclaves, 44 remain uninhabited, while the remaining 73 vary in size and population density. Several NGO-MFIs, including ASA, BRAC, and TMSS, operate microfinance programs in these areas. In this study, initially, a random sampling method was employed to select 47 former enclaves across four districts in Bangladesh, comprising both the microfinance borrower and non-borrower groups, where various NGO-MFIs have been implementing microfinance programs. From these, 468 respondents were randomly chosen for data collection, ensuring a comprehensive analysis of microfinance impacts in the former enclaves.

Table:02 Distribution of Respondents (Category-wise and District-wise)

Districts	Number of Former Enclaves	Type of Respondents		Total Respondents
		Microfinance Borrowers	Non-Borrowers	
Lalmonirhat	16	59	125	117
Panchagarh	16	112	42	154
Kurigram	12	59	66	125
Nilphamari	3	30	42	72
Total	47	276	192	468

Source: Present Study

This table summarizes data from four districts, showing the number of former enclaves and the respondents within them. The study involved 47 former enclaves, where 276 respondents were borrowers and 192 were non-borrowers, totaling 468 respondents. Data has been meticulously gathered from residents within the former enclaves. As more than 95% of the microfinance beneficiaries in Bangladesh are women, so all the respondents in this study were women. Nevertheless, interactions with male respondents provided supplementary insights. Respondents were selected from various age groups to enrich the understanding of their lived experiences within a historical context.

Sample Size Determination

To gather qualitative information, potential respondents were chosen using a non-probability method (purposive sampling). A total of 12 interviews were conducted for this purpose. Quantitative data was collected from 48,765 enclave people from 10,467 households (N= 48,765) of the four districts. Considering N=48,765 in the respective four districts, the following sampling approach and statistical formula were applied to the sample design.

$$n = \frac{(z^2 \cdot p \cdot q \cdot N)}{(z^2 \cdot p \cdot q + (N-1) \cdot e^2)} + 1$$

For this study, the formula becomes : $n = \frac{1.96^2 \times 0.5 \times 0.5 \times 48765}{1.96^2 \times 0.5 \times 0.5 + (48.765-1) \cdot 0.05^2}$

Where: n= 384.16. Rounding up to the nearest whole number, the sample size required would be 384. To deal with 5% of respondents will be included in the survey. So the total sample size will be; n = (384+22%) = 468.

9. Demographic Information of the Respondents

The average age of microfinance borrowers was 32 years, while non-borrowers averaged 36 years. Borrowers had an average of 4.2 years of education, compared to 3.3 years for non-borrowers. Illiteracy was a significant issue, with 45.7% of respondents identified as illiterate, a rate 16.1% higher among non-borrowers. Additionally, over 56% of household heads were illiterate, with non-borrowers experiencing a 6.5% higher rate. Training opportunities were limited, with only 12.6% of respondents having received training, more common among borrowers (15.2%) than non-borrowers (9.1%).

Both groups had an identical average household size of 4.6 members. Child marriage was prevalent, with an average marriage age of 15 years for respondents. Common health issues included colds (30.3%), high blood pressure (15%), and gastric problems (14%). Most respondents sought treatment from local pharmacies (46%) and quacks (34%). Government healthcare facilities were, on average, 4 km away. Electricity access was widespread, with over 95% of respondents having connections. Tubewells were the primary drinking water source, while 55.8% lacked sanitary toilet facilities, likely contributing to health issues.

Most respondents were women, with 93.5% of microfinance borrowers and 92.7% of non-borrowers being housewives. Self-employment was slightly lower among borrowers (1.8%)

¹ Where, n = Sample size, N = Targeted Population size, e = Admissible error in the estimate, p = Proportion of defectiveness or success for the indicator, q = 1-p, z = Standard normal variable at the given level of significance.

² z=1.96 for a 95% confidence level, p = 0.5, q = 0.5 (i.e., 1-p), e is the desired margin of error as a decimal (0.05 in this case), and N= 48,765.

compared to non-borrowers (2.05%). Given that households often had multiple income sources, the primary source was identified based on earnings. These findings highlight critical socio-economic conditions in former enclaves, emphasizing education, healthcare access, and sanitation as key concerns.

Table: 03 Primary Source of Household Income

Type of Occupation	Type of the Respondents' Households		All Samples (%)
	Microfinance Borrower Households (%)	Non-Borrower Households (%)	
Daily Wage	56.5	47.9	53.0
Agriculture	14.9	34.4	22.9
Small Business	23.6	12.0	18.8
Service	0.7	2.1	1.3
Unemployed	1.5	1.0	1.3
Other	2.9	2.6	2.8
Total	100	100	100

Source: Field Survey

Wage-based employment was the primary income source for most respondents. Small enterprises contributed to 22.9% of borrowers' and 18.8% of non-borrowers' household income. Self-employment income was 1.2 times higher among non-borrowers, while daily wage work was 8.6% higher among borrowers. Unemployment rates were similar (borrowers 1.5%, non-borrowers 1%).

Table: 04 Households' Financial Affairs

Financial Affairs	Category of the Respondents		All Samples (Average)
	Microfinance Borrowers (Average)	Non-Borrowers (Average)	
Household income (BDT)	15,012	14,372	14,750
Household expenditure (BDT)	10,542	10,296	10,441
Household savings (BDT)	8,493	6,105	7,299
Household Earners (Number)	1.2	1.3	1.2

Source: Field Survey

The survey delineates a superior income for microfinance borrowers (BDT 15,012) over non-borrowers (BDT 14,372), paralleled by marginally elevated expenditures (BDT 10,542 vs. BDT 10,296). Savings exhibited a stark contrast, with borrowers amassing BDT 8,493 against

non-borrowers BDT 6,105. Notably, 49.5% of non-borrowers hoarded savings domestically, whereas borrowers exclusively entrusted NGO-MFIs.

10. Regarding Involvement in Microfinance Program

A cohort of seven NGO-MFIs was engaged in the execution of multifarious socio-economic initiatives across 67 densely inhabited enclaves. These undertakings encompassed an array of domains, namely, the provision of credit facilities, the dissemination of educational resources, the implementation of sanitation measures, and the facilitation of healthcare services. In addition, there are five NGO-MFIs branches within the geographical area of these former enclaves.

Table: 05 NGO-MFIs Operating Microfinance Program in Former Enclaves

Name of the NGO-MFIs	Number of Former Enclaves	Number of Beneficiaries
BRAC	21	2096
ASA	29	1275
Grameen Bank	11	1060
RDRS	10	1425
BURO Bangladesh	5	189
TMSS	2	550
Padakhep	5	120

Source: Field Survey and KIIs

Seven NGO-MFIs spearhead socio-economic interventions in former enclaves, with BRAC and ASA commanding the highest beneficiary outreach. BRAC, ASA, RDRS, and TMSS concurrently implement non-financial initiatives, encompassing education, sanitation, and healthcare. Borrowers engaged in microfinance for an average of 4.8 years, securing loans four times, cumulatively amounting to BDT 1,14,966. Predominantly, 60.8% of loans funded agriculture, while 17.4%, 13.3%, and 8.6% facilitated small enterprises, livestock, and vehicle procurement, respectively. Non-borrowers stemmed from psychological duress, familial opposition, procedural intricacies, and preference for informal borrowing channels, exacerbating financial exclusion within these marginal enclaved communities.

11. Discussion on Findings

Discussion on Findings Using Descriptive Analysis

This section elucidates the ramifications of microfinance programs on multifarious dimensions, encompassing economic paradigms and quotidian existence. These initiatives catalyze local economic dynamism and elevate individual quality of life by facilitating access to financial resources.

Table: 06 Impact of Microfinance on Economic Affairs

Economic Affairs	Percentage of Borrowers Reporting Increase (%)	Rate of Increase (%)
Average household income	78.8	25.7
Average household expenditure	73.2	35.4
Expenditure on travelling	43.1	45.3
Expenditure on utility	76.1	77.5

Source: Present Study

Economic analysis reveals a substantial escalation across household financial parameters. Household income surged by 25.7%, with 78.8% of microfinance borrowers affirming growth, aligning with Pitt and Khandker (1998). Expenditure soared by 35.4% (73.2% of borrowers), corroborating Hulme and Mosley (1996). Travel costs skyrocketed by 45.3% (43.1% borrowers), while utility expenses exhibited a staggering 77.5% surge (76.1% respondents), paralleling findings by Rahman and Khan (2013). These metrics underscore microfinance's profound economic ramifications within marginalized enclaved communities.

Table: 07 Impact of Microfinance on Standard of Living

Standard of Living	Percentage of Borrowers Reporting Increase (%)	Rate of Increase (%)
Expenditure on basic needs fulfillment	85.5	22.5
Creating employment opportunity	3.6	62.5
Access to sanitary toilet	36.8	20.5

Source: Present Study

The economic shifts significantly improved living standards. Basic needs expenditure rose by 22.5% for 85.5% of respondents. Employment opportunities surged by 62.5%, noted by 3.6% of respondents. Access to sanitary toilets was enhanced by 20.5% for 36.8% of respondents. These changes signify improved fiscal resilience and elevated living standards among respondents.

Table: 08 Impact of Microfinance on Asset Accumulation

Type of Assets	Percentage of Respondents Reporting Increase (%)	Rate of Increase (%)
Amount of Savings	76.0	264.0 ¹
Land ownership	13.0	9.1
Gold ornaments	8.0	60.0
Number of Televisions	15.6	60.0
Number of mobile phones	42.4	55.9
Number of livestock	35.9	43.8

Source: Present Study

The dataset delineates a substantial escalation in asset accumulation among microfinance beneficiaries, as evidenced by a 3.6-fold surge in savings for 76% of microfinance borrowers. Conversely, land ownership exhibited a tepid 9.1% growth, acknowledged by merely 13.0% of borrowers. Gold assets (8.0%) and television ownership (15.6%) both soared by 60.0%, while mobile proliferation (42.4%) surged by 55.9%. Livestock holdings expanded among 35.9% of borrowers, with a 43.8% increase rate. Collectively, this data signifies a positive trajectory in wealth growth for microfinance borrowers.

Table: 09 Difference Between Microfinance Borrowers and Non-Borrowers in Economic Affairs, Standard of Living, and Asset Accumulation

Subjects to Comparison	Category of the Respondents		Comparative Difference (%)
	Microfinance Borrowers	Non-Borrowers	
Average household income	Yes	No	4.5
Average household expenditure	Yes	No	2.4
Traveling expense (BDT)	No	Yes	6.4
Utility expense (BDT)	Yes	No	22.1
Basic Needs Fulfillment (BDT)	Yes	No	7.1
Access to safe water	No	Yes	1.7
Access to a sanitary toilet	No	Yes	22.3
Earners in the household (number)	No	Yes	2.6
Savings (BDT)	Yes	No	39.1
Landowners (number)	No	Yes	90.6
Amount of land owned (decimal)	No	Yes	37.5
Gold ornaments (in ana)	No	Yes	0.9
Television (number)	Yes	No	14.2
Mobile phones (number)	No	Yes	4.1
Livestock (number)	No	Yes	18.2
Transport (number)	Yes	No	60.1
Poultry (number)	No	Yes	17.6

Source: Present Study

Borrowers exhibited marginal increments in household income (4.5%) and expenditure (2.4%), while non-borrowers incurred elevated travel costs (6.4%). Utility expenses were disproportionately higher among borrowers (22.1%), yet they achieved superior basic needs fulfillment (7.1%). Non-borrowers exhibited greater landownership (90.6%), safe water access (1.7%), and sanitary facilities (22.3%). Conversely, borrowers surpassed in savings (39.1%) and transport assets (60.1%). These findings align with Hulme and Mosley (1996) and Rahman and Khan (2013), affirming microfinance’s nuanced socio-economic impact. In a nutshell, the comparative analysis reveals that microfinance borrowers moderately increased household income and expenditure and excelled in basic needs, savings, and transport assets. Non-borrowers had higher expenses, better utilities, water access, land, and livestock.

Discussion on Findings Using Inferential Analysis

The table below shows the impact of microfinance on the microfinance borrowers’ economic affairs.

Table: 10 Impact of Microfinance on Economic Affairs

Independent Variables	(Model 01)	(Model 02)	(Model 03)	(Model 04)
	Household Income	Household Expenditure	Travel Expense	Utility Expense
Respondent Age	714.4 (464.6)	-236.8 (285.1)	2.952 (13.13)	28.29 (24.76)
Respondent Age Square	-5.898 (6.708)	3.827 (4.116)	0.0720 (0.190)	-0.332 (0.358)
Respondent education	247.2 (226.6)	-62.64 (139.1)	8.532 (6.403)	27.27** (12.08)
Respondent's profession (housewife only)	-8,186*** (2,682)	550.1 (1,646)	-23.63 (75.78)	106.9 (142.9)
Household head age	-20.76 (335.8)	197.5 (206.1)	1.647 (9.490)	-0.939 (17.90)
Household head age square	-1.183 (4.362)	-2.846 (2.677)	-0.0532 (0.123)	0.0478 (0.233)
Household head education	484.5** (195.0)	264.7** (119.7)	15.40*** (5.511)	23.99** (10.40)
Household head profession (self-employed work)	1,435 (1,320)	1,313 (809.9)	-53.50 (37.30)	-54.47 (70.35)
Household size	1,380*** (469.1)	865.6*** (287.9)	5.979 (13.26)	49.21** (25.01)
Access to training (Yes)	1,487 (1,955)	17.70 (1,200)	-136.9** (55.26)	-146.9 (104.2)
Microfinance borrower (Yes)	9,178** (3,414)	827.6 (793.0)	-26.68 (36.52)	114.8* (68.89)
Constant	683.1 (8,132)	5,781 (4,945)	-27.13 (227.7)	-660.0 (429.6)
Observations	316	316	316	316
R-squared	0.126	0.072	0.085	0.091

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

The above table shows that the respondent's profession (housewife) was found to have a significant negative impact on household income. Household head education was found to have a positive and significant impact on all dependent variables, except for travel expense, where it is highly significant. Household size was found to have a positive and significant impact on household income, household expenditure, and utility expense. In terms of microfinance borrowers, it was found a positive and significant impact was found on household income and utility expenses, and a negative and significant impact on travel expenses.

Table: 11 Impact of Microfinance on Standard of Living

Independent Variables	(Model 05)	(Model 06)	(Model 07)	(Model 08)
	Basic Need Fulfillment	Employment Generation	Access to Sanitary Toilet	Living in Own House
Respondent Age	21.99 (155.0)	28.29 (24.76)	0.00229 (0.00963)	-0.0192 (0.0207)
Respondent Age Square	1.021 (2.238)	-0.332 (0.358)	-4.07e-05 (0.000139)	8.41e-05 (0.000299)
Respondent education	92.23 (75.58)	27.27** (12.08)	-0.00889* (0.00470)	-0.0113 (0.0101)
Respondent's profession (housewife only)	-2,080** (894.5)	106.9 (142.9)	-0.0755 (0.0556)	0.145 (0.120)
Household head age	100.9 (112.0)	-0.939 (17.90)	-0.00367 (0.00696)	0.000219 (0.0150)
Household head age square	-1.436 (1.455)	0.0478 (0.233)	4.92e-05 (9.05e-05)	4.47e-05 (0.000195)
Household head education	146.2** (65.05)	23.99** (10.40)	0.00757* (0.00404)	-0.00301 (0.00870)
Household head profession (self-employed work)	-543.2 (440.2)	-54.47 (70.35)	0.0591** (0.0274)	-0.0213 (0.0589)
Household size	647.0*** (156.5)	49.21** (25.01)	0.00483 (0.00973)	-0.0402* (0.0209)
Access to training (Yes)	1,395** (652.2)	146.9 (104.2)	0.000426 (0.0405)	-0.0383 (0.0873)
Microfinance borrower (Yes)	480.9 (431.1)	114.8* (68.89)	0.00185 (0.0268)	-0.00998 (0.0577)
Constant	2,004 (2,688)	-660.0 (429.6)	1.023*** (0.167)	1.684*** (0.360)
Observations	316	316	316	316
R-squared	0.141	0.091	0.041	0.047

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

The above table shows that in terms of basic need fulfillment, this study found significant results for the respondent profession (housewife), household head education, household size, and access to training. In terms of employment generation, respondent education, household head education, household size, and microfinance borrower status were found to have a statistically significant positive association. Concerning access to sanitary toilets, a significant association was found in the case of respondent education, household head education, and household head profession (self-employed work).

Table: 12 Impact of Microfinance on Asset Accumulation

Independent Variables	(Model 09)	(Model 10)	(Model 11)
	Amount of Savings	Amount of Land Ownership	Total Asset Value
Respondent Age	883.1 (1,733)	5.702 (3.487)	63,338 (61,729)
Respondent Age Square	-7.121 (25.02)	-0.0660 (0.0503)	-580.7 (891.3)
Respondent education	248.6 (845.1)	1.451 (1.701)	36,252 (30,109)
Respondent's profession (housewife only)	143.0 (10,001)	-2.250 (20.13)	54,361 (356,320)
Household head age	-361.8 (1,252)	-1.210 (2.521)	-5,520 (44,625)
Household head age square	0.824 (16.27)	0.0161 (0.0327)	33.08 (579.6)
Household head education	1,440** (727.3)	5.538*** (1.464)	29,608 (25,914)
Household head profession (self-employed work)	5,211 (4,922)	38.18*** (9.906)	727,010*** (175,372)
Household size	-632.3 (1,749)	2.349 (3.521)	71,512 (62,331)
Access to training (Yes)	3997.8*** (1448.5)	8.589 (14.68)	65,547 (259,824)
Microfinance borrower (Yes)	31.1** (15.22)	9.522 (9.699)	452,968*** (171,715)
Constant	-6,392 (30,052)	-95.81 (60.48)	-1.635e+06 (1.071e+06)
Observations	316	316	316
R-squared	0.033	0.151	0.122

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

In the above table, Model 10 (Amount of Land Ownership) explains the most variance, followed by Model 11 (Total Asset Value) and Model 09 (Amount of Savings). This table shows that higher education levels of respondents and household heads generally had a positive impact on savings, land ownership, and total asset value. There is some evidence that age impacts savings and total asset value positively, but the significance levels are low. Notably, household head education shows significant positive effects in Models 09 and 10. Household heads who were self-employed showed highly significant positive associations with savings, land ownership, and total asset value. Larger household sizes tend to have positive associations with land ownership and total asset value, but these effects were not statistically significant. Access to training and being a microfinance borrower significantly increased savings (Model 09) and total asset value (Model 11).

