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Bridging Training and Employment: Evaluating Competency-Based TVet Programs for School-To-Work Transition in Jamaica

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ABSTRACT

Technical and Vocational Education and Training (TVET) has become a critical pathway for workforce development, particularly in developing contexts where youth unemployment remains a persistent challenge. This paper examines the effectiveness of Competency-Based Education and Training (CBET) in facilitating successful school-to-work transitions. Using the Context, Input, Process, and Product (CIPP) evaluation model, the study evaluates a structured TVET programme designed to equip learners with industry-relevant competencies. Drawing on a mixed-methods approach, the study incorporates qualitative insights from instructors and trainees alongside quantitative performance indicators to assess programme outcomes. Findings reveal that while CBET enhances practical skill acquisition and workplace readiness, gaps remain in areas such as industry alignment, soft skills integration, and post-training support mechanisms. Additionally, the study highlights the importance of embedding employability skills and strengthening partnerships between training institutions and industry stakeholders. The paper argues that effective career development within TVET requires more than technical competence; it demands a holistic approach that integrates career guidance, mentorship, and continuous professional development. Recommendations are provided for improving curriculum design, instructional delivery, and evaluation frameworks to better support sustainable employment outcomes. This study contributes to ongoing discourse on career development by demonstrating how structured evaluation models can inform policy and practice in TVET systems, particularly within Caribbean and similar developing contexts.

Key words:

Technical and Vocational Education and Training (TVET), Competency-Based Education and Training (CBET), Career Development, School-to-Work Transition, Programme Evaluation

1. Introduction

TVET, employability and workforce development in Jamaica

TVET is widely recognised as a key driver of socio-economic and technological development, particularly in developing economies seeking to raise productivity, reduce poverty, and address youth unemployment (Barrett, 2019; Okolocha & Baba, 2016). In Jamaica, TVET has evolved from fragmented, under-resourced provision to a more systematised framework anchored in the Human Employment and Resource Training/ National Services Training Agency (HEART/NSTA) Trust, the National Council on Technical and Vocational Education and Training (NCTVET), and a National Vocational Qualifications of Jamaica (NVQ-J) architecture (Roofe & Ferguson, 2018; Planning Institute of Jamaica [PIOJ], 2016; Morris, 1998).

National policy frameworks such as Vision 2030 Jamaica, and the national TVET policy emphasise outcomes- and competency-based training, the development of a learning society, and the creation of pathways for lifelong learning and workforce mobility (PIOJ, 2016, Ministry of Education, 2014). Within this landscape, competency-based TVET programmes are expected to improve employability by aligning training with occupational standards, integrating employability skills, and strengthening linkages between education and the labour market (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018; Mutua & Muriithi, 2015)

The challenge of bridging training and employment

Despite these reforms, Jamaican employers continue to report skills shortages and difficulties filling vacancies in key occupations, including chefs in the tourism and hospitality sector, even as significant numbers of TVET graduates remain underemployed according to (HEART NSTA/Trust, 2019). Tracer and employer surveys conducted by HEART/NSTA Trust have highlighted concerns about graduates' practical readiness, soft skills, and work attitudes, suggesting a persistent gap between training provision and workplace expectations (HEART NSTA/Trust, 2021). Similar patterns have been documented across CARICOM countries, where the Caribbean and National Vocational Qualifications/National Vocational Qualification (CVQ/NVQ) systems play an important, but uneven, role in youth transitions from school to work (Caribbean Community, 2019).

The Commis Chef Level Two (CCL2) programme offers a strategic lens through which to explore these issues, as it is one of HEART's longest-running and most in-demand programmes and is directly linked to Jamaica's tourism and hospitality sector. The programme's design is explicitly competency-based, aligned to NVQ-J standards, and intended to produce a cadre of work-ready, NVQ-certified commis chefs for the national and regional labour market (Porter-Lewis, 2022; HEARTBEAT, 1993).

1.3 Purpose and significance

This study evaluates the effectiveness of the CCL2 CBET programme in bridging training and employment by examining its design, implementation, and outcomes through a CIPP evaluation framework. The analysis is situated within broader debates on employability, industry partnership, competency-based training, and transition-to-work models in TVET systems in Jamaica and the wider Caribbean.

The article contributes to the international career development and TVET literature by:

1) Providing an empirically grounded evaluation of a mature CBET program in a small-island developing context.

2) Linking program evaluation findings to employability outcomes and transition-to-work pathways for TVET graduates.
3) Drawing policy and practice implications for workforce development strategies in Jamaica and comparable Caribbean systems.