The regression models reveal the following insights about the impact of microfinance on various aspects:

Table: 13 Impact of Microfinance on Economic Affairs, Standard of Living, and Asset Accumulation

Indicators	Sub-Indicators	Impact of Microfinance
Economic Affairs	Household Income	<i>Being a microfinance borrower significantly increases household income.</i>
	Household Expenditure	Positive but not significant impact on household expenditure.
	Travel Expense	Negative but not significant impact on travel expenses.
	Utility Expense	<i>Significant increase in utility expenses for microfinance borrowers.</i>
Standard of Living	Basic Need Fulfillment	Positive but not significant impact on fulfilling basic needs.
	Employment Generation	<i>Significant increase in employment generation associated with microfinance borrowing.</i>
	Access to Sanitary Toilet	Very minor and not significant impact.
	Living in Own House	Slight negative and not significant impact on the likelihood of living in one's own house.
Asset Accumulation	Savings	<i>Significant increase in savings for microfinance borrowers.</i>
	Land Ownership	Positive but not significant impact on land ownership.
	Asset value	<i>Highly significant increase in total asset value for microfinance borrowers.</i>

Source: Present Study

The table shows that microfinance has been shown to have a significant positive impact on household income, employment generation, and asset accumulation, though its effects on some aspects of living standards remain limited. Household income increases significantly for microfinance borrowers, supporting the findings of Banerjee et al. (2015), who noted that microfinance

participation helps expand income-generating activities. However, its impact on household expenditure and travel expenses is not significant, suggesting that income gains may be directed toward savings or investments rather than increased consumption (Khandker, 2005). Additionally, utility expenses rise significantly, indicating greater access to essential services, a trend consistent with Pitt and Khandker's (1998) study on microfinance's role in improving living conditions.

Regarding the standard of living, microfinance contributes to employment generation, aligning with findings by Morduch (1999), who observed that access to microfinance fosters self-employment. However, its influence on basic need fulfillment and access to sanitary toilets is minimal, suggesting that borrowing alone does not ensure substantial improvements in quality of life. A slight negative impact on homeownership may indicate that borrowers prioritize business growth or other financial needs over purchasing property, a pattern also highlighted by Karlan and Zinman (2011). In terms of asset accumulation, microfinance borrowers experience a significant rise in savings and total asset value, reinforcing findings by Karlan and Zinman (2011), who reported that microfinance participation enhances financial resilience. Although there is a positive but not significant impact on land ownership, this suggests that while microfinance supports short-term financial stability, its role in long-term wealth-building, such as property acquisition, remains limited (Armendáriz and Morduch, 2010). Overall, microfinance serves as a catalyst for income growth, employment, and financial security, but its effect on broader living standards is less pronounced. Complementary interventions, such as financial literacy programs and infrastructure improvements, may be necessary to maximize its benefits.

12. Policy Recommendations

Here are some recommendations based on the findings that will enhance microfinance effectiveness, ensuring long-term financial stability and economic growth for the people of the former enclaves of Bangladesh:

- Strengthening Financial Literacy and Training Programs
 - o Since access to training was found to positively impact economic affairs, asset accumulation, and employment generation, NGO-MFIs should enhance financial literacy and business training programs.
 - o Training programs should focus on investment strategies, savings management, and entrepreneurship to maximize the benefits of microfinance.
- Expanding Microfinance Services to Marginalized Groups
 - o The study found that housewives had a negative impact on household income, suggesting a need for targeted financial products and support mechanisms to empower women.
 - o Special financial assistance programs should be developed for women, especially those in self-employment or small businesses, to promote economic independence.

- Improving Access to Infrastructure and Basic Services
 - o Microfinance borrowers had higher utility expenses but lower access to sanitary toilets and safe water. Policymakers and NGO-MFIs should collaborate to integrate microfinance with community development initiatives, such as improving sanitation and water supply.
 - o NGO-MFIs can work with local governments to provide financial products that enable borrowers to invest in home infrastructure improvements.
- Enhancing Savings and Asset Accumulation Mechanisms
 - o A significant increase in savings was observed among microfinance borrowers, but asset accumulation was still limited in areas such as land ownership.
 - o NGO-MFIs should introduce savings-based loan models that encourage long-term financial planning, ensuring borrowers accumulate wealth sustainably.
 - o Providing incentives for investment in productive assets, such as livestock or business equipment, can further enhance financial stability.
- Encouraging Entrepreneurship and Employment Opportunities
 - o Since microfinance was found to have a statistically significant impact on employment generation, NGO-MFIs should introduce business incubation programs that help borrowers start and scale businesses.
 - o Loan structures should be diversified to cater to different business needs, including working capital loans, asset financing, and expansion loans.
- Monitoring and Evaluating Microfinance Effectiveness
 - o Continuous assessment of microfinance programs should be conducted to measure their long-term economic and social impact.
 - o NGO-MFIs should implement data-driven decision-making processes to tailor financial products to the evolving needs of borrowers.
- Government and Private Sector Collaboration
 - o Strengthening partnerships between the government, private sector, and NGO-MFIs can help provide technical support, improve infrastructure, and expand financial access to underserved communities.
 - o Regulatory frameworks should be strengthened to ensure microfinance operations remain transparent, efficient, and aligned with development goals.

13. Conclusion

The findings from both descriptive and inferential analyses provide a comprehensive view of microfinance's impact on economic affairs, standard of living, and asset accumulation among borrowers in the former enclaves of Bangladesh. The descriptive analysis reveals that microfinance significantly enhances financial stability, with many borrowers reporting increased household income and expenditure. Higher spending on utilities and travel indicates improved affordability and mobility. Standard of living improvements are evident, as 85.5% of respondents reported increased spending on basic needs, and employment opportunities rose by 62.5%. Asset accumulation also showed positive trends, with 76% of borrowers reporting increased savings,

alongside higher ownership of mobile phones and livestock. A comparative analysis between borrowers and non-borrowers highlights key differences. Borrowers demonstrated better savings rates and transport asset ownership, while non-borrowers had greater land, livestock, and poultry possession. Additionally, non-borrowers had better access to sanitary facilities and safe water, suggesting microfinance primarily improves financial stability rather than infrastructure access. The inferential analysis confirms these trends, identifying key financial improvement determinants. Household head education positively influenced income, expenditure, and asset ownership, while household size contributed to higher income and spending. Microfinance participation had a significant positive effect on household income and utility expenses but a negative association with travel expenditure. Regarding the standard of living, microfinance, along with household head education and training, modestly improved basic needs fulfillment and employment generation but did not significantly enhance access to sanitary toilets or home ownership. In asset accumulation, borrowers experienced notable gains in savings and asset value, with training access playing a crucial role. However, the impact on land ownership was minimal, suggesting microfinance primarily supports liquid asset growth rather than large-scale property acquisition.

The findings collectively underscore the vital role of microfinance in fostering economic growth and financial security among borrowers. While income, expenditure, and asset accumulation improved notably, the program's influence on infrastructure and land ownership remained limited. The evidence suggests that microfinance is an effective tool for enhancing financial stability and entrepreneurship, albeit with some gaps in broader socio-economic advancements. Future policies should focus on complementary interventions, such as improved access to infrastructure and training, to maximize the holistic benefits of microfinance programs.

References

- Armendáriz, B., & Morduch, J. (2010). *The economics of microfinance* (2nd ed.). MIT Press.
- Banerjee, A., Karlan, D., & Zinman, J. (2015). Six randomized evaluations of microcredit: Introduction and further steps. *American Economic Journal: Applied Economics*, 7(1), 1–21.
- Barman, R.K. (2007). *Contested Regionalism: A New Look on the History, Cultural Change, and Regionalism of North Bengal and Lower Assam*. Abhijeet Publication, Delhi.
- Bhattacharyya, H. et al. (2011). *The Politics of Social Exclusion in India: Democracy at the Crossroads*, edited Volume, Routledge publication.
- Chakraborty, A. (2016). *On the Conflicted Space of "Chitmahals" between the Indo-Bangladesh Border*: URL: <http://cerebration.org/arpitachakraborty.html>
- Chowdhury, M. J. A., Ghosh, D., & Wright, R. E. (2005). The impact of micro-credit on poverty: evidence from Bangladesh. *Progress in Development Studies*, 5(4), 298-309.
- Ferdoush, Md Azmeary. (2019). Acts of belonging: The choice of citizenship in the former border enclaves of Bangladesh and India. *Political Geography*. 70. 83-91. 10.1016/j.polgeo.2019.01.015.

- Haider, M. A. (2016). Transformation of Informal Governance to Formal Governance: Study on Former Enclaves of Bangladesh.
- Hemley, R. (2018). The Great Land Swap. Pacific Standard, California: Santa Barbara, Available at: <https://psmag.com/magazine/the-great-land-swap-india-bangladesh-borders-citizenship>
- Hulme, D., & Mosley, P. (1996). *Finance against poverty* (Vol. 1, No. 2). London: Routledge.
- Karan, P. P. (1966). The India–Pakistan enclave problem. *The Professional Geographer*, 18(1), 23-25.
- Karlan, D., & Zinman, J. (2011). Microcredit in theory and practice: Using randomized credit scoring for impact evaluation. *Science*, 332(6035), 1278–1284.
- Khandker, R.S. and Pitt, M.M. (1988). The Impact of Group-Based Credit Programs on Poor Households in Bangladesh, *Journal of Political Economy*, vol. 106(5), pp.958-996.
- Khandker, S. R. (2005). Microfinance and poverty: Evidence using panel data from Bangladesh. *The World Bank Economic Review*, 19(2), 263–286.
- Morduch, J. (1999). The microfinance promise. *Journal of Economic Literature*, 37(4), 1569–1614.
- Pandey, A. (2011). Hope for Indo-Bangladesh enclaves. NDTV. Retrieved 31 March 2020, Available at: <https://www.ndtv.com/india-news/hope-for-indo-bangladesh-enclaves-467347>
- Pitt, M. M., & Khandker, S. R. (1998). The impact of group-based credit programs on poor households in Bangladesh: Does the gender of participants matter? *Journal of Political Economy*, 106(5), 958–996.
- Rabbani, G. (2005). ‘Stateless in South Asia: Living in Bangladesh- India Enclaves’. A journal of social sciences and arts, vol. 12 & 13, 2005 & 2006.
- Rahman, M.T. and Khan, H.T.A. (2013). The Effectiveness of the Microcredit Programme in Bangladesh, *Local Economy*, vol. 28(1), pp. 85-98.
- Rahman, M. M., & Khan, H. T. A. (2013). The impact of microfinance on household income and expenditure in Bangladesh: Evidence from a longitudinal study. *Journal of Developing Areas*, 47(2), 263–280. <https://doi.org/10.1353/jda.2013.0025>
- Robinson, G. W. S. (1959). Exclaves. *Annals of the Association of American Geographers*, 49(3), 283-295.
- Roy, A. (2019). *Structures of Everyday Lives of Women: The Former Enclaves on the India-Bangladesh Border* (Doctoral dissertation).

- Sen, A. (2000). Social Exclusion: Concept, Application, and Scrutiny, *Social Development Office. Papers N1 Office of Environment and Social Development Asian Development Bank.*
- Sen, S. (2012). *Measuring Social Exclusion*, Rupali Publishers, Kolkata
- Schendel Van , W., 2002. Stateless in South Asia: the making of the India-Bangladesh enclaves. *The Journal of Asian Studies*, 61(01), pp.115-147.
- Whyte, B. (2002), 'The Cooch Behar Enclaves of India and Bangladesh: A Historical overview and determination of their number, area and population. *Oriental geographer*; Vol: 46(2).
- Whyte, B.R., 2002. Waiting for the Esquimo: A historical and documentary study of the Cooch Behar enclaves of India and Bangladesh. Available at: <http://hdl.handle.net/11343/34051>.
- Younus, A. S. M. (2015). Enclaves: Introducing stateless Folk in South Asia. Mohammad Abdul Hannan (Translated), Dhaka: Annesha Prokashon, April,30-160

Quality of Vocational Skill and Technical Training for Human Resource Development

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Abstract

The quality of vocational skill and technical trainings provided by public and private training institutes was at medium level. Major reasons for medium quality of training were lack of trained teachers, lack of training materials and infrastructural problems. According to the opinions of teachers, major needs for improvement of trainings were training of trainers, modern training materials/machines followed by/modern/digital laboratory, industry-based training and organizing regular training course. Government might take care to improve the quality of training like assist in organizing training for trainers on modern technology, modernization of instruments and training materials, financial grant and provide scholarship to trainees.

Key words: Vocational skill, Technical Training, Human Resource Development, Training Quality.

1. Introduction

Human resource development is the process of developing knowledge, skill, capability and positive attitudes of human beings to participate in development. Training is essential for human resource development. It increases the knowledge, skill, and positive attitude of man. It is a process of teaching, informing or educating people so that they may become as qualified as positive to do their work and become qualified to perform in position of greater difficulty and responsibility. In Bangladesh, there are training institutions both at private and public sectors which offer trade courses of various types. Imparting skills and methods for producing mechanics, technicians or skilled worker is main objective of courses offered by these institutions. The subjects of training include crafts, cottage industries, typing and short-hand, motor (vehicle) driving, repairing of electrical and electronic appliances, computer skill, pisciculture, poultry and livestock, farming, primary health care and operation of medical equipment and so on. This article highlights the quality of vocational, skill and technical training and its influence on human resource development.

2. Objective

2.1 General objective

Assess the influence of quality of training on human resource development.

2.2 Specific objectives

Specific objectives were to:

- (a) Assess the quality of vocational, skill and technical training provided by public and private training institutes;
- (b) Identify the problems related to the quality of training;

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- (c) Assess the quality of human resource development by training; and
 (d) Identify the steps should be taken to improve the quality of training and human resources.

3. Methodology

The study was conducted on both secondary and primary data. Secondary data were collected from secondary sources through reviewing books, journals, reports, and from various official and unofficial sources related to the study.

Three national level public organizations providing vocational, technical and skill training like Bangladesh-Korea Technical Training Center, Bangladesh-German Technical Training Center and Dhaka Polytechnic Institutes at Dhaka, one public vocational, technical and skill Training Institute from each Division of Bangladesh except Dhaka were selected purposely to collect information and data related to vocational, technical and skill training. Similarly, three national level private training institutes and non-government organizations (NGOs) like BRAC, Ashania Mission, and Underprivileged Children's Education Programs (UCEP) at Dhaka, one private vocational, technical and skill training institute from each Division of Bangladesh except Dhaka were also selected purposely to collect information and data. Total number of national level training institutes was 06 and vocational, technical and training institutes was 14. From each institute, information was collected regarding different aspects of training courses and about the institutes. Information about institutes were collected from relevant authority of the institute. Two trainers, two trainees and two trained trainees from each institute were respondents to provide data and information related to the study. Total number of trainers were 02 trainers x 20 institutes=40 trainers, 02 trainees x 20 institutes=40 trainees and 02 trained trainees x 20 institutes =40 trained trainees.

4. Result and Discussion

4.1 Quality of Training

4.1.1 Opinions of Trainers

Opinions of trainers about quality of training were measured by putting values like 3 for good, 2 for medium and 1 for minimum. The mean value of the opinions for quality of training was 2.5. It indicates that the quality of training was between good and medium level (Table 1).

Table 1: Opinions of Trainers about Quality of Training, 2019

TrainingInstitute(s)	Quality of Training			
	Good (3)	Medium (2)	Minimum (1)	Mean
Public	9	6	2	2.41
Private	4	3	-	2.57
Total	13	9	2	24 (2.5)

Source: Survey conducted during 2018-19 under the study.

4.2 Opinions of Different Occupation Holders

Different occupational holders opined about the quality of vocational, skill and technical trainings. Their opinions were measured in the same procedure as mentioned in the opinions of Trainers. The mean values of the opinions on vocational, skill and technical trainings were 2.1, 2.3 and 2.2 respectively. These findings indicate that all categories of training were at medium level (Table 2).

Table2: Opinions of Different Occupation Holders about Quality of Vocational, Skill and Technical Training, 2019

Training Institute(s)	Quality of Training											
	Vocational Training				Skill Training				Technical Training			
	Good (3)	Medium (2)	Minimum (1)	Mean	Good (3)	Medium (2)	Minimum (1)	Mean	Good (3)	Medium (2)	Minimum (1)	Mean
Public	6	9	4	19 (2.1)	8	10	2	20 (2.3)	8	10	2	20 (2.3)
Private	3	9	1	13 (2.1)	9	6	3	18 (2.3)	5	4	4	13 (2.07)
Total	9	18	5	32(2.1)	17	16	5	38(2.3)	13	14	6	33(2.2)

Source: Survey conducted during 2018-19 under the study.

Different occupation holders opined about the reasons for medium and average quality of training. There were 68 responses. Maximum reason was lack of trained trainers (35%) followed by inadequate training materials (25%), infrastructure problems (7%), lack of responsibility (6%) and others (Table 3).

Table 3: Reasons for Medium and Average Quality of Training, 2019

Reasons	Training Institute(s)		
	Public	Private	Total
Poor Management/Monitoring	1	1	2 (3)
Low Salary of Teachers	2	1	3 (4.5)
Lack of Proper Utilization of Resources	2	-	2 (3)
Lack of Responsibilities	2	2	4 (6)
Lack of Trained Trainers	13	11	24 (35)
Emphasis of Private Training Institute on Profit	2	1	3 (4.5)
Irregular Attendance of Trainees in the Classes	-	2	2 (3)
Inadequate Modern Training Materials	8	9	17 (25)
Lack of Update Machineries	2	-	2 (3)
Lack of Industrial Linkage	2	-	2 (3)
Lack of Space at Private Training Institutes	1	1	2 (3)
Infrastructure Problems	2	3	5 (7)
Total	37(54)	31(46)	68(100)

Source: Survey conducted during 2018-19 under the study;() : Data within parenthesis indicate percentage.

4.3. Needs for Improvement of Quality of Training

Trainers and different occupational holders opined about the needs for improvement of trainings. According to trainers, major needs for improvement of trainings were training of trainers course (22.5%), modern training materials/machines (22.5%) followed by up to date /modern/digital laboratory (15%), industry-based training (7.5%), organize regular training course (7.5%) and others (Table 4).

Table 4: Opinions of Trainers about Needs for Improvement of Quality of Training, 2019

Needs	Training Institute		
	Public	Private	Total
Up to Date /Modern/Digital Laboratory	3	3	6 (15)
Close Supervision and Monitoring	2	2	4 (10)
Industry based Training	-	3	3 (7.5)
Training of Trainers	7	2	9 (22.5)
Modern Training Materials/Machines	9	-	9 (22.5)
Organize Regularly Training Courses	1	2	3 (7.5)
Up to date /Modernization of Syllabus	1	-	1 (2.5)
More Attention of Trainers	1	-	1(2.5)
Provide Adequate Budget	1	-	1 (2.5)
Incentive for training	-	1	1 (2.5)
More Emphasis on Practical Training	-	1	1 (2.5)
Modern Training	-	1	1(2.5)
Total	25 (63)	15 (37)	40 (100)

Source: Survey conducted during 2018-19 under the study; Data within parenthesis indicate percentage.

Occupation holders also opined that, major needs were training of trainers (20%), provide enough machines and training materials (20%). It was followed by financial grant (8%), strong monitoring (8%), infrastructure development (8%) and others (Table 5).

The above findings emphasized the needs to impart training to trainers and provide training materials for improvement of training.

Table 5: Opinions of Different Occupation Holders about Needs for Improvement of Quality of Training, 2019

Needs	Training Institute(s)		
	Public	Private	Total
Inclusion of Modern Instruments	-	2	2 (4)
Financial Grant	4	-	4 (8)
Training in One Shift	1	1	2 (4)
Appoint Skilled Trainers	5	2	7 (14)
Training of Trainers	6	4	10 (20)
Training of Trainers and acquaint with modern technology	1	1	2 (4)
Industry relevant Trainings	-	1	1 (2)
Introduce update Technology	-	1	1 (2)
Ensure the Regular Presence of Trainees in the Classes	-	2	2 (4)
Provide Enough Machines and Training Materials	3	7	10(20)
More Practical	1	-	1 (2)
Strong Monitoring	3	1	4 (8)
Infrastructure Development at Training Institute	2	2	4 (8)
Total	26 (52)	24 (48)	50(100)

Source: Survey conducted during 2018-19 under the study;Data within parenthesis indicate percentage.

4.4. Government Steps Needed for Improvement of Training

Trainers opined about the steps should be taken by the government for improvement of trainings. There are 64 responses. Out of which, 38 responses from trainers of public training institutes and 28 responses from private training institutes. The maximum responses were to train the trainers on modern technology (27%) followed by modernization of instruments and training materials (19%), financial grant (9%); scholarship for trainees (8%) and others (Table 6).

These findings again emphasized the need on training of the trainers especially on modern technology and training materials with emphasis on modernization.

Table 6: Government Steps Needed for Improvement of Training, 2019

Government Steps Needed	Training Institute		
	Public	Private	Total
Create Interest among students	-	1	1(2)
Emphasis on Technical Education	-	1	1 (2)
Financial Assistance	1	2	3 (5)
Appropriate Trainers	2	-	2 (3)
Modern Laboratory	1	1	2 (3)
C.S up to date	-	1	1 (2)
Strong Monitoring	1	1	2(3)
Laboratory	-	2	2 (3)
Increase the course period	1	-	1 (2)
Technical Services	-	2	2 (3)
Increase the Course Period	2	-	2 (3)
Employment after Training	1	-	1 (2)
Hostel for Trainees	1	-	1 (2)
Up to date / Modernize the Syllabus	1	1	2 (3)
Financial Grant	2	4	6 (9)
Train the Trainers on Modern Technology	12	5	17 (27)
Scholarship of Trainees	2	3	5 (8)
Modernization of Instruments and Training Materials	8	4	12 (19)
Preparation of Course Syllabus through Linkage of with Industries	1	-	1(2)
Total	36 (56)	28(44)	64 (100)

Source: Survey conducted during 2018-19 under the study; Data within parenthesis indicate percentage

4.5. Satisfaction Level of Training

Satisfaction of trainers, trained trainees and trainees about training was measured by putting values like 3 for much, 2 for medium and 1 for minimum satisfaction of training. The mean value for satisfaction of training was 2.67. It means that satisfaction level of training was between much and medium (2.67) (Table 7).

Table 7: Satisfaction Level on Training, 2019

Training Institute(s)	Satisfaction			Mean
	Much (3)	Medium (2)	Minimum (1)	
Public	29	18	-	2.6
Private	30	11	-	2.7
Total	59	29	-	2.67

Source: Survey conducted during 2018-19 under the study.

Maximum reasons for satisfaction about training as opined by trained trainees was good quality of training (40%) followed by acquired knowledge (23%), got job (6%) and others.

4.6. Human Resource Development by Public and Private Training Institutes

Role of public and private training institutes for developing human resources in the country was measured by putting values like 3 for high, 2 for medium and 1 for minimum. The mean value for both categories institutes was 2.4 for human resource development. It indicates that their role for developing the human resources was above the medium level (2.4). In case of public institutes, it was between high and medium level (2.5) and above medium level (2.24) at private training institutes (Table 8).

Table 8: Human Resources Development at Public and Private Training Institute, 2019

Training Institute(s)	Human Resource Development			
	High (3)	Medium (2)	Minimum (1)	Mean
Public	15	15	-	2.5
Private	10	13	2	2.24
Total	25	28	2	2.4

Source: Survey conducted during 2018-19 under the study.

5. Conclusion

Bangladesh is a densely populated country, where maximum low-income families sent their children, male and female for vocational, skill and technical training. It is the responsibility of public and private sectors to provide good quality training to the trainees by which they can earn money in home and abroad. Moreover, government should take care to strengthen the training institutes.

References

Bangladesh Technical Education Board (2014). Number of Vocational and Skill Training Institutes in different Divisions of Bangladesh. Dhaka: Bangladesh Technical Education Board.

BRAC (2018). BRAC-Skills Development Program 2018. Dhaka: BRAC.

BSTD (2011). Project Proposal on Organizing Effective Training Course in Bangladesh. Dhaka: Bangladesh Society for Training and Development.

BSTD (2017). Strategy for Organizing Effective Training Courses in Bangladesh. Dhaka: Bangladesh Society for Training and Development.

BTEB (2019). 360hr Basic Trade Institute. Dhaka: Bangladesh Technical Education Board.

DFID (2007). STechnical and Vocational Skills Development.DFID.

DMA (2014). Skills Development Training Program. Dhaka: Dhaka Ahsania Mission.

Khanam, M. S. (1993). Development of Human Resources in Bangladesh: An Analysis of Institutional Supports. Chittagong: Chittagong University.

Sarwar, H. (2009). Utilization of Training for Poverty Reduction: A Case Study. Proshikhyan, A Journal of Training and Development, Vol.17(2), PP. 49- 61.

Sarwar, H., & Banu, T. (2012).Organizing Effective Training Course in Bangladesh.Annual Seminar of Bangladesh Society for Training and Development (BSTD). Dhaka.

Shamsuddoha, M., & Khanam, M. D. (2006). Development of Human Resources in Bangladesh: An Analysis of Institutional Supports. Chittagong: University of Chittagong.

Tansen, M. H. (2012, 09 27). Public Private Partnership (PPP) in the Technical Vocational Education and Training (TVET) Sector in Bangladesh: Challenges and Prospects. Retrieved 06 10, 2014, from Privatization in Education: <http://www.periglobal.org/public-private-partnerships/document/document-publicprivate-partnership-ppp-technical-v>

UNDP(1997). Human Development Report 1997. Delhi: Oxford University Press.

Impact of Farmers' Training on Technology Adoption, Profitability and Farm Income in Tilapia Farming

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Debarshi Bhattacharjee²

Abstract

Farmers' training plays a pivotal role in the sustainable development of aquaculture by promoting the adoption of improved technologies and the efficient use of production inputs. In Bangladesh, many institutions provide training to fish farmers to enhance their technical knowledge and management skills. This study investigates whether such training facilitates technology adoption and improves profitability and farm income. Specifically, it examines the effects of farmers' training on the adoption of semi-intensive (improved) tilapia farming technology and on the economic performance of fish farms in the Sylhet district of Bangladesh. Primary data were collected from 99 tilapia farmers across three upazilas: Sylhet Sadar, South Surma, and Golapganj, covering the period from July 2015 to June 2016. A Logit model was used to assess the influence of formal education, training, and access to institutional credit on technology adoption. Farm profitability was estimated using net returns, while farm income was measured as returns to land, family labor, and management. The results indicate that both training and access to formal credit have a statistically significant and positive influence on the adoption of improved technology. Trained farmers achieved 78% higher yields and 137% higher profitability than their non-trained counterparts. The per-hectare profit of trained farmers (Tk. 296,674) was more than twice that of non-trained farmers (Tk. 125,191). Similarly, the average annual income of trained farmers (Tk. 188,068) exceeded that of non-trained farmers (Tk. 91,682) by 105%. These results underscore the importance of continued investment in well-designed, need-based farmer training programs to accelerate technology adoption, increase production, and farmers' income in Bangladesh.

Key Words: Farmers, Training, Technology, Adoption, Profitability, Farm, Income, Tilapia.

1. Introduction

Farmers' training is fundamental to the sustainable development of aquaculture. It builds technical knowledge and practical skills essential for improving productivity, profitability, and environmental performance (Menezes et al., 2022). Well-structured training enables farmers to acquire critical competencies in pond preparation, water quality management, feed formulation, and disease prevention, directly influencing fish growth and yield (Murshed-e-Jahan, Beveridge, & Brooks, 2008). Moreover, trained farmers tend to adopt improved technologies, use inputs

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more efficiently, employ bio-secure management, and adopt environmentally responsible practices that reduce production costs while minimizing ecological impacts (Murshed-e-Jahan, Ahmed, & Belton, 2010).

In recent years, experiential learning models such as aquaculture field schools have proven highly effective in improving farm productivity and household income (Widowati et al., 2021). Moreover, decentralized and participatory extension systems have strengthened farmers' problem-solving capacity and resilience to climate and market shocks (Dompheh, Ferdous, & Hossain, 2024). Evidence from institutional programs, particularly those led by the WorldFish Center, demonstrates that sustained technical support and capacity building substantially increase adoption of improved aquaculture technologies, thereby contributing to enhanced productivity, higher household income, and food security (WorldFish Center, 2003). The Department of Fisheries (DoF) plays a central role in farmer training through its Fisheries Training and Extension Centers. Complementary initiatives are also implemented by the Bangladesh Fisheries Research Institute (BFRI), agricultural universities, non-governmental organizations (NGOs), and development partners.

In Bangladesh, tilapia farming has emerged as one of the fastest-growing sectors in aquaculture, driven by favorable climatic conditions, technological advancements, and rising market demand. According to the FAO (2022) report, "The State of World Fisheries and Aquaculture 2022," Bangladesh ranked 4th in tilapia production globally and 3rd in Asia. The total production of tilapia has increased from approximately 10,000 metric tons in 2000/01 to 439,678 metric tons in 2023/24 (DoF, 2024). Despite extensive training investments, empirical evidence on how training affects technology adoption, profitability, and income among tilapia farmers remains limited. Assessing these linkages is critical for guiding future extension strategies and optimizing resource allocation in aquaculture development.

This study investigates the impact of farmers' training on technology adoption, profitability, and farm income in tilapia farming in the Sylhet district of Bangladesh. The specific objectives of the study are to: (i) identify factors (especially the role of farmers' training) influencing the adoption of improved tilapia farming technology; (ii) compare input use, yield, and profitability between trained and non-trained farmers; and (iii) estimate differences in annual farm income across farmer groups. The findings from this study are expected to inform evidence-based policy and extension strategies that enhance sustainable aquaculture growth and rural livelihoods in Bangladesh and other developing countries.

2. Research Methodology

2.1 Theoretical Framework of the Study

Understanding how farmers' training influences technology adoption, profitability, and farm income requires a multidisciplinary perspective that draws on theories from behavioral science, economics, and innovation diffusion. Three major frameworks are available, namely, Human Capital Theory, Rogers' Diffusion of Innovations Theory, and the Technology Acceptance Model

(TAM). These models jointly explain how training affects farmers' knowledge, perceptions, and decisions regarding the adoption of improved aquaculture technologies.

Human Capital Theory: According to the Human Capital Theory, education and training constitute investments that enhance individuals' knowledge, skills, and productivity, leading to higher economic returns (Becker, 1964). In aquaculture, training enhances farmers' technical competence in areas such as pond preparation, feed management, and water quality control, thereby increasing production efficiency and profitability. Enhanced human capital also strengthens farmers' ability to adopt new technologies and manage risks. Studies in agriculture and aquaculture have demonstrated that trained farmers achieve higher yields and better financial performance than untrained farmers, primarily due to improved management practices and more efficient resource utilization (Asfaw & Admassie, 2004; Ragasa et al., 2022).

Diffusion of Innovations Theory: Rogers' (2003) Diffusion of Innovations theory offers a sociological explanation for the spread of new technologies through communication and social systems. Adoption depends on five key innovation attributes—relative advantage, compatibility, complexity, trialability, and observability. Training enhances these attributes by demonstrating the advantages of new practices, reducing their perceived complexity, and providing observable results. Through farmer-to-farmer interaction, trained individuals serve as opinion leaders, accelerating the diffusion of information within communities. In aquaculture, field-based training and participatory learning, such as Aquaculture Field Schools, have been demonstrated to facilitate collective learning and enhance technology adoption (Widowati et al., 2021).

Technology Acceptance Model (TAM): The Technology Acceptance Model (Davis, 1989) complements diffusion theory by focusing on individual behavioral intentions toward technology use. TAM posits that adoption is influenced by two perceptions: perceived usefulness (the belief that technology improves performance) and perceived ease of use (the belief that it is simple to operate). Training directly affects both perceptions by providing hands-on experience, simplifying complex tasks, and demonstrating tangible economic benefits such as higher yields or reduced costs. As knowledge and confidence grow, farmers' perceived usefulness and ease of use increase, reinforcing their willingness to adopt and continue using improved technologies.

Integrative Conceptual Framework: By integrating these theories, this study conceptualizes farmers' training as a catalyst that builds human capital and shapes behavioral intentions toward the adoption of technology. Improved knowledge and technical capacity reduce uncertainty, increase the perceived benefits of innovation, and promote the adoption of improved tilapia-farming technologies. Adoption, in turn, enhances production efficiency and profitability, which subsequently raises farm income. The framework also acknowledges mediating and moderating factors, such as access to credit, market conditions, and institutional support, that can strengthen or weaken these causal pathways.

Figure 1 shows the conceptual framework of our study. We argue that providing knowledge and skills through farmers' training and augmenting financial constraints through institutional credit contribute to the adoption of improved fish production technology, higher yields, increased

profits, and higher incomes. Lack of financial capital was identified by producers as a major constraint to the commercialization of aquaculture in Bangladesh (Murshed-e-Jahan et al., 2015). The productivity and input use of credit-constrained aquaculture farmers is significantly lower than that of unconstrained farmers (Mitra et al., 2019).

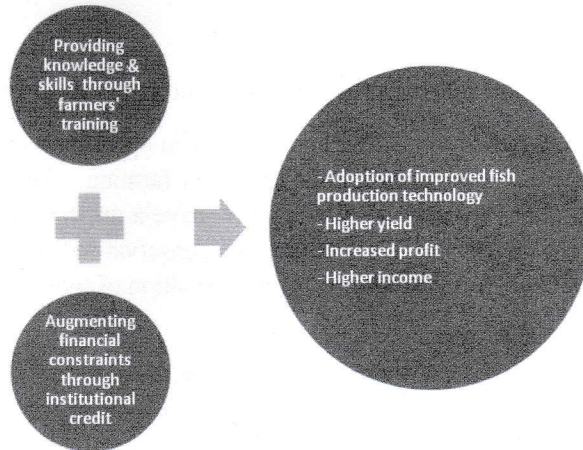


Figure 1. Conceptual Framework of the Study.

2.2 Data Sources

We conducted a survey among 99 tilapia farmers from three Upazilas (Sylhet Sadar, South Surma, and Golapganj) in Sylhet District from July to December 2015. We have analyzed the farm survey data in this study.

2.3 Analytical Framework

2.3.1 Adoption of Semi-intensive Production Technology

We have estimated a binary logit model (as in Equation 1) to examine the influence of training and access to financial resources (i.e., a loan) on the probability of adopting semi-intensive (improved) tilapia production technology. Formally, the model is specified as:

$$\text{Logit}(P_i) = \ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} \dots \dots (1)$$

where P_i denotes the probability that the farmer i is going to adopt the semi-intensive (improved) tilapia farming technology, β_0 is the intercept, β_j are the coefficients, and X_j represent explanatory variables. The explanatory variables comprised four variables: age,

the farmer's education level, training, and a loan from institutional sources. Thus, our empirical logit regression model was in the form of Equation 2.

$$Adopt_i = \beta_0 + \beta_1 AGE_i + \beta_2 EDU_i + \beta_3 TRAIN_i + \beta_4 LOAN_i + \mu_{ij} \dots \dots \dots (2)$$

Where,

$Adopt_i$ = Farmer i has adopted semi-intensive (improved) technology or not (1 = Yes, 0 = No)

AGE is the age of the farm operator (years). The age of the farm operator is expected to have a positive or negative impact on technology adoption in tilapia farming. The older farmers are likely to have had more farming experience and, therefore, have a greater interest in adopting new technologies. However, they are also likely to be more conservative and, thus, less willing to adopt new practices, which may result in a lower level of adoption of semi-intensive technologies for tilapia production.

EDU refers to the education level of farm operators and is expected to have a positive impact on the level of technology adoption. That is, we expect that greater levels of formal education among farm operators will be positively associated with the adoption of technology. EDU_i = Farmer i received secondary education or not (1 =Yes, 0 =No)

TRAIN is the variable of whether the farmer received any training for fish production. We expected that training would have a positive effect on technology adoption. In other words, farmers with training in fish production will adopt semi-intensive (improved) tilapia farming technology. $TRAIN_i$ = Farmer i was trained or not (1 =Yes, 0 =No)

LOAN is the variable indicating whether the farmer obtained credit from institutional sources. We assume that access to financial capital (in the form of a loan) has a positive effect on technology adoption in tilapia farming. $LOAN_i$ = Farmer i has obtained institutional loan or not (1 = Yes, 0 = No)

The probability function for the binary outcome is expressed as:

$$P_i = \frac{\exp(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki})}{1 + \exp(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki})} \dots \dots \dots (3)$$

To facilitate interpretation, marginal effects were computed for each explanatory variable, indicating the change in the probability of adopting semi-intensive tilapia farming technology resulting from a unit change in the predictor.

2.3.2 Profitability in Tilapia Farming

To quantify the profitability of tilapia farming, we have identified all expense items and income sources associated with tilapia production. We have quantified the input use level and associated costs of inputs used by trained and non-trained fish farmers. We have also gathered data on fish

production and prices received by the farmers. For a comprehensive understanding, we estimated the amount of total revenue (also known as gross revenue), total costs, and net returns. Also, we calculated break-even prices and yields.

Total revenue from tilapia farming refers to the total earnings from selling tilapia. It is obtained by multiplying the total output (quantity of fish produced) by the price of the output (fish price). We have used Equation (4) for calculating the total revenue.

$$\text{Total Revenue} = (\text{Total Output}) \times (\text{Price}) \quad \dots (4)$$

The total cost is the sum of all costs involved in tilapia production. Equation (5) can be used to calculate the total cost.

$$\text{Total Costs} = (\text{Total Variable Costs}) + (\text{Total Fixed Costs}) \quad \dots (5)$$

For a tilapia farm, there are two types of costs: variable costs and fixed costs. Variable costs are expenses that fluctuate in proportion to the quantity of fish produced. In our case, these are costs for fingerlings, cow dung, lime, mustard oilcake, rice bran, Urea, TSP, and labor. On the other hand, fixed costs are expenses that remain constant regardless of the level of production. It includes the cost of the rental value of the ponds used to produce tilapia.