2. Literature review

As argued by Allais (2017) that the Competency-based TVET has significant potential to strengthen young people's employability in Jamaica and the wider Caribbean, but its impact depends heavily on how competency standards are designed, how industry partnerships and work-based learning are structured, and how transition-to-work support is implemented and resourced (Tran, et al., 2024; Chen, et al., 2021; Arthur-Mensah & Alagaraja, 2013). Recent international and regional evidence, including work in leading TVET and career development journals, highlights that CBET works best when it integrates technical and transversal skills, embeds high-quality work-based learning, and is coupled with comprehensive career development services rather than standing alone as a narrow, task-focused model (Zakiyudin & Hasim, 2025; Ismail & Mujuru, 2020; National Council on Technical and Vocational Education and Training [NCTVET], 2022; Organisation for Economic Co-operation and Development, [OECD] and The World Bank, 2016).

Competency-based TVET and employability

Motsepe et al. (2026) emphasized that Competency-based education and training (CBET) in TVET is built around clearly specified learning outcomes that describe what learners must be able to do in occupational contexts, rather than what they must know in purely academic terms (Zakiyudin & Hasim, 2025; NCTVET, 2022; Chen, et al., 2021). In this approach, industry-derived occupational standards are translated into units of competency, each combining performance criteria, required knowledge, and underpinning attitudes, and assessment focuses on whether learners can demonstrate these competencies in authentic or simulated workplace settings (Suyitno, et., 2025; Ismail & Mujuru, 2020; Organisation for Economic Co-operation and Development, 2016; Grenada National Training Agency, 2011). The International Labour Organization [ILO] (2017) and the Organisation for Economic Co-operation and Development (2016) have promoted CBET and outcomes-based qualifications frameworks as tools to improve the alignment of training with labour market needs, support recognition of prior learning (RPL), and offer modular pathways that accommodate adult, non-traditional, and disadvantaged learners (Motsepe et al., 2026; Tran et al., 2024; Chen et al., 2021; Suyitno et al., 2025; Grenada National Training Agency, 2011; NCTVET, 2022).

Johnston (2018) explained that from an employability perspective, CBET is attractive because it makes skills "visible" and portable: competency standards provide a shared language between education providers and employers about what a graduate can do on the job. The OECD analyses of qualifications frameworks and employability maintained that when competency standards reflect up-to-date occupational profiles and are co-constructed with employers and social partners, they can reduce skill mismatches and help individuals navigate more fluid labour markets (Suyitno, 2025; OECD, 2016; Brewer & Comyn, 2015). The ILO (2020) guidance on “core work skills” similarly emphasizes that competency-based TVET can facilitate smoother school-to-work transitions by embedding both job-specific skills and transferable core skills (communication, problem solving, teamwork) that underpin long-term employability models (Motsepe et al., 2026; Menéndez, 2022; Wesselink, 2017; Brewer & Comyn, 2015).

However, CBET is not inherently transformative; its effectiveness depends on the depth and breadth of the competencies defined and the way programmes are delivered (Brewer & Comyn, 2015; Tran, 2024). Curriculum research on CBET implementation in vocational systems notes that some reforms have narrowed competencies to very specific, observable tasks, fragmenting occupations into checklists of micro-skills with limited attention to holistic occupational competence, career adaptability, or the capacity to learn in new contexts (Tran, 204; Chen, 2021). Critics argue that this task-based orientation risks preparing learners for current job descriptions rather than for evolving work roles shaped by digitalisation, green transitions, and organisational restructuring (Motsepe et al., 2026., Suyitno, 2025).

Zulakhmar Zakiyudin and Hasim (2025) stated that recent work in vocational and curriculum journals has tried to nuance this critique by distinguishing between “thin” CBET (focused on discrete tasks and behavioural outcomes) and “thick” CBET, which incorporates complex problem-solving, reflection, and broader professional competences. Comparative studies of competence-based vocational education (for example, the revised CCBE model) highlight principles such as centring complex vocational core problems, integrating knowledge, skills and attitudes, and giving learners increasing responsibility for self-directed learning (Hernández-Fernández & Marsan, 2026).

These design features align closely with contemporary employability constructs in the career development literature, which emphasise not only immediate job readiness but also adaptability, identity development, and career self-management (Harvey, 2019).

Career development research published in the International Journal for Educational and Vocational Guidance and related outlets underscores that employability involves a dynamic interaction between individual resources (skills, knowledge, self-efficacy), career management behaviours (exploration, networking, planning), and contextual supports and barriers (Tran et al., 2024; Chen et al., 2021; Harvey, 2019). In this perspective, Hutton and Dixon (2016) CBET contributes to employability when it is embedded in programmes that also cultivate vocational identity, self-efficacy, and career management skills, rather than treating competence as a static end-state. For example, recent work on graduate employability attributes in regional contexts shows that employers expect not only technical proficiency but also communication, teamwork, problem-solving, and the ability to continue learning, which can be systematically embedded in competency standards and assessments (Majumdar, 2013; Pavlova & Maclean, 2013).