Net return is the amount that a farm receives after paying for all inputs. Net returns indicate the profitability of a tilapia farm. It is calculated by deducting the total costs from the total revenue. For family-owned inputs, such as family labor and management, we have used imputed values based on the market price. Equation (6) is used to calculate Net Returns.

$$\text{Net Returns} = (\text{Total Revenue}) - (\text{Total Costs}) \quad \dots (6)$$

We have also computed two other useful information relevant for farmers: break-even price and break-even yield. Break-even price (BEP) is the price that a farm must receive to cover all the costs. It is also known as the per-unit cost of production. Using Equation (7), we calculated the BEP for both trained and non-trained tilapia farmers.

$$\text{BEP} = \text{Cost of Production (in Tk/Kg)} = (\text{Total Costs in Tk}) / (\text{Total Production in Kg}) \quad \dots (7)$$

Break-even yield (BEY) is the yield that a farm must receive to cover all costs when the farm sells the output at the existing market price. Equation (8) is used to calculate the BEY for trained and non-trained tilapia farmers.

$$\text{BEY} = (\text{Total Costs in Tk}) / (\text{Price of tilapia in Tk/Kg}) \quad \dots (8)$$

2.3.3 Income from Tilapia Farming

We have calculated farm income by determining returns to land, family labor, and management. In Bangladesh, there is no established market value for family labor and management in fish farms, nor for the use of one's own resources (land used in fish farming). Researchers use the wage rate of hired labor to impute the value of family labor and the time spent managing the fish

farm. The rental value of the land is used to calculate the cost of land. Family members may be able to share their available spare time to feed the fish and manage the fish farm, but not be gainfully employed in any outside jobs. Similarly, it may be possible to use your pond and ditch for fish production, but they cannot be rented to another person without compromising other uses, such as bathing, washing, and household water needs. Therefore, we use a better indicator to understand income from fish farming. It is referred to as "Returns to land, family labor, and management," which is calculated using Equation (9).

$$\text{Returns to land, family labour, and management} = \text{Total Revenue} - \text{Total Costs (excluding the costs of family labour, management, and land)} \quad \dots (9)$$

3. Results and Discussion

3.1 Basic Characteristics of the Sample Farms

Table 1 shows the basic characteristics of the sample farms. Approximately 59 percent of the sample farmers adopted semi-intensive (improved) production technology, while 41 percent used extensive technology. Average pond area per farm for extensive farmers and semi-intensive farmers was 58.1 decimals and 60.4 decimals, respectively. Approximately 59 percent of the tilapia pond area was cultivated using a semi-intensive method, and 41 percent of the pond area was cultivated using an extensive method.

Extensive aquaculture is a lightly stocked system where water throughput is not boosted, and feed or fertilizer inputs are not applied (Gomiero et al., 1997). Fish production depends on natural food sources within the culture unit (Edwards & Demaine, 1997). An extensive system in the empirical literature has been linked to feeding or fertilizing functions, but in limited quantities (Hari et al., 2006; Wahab et al., 2003; Dasgupta et al., 2008). Semi-intensive (improved) aquaculture systems can be defined as farms where feeding is carried out at least twice a week and fertilization is done once a week (Nilsson & Wetengere, 1994). The intensity of the system is correlated with the level of feed or fertilizers introduced into the system, as well as the levels of seed, labor, capital, and management (Edwards & Demaine, 1997).

There was not much difference in the formal educational attainment of the two groups of farmers. However, a higher percentage (19%) of non-trained farmers had secondary education, compared to trained farmers (11%). The average age of the sample farmers was 48 years. Although there was little difference in the age of trained and non-trained farmers, the average age of trained farmers was slightly higher. Almost all trained farmers (98%) adopted semi-intensive technology, whereas only 26% of non-trained farmers adopted semi-intensive technologies. Most (74%) of the non-trained farmers used extensive technology for tilapia production. More than half (54%) of the trained farmers received a loan from institutional sources, but only 26% of non-trained farmers took a loan from any institutional source.

Table 1. Basic Information about Tilapia Farmers.

Inputs	Non-trained Farmers	Trained Farmers	All
Number of farmers	53	46	99
Pond area per farm (Decimals)	58.8	60.3	59.5
Age (years)	46.4	49.5	47.8
Education level			
Primary	43 (81.1)	41 (89.1)	84 (84.8)
Secondary	10 (18.9)	5 (10.9)	15 (15.2)
Farms that received institutional loans	14 (26.4)	25 (54.3)	39 (39.4)
Tilapia production technology			
Extensive technology	39 (73.6)	1 (2.2)	40 (40.4)
Semi-intensive technology	14 (26.4)	45 (97.8)	59 (59.6)

Note: Figures in parentheses indicate the percentage of the total farmers in that category.

Source: Author's calculation.

3.2 Factors Influencing the Adoption of Improved Production Technology

As mentioned earlier, to examine the influence of formal education, training, and access to financial resources (loans) on the probability of adopting semi-intensive (improved) production technology, a logit regression model was estimated (Equation 1). Table 2 presents the results of a logistic regression model estimating the factors influencing farmers' adoption of improved fish farming technology. The explanatory variables include participation in farmers' training, access to loans, age, and education level. The dependent variable is binary, indicating whether a farmer adopted the improved technology (1 = adopter, 0 = non-adopter).

The model exhibits high explanatory power, with a pseudo R^2 of 0.62, indicating that the included variables account for 62% of the variation in adoption behavior. The Chi-square statistic ($\chi^2 = 83.02$, $p < 0.01$) indicates that the overall model is statistically significant.

Among the explanatory variables, training and access to loans have positive and highly significant effects ($p < 0.01$) on adoption. The estimated coefficient for training (5.20) implies that trained farmers are substantially more likely to adopt improved fish farming technology. The corresponding odds ratio (181.77) indicates that trained farmers are approximately 182 times more likely to adopt compared to non-trained farmers, while holding other factors constant. The marginal effect (0.79) indicates that training increases the probability of adoption by approximately 79 percentage points. Similarly, farmers with access to credit have a coefficient of 3.089 (statistically significant at 1% level of significance) and an odds ratio of 21.95, indicating that they are approximately 22 times more likely to adopt improved technology than those without loans. The marginal effect (0.47) indicates a 47-percentage-point increase in the adoption probability due to loan access.

Age (coefficient = 0.01) and education (coefficient = -0.09) have no statistically significant effects on adoption, indicating that these factors do not meaningfully influence technology uptake in this sample. The constant term (-2.67) is marginally significant ($p = 0.08$), reflecting a low baseline probability of adoption in the absence of training and access to institutional credit.

Several studies have reported similar findings. Ragasa et al. (2022) reported that participants in the training cohort had significantly higher adoption rates of improved tilapia technologies (fingerling quality and feeding practices) than non-participants in Ghana. The authors concluded that training enhances technical skills, decision-making confidence, and exposure to new practices. Das et al. (2014) found that education and training played an important role in the adoption of improved aquaculture technologies in Tripura, India. Widowati et al. (2021) showed that the aquaculture field school resulted in the adoption of liquid compost technologies in shrimp and milkfish ponds of Central Java (Indonesia) farmers. In Kenya, attendance at extension training significantly increased the likelihood of technology uptake (odds of adoption) among the analyzed smallholder fish farmers (Obiero et al., 2019). In Bangladesh, spousal education, training, extension contacts, and off-farm income sources played an important role in the adoption of improved carp polyculture management practices (Rahman et al., 2023).

Table 2. Logit estimation for the impact of farmers' training, access to loans, farmers' age, and education level on the adoption of improved (semi-intensive) fish farming technology.

Variable description	Estimated coefficient	Standard Error	Odds ratio	Marginal Effect	P value
Constant	-2.667*	1.543	0.069		0.08
Age	0.011	0.031	1.011	0.002	0.72
Training (Yes=1, No =0)	5.203***	1.140	181.771	0.789	0.00
Loan (Yes=1, No =0)	3.089***	0.788	21.950	0.469	0.00
Secondary Education (Yes=1, No =0)	-0.085	0.984	0.918	-0.013	0.93
Chi ²		83.02			
Prob > Chi ²		0.00			
Pseudo R ²		0.62			

Note:***p<0.01, **p<0.05and*p<0.10; n = 99.

Source: Authors' estimate.

Our findings do not support Islam et al. (2024), who reported that the training received by farmers had non-significant relationships with farmers' adoption of modern aquaculture technologies in fish farming. The study added that adopting modern aquaculture technology was significantly and favorably correlated with education, fish farm size, annual income from fish farming, experience with fish farming, and knowledge of fish farming technologies (Islam et al., 2024). We want to argue that the critical factor to notice here is the knowledge of fish farming technology, which can be enhanced through training.

Table 3 presents the predicted probabilities of adopting improved tilapia farming technology under various combinations of farmers' participation in training and access to institutional loans. These probabilities are derived from the estimated logit model presented in Table 2. The results clearly demonstrate the strong, complementary effects of both training and credit access on farmers' likelihood of adopting improved technology. When farmers receive neither training nor loans, the predicted probability of adoption is very low (only 7.6%), indicating that few non-trained and credit-constrained farmers adopt semi-intensive tilapia farming.

When farmers receive training but lack access to loans, the probability of adoption increases sharply to 93.7%, indicating that training alone substantially enhances farmers' knowledge, skills, and confidence in adopting improved practices. Similarly, when farmers do not receive training but have access to loans, the probability increases to 64.5%, suggesting that financial support alone also encourages adoption, though to a lesser degree than training.

The highest probability of adoption (99.7%) occurs when farmers receive both training and institutional loans, underscoring the synergistic impact of combining technical capacity-building with financial support. This finding highlights that integrated interventions (i.e., linking farmers' training with accessible credit) are most effective for promoting widespread adoption of improved tilapia farming technologies.

Table 3. Predicted probability of adoption of improved tilapia farming technology with training and access to institutional loans.

Training	Loan	Predicted Probability of Adoption
No	No	7.6%
Yes	No	93.7%
No	Yes	64.5%
Yes	Yes	99.7%

Sources: Authors' calculation.

3.3 Costs of and Returns to Tilapia Production

Table 4 reports per-hectare input use level and yield in tilapia cultivation by trained and non-trained fish farmers. Trained farmers used more input than non-trained fish farmers. The average per-hectare yield of tilapia among the sample farms was 4,018 kg. The per-hectare average yield of trained farmers (5,225 kg) was 77.5% higher than that of non-trained farmers (2,944 kg). Input use level for all inputs was higher for trained farmers than for non-trained farmers. Trained farmers used 53,318 fingerlings (i.e., 18.3% more fingerlings) than non-trained farmers (45,056). On average, trained farmers used 3,373 kg of cow dung, 286 kg of lime, 881 kg of mustard oilcake, and 903 kg of rice bran per hectare. On the other hand, non-trained farmers used 1,498 kg of cow dung, 173 kg of lime, 334 kg of mustard oilcake, and 363 kg of rice bran per hectare. In terms of chemical fertilizer use per hectare, trained farmers applied 29.1 kg of Urea and 12.6 kg of TSP, which was significantly higher than the amount used by non-trained farmers (16.2 kg of Urea and 7.4 kg of TSP). A higher level of input use resulted in a higher yield in tilapia for farmers who received training. In other words, farmers' training benefited the country by increasing fish production.

Our results corroborate those of Widowati et al. (2021), who showed that the aquaculture field school resulted in higher stocking densities, more use of inputs (manure, feed, and fertilizer), and increased yield of shrimp and milkfish in Central Java (Indonesia).

Table 4. Per-hectare input use level and yield (kg) in tilapia fish farming among the sample farms in Sylhet, Bangladesh.

Inputs	Non-trained farmers	Trained farmers	All
Fingerlings (Number)	45,056	53,318	48,947
Labor (Person-days)	165	307	232
Cow dung (Kg)	1,497.71	3,372.73	2,380.74
Lime (Kg)	172.52	286.21	226.06
Mustard Oilcake (Kg)	333.89	881.21	591.65
Rice bran (Kg)	363.28	902.64	617.29
TSP (Kg)	7.42	12.56	9.84
Urea (Kg)	16.22	29.05	22.26
Yield (Kg)	2,944	5,225	4,018

Source: Author's calculation.

Per-hectare costs of and returns from tilapia cultivation by trained and non-trained farmers are reported in Table 5. The average net return (i.e., profit or income) from tilapia farming among the sample farms was Tk 205,951 per hectare. The net return from tilapia production for trained farmers (Tk 296,674/Ha) was 137% higher than the net returns obtained by non-trained farmers (Tk 125,191/Ha). The average gross return received by the trained farmers was Tk 500,226/Ha, compared to Tk 253,470/Ha by the non-trained farmers. The average Total Costs of tilapia farming were Tk 203,553/Ha for trained farmers, while they were Tk 128,279/Ha for non-trained farmers. The per-kilogram production cost (also known as the break-even price) for tilapia was 10.6% lower for trained farmers (Tk 38.96) than for non-trained farmers (Tk 43.57). The benefit-cost ratio (BCR) in tilapia farming was 2.46 for trained farmers and 1.98 for non-trained farmers. Break-Even yield was 2,126 kg/ha for trained farmers and 1,490 kg/ha for non-trained farmers. In other words, at the current market price, to cover production costs only, the minimum yield per hectare should be 2,126 kg for trained farmers and 1,490 kg for non-trained farmers.

Table 5. Per-hectare costs and returns from Tilapia farming among the sample farms in Sylhet, Bangladesh.

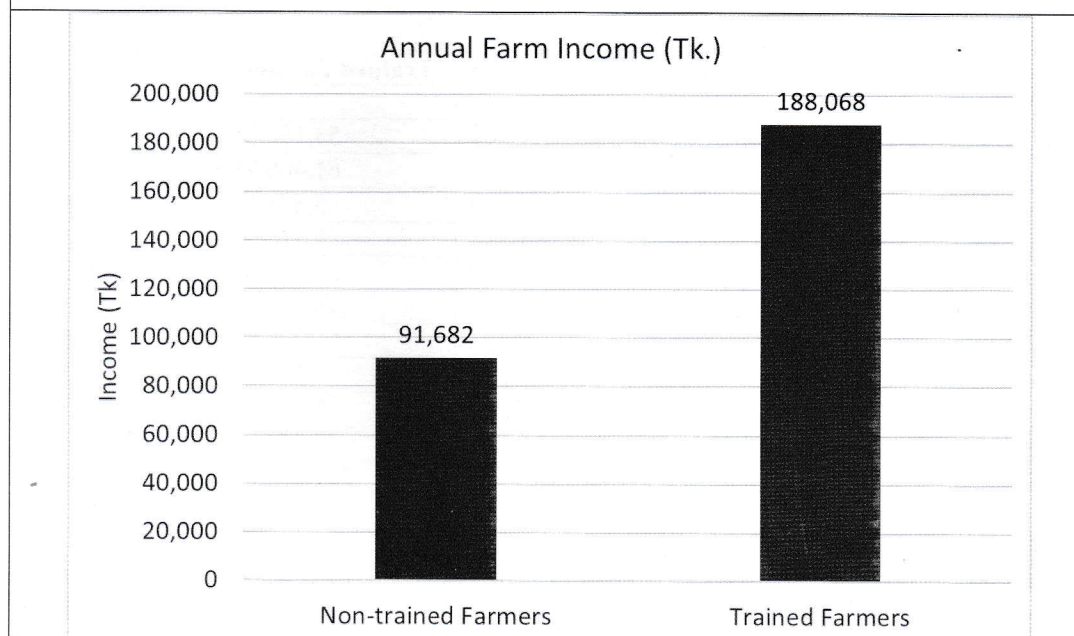
Description	Non-trained Farmers	Trained Farmers	All
COSTS			
Fingerlings (Tk.)	38,978.50	53,154.53	45,654.67
Labor (Tk.)	33,074.52	61,400.71	46,414.68
Cow dung (Tk.)	2,996.69	5,678.61	4,259.73
Lime (Tk.)	3,451.85	5,726.56	4,523.12
Mustard oilcake (Tk.)	10,021.09	26,447.47	17,757.06
Rice bran (Tk.)	7,268.73	18,060.43	12,351.06
TSP (Tk.)	163.23	276.52	216.58
Urea (Tk.)	292.10	523.09	400.88
Harvest cost (Tk.)	17,212.27	17,464.65	17,331.12
Rental value for land (Tk.)	14,820.00	14,820.00	14,820.00
Total Cost (Tk.)	128,278.98	203,552.57	163,728.93
RETURNS			
Yield (Kg)	2,944	5,225	4,018
Price (Tk./Kg)	86.09	95.74	92.00
Gross Return (Tk.)	253,470.18	500,226.49	369,679.57
Net Return (Tk.)	125,191.20	296,673.92	205,950.65
Returns to Land, Family Labour and Management (Tk.)	190,297.99	390,359.27	284,516.45
Break-Even Yield (Kg/Ha)	1,490	2,126	1,780
Break-Even Price (Tk/Kg)	43.57	38.96	40.75
Benefit-Cost Ratio (BCR)	1.98	2.46	2.26

Source: Authors' calculation.

3.4 Income from Tilapia Farming

Figure 2 illustrates the annual farm income of an average tilapia farm for the 2015/16 period. On average, the sample farmers had 59.5 decimals of pond area under tilapia farming. Farmers were able to produce tilapia twice a year. Our estimates reveal a substantial difference in farm income between the trained and non-trained farmers. The annual farm income of trained farmers was more than double that of the non-trained farmers. This income advantage reflects the benefits of adopting enhanced management practices, increased use of inputs, and higher stocking of fingerlings associated with the semi-intensive system.

Our results corroborate those of Widowati et al. (2021), who showed that the aquaculture field school resulted in the adoption of liquid compost technologies in the pond, increased shrimp and milkfish yield, and income of Central Java (Indonesia) farmers. Ragasa et al. (2022) demonstrated that participants in the training cohort exhibited significantly higher adoption of improved tilapia technologies and higher incomes compared to non-participants in Ghana.

Figure 2. Comparison of Annual Farm Income for an Average Tilapia Farm in 2015/16.

Source: Authors' calculation.

4. Conclusion

Researchers and policymakers are increasingly focused on understanding the impacts of farmer training programs, recognizing their potential to enhance farm productivity, income, and rural development. This study highlights the pivotal role of farmer training and institutional credit in driving the adoption of improved aquaculture technologies in Sylhet, Bangladesh. Specifically, training and access to credit are identified as the two most influential factors in the adoption of improved (semi-intensive) tilapia production systems. Training alone increases the likelihood of adoption by 79 percentage points, while access to credit contributes to 47 percentage points. When combined, these interventions can result in an almost universal adoption rate of 99.7%, underscoring the synergistic impact of technical knowledge and financial support in promoting aquaculture innovation.

The study further reveals that trained farmers achieve markedly higher productivity and profitability. Their average yield (5,225 kg/ha) exceeds that of non-trained farmers by 77.5%, while their net return (Tk. 296,674/ha) is 137% higher. Trained farmers also exhibit lower unit production costs (Tk. 38.96/kg) and a higher benefit-cost ratio (2.46), reflecting more efficient resource use and better management. Consequently, their annual farm income is more than double that of non-trained farmers, confirming the substantial benefits to their livelihoods from knowledge-induced aquaculture practices.

From a policy standpoint, these results underscore the need to prioritize farmer capacity-building as a cornerstone of sustainable aquaculture development. Government agencies, extension services, and non-governmental organizations should collaborate to design and implement targeted, hands-on training programs focusing on pond management, feed optimization, and input efficiency. Equally critical is the expansion of affordable institutional credit through coordinated efforts between financial institutions and aquaculture departments. Integrating technical training with access to credit will create enabling conditions for smallholder farmers to adopt improved technologies, enhance productivity, and sustain profitability. Continued investment in such integrated support mechanisms will accelerate the transition toward a more productive, inclusive, and resilient aquaculture sector in Bangladesh.

References

- Asfaw, A. & Admassie, A. (2004). The role of education on the adoption of chemical fertiliser under different socioeconomic environments in Ethiopia. *Agricultural Economics*, 30(3), 215-228. <https://doi.org/10.1111/j.1574-0862.2004.tb00190.x>
- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- Das, A., Kumar, N.R., Krishnan, M., Yadav, V.K. & Immanuel, S. (2014). Adoption of improved aquaculture technologies in Tripura, India. *Fishery Technology* 51: 58 – 63.
- Dasgupta, S., Pandey, B. K., Sarangi, N., & Mukhopadhyay, P. K. (2008). Evaluation of water productivity and fish yield in sewage-fed vis-a-vis fertilized based carp culture. *Bioresource technology*, 99(9), 3499-3506.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- DoF. (2024). *Yearbook of Fisheries Statistics of Bangladesh 2023–24*. Department of Fisheries. Ministry of Fisheries and Livestock. Government of Bangladesh.
- Dompheh, E. B., Ferdous, Z., & Hossain, M. (2024). Decentralized extension and food-security outcomes among small-scale aquaculture farmers in Bangladesh. *Frontiers in Sustainable Food Systems*, 8, 1499081. <https://doi.org/10.3389/fsufs.2024.1499081>
- Edwards, P., & Demaine, H. (1997). Rural aquaculture: overview and framework for country reviews. *RAP Publication (FAO)*.
- FAO. (2022). *The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation*. Rome, FAO. <https://doi.org/10.4060/cc0461en>

Gomiero, T., Giampietro, M., Bukkens, S. G., & Paoletti, M. G. (1997). Biodiversity use and technical performance of freshwater fish aquaculture in different socioeconomic contexts: China and Italy. *Agriculture, Ecosystems & Environment*, 62(2-3), 169-185.

Hari, B., Kurup, B.M., Varghese, J.T., Schrama, J.W. & Verdegem, M.C.J., (2006). The effect of carbohydrate addition on water quality and the nitrogen budget in extensive shrimp culture systems. *Aquaculture*, 252(2-4), 248-263.

Islam, S., Haider, S., Sayadat, N.,& Rahman, S. (2024). Adoption of modern aquaculture technologies in fish farming: The case of rural Bangladesh. *World Development Sustainability*, 5, 100192.

Murshed-e-Jahan, K., Ahmed, M., & Belton, B. (2010). The impacts of aquaculture development on food security: Lessons from Bangladesh. *Aquaculture Research*, 41(4), 481-495. <https://doi.org/10.1111/j.1365-2109.2009.02337.x>

Murshed-E-Jahan, K., Beveridge, M.C.,& Brooks, A.C. (2008). Impact of long-term training and extension support on small-scale carp polyculture farms of Bangladesh. *Journal of the World Aquaculture Society*, 39(4), 441-453.

Murshed-e-Jahan, K., Belton, B., Ali, H., Dhar, G.C.,& Ara, I. (2015). Aquaculture technologies in Bangladesh: An assessment of technical and economic performance and producer behavior. WorldFish, Penang, Malaysia.

Mitra, S., Khan, M.A.,& Nielsen, R. (2019). Credit constraints and aquaculture productivity. *Aquaculture Economics & Management*, 23(4), 410-427. <https://doi.org/10.1080/13657305.2019.1641571>.

Menezes, A., Murekezi, P., Martone, E., Badiane, A.A. & Mulonda, B.K. (2022). Training curriculum and practical manual on sustainable aquaculture. Rome, FAO. <https://doi.org/10.4060/cc0188en>

Nilsson, H., & Wetengere, K. (1994). Adoption and viability criteria for semi-intensive fish farming: A report on a socio-economic study in Ruvuma and Mbeya regions, Tanzania.

Obiero, K. O., Waidbacher, H., Nyawanda, B. O., Munguti, J. M., Manyala, J. O., & Kaunda-Arara, B. (2019). Predicting uptake of aquaculture technologies among smallholder fish farmers in Kenya. *Aquaculture International* 27, pp.1689-1707. <https://doi.org/10.1007/s10499-019-00423-0>

Ragasa, C., Mensah, A., & Anaglo, J. (2022). Impact of aquaculture training on farmers' adoption and income: Evidence from Ghana. *Agricultural Economics*, 53(3), 307-323. <https://doi.org/10.1111/agec.12754>

Rahman, M. S., Kazal, M. M. H., Rayhan, S. J., & Manjira, S. (2023). Adoption determinants of improved management practices and productivity in pond polyculture of carp in Bangladesh. *Aquaculture and Fisheries*, 8(1), 96–101. <https://doi.org/10.1016/j.aaf.2021.08.009>

Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). Free Press.

Wahab, M. A., Bergheim, A., & Braaten, B. (2003). Water quality and partial mass budget in extensive shrimp ponds in Bangladesh. *Aquaculture*, 218(1-4), 413-423.

Widowati, L.L., Ariyati, R.W., Rejeki, S., & Bosma, R.H. (2021). The impact of aquaculture field school on the shrimp and milkfish yield and income of farmers in Demak, Central Java. *S52(2)*, 362-377. <https://doi.org/10.1111/jwas.12770>

WorldFish Center. (2003). Development of Sustainable Aquaculture Project (DSAP): Progress report (1 July 2003 – 30 September 2003). World Fish Center, Bangladesh Office.

Comparative Assessment of Training Implementation in National Training Centers in Bangladesh¹

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Abstract

It's the process of change that allows workforce, institutions and the community progress. In countries like Bangladesh, near completion of the development has created such good networks -for training a person to do the job from just the planning table down to 'on floor' – have bridged lacuna between policy design and its implementation into field. This study compares the training strategies and evaluation systems of three national-level training institutes which are significant—PKSF, NAPD, and BRAC Learning Centre. The study will be conducted using a mixed method design which draws on quantitative survey data collection methods complemented by qualitative interviews, FGDs, structured observations and document review. The sample was composed of 42 respondents (apprentices, instructors and course moderators).

Findings reveal that the implementation quality of PKSF is relatively superior, due primarily to its participatory facilitation, ISO-based evaluation system and strong logistical support. NAPD seems typical of South African responses to social unrest and rebellion in its combination of technological preparedness with bureaucratic efficiency, on the one hand, and crippling restriction by infrastructural insufficiencies, on the other. BRAC exhibits its creativity and digital innovation but faces financial constraints and paucity of evaluation. The study is based on Kolb's Experiential Learning Theory, Kirkpatrick's Four Level Evaluation Model and Stufflebeam's CIPP Framework which takes into account institutional differences. Findings suggest that the addition of participatory learning supported by digital technology and standardized assessment has significant potential, positive or negative, to transform training in Bangladesh.

Key words: Training; Community progress, Participatory facilitation, Evaluation System.

1.0 Introduction

Learning, is the central business of today's HRD and organizational performance. Successful training doesn't just mean that employees are learning new skills, it means they're able to apply them to their work and see measurable performance improvements as a result. In Bangladesh at least, (recent) developments confirm that the activities of training institutions are an essential condition to such a significant and efficient realization of development policies and organizational changes at local level. Bangladesh in the last four decades or so has invested substantially in terms of time and resources to develop training institutions such as BPATC, NAPD, PKSF and BRAC Learning Centre. Although the roles of such institutions are diverse, they share a common purpose in building institutional and human capacity. But there are many signs that

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have experienced structural advances and some state mobilization, but not yet the creation of a good service up to institutional levels.

A disjunction between the design of training and its translation into practice in education and capacity building literature has long been recognized. Too much “content dumping” still occurs in all too many learning events and not enough focus is placed on getting learners to actually BE involved in the experience, change an actual behavior and deliver real organizational impact. Replicating the model International models such as Kolb’s Experiential Learning Theory, Kirkpatrick’s Evaluation Framework and Stufflebeam’s CIPP Model have been employed to evaluate and improve training systems. But, it has applied a very little in context of Bangladesh. This study, therefore, aims to explore and compare the practice of training implementation in three prominent Bangladeshi RTOs-PKSF, NAPD and BRAC Learning Centre. It explores the impact of institutional cultures, facilitation approaches, logistics and evaluation on the effectiveness of trainings. The approach is for analysis to be a summary of institution capacity, what are strengths and weaknesses and best practice from speakers on which national training policy can be advised.

1.1 Research Objectives

The objective of this study will be to:

RO-1: Examine how training and implementation methods vary across the PKSF, NAPD, and BRAC Learning Center.

RO-2: Identify the key drivers of quality and impact in training delivery.

RO-3: Critically assess current appraisals and feedbacks in the context of existing theoretical frameworks.

The use of a composite model for the development of national training management in Bangladesh.

1.2 Rationale of the Study

Training is not just a one-time event. It’s a continuous practice that connects individual learning to organizational change. Bangladesh’s Vision 2041 and National Skills Development Policy require effective and transparent training in situations. But lacking a disciplined review process, and the application of consistent standards across the board, even carefully conceived programs aren’t likely to make the kind of lasting impact Charter Promise has the potential to deliver. Attempting to close that policy gap, the current study offers an evidence-based crosswalk that can help standardize management.

1.3 Scope of the Study

The study focuses on the delivery of programs, not the development of curriculums and policies making. It Comprising of classroom managing, logistics support and instructor quality in addition to evaluation and participant satisfaction. The research conducted in public, semi-government and non-government organizations also reflects diversified management practices among the training efforts across Bangladesh.

2.0 Literature Review

2.1 Global Perspectives of Practice Implementation of Trainings

Training is often considered strategic weapon for organizational growth as well as human development. Training is a deliberate and systemic attempt to change attitude, knowledge, or skill behavior through learning experiences in which remnants of the environment affect these changes so that performance on the job is improved (Goldstein & Ford, 2002). Salas et al. (2012) also emphasize, that the success of a preparatory program depends on how the training/ facilitation expert delivers it - including trainer competence (training leading/facilitating), learning context and progress control.

Arthur et al. (2003), in a meta-analysis indicated that how what methods of design and delivery were used still mattered to learning retention and secured behavior change. Skill in its use promotes better training results, and fosters organizational creativity and adaptability. On the contrary, inadequately developed training can lead to resources being spent in vain and low motivation and few changes in behavior (Noe, 2017).

Participation, reflection and exploration in training can also increase retention and transfer of training (Rowold, 2007). Cache A group of closely related concept is very relevant to the training in developing countries like Bangladesh, where most of the training programs are still lecture-based and non-participatory.

2.2 Regional and Local Studies

Several challenges related to a training delivery in the South Asian context. According to Al-Ajlouni (2020) research finding, the public sector in developing countries generally does not gain from standardized evaluation tool, while low in efficiency. Similarly, a study in Bangladeshi government sector institutions found that there was no monitoring of learning achievements or performance after training (Islam and Rahman 2016).

A comparative study by Chowdhury et al. (2017) reported that progress is made in infant and young child feeding training infrastructure has been achieved in Bangladesh but there are some differences in facilitation, logistics and assessment. PKSF emphasis on participatory learning and feedback, for instance as NAPD is still too documentation-heavy. BRAC, in the meantime, has innovation and technology-based education included but weak results measurements post-implementation.

These findings underscore the cross-institution comparative utility in determining how a wide range of management, resources and evaluation strategies might affect implementation outcome.

2.3 Gaps in Existing Research

- The reviewed work suggests three essential points:
- The strength of a training strategy is no better than the implementation of that strategy.
- Typical evaluation frameworks shield the transparency and accountability.
- Optimal models can be built only through comparative institutional analysis.
- Theoretical Framework

Building on three closely allied theoretical models (i.e., Kolb's Experiential Learning Theory, Kirkpatrick's Four Level Evaluation Model and Stufflebeam's CIPP Evaluation Models) the study employs a multifaceted approach to evaluate training implementation.

3. The conceptual Development Framework Theory

3.1 Theory of David A. Kolb's Experiential Learning (1984)

"From Kolb's theory, successful learning is the product of four-ring model.

- Concrete Experience (CE): Actively doing or encountering something directly, allowing learners to gain firsthand experience that becomes the basis for reflection and learning.
- Reflective Observation (RO): Reflect on what happened and how it relates to generic principles.
- Abstract Conceptualization (AC): Participants draw conclusions or theories.
- Active Experimentation (AE): Try out new ideas for a change.

Theory of Kolb is used for teaching and learning in participatory pathways— e.g. simulations, case studies, group discussion—all are common tools applied by PKSf and BRAC. It reflects the principles of adult learning (andragogy) in terms of self-direction, relevance and reflective thinking.

3.2 Kirkpatrick's Four-Level Evaluation Model (1998)

Kirkpatrick formulated a four-level model for assessing the impact of training as presented in hierarchical order:

- Level-1: Reaction: How trainees feel about the training (— e.g. satisfaction questionnaires).
- Level 2: Learning: What people learn, how much they have learnt; what new knowledge and skills are gained.
- Level 3: Behavior: Using learning on the job as a consequence of training.
- Level 4: Results – Impact on the organization, for example, increased productivity or quality.

The majority of these centers assessed only Levels 1 and 2, and Levels 3 & 4 were severely neglected in Bangladesh. It is at Output Level 1-2 by PKSf providing feedback, whereas its equivalent after care system (Level 3) is in short supply. Regular post-course evaluations are used by NAPD, while BRAC is trying digital follow-ups with unsystematised data collection.

3.3 Daniel L. Stufflebeam CIPP Model (2003)

The **Context, Input, Process, Product (CIPP) Model** provides a comprehensive framework for evaluating training systems. **Context analysis** helps identify the needs, problems, and objectives that the training must address. **Input analysis** reviews available resources, strategies, and methods to ensure an appropriate and effective training design. **Process evaluation** assesses the quality of implementation, monitors activities, and identifies areas requiring improvement. **Product evaluation** examines the outcomes and overall impact of the training.

The CIPP model emphasizes continuous improvement through both **formative evaluations** (pre-training and during-training calibration) and **summative evaluations** (post-training assessment). This makes the model particularly relevant in structured environments such as **NAPD**, where planning, documentation, and accountability are central to training management.

3.4 Integrative Conceptual Model

In addition, these three theories (Kolb, Kirkpatrick and CIPP models) in the integrated form result a comprehensive assessment of training implementation as:

- Theory Kolb's Theory is theory Specifications, a hypothesis about how people develop concepts.
- The Kirkpatrick model measures what learning achieves.
- CIPP ensures that the method is monitored and improved.

By taking these two angles, process quality and outcome efficiency are included in this study. That is his triangulation here, placing the analysis into theoretical rigor and then to some extent reflecting how 'this one' fits Bangladesh's institutional regimes.

4. Research Methodology

4.1 Research Design

A comparative mixed method approach was used in the research with triangulation and reliability to be reached through both quantitative and qualitative methods. This strategy is allowing the data to be cross-validated across levels, from quantified measurements to contexts of occurrence. Quantitative aspects are represented by questionnaires that returned digital feedback results on satisfaction and institutional productivity for users. Qualitative methods (FGDs, KIIs and observations) were used to identify stakeholders while at the same time malting complementary information on behavioral, environmental and organizational factors.

4.2 Study Sites

For this, three different types of training his institutes were selected to represent the diversity that exists in the Bangladeshi training system:

- **PKSF Training Center:** PKSF is a development organization established by the Government of the People's Republic of Bangladesh. It operates through more than 200 partner (NGO) organizations across the country, focusing on credit programs, education, healthcare, and social development activities for the past 35 years, guided by national values and principles. Recently, PKSF Training Center has emerged as a separate division, and its activities are progressing in alignment with the evolving needs of the time. PKSF Training Center is currently offering 18 courses based on demand. Notable among them are: Behavior Science & Mindset, Behavioral Nudge in MFIs, Leadership for Development Professionals, and AI for Workplace Productivity.

- **National Academy for Planning & Development (NAPD):** The National Academy for Planning and Development (NAPD) is a national training institution under the Ministry of Public Administration, Government of the People's Republic of Bangladesh. It provides training to employees of government, semi-government, autonomous, and private organizations in areas such as planning and project implementation, procurement management, strategic planning and leadership, financial management, project evaluation and monitoring, e-governance and e-commerce, human resource management, office management, language education, and information technology, among others. Additionally, upon request, it offers training on any subject to employees of various government, semi-government, autonomous, and private organizations.
- **BRAC Learning Center:** BRAC is a global leader in pioneering and scaling proven solutions to poverty and inequality. Founded in 1972 as a small relief effort in post-war Bangladesh, we are now the world's largest southern-led development organization. BRAC's solutions-focused service delivery and systems change model operates across Asia and Africa and has reached 145 million people. Behind this effort, BRAC's 18 training centers across the country play a continuous collaborative role, collectively known as BRAC Learning Centers. Among these, information from the BRAC Learning Center located in Uttora, Dhaka, has been included in this study.

4.3 Sampling Strategy

A purposive sampling plan to ensure that resource people were involved in training for implementation. The total sample was 42:

- 27 trainees
- 9 trainers
- 3 coordinators
- 3 administrative officers

Year-of-training for the current year's trainees (2024–2025) was also reported to ensure relevance and currency of experiences.