Empirical evidence from OECD and ILO studies confirms that competency-based qualifications frameworks can support transitions to employment, but only under certain conditions according to (Grenada National Training Agency, 2011; ILO, 2017). First, standards must be co-developed and periodically updated with employers, professional bodies, and, where relevant, unions, so that they reflect real work practices and emerging skill demands. Second, assessment systems must be robust and transparent, using multiple methods (observation, portfolios, simulations, workplace assessment) and quality-assured assessors to ensure that the "competent" judgement is credible to employers. Third, programmes need to integrate both technical and transversal skills, including digital, green, entrepreneurial, and socio-emotional skills that support mobility and resilience across sectors (Hernández-Fernández & Marsan, 2026; OECD, 2016)

Conversely, several evaluations caution that poorly designed or weakly implemented CBET can leave graduates with certificates that employers do not trust or understand. If industry stakeholders are only nominally involved in standard setting, or if assessment practices are inconsistent, competency-based frameworks can become bureaucratic overlays rather than levers for better work outcomes (Majumdar, 2013; Pavlova & Maclean, 2013).

Moreover, when CBET is implemented in resource-constrained institutions without adequate staff development, learning materials, or equipment, instructors may struggle to facilitate authentic, practice-based learning, undermining the promise of CBET to develop job-ready skills (Majumdar, 2013; Pavlova & Maclean, 2013).

These debates intersect directly with contemporary career development perspectives that reject a narrow "employability skills checklist" and instead foreground career adaptability, meaning making, and contextualised support for transitions (Harvey, 2019). Research in international career guidance journals increasingly highlights the need for TVET programmes to foster career agency, support students in exploring occupational futures, and address structural barriers such as discrimination, precarious work, and limited local opportunities. In this light, CBET should be understood as one component of a broader career development ecosystem, rather than a stand-alone solution to youth unemployment (Harvey, 2019).

CBET in Jamaica and the Caribbean

In Jamaica and across the CARICOM region, CBET principles are institutionalised in the National Vocational Qualification of Jamaica (NVQ-J) and the Caribbean Vocational Qualification (CVQ) systems, which articulate competencies across multiple levels and occupational sectors (HEART/NSTA Trust, 2021; NCTVET, 2022; CARICOM, 2017; Grenada National Training Agency, 2011).

The NVQ-J is a nationally endorsed certificate of competence awarded because of demonstrated competencies aligned with Jamaican occupational standards, while the CVQ is a regional award based on CARICOM-approved occupational standards that define the core work practices for an occupational area (NCTVET, 2022; CARICOM, 2017; Hutton & Dixon, 2016; Grenada National Training Agency, 2011). Both systems are explicitly competency-based, using modular units, workplace-relevant assessments, and recognition of prior learning to accommodate diverse learners, including out-of-school youth and adults (Hutton & Dixon, 2016).

Regionally, the CVQ has been framed as a key instrument for labour mobility within the CARICOM Single Market and Economy, as it provides a common framework to recognise skills across national borders. National Training Agencies in several Caribbean states, including Jamaica, Trinidad and Tobago, and Grenada National Training Agency (2011), use NVQ/CVQ pathways to certify competencies from entry-level to supervisory and professional levels, aligning with regional qualifications frameworks (NCTVET, 2022; CARICOM, 2017; Grenada National Training Agency, 2011). Over time, employers in sectors such as tourism, construction, and hospitality have become more familiar with NVQ/CVQ levels and increasingly recognise these awards as credible indicators of skills and productivity potential (NCTVET, 2022; Grenada National Training Agency, 2011).

Quality assurance mechanisms in the Caribbean TVET landscape place particular emphasis on learner engagement, employer satisfaction, and competency completion as core quality indicators (HEART/NSTA Trust, 2021; NCTVET, 2022; CARICOM, 2017). Quality assurance manuals issued by National Training Agencies highlight data collection on these indicators as central to monitoring provider performance and informing continuous improvement in programme design (Porter-Lewis, 2022). These indicators map closely onto employability constructs widely used in the career development and higher education literature, which often operationalise employability in terms of students' engagement with learning, employers' satisfaction with graduate attributes, and successful completion of competence-based modules linked to occupational outcomes (NCTVET, 2022; HEART/NSTA Trust, 2021; CARICOM, 2017; Grenada National Training Agency, 2011).

Recent analyses of TVET and employability in the Caribbean argue that CBET-based qualifications have contributed to a gradual reframing of TVET from a "second chance" track to a legitimate route into skilled employment and further study (NCTVET, 2022; CARICOM, 2017; Grenada National Training Agency, 2011). Studies of TVET and its integration into general education in the region show how universities and colleges have increasingly adopted competency-oriented, work-based learning approaches that were once confined to TVET, including internships, industry projects, and outcome-based curricula. This convergence suggests that CBET principles are influencing wider post-secondary education, potentially broadening pathways for TVET graduates to progress into higher education while retaining a focus on employability (Porter-Lewis, 2022; HEART/NSTA Trust, 2021; Grenada National Training Agency, 2011).

However, challenges remain in ensuring that NVQ-J and CVQ qualifications consistently translate into improved labour market outcomes, especially for youth from disadvantaged communities (HEART/NSTA Trust, 2021; Grenada National Training Agency, 2011). Research on the perceived effectiveness of TVET in Jamaica notes