4.4 Data Collection Methods

The data were from five complementary instruments:

- **Specific questionnaire:** For participants, a structured questionnaires were used to survey on general satisfaction with learning environment, trainers, content and logistics.
- **KII: Key Inform- ant Interview** with staff trainers and coordinators to identify strategies and organizational barriers.
- **FGDs:** This was a method to capture group experiences and perceptions.
- **Structured observations:** Research personnel observed lessons, using checklists that were organized around classroom environment, trainer-learner interaction, and technology.
- **Review of Documentation:** To ensure triangulation, we reviewed departmental documents and evaluation forms and course materials.

4.5 Data Analysis

The quantitative data were analyzed by the use of SPSS for frequencies, means and percentages as descriptive summary. Qualitative thematic analysis was done using the coding technique (open, axial and selective coding). Patterns were compared between institutions and themes extracted.

5. Ethical Considerations

Written consent was obtained from all respondents. Institutional consent was obtained from PKSF Training Center (PTC), National Academy for Training (NAPD) & Development and BRAC Learning Centers (BLC). Security and privacy of personal information were strictly maintained and no identifying details were disclosed.

6: Findings and Analysis

A summary review of evidences has been presented in this chapter based on data derived from PKSF Training Center, National Academy for Planning and Development (NAPD) and BRAC Learning Center. The analytical method compares institutions' effectiveness in the context of training and their efficiency focusing on findings from surveys, FGDs, KIIs, structured observations and document review.

6.1 Training Implementation across Institutions

6.1.1 Classroom Environment and Seating Arrangement

Indicators	PKSF Training Center	NAPD	BRAC Learning Center
Room Size & Space	Well-organized; spacious; allows group work	Clean but small; restricted movement	Adequate but less refined; limited group space
Seating Comfort	Comfortable and structured	Rigid; less flexible	Basic and informal
Lighting & Ventilation	Excellent natural light and airflow	Fully air-conditioned; less natural ventilation	Moderate light and ventilation
Cleanliness	Very clean, well-maintained	Clean but densely arranged	Clean but less polished
Teaching Equipment	Whiteboard, flat panel, markers	Smart board, multimedia	Multimedia only
Accessibility	Easily accessible	Well-structured, limited space	Distant from main road
Participant Feedback	Highly positive	Positive but space complaints	Mixed opinions

Impact of classroom space on learner engagement the classroom is a potent factor in stimulating the learner's engagement. PKSf's training halls are spacious and sufficiently lit facilities, which promote interaction and group teaching. The set-up also allows Kolb to learn experientially with mobility and engagement. Where NAPD feels stuffy and static, even while bleeping into the future, such templates are a barrier to the creative task ahead. BRAC's down-to-earth architecture reflects its no-nonsense approach to community education and training-simple, but highly effective in providing services right at the grassroots. So the philosophy of institution is embodied in materiality.

6.1.2 Logistic Support and Teaching-learning Material

Indicators	PKSF	NAPD	BRAC
Material Distribution	Timely and complete	Timely but sometimes delayed	Occasionally incomplete
Digital Tools	App-based assessments	Smart board, laptops	Limited multimedia use
Coordination	High administrative efficiency	Formal but slow	Responsive yet unstructured
Trainee Support	Personalized assistance	Centralized and hierarchical	Quick but inconsistent

The logistics of the PKSf operation are a showcase in administrative efficiency – training material goes out well in advance, sessions start timeously and feedback will be processed efficiently. NAPD is more political while bureaucratic, and BRAC is inconsistent but reactive. These indicators demonstrate that logistics efficiency is no longer a technological system but more of an issue within organizations.

6.1.3 Accommodation and Living Facilities

Indicators	PKSF	NAPD	BRAC
Room Cleanliness	Excellent	Good	Moderate
Space & Comfort	Spacious and comfortable	Compact	Moderate
Amenities	AC, lockers, attached bath	Basic but functional	Basic with shared facilities
Food Quality	Very good, hygienic	Acceptable; hygiene concerns	Good, well-cooked meals
Residential Environment	Quiet and relaxed	Disciplined and formal	Friendly and casual

The well-being of learners has a significant influence on motivation to learn. Clean air-conditioned rooms of the PKSf and good balanced meals all contributed to satisfaction, concentration. NAPD's disciplined backdrop brings order, but there isn't as much socializing. BRAC fosters a non-constrictive, community setting conducive to frank dialogue, but it can also be a hit-or-miss. The estimates indicate that quality of hospitality is positively associated with ROL the post-training use of skills was highest for PKSf Some estimation. Other studies/details Method results Training agency showed higher use of skills compared none are found in unpublished work Indices used differ across studies none were involved.

6.2 Trainer Skills and Training Methods

Indicators	PKSF	NAPD	BRAC
Trainer Competence	Highly skilled; participatory	Strong theoretical expertise	Innovative digital approach
Pedagogical Methods	Group work, case studies	Lecture-based	Storytelling, online quizzes
Feedback System	Continuous and reflective	End-of-course only	Digital form-based feedback

Skills of the trainers of PKSf Our trainers are knowledgeable in adult learning - theory while combining theoretical contents and activity based methods. Their provocative discussions lead students themselves to take responsibility for their learning. None of the DAPN ones were ever meant to be in person event (DAPN itself is a strictly online con), but the emulating NAPD(s) were always formatted as traditional lecture, which jives with bureaucracy if not attendance. We like the innovative BRAC (videos, peer feedback) but there is no coherent pedagogic framework. This supports the Kirkpatrick Model in which 5 reaction and learning are predicted to be relevant to upward training transfer.

6.3 Assessment and Evaluation Systems

Indicators	PKSF	NAPD	BRAC
Evaluation Model	ISO-based structured forms	Administrative evaluation forms	Digital Google Forms
Pre- & Post-Test	Conducted systematically	Exam-based, less aligned	Limited pre-testing
Reaction Evaluation	Detailed and standardized	General satisfaction only	Creative but irregular
Behavioral Evaluation	Occasional	None	Emerging digital follow-up

Accountability for the institutions is the key need of assessment. Farms are integrated to the lectures and these courses are ISO Standard (ISO 9001, 5010). Pre- and Post-tests measure learning gain quantitatively reasonably well. While the review by NAPD is formal, it includes no

behavioral cues and BRAC’s internet-based creativity adds flexibility but not rigor. The findings are indicating that the optimum can be achieved through a hybrid model covering the PKSF structure-based and BRAC innovation-Model – towards process (CIPP’s Process Evaluation) iota Product evaluation)

6.4 Results of Focus Group Discussions (FGDs)

Thematic Area	Best Performer	Key Comments from Participants
Food & Hospitality	PKSF	“Clean, timely meals; excellent hospitality.”
Trainer Quality	PKSF	“Highly interactive and motivational.”
Learning Environment	NAPD	“Comfortable but too formal.”
Digital Innovation	BRAC	“Creative, though occasionally disorganized.”
Evaluation & Feedback	PKSF	“Systematic and fair.”

Trainees' voices resonated on several themes in hospitality and pedagogy and evaluation. PKSF trainees spoke positively about both comfort and mutual respect amongst staff and between trainers. NAPD students appreciated professional discipline, yet desired more interactive sessions. BRAC learners were inclined towards digital innovations but reported them as not being trustworthy. These conversations together validate the statistical results—we find that while infrastructure matters, it does so within the realm of human warmth, complexity with a hint of participation and timely feedback.

6.5 Observation Checklist Findings

Aspect	PKSF	NAPD	BRAC
Trainer Engagement	High energy; interactive	Formal and directive	Dynamic but uneven
Learner Interaction	Frequent group work	Moderate	Sporadic participation
Learning Materials	Well-organized	Standardized	Limited
Environment	Comfortable, well-lit	Clean but tight	Functional

PKSF emerged as a lively, interactive classroom atmosphere in which facilitator intervention continued. The NAPD does have can't, but cannot affect the game once its power level settles- in other words, there are no creative elements on which to improvise and learn. Some of BRAC's excite-the-monkeys sessions are free-for-all polemics. The practice of PKSF facilitation fits nicely with the principles of experiential learning -learning occurs through a cycle of experience, reflection and then practice.

6.6 Document Review Findings

Aspect	PKSF	NAPD	BRAC
Documentation Type	Manuals, reports, evaluation forms	Course schedules, handbooks	Internal manuals
Accessibility	Publicly available	Restricted	Limited access
Evaluation Records	Digitized, ISO-compliant	Narrative summaries	Digital but incomplete

Culture documentation in PKSF makes it more transparent and accountabilities. Twice, the times went all-digital — in 1999 when it was an early mover and again, a year ago, when peers like The Independent were still in print — it is extraneous and inscrutable. Its archives (digitized even while we were photographing news pages with our bodies), are quality control; they provide institutional memory. NAPD’s hard paper work is fine for admin reports, but not a complex analysis. BRAC has its own in-house manuals, which provides flexibility but limits outside scrutiny. This institutionalism is said to depend on openness and digital integration.

The findings reveal a consistent pattern:

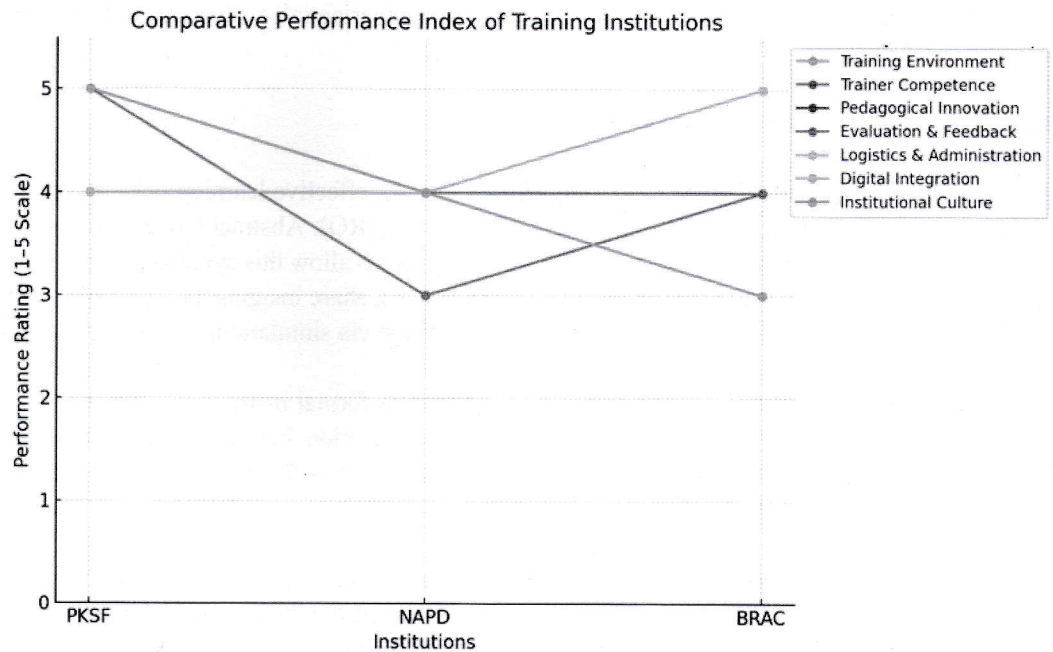
- **PKSF** stands out for its participatory methods, infrastructure, and evaluation rigor.
- **NAPD** performs well in discipline and policy training but lacks flexibility.
- **BRAC** excels in innovation and digitalization but requires stronger consistency.

In conclusion, training effectiveness in Bangladesh is largely determined by institutional culture, leadership commitment, and evaluation strategy. PKSF’s ISO-driven participatory structure presents a model for replication, while NAPD and BRAC illustrate valuable lessons in digital adaptation and innovation diffusion.

7. Figure Interpretation

The comparative graphical summary demonstrates that PKSF consistently leads in both quantitative and qualitative dimensions of training implementation, followed by NAPD, which shows strength in discipline and digital infrastructure, while BRAC demonstrates creative innovation but needs improvement in evaluation and consistency.

The overall index score clearly reflects PKSF’s balanced integration of experiential learning and administrative excellence, making it a model for replication in Bangladesh’s national training policy framework.



8: Discussion

This chapter presents an interpretive discussion of the findings presented in Chapter 5 through the lenses of **Kolb's Experiential Learning Theory (1984)**, **Kirkpatrick's Four-Level Evaluation Model (2006)**, and **Stufflebeam's CIPP Framework (2003)**. The discussion connects institutional practices of **PKSF**, **NAPD**, and **BRAC** with theoretical and empirical perspectives from existing training and organizational learning literature. The analytical aim is to identify the underlying principles explaining institutional differences in training implementation and evaluation.

8.1 Overview of Theoretical Integration

The comparative results indicate that **PKSF's** success in training implementation derives from a participatory, reflective, and learner-centered approach consistent with Kolb's experiential learning cycle. The institution's strong facilitation, evaluation structure, and administrative efficiency demonstrate alignment with Stufflebeam's CIPP model, emphasizing continuous improvement through context, input, process, and product evaluation.

By contrast, **NAPD's training structure** follows a rigid, formal, and lecture-driven pattern that fulfills the learning component of **Kirkpatrick's Level 2 (Learning)** but lacks deeper behavioral and organizational assessment. **BRAC's approach**, characterized by digital experimentation and flexible facilitation, corresponds more to CIPP's process evaluation dimension, though inconsistencies in feedback and data use limit its effectiveness.

Thus, institutional variation reflects differing emphases on experiential, evaluative, and systemic learning mechanisms.

8.2 Classroom Environment and Learning Process

According to **Kolb's Experiential Learning Theory (1984)**, effective learning is a continuous cycle of Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE). PKSF's training rooms allow this cycle to occur organically. Learners engage in role plays and group exercises (CE), share insights through reflections (RO), derive conceptual takeaways (AC), and test knowledge via simulations or fieldwork (AE).

NAPD, despite having well-equipped classrooms, prioritizes formal instruction over reflective interaction. Its structured setting supports knowledge acquisition but restricts collaborative learning and experimentation. **BRAC's environment**, in contrast, is flexible and fosters innovation but sometimes lacks academic rigor or consistency.

This analysis supports **Goldstein and Ford (2002)**, who argue that experiential design improves retention and motivation. PKSF's combination of structure and flexibility provides the psychological safety and engagement necessary for effective adult learning—confirming **Kolb's experiential model** as a key explanatory framework.

8.3 Trainer Competence and Facilitation

Trainer competence emerged as a major determinant of training quality across all institutions. **Salas and Cannon-Bowers (2001)** assert that training effectiveness is enhanced when instructors combine behavioral modeling, feedback, and practice. PKSF's facilitators embody this through active engagement, humor, empathy, and peer-to-peer coaching. These trainers stimulate higher cognitive involvement and foster motivation through continuous interaction.

NAPD's trainers, though technically proficient, rely on lectures and PowerPoint delivery. This didactic method aligns with **Level 2 (Learning) of Kirkpatrick's model**—emphasizing knowledge gain—but limits affective learning and behavioral transfer. **BRAC's trainers** utilize storytelling, games, and digital resources, promoting engagement but lacking uniform assessment tools to verify learning depth.

This pattern aligns with **Rowold (2007)**, who demonstrated that experiential facilitation methods—such as group reflection and active simulation—produce stronger long-term skill retention. Therefore, PKSF's participatory model serves as an example of facilitative training leadership, rather than directive instruction, bridging theory with behavior.

8.4 Evaluation Practices

Evaluation systems reflect institutional commitment to accountability and quality assurance. **Kirkpatrick's Four-Level Evaluation Model (2006)** offers a framework to assess this comprehensively—measuring Reaction, *Learning, Behavior, and Results*.

- **PKSF's evaluation** effectively addresses the first two levels through structured reaction surveys and pre/post-tests. However, behavioral tracking (Level 3) and organizational outcomes (Level 4) remain underdeveloped.
- **NAPD's evaluation** is largely limited to reaction forms and administrative documentation, echoing **Salas et al. (2012)**, who observed similar trends in public training institutions globally.
- **BRAC's evaluation** employs digital tools like Google Forms and LMS feedback but lacks systematic behavior-based follow-up.

According to **Stufflebeam's CIPP model (2003)**, continuous evaluation must focus on both process and product dimensions. PKSF's ISO-based assessment mirrors this model's principles by embedding reflection during and after training. Hence, institutions applying CIPP principles better sustain improvement over time.

8.5 Institutional Learning Culture

Institutional culture acts as a mediating factor linking pedagogy with implementation quality. As noted by **Tannenbaum and Yukl (1992)**, organizations with open communication, feedback tolerance, and innovation orientation experience stronger transfer of learning.

PKSF demonstrates a collaborative culture—trainers and trainees work together as reflective practitioners. This environment encourages feedback utilization and adaptive learning, making training an evolving process rather than a one-time event.

NAPD, rooted in bureaucratic culture, emphasizes hierarchy, punctuality, and discipline but discourages spontaneous dialogue and learner-led inquiry.

BRAC, with its entrepreneurial orientation, encourages creativity and flexibility, yet its decentralized management often leads to uneven quality.

This supports **Kolb's Reflective Observation stage**, where institutional culture enables learners to translate experiences into learning. Thus, learning culture is not peripheral—it determines whether experiential and evaluation systems can function effectively.

8.6 Integrative Implications for Theory and Practice

Integrating **Kolb's**, **Kirkpatrick's**, and **CIPP** models reveals the multidimensional nature of training effectiveness.

- **Kolb's** model explains how learning occurs through experience and reflection.
- **Kirkpatrick's model** measures what learning achieves in cognitive and behavioral terms.
- **CIPP** evaluates how training systems maintain continuous quality improvement.

This triangulated theoretical approach shows that training success depends on the balance between **learner experience, institutional process, and evaluation feedback**.

For Bangladesh, adopting this integrated model has practical policy implications. **A unified National Training Quality Framework (NTQF)** should embed experiential methodologies, multi-level evaluation, and continuous process review. Institutional collaboration among PKSF, NAPD, and BRAC could generate a hybrid model combining PKSF's participatory rigor, NAPD's administrative strength, and BRAC's digital innovation.

In conclusion, theory and practice converge to suggest that effective training is not a static activity—it is a **dynamic system** where learning, evaluation, and culture interact continuously. Institutions that internalize this system develop adaptive learning capacities, ensuring sustainable human capital development in Bangladesh.

9: Best Practices

Best Practices of PKSF, NAPD, and BRAC

Institution	Best Practices	Core Features	Implications
PKSF	<ul style="list-style-type: none"> ▪ Participatory Facilitation Model 	<ul style="list-style-type: none"> ▪ Experiential learning, reflection-based evaluation, ISO-certified documentation 	<ul style="list-style-type: none"> ▪ Demonstrates the effectiveness of combining facilitation with structured evaluation.
NAPD	<ul style="list-style-type: none"> ▪ Digital and Administrative Integration 	<ul style="list-style-type: none"> ▪ Smart board use, standard protocols, structured curriculum 	<ul style="list-style-type: none"> ▪ Highlights the role of digital tools in ensuring transparency and efficiency.
BRAC	<ul style="list-style-type: none"> ▪ Innovation-Driven Training 	<ul style="list-style-type: none"> ▪ Digital storytelling, community engagement, flexible learning spaces 	<ul style="list-style-type: none"> ▪ Proves that creativity and accessibility enhance inclusion and motivation.

PKSF's structured approach ensures quality assurance and reliability; NAPD's digital readiness allows standardized learning delivery across departments; BRAC's innovation promotes grass-roots participation and adaptability. A hybrid model combining these elements would bridge the gaps among public, semi-public, and NGO sectors.

9.2 Institutional Best Practices Explained

1. PKSF: Model of Participatory and Reflective Learning

PKSF's approach embodies **Kolb's Experiential Learning Cycle**. Training involves real-life case discussions, group simulations, and reflective journals. Trainers act as facilitators rather than lecturers. Feedback loops, integrated within the process, ensure continuous improvement. This method aligns with the CIPP framework by balancing context, input, process, and product evaluation.

2. NAPD: Digital and Governance-Oriented Framework

NAPD, as a public institution, demonstrates excellent administrative rigor and digital integration. Through the use of multimedia classrooms, structured reporting, and pre-scheduled modules, NAPD aligns with Kirkpatrick's Level 2 (Learning). However, incorporating behavioral-level (Level 3) assessment could transform its rigid model into a more outcome-oriented system.

3. BRAC: Innovative and Community-Based Learning

BRAC's strength lies in inclusivity and accessibility. It integrates **digital storytelling, peer learning, and mobile-based feedback systems**, making it ideal for large-scale community outreach. However, the lack of standard follow-up and documentation weakens accountability. Applying CIPP's process and product monitoring could strengthen its sustainability.

9.4 Comparative Matrix of Best Practices

Area	PKSF	NAPD	BRAC	Hybrid Recommendation
Training Design	Experiential, participatory	Theoretical, structured	Flexible, digital	Combine experiential design with structured digital delivery
Evaluation	ISO-standard, feedback-driven	Documentation-based	Digital but unstandardized	Integrate ISO + digital analytics
Learning Environment	Interactive, comfortable	Formal, organized	Informal, adaptive	Blend comfort with digital engagement
Trainer Development	Continuous reflection	Policy-based expertise	Creative experimentation	Introduce National Trainer Certification Program
Cultural Orientation	Collaborative	Hierarchical	Community-driven	Promote adaptive and inclusive learning culture

This comparative framework underscores that Bangladesh's training sector would benefit from an **Integrated National Training Model** built on PKSF's participatory ethos, NAPD's governance discipline, and BRAC's innovation.

9.5 Strategic Recommendations for Implementation

- **Integrate Evaluation Frameworks:** Merge Kirkpatrick’s Level 3 and 4 evaluations into all institutional curricula to ensure behavioral change and long-term impact.
- **Digital Transformation:** Develop a National Learning Management Platform to unify training data from PKSF, NAPD, and BRAC.
- **Capacity-Building Fund:** Create a government-endorsed fund to support research-based training innovations.
- **Annual Benchmarking:** Introduce “Institutional Performance Index” to compare annual outcomes and reward top-performing centers.
- **Gender and Inclusion Policy:** Mandate inclusive participation and gender-sensitive pedagogy across all training institutions.

This chapter underscores that the most effective training ecosystem combines **participation, reflection, structure, and innovation**. PKSF offers a model of experiential learning; NAPD provides governance discipline; BRAC contributes creativity and inclusivity. When integrated, these models could redefine training governance in Bangladesh—bridging public and private sectors through a unified national quality assurance mechanism.

Institutional collaboration, adaptive culture, and continuous evaluation represent the three pillars of sustainable capacity development. Such a framework would not only enhance training outcomes but also strengthen national human capital, aligning education and learning with Bangladesh’s socio-economic transformation goals.

Conclusion:

The study concludes that effective training is a synergistic process — where learning design, facilitation, evaluation, and institutional culture interact dynamically. Institutions that embed feedback, embrace reflection, and adapt continuously are more likely to achieve transformational learning outcomes.

In Bangladesh’s context, training should be repositioned as a strategic development instrument—not merely a human resource function, but a policy mechanism for achieving Vision 2041 and the Sustainable Development Goals (SDGs).

If the insights from this research are operationalized through a national framework, Bangladesh can emerge as a model for participatory and evidence-based capacity development in the Global South.

References

- Al-Ajlouni, M. I. (2020). Evaluation of training programs: Evidence from public sector employees. *International Journal of Organizational Analysis*, 28(3), 617–633. <https://doi.org/10.1108/IJOA-12-2018-1614>
- Arthur, W., Bennett, W., Edens, P. S., & Bell, S. T. (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *Journal of Applied Psychology*, 88(2), 234–245. <https://doi.org/10.1037/0021-9010.88.2.234>
- Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, 41(1), 63–105. <https://doi.org/10.1111/j.1744-6570.1988.tb00632.x>
- Chowdhury, F., Alam, M., & Jahan, M. (2017). Training effectiveness in Bangladesh public sector organizations. *South Asian Journal of Human Resources Management*, 4(2), 207–227. <https://doi.org/10.1177/2322093717735374>
- Goldstein, I. L., & Ford, J. K. (2002). *Training in organizations: Needs assessment, development and evaluation* (4th ed.). Wadsworth.
- Islam, M. S., & Rahman, M. M. (2016). *Training effectiveness in government organizations of Bangladesh*. *Journal of Public Administration and Governance*, 6(4), 17–29. <https://doi.org/10.5296/jpag.v6i4.10390>
- Kirkpatrick, D. L., & Kirkpatrick, J. D. (2006). *Evaluating training programs: The four levels* (3rd ed.). Berrett-Koehler.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.
- Noe, R. A. (2017). *Employee training and development* (7th ed.). McGraw-Hill Education.
- Pallant, J. (2020). *SPSS survival manual* (7th ed.). McGraw-Hill Education.
- Phillips, J. J., & Phillips, P. P. (2016). *Handbook of training evaluation and measurement methods* (4th ed.). Routledge.
- Rahman, H. Z., & Matin, I. (2001). The dynamics of microfinance in Bangladesh. *IDS Bulletin*, 32(1), 1–10. <https://doi.org/10.1111/j.1759-5436.2001.mp32001001.x>

- Rowold, J. (2007). The impact of personality and training methods on the transfer of training. *International Journal of Training and Development*, 11(4), 282–297. <https://doi.org/10.1111/j.1468-2419.2007.00288.x>
- Salas, E., & Cannon-Bowers, J. A. (2001). The science of training: A decade of progress. *Annual Review of Psychology*, 52, 471–499. <https://doi.org/10.1146/annurev.psych.52.1.471>
- Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations: What matters in practice. *Psychological Science in the Public Interest*, 13(2), 74–101. <https://doi.org/10.1177/1529100612436661>
- Stufflebeam, D. L. (2003). The CIPP model for evaluation. In T. Kellaghan & D. L. Stufflebeam (Eds.), *International handbook of educational evaluation* (pp. 31–62). Springer. https://doi.org/10.1007/978-94-010-0309-4_4
- Tannenbaum, S. I., & Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology*, 43, 399–441. <https://doi.org/10.1146/annurev.ps.43.020192.002151>
- Werner, J. M., & DeSimone, R. L. (2012). *Human resource development* (6th ed.). Cengage Learning.
- Wilson, J. P. (2005). *Human resource development: Learning and training for individuals and organizations*. Kogan Page.

Production process and profitability of dried fish in chalan beel areas of Bangladesh

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Abstract

Bangladesh has a great potentiality to earn huge foreign exchange by exporting dry fishes. As the largest beel of the country, Chalan beel produces huge amount of fish every year. A large number of fish is being used in sun drying in Chalan Beel region. The present study was designed to figure out the production process and estimation of profitability of dried fish production in Chalan beel areas. The study was conducted in January and October 2017. Field survey was carried out in Tarash and Singra upazilas adjacent to Chalan Beel to assess the fish drying status. A total of 32 dried fish producers were selected for the study through simple random sampling technique. It was observed that, the processing system of dried fish in the areas was traditional. Washing of raw fish was done by beel water and poor quality salts were used for salting in most cases. Majority drying were done by spreading raw fishes on bamboo rack without any protection measure from insects or dust. On an average an amount of 38.8 tonne of raw fishes were dried by a processor per year in Chalan beel areas. The average net return of a processor in dried fish production was Tk. 131911.77 per year and undiscounted BCR was 1.08. There are several factors (age, experience, labour cost, cost of mancha/rack) which have significant effects on gross return of dried fish processors. Those factors should be given emphasized for earning more gross return. This study revealed that substantial improvement was needed at different stages of handling, processing, and transportation of the dried fish in Chalan Beel areas to get the high quality dried fish products. Training of the fish processors on above aspects including hygiene, sanitation, good water quality and raw materials was found very important to ensure high quality dried products for the consumers.

Keyword: Dried fish, Production Process, Chalan Beel, Bangladesh

1. Introduction

Bangladesh, with its rich inland waters and rivers systems, has significant capture fishery and aquaculture potential. The favorable geographic position of this country comes with a large number of aquatic species and provides plenty of resources to support fisheries potential. Fish and fisheries are indispensable part in the life and livelihoods of the people of Bangladesh and it is the part of our cultural heritage. Fish is a popular complement to rice in the national diet, giving rise to the adage Maache-Bhate Bangali (“a Bengali is made of fish and rice”) (Ghose, 2014). Fish contributes substantially in human diets as good sources of animal protein that also provide other important elements necessary for maintenance of healthy bodies (Ravichandran et

¹ This paper is derived from the MS thesis of Israt Jahan on “A Study on Dried Fish Production and Its Supply Chain Analysis in Chalan Beel Areas of Bangladesh”. Thesis submitted to the Department of Agricultural Economics, BAU, Mymensingh

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al., 2012). As a good source of high quality protein, fish can make an outstanding contribution to the nutritional development in Bangladesh. As an extremely perishable commodity due to high water activity and neutral pH, several processes like drying, smoking, salting, curing are often carried out to preserve fishes for a longer period of time. Every year, huge amount of fresh fishes are cured for mass people consumption at the scarcity of fresh fishes in Bangladesh. Sun drying of fishes is a simple and the oldest known method of fish preservation where fishes are dried under the light of sun. Drying method is considered as the least expensive method of fish preservation (Balachandran, 2001). It is one of the most important methods of fish preservation in Bangladesh which is regarded as a traditional and primitive preservation method of fish. Dried fish is a very favorite food item among Bangladeshi people and has a good market demand besides fish and seafood products. Dried fish is low cost dietary protein source and used as a substitute of fish at the scarcity of fresh fish. The nutritional quality remains intact, sometimes retains higher quality standards compared to fish (as per unit weight). The product of dried fish is easily transportable, marketable and storable (Nowsad, 2007). Moreover, dried fish has a storage life of several years.

Chalan Beel is the largest and most important watershed in the North Central Bangladesh covering an area of about 375 km² during the monsoon season and 52-78 km² during the dry season. Chalan Beel is suitable for indigenous fishes and culture fishes. In the rainy season, the people living around this beel include both professional and non-professional fishers' harvest a huge amount of fishes. During the dry season, the water-covered area is reduced by significant amount and turns individual small water bodies called ponds as well as lakes and canals. These separated water bodies are vital for breeding and maintaining stocks of fish. The farmers met their fish protein during the dry season by producing fish in these small water bodies and during the wet season when the whole area inundated the farmers formed community and cultivate as well as harvest fish cumulatively. So, being the largest beel of the country, Chalan Beel produces huge amount of fish every year. A large number of fish is being used in sun drying in Chalan Beel region. The traditional method of preserving fishes through sun drying is an old practice in areas adjacent to the beel. But the production processes of dried fish of the area are not well developed. Moreover, in the past, the beel covered an area of about 1,085 km² but now is reduced to 375 km². The fishermen living in and around the Beel have been severely impacted. Though fishermen used to catch fishes for the whole year in the past, they only go fishing in rainy season now. A survey of Chalan beel showed that the number of fishermen in the area decreased from 177,061 in 1982 to 75,000 in 2006 (BDP 2100, 2015). Large number of fish and aquatic organisms in this water body has diminished. So the production of both fresh and dried fish of this area is now under threat. Through personal encouragement dried fish enterprise is trying to generate spaces in the area but there is no export processing zone which is a crying need now. Bangladesh has a great potentiality to earn huge foreign exchange by exporting dry fishes. Last few years, Bangladesh exports dried fish to abroad and earns a huge amount of foreign currency and this rate is increasing day by day. In 2015-16 financial year the amount was 2229 metric ton which worth 30.12 crore taka (FRSS, 2017). But the contribution from Chalan beel areas is not much more. If it could be organize properly it can be take part in GDP earning for Bangladesh. Though few

works were done on fish drying in different regions of Bangladesh but systematic research on fish drying of Chalan Beel region is rare. This study is a modest effort undertaken to examine the production practices that the processors in Chalan Beel areas follow to process dried fish. The specific objectives of the study are to figure out the processing system and estimate the profitability of dried fish production in Chalan Beel areas and to determine factors affecting gross return of dried fish production. The information may be helpful to both government and non-government organizations to take necessary steps for the improvement of dried fish production in the study area.

2. Methodology

The study was conducted in different dry fish yards at Tarash and Singra upazila in Chalan beel area of Sirajgang and Natore districts. The selection of the area for this study was made on the basis of concentration of fish drying and processing in Chalan beel areas of Bangladesh. These areas are famous for supplying dried fish all over the country mainly Rangpur, Sayedpur. Tarash upazila and Singra upazila are well known for fish drying in Chalan beel areas. A total of 32 dried fish processors were selected through simple random sampling technique from Tarash and Singra dry fish yards in Chalan beel areas. The raw data was collected during the field survey in January and September, 2017 through structured interview schedule. Data of secondary sources was collected from various research publications, government annual reports, official statistical abstracts and other authentic sources as per requirement of the study. The collected data for the study were processed and analyzed using different descriptive statistics such as mean, sum, ratio, percentages, etc. were derived and calculated to present the results. Graphical presentation of the data was done in Microsoft Excel. Some analyses were done by using Stata.

In this study, profit was calculated by deducting total costs from total returns. The profitability of dried fish production was derived in terms of gross return, gross margin, net return and benefit cost ratio (undiscounted). The formulas need for the calculation of profitability in discussed below:

Gross return, gross margin and net return

Gross return is calculated by multiplying the total volume of output of an enterprise by the average price in the harvesting period (Dillon and Hardaker, 1993). The following equation was used to estimate GR:

$$GR = QdPd$$

Where,

GR = Gross return (Tk./season)

Qd = Average amount of dried fish produced (kg./season)

Pd = Price of dried fish (Tk./kg.);

Gross margin was calculated by the difference between gross return and total variable costs.

That is,

$$GM = GR - TVC$$

Where,

GM= Gross margin (Tk./season)

GR = Gross return (kg./season.);

TVC = Total variable costs

Net return will be calculated by deducting all costs (variable and fixed) from the gross return.

$$NR = GR - GC$$

Where,

GR = Gross return (Tk./season);

GC = Gross cost (Tk./season) (TFC + TVC);

Benefit cost ratio (BCR)

The BCR is a relative measure which is estimated as a ratio of gross returns and gross costs. The formula of calculating BCR (undiscounted) is shown below:

$$BCR = GR/GC$$

Where,

GR = Gross return (Tk./season);

GC = Gross cost (Tk./season);

To determine the influence of different factors on the gross return of dried fish production the following model was used in this study:

$$Y_i = a_0 X_{1i}^{a_1} X_{2i}^{a_2} X_{3i}^{a_3} X_{4i}^{a_4} X_{5i}^{a_5} X_{6i}^{a_6} X_{7i}^{a_7} X_{8i}^{a_8} e^{u_i}$$

This non-linear form of Cobb-Douglas model was specified by taking natural logarithms on both sides of the equation as follows:

$$\ln Y_i = \ln a_0 + \alpha_1 \ln X_{1i} + \alpha_2 \ln X_{2i} + \alpha_3 \ln X_{3i} + \alpha_4 \ln X_{4i} + \alpha_5 \ln X_{5i} + \alpha_6 \ln X_{6i} + \alpha_7 \ln X_{7i} + \alpha_8 \ln X_{8i} + u_i$$

Where,

Y_i = Gross revenue of dried fish production (kg.)

X_{1i} = Age of processor (years);

X_{2i} = Education level of processor (years of schooling);

X_{3i} = Experience (years);

X_{4i} = Family size (no.);

X_{5i} = Farm size (decimal);

X_{6i} = Labor cost (Tk.);

X_{7i} = Land use cost (Tk.);

X_{8i} = Cost of mancha/ rack (Tk.);

α_1 to α_8 = Coefficients of the respected variables;

α_0 = Intercept; and u_i = Error term.

3. Results and Discussion

3.1 Production Process of Dried Fish in Chalan Beel Areas

The methods employed for handling and processing of dried fish in Chalan beel areas is still traditional and processors use sun drying method to processing dried fish. Researcher found some steps in the processing system of dried fish in the study area, which are described below.

3.1.1 Collection of raw fish

Dry fish processors in the study areas collect raw fishes from two sources- local fish markets or landing centers (90%) and from fishermen directly (10%). It was observed that large amount raw fishes were collected by the dry fish farmers in the peak harvesting season (July to September) due to availability of raw fish and low market price.

3.1.2 Dressing and splitting of raw fish

Only for large fish like, boal, silver carp and taki, gutting and splitting were practiced. First the fishes were beheaded and then alimentary canal was removed from the body. Other small fish species were directly dried under the sun without any dressing.

3.1.3 Washing and Salting

In most cases, dry fish farmers washed their raw fish with beel water as there were no good water supply sources in drying areas and few dry fish farmers used tube well water for this purpose. Many dry fish farmers did not wash their raw fish. Dried fish processors used salt for mixing with raw fishes before drying but they did not maintain any fixed ratio of salt and fish. They generally mixed 1 kg commercial salt for 18-20 kg of fishes. All the dried fish processors (100%) used non-brand commercial salt for salting.

3.1.4 Drying under the sun

In the surveyed area, drying process varied according to the size and type of fishes. Small fishes were dried in the sun by spreading them on fish drying yard which was either the open field or bamboo made rack called 'khola' of 0.6-1.2 meter high from earth in most cases. Fish drying yards were situated near the fish market or highway for easy communication. It was observed that large fishes were hanged from a rope tied horizontally to the two poles placed vertically for drying instead of using any rack. Most of the dried fish processors used fishing nets over the rack to prevent fish from insect infestation.

3.1.5 Sorting

Except for large fishes, other fishes remained in mixed condition and were sorted after drying. Almost all the dried fish processors sorted out the mixed dried fishes and separated the fish according to the species and size of the dried fish (Plate 6.2).

3.1.6 Packaging and Storing

After sorting, the dried fishes were bagged into a plastic and hessian bag for easy handling. Sometimes bamboo baskets were also used for this purpose. Storage of dried fish was found to be performed in a tent generally made of thin plastic sheet and bamboo splits (Plate 6.3). This tent is usually made in the place of fish drying. Bagged dried fishes were kept into these tents for temporary storage until marketing or selling where there is a great chance of contamination with filth and dust.



Plate 3.1 Pictorial view of fish drying under the sun



Plate 3.2 Pictorial view of sorting of dried fishes according to species and size

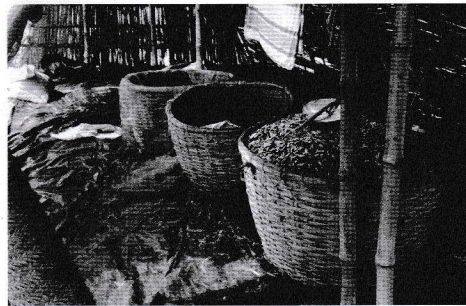


Plate 3.3 Pictorial view of storing of dried fish

Collection of raw fish
(Local fish market, fishermen)

Dressing, gutting and splitting of raw fish

- i. done for large fishes only
- ii. small fishes dried without dressing

Washing

(*Beel* water mainly, rarely used tubewell water)

Salting

(Mixed with 1 kg. salt for 18-20 kg. fish)

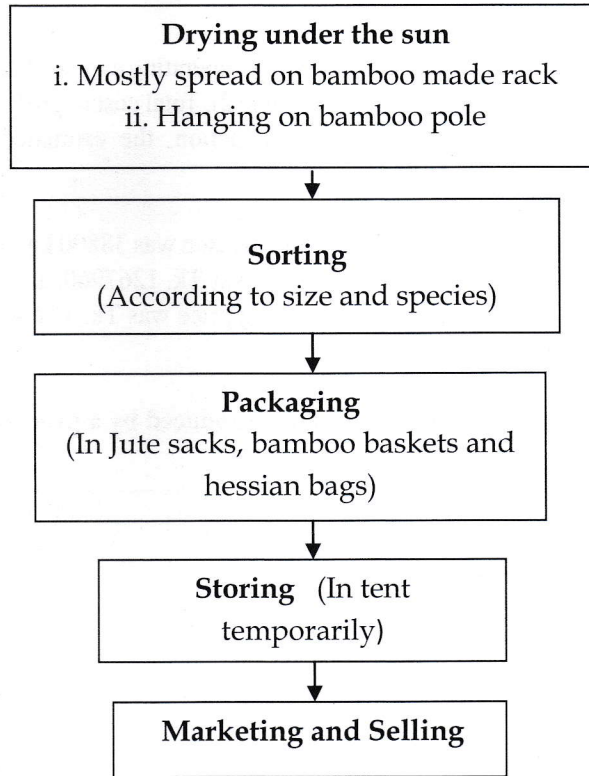


Fig. 1 Flowchart of overall fish drying activities in the study areas

3.2 Profitability of dried fish production in Chalan Beel areas

For profitability analysis, it is necessary to compute both variable and fixed cost. To calculate the costs, returns and profitability of dried fish in the study area, calculations were done in terms of per year or season basis.

Variable costs, Fixed costs and Total costs/gross costs

Variable costs are incurred because of the costs of using the variable inputs. These costs vary with the level of production. For dried fish production, variable costs includes purchase cost of raw fish and all kinds of processing and marketing cost like labor cost, transportation, loading and unloading, salt, basket, net, equipment, Aratdar's commission etc. Generally dried fish processors use leased land for dried fish production which is adjacent to the beel areas. The lease value of land varies from area to area depending upon the location and convenience. So, it is also a variable cost. The estimated variable cost incurred for dried fish production was Tk. 1512884.2 (Table 2). Fixed costs are those costs which do not change in magnitude as the amount of output changes and are incurred even when production is not undertaken. In case of dried fish production,

fixed costs include cost of mancha or rack and interest on operating capital. The estimated fixed cost incurred for dried fish production was Tk. 71474.33 (Table 2). Total cost or gross cost is the summation of variable cost and fixed cost. For dried fish production, the estimated total cost was Tk. 1584402.62 (Table 2).

Table 1 shows the average amount of raw fish dried in a season was 38800 kg. or 38.8 tonne, average purchase price of raw fish was Tk. 32.67, purchase cost was Tk. 1267960, amount of dried fish after drying was 11255.6 kg. or 11.255 tonne, average selling price was Tk. 152.48 and total return was Tk. 1716314.

Table 1 Estimation of average amount of dried fish produced by a processor and total return in a season/year

Particulars	Total amount/value
i. Average amount of raw fish dried in a season	38800 kg. or 38.8 tonne
ii. Average Purchase price (Tk./kg.)	32.67
iii. Raw fish purchase costs (Tk.) (i*ii)	1267960
iv. Amount after drying (by considering conversion rate)	11255.6 kg. or 11.255 tonne
v. Average Selling price (Tk./kg.)	152.48
vi. Total Return (Tk.) (i*ii)	1716314

Source: Authors estimation, 2017.

Table 2 Estimation of average amount of total cost in dried fish production by a processor in a season or year

Cost items	Unit	Quantity	Price per unit (Tk.)	Total value (Tk.)	Percentage
Variable costs					
a. Purchase cost of raw fish	kg.	38800	-	1267960	80.02
b. Processing and marketing cost					
Transportation				26331.3	1.66
Raw fish	Tonne	38.8	200	7760	
Dried fish	Tonne	6.753	2750	18571.3	
Loading and unloading	Tonne	38.8	225	8730	0.55
Salt	kg.	1940	18	34920	2.20
Repair cost of mancha/rack	-	-	-	8875	0.56
land use cost	-	-	-	10425	0.65
Labor cost				120000	7.57
i. Hired labour				82500	
Men	man/day	1	250	37500	
Women	man/day	3	100	45000	
ii. Family labour	man/day	1	250	37500	
Bamboo basket	piece	8	650	5200	0.32
Net	piece	7	560	3920	0.24
Bamboo made equipment	piece	12	25	300	0.01
Storeroom	-	-	-	3225	0.20
Wastage	-	-	-	8500	0.53
Aratdar's commission	kg	6753.36		14497.9	0.91
c. Total processing and marketing cost				244924	15.45
i. Total variable cost (Tk.) (a+c)				1512884.2	95.49
Fixed costs					
Cost of mancha/rack				40000	2.52
Interest on operating capital				31474.33	1.99
ii. Total fixed cost (Tk.)				71474.33	4.51
iii. Total cost (Tk.) (i+ii)				1584402.62	100

Source: Authors estimation, 2017.

Results of financial returns of dried fish production

Table 3 shows gross return, gross margin, net return and benefit cost ratio (BCR) of dried fish production in a season. Gross returns were calculated by multiplying the average amount of dried fish produced per year with their respective market prices. Gross return or total return from dried fish production per year was Tk. 1716314.4. Gross margin is the difference between the gross

return and total variable costs. Gross margin from dried fish production was Tk. 203430.2/year and Tk. 5.24/kg. (Table 3). Net return was obtained by subtracting gross costs from gross return, or deducting fixed cost from gross margin. Net return from dried fish production was Tk. 131911.77/year and Tk. 3.39/kg. (Table 3). The benefit cost ratio (BCR) was calculated as a ratio of gross returns and gross costs. Benefit cost ratios of dried fish production were 1.08 which implies that Tk. 1.08 would be earned by investing every Tk. 1.00 in dried fish production

Table 3 Estimation of costs and returns in dried fish production by a processor in a season or year

Particulars	Total value	
i. Total return (Tk./year)	1716314.4	
ii. Total variable cost (Tk./year)	1512884.2	
iii. Total cost (Tk./year)	1584402.62	
iv. Gross margin (Tk.) (i- ii)	203430.2/year	5.24/kg.
v. Net return (Tk.) (TR-TC) (i-iii)	131911.77/year	3.39/kg.
vii. Benefit cost ratio (BCR) (i÷iii) (Undiscounted)	1.08	

Source: Authors estimation, 2017.

3.3 Factors affecting gross return of dried fish production

To determine the key factors that affect gross return of dried fish production, several tests were done and it was seen that Cobb-Douglas model fits best for the particular data set and there was no multicollinearity, omitted variables and heteroskedasticity problems in the model. Table 4 shows the results of the tests.

Table 4 Results of omitted variables test, heteroskedasticity test and multicollinearity test

Sl. No.	Test	Hypothesis	F/chi ² values with probability	Decision
1	Omitted variables by using Ramsey RESET test	H ₀ : model has no omitted variables	F(3,20) = 1.68 and Prob > F = 0.2026	Failed to reject null hypothesis
2	Heteroskedasticity test by using Breusch-Pagan/Cook-Weisberg test	H ₀ : Constant Variance	chi ² (1) = 0.03 Prob > chi ² = 0.8733	Failed to reject null hypothesis
3	Multicollinearity test	H ₀ : VIF constant	No value > 10	There is no multicollinearity problem

Source: Author's estimation, 2017 (Adapted from Appendix).

Table 5 Estimated values of coefficients and related statistics of Cobb-Douglas production function model

Variables	Notation	Value of Coefficient	Standard error	P value
Constant		2.9037	1.9963	0.159
Age (year)	X ₁	0.7080*	0.3701	0.068
Education level (year)	X ₂	-0.0026	0.1029	0.980
Experience (year)	X ₃	0.3024**	0.1508	0.057
Family size (No.)	X ₄	-0.1312	0.2251	0.566
Farm size (decimal)	X ₅	0.0313	0.0834	0.711
Labour cost (Tk.)	X ₆	0.0834	0.0709	0.250
Land use cost (Tk.)	X ₇	0.4595**	0.1916	0.025
Cost of mancha/rack (Tk.)	X ₈	0.2931***	0.0943	0.005
F (8,23) = 17.55 R-squared = 0.85 Adjusted R-squared = 0.8103 Returns to scale = 1.74				

Source: Author's estimation, 2017. *** Significant at 1 percent level; ** Significant at 5 percent level and * Significant at 10 percent level

The result of Cobb-Douglas revenue type function model (double log model) is presented in Table 5. The estimated values of the relevant coefficient revealed that, among the included eight variables, age of processors, experience, labor cost and mancha/rack cost showed positive and significant effect on return of dried fish production.

It is evident from Table 5 that the value of the coefficients of determination (R²) of the model was 0.85 which mean that the explanatory variables included in the model explained 85 percent of the total variation of gross return of dried fish production.

The measure of overall fit of the estimated regression, F-values was 17.55 which was significant at 1% probability level implying that all the included explanatory variables included in the model significantly explained the variation in gross returns of dried fish production.

4. Conclusions and Policy Recommendations

The findings of the study revealed that, fish drying in two drying areas of Chalan beel is traditional. Sun drying is carried out in an unhygienic condition. Different problems observed during study period which were selection of poor quality raw fishes for drying damaged fishes in most cases; washing of raw fishes with dirty water especially with beel water instead of tube well or other water of good quality; use of low quality commercial salt during salting, also proper ratio of salt and fish was not maintained. No dressing of used fishes in many cases; drying

directly on earth surface which affect the quality of dried product strongly. Moisture, dust and other harmful substances from the environment can easily be mixed to the fish and make the fish susceptible to the microorganism or insect attack. In most cases, storage of dried fish in unhygienic condition was observed which usually took place in the tent having no platform. Furthermore, it was also found that raw and dried products were kept in the same tent which badly affects the quality of dried final product. In this situation, therefore, it is necessary to practice scientific drying methods in all the drying process and, more research and extension opportunities along with the knowledge of dried fish processing to increase the awareness among dry fish farmers on proper handling procedures and quality standards to ensure reduction in losses and improving the quality of products. A satisfactory dried product is highly desirable at all consumer levels. In these instances, low cost solar dryer can be constructed by using locally available materials that will ensure high quality dried products which will be safe for consumption and will fetch higher economic benefits for the dried fish processors and consumers.

References

- Balachandran K. K. (2001) Post-harvest Technology of Fish and Fish Products, *Daya Publishing House*, Delhi 110035, pp. 77.
- BDP (2015). Bangladesh Delta Plan 2100, Chalan Beel Under Threat, The Independent, 31 March, 2015. Available at <http://www.bangladeshdelta plan2 100.org/ chalan-beel-under-threat/>[Accessed 14/6/16]
- Dillon, J. L. and Hardaker, J. B. (1993). Farm Management Research for Small Farmer Development, Food and Agriculture Organizations of the United Nations, Rome.
- Faruque, M. O., K. M. S. Nazrul, U. S. Tonny, K. R. Islam, S. C. Dey, S. J. Mona and D. Saha (2012). Status of an Ideal Dry Fish Market of Bangladesh: A Study on Asadganj Dry Fish Market, Chittagong. *International Journal of Life Science Biotechnology & Pharma Research*, Vol. 1, No. 3, July 2012.
- Flowra, F. A., A. S. Tumpa and M. T. Islam (2013). Study on the Insect Infestation of Dry Fishes at Singra. *J. Asiat. Soc. Bangladesh, Sci. Vol. 39(2)*, pp. 273-277.
- FRSS (2017). Fisheries Statistical Report of Bangladesh. Fisheries Resources Survey System (FRSS), Department of Fisheries, Bangladesh. Volume 32: 57 p.
- Ghose, B. (2014). Fisheries and aquaculture in Bangladesh: Challenges and opportunities. *Annals of Aquaculture and Research*, 1 (1), pp. 1-5.
- Kostori, M. F. A. (2012). Socio-economic Condition of Fishermen of the Chalan Beel under Tarash Thana of Sirajganj District in Bangladesh. *Bangladesh Research Publications Journal*, Vol. 6 (4), pp. 393-402.

- Mou, A. T. (2016). Impacts of Natural Calamities on Farming Practices and Biodiversity in Chalan Beel Areas of Natore District. M.S. Thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Nowsad AKMA (2007). Participatory Training of Trainers: A New Approach Applied in Fish Processing, *Bengal Com-print*, 68/5, Green Road, Dhaka, Bangladesh, p. 328.
- Rahman M. M., M. M. Hoque, R. Karim, and M. M. Sarkar(2017). Present status and scope of fisheries culture at chalan beel in Bangladesh. *International Journal of Advanced Research in Biological Sciences*, Vol. 4, No. 6. pp. 34-40.
- Ravichandran S., Joseph F.R.S., Kanagalakshmi R., and Ramya M. S., (2012). Variation in nutritive composition of two commercially important marine fin fishes. *Int. J. Zool. Res.*, 8: 43-51.
- Samad, M. A., Galib, S. M. and Flowra, F.A. (2009). Fish Drying in Chalan Beel Areas. Bangladesh. *Journal of Scientific and Industrial Research*, Vol. 44 (4), pp. 461-466.
- Shamsuzzaman M. M., M. M. Islam, N. J. Tania, M. A. Al-Mamun, P. P. Barman and X. Xu (2017). Fisheries resources of Bangladesh: Present status and future direction. *Aquaculture and Fisheries*, pp. 1-12.
- Sharmin, S., M. M. Ali, M. S. Monir, M. A. U. Doulah and M. G. Sarwer (2014). Traditional Fish Drying Activities and Marketing Status of Dried Fish at Tarash Upazila Under Sirajganj District of Bangladesh. *Marine Resources and Aquaculture (MRA)*, Vol. 2(1), pp. 32-37.
- Sharmin, R. (2013). An Economic Study on Processing and Distribution of Marine Dry Fish in Cox's Bazar District. M.S. Thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.
- Sultana, N. and M. N. Islam (2016). Fish Production and Livelihood of Fish Farmers of Chalan Beel Area, Bangladesh. *IOSR Journal of Agriculture and Veterinary Science*. Vol. 9, No. 11, pp. 51-56, Nov, 2016.

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BANGLADESH SOCIETY FOR TRAINING AND DEVELOPMENT (BSTD)

Introduction

The Bangladesh Society for Training and Development (BSTD) is the apex professional organization for the trainers of Bangladesh. Established in 1980, its "General Members" comprise trainers from both public and private sectors. People interested in training and human development may register themselves as, "Associate Members". It is a non-profit democratic body whose structure, objectives and development activities are defined by a unanimously adopted constitution. It is incorporated as legal entity under the Societies Act XXI of 1860. The society is a member of International Federation of Training and Development Organizations (IFTDO) and Association of Management Development Institutions in South Asia (AMDISA).

Objectives

The general objective of the society is to promote human resource development among its members as well as other concerned professionals through conducting training and other professional activities. The specific objectives of BSTD as articulated in its constitution are:

- To develop the professional skill of its members in training, and take necessary steps for the development of training institutions;
- To provide training, conduct research, undertake publications, coordinate among training institutes for bringing them closure and exchange experiences through training materials and information;
- To help develop professional pride of training profession and trainers and protect the latter's professional interest;
- To facilitate exchange of views, promote fraternity and professionalism among the trainers, researchers and development managers within Bangladesh and abroad;
- To create awareness about the role of training in solving local, national and regional problems;
- To plan and organize seminars, workshops and conferences primarily for developing the skill of trainers;
- To provide advisory and consultancy services in the field of training and management, in order to develop, implement, monitor, evaluate the policies, strategies and activities of the government and NGOs;
- To give award and/or accord recognition for contribution in the field of training and offer fellowships for encouraging training-related activities; and
- To undertake welfare activities among its members.

Management

The professional and administrative responsibilities of BSTD are performed by two bodies: General Assembly and Executive Committee. The General Assembly is the supreme policy making body and consists of institutional members, individual general and life members. The operational activities are accomplished by a 23-member Executive Committee which is duly elected by the General Assembly. The professional functions of the Executive Committee are also facilitated by five sub-committees. A full time Executive Officer is the head of the administrative team managing the office of the society which is located in society's own premises at Centre Point Concord, 14A & 31A, Farmgate, Dhaka-1215. The contact information of the society is as follows: Phone: 88-02 41024413, 01817072603; E-mail: bstddhaka@gmail.com

Focus and Activities

The main focus of BSTD is on human resource development. This is achieved through various professional activities, such as:

- Designing and conducting innovative and model training programs
- Publication of the professional Journal "PROSHIKHYAN" (Training)
- Conducting research, consultancy and evaluation work
- Organizing workshops, seminars and conferences on training and human development
- Observing National Training Day on 23rd January every year
- Recognizing the best trainers through annual professional award
- Maintaining liaison with international training and development organizations
- Informing the trainers about latest developments in the training sector in home and abroad through its quarterly News Letter "Proshikhyan Barta".

In addition, BSTD communicates with the various ministries, departments, and agencies of the government and with NGOs and international organizations in order to innovate training fields, training methods, conduct and promote the cause of training and trainers in Bangladesh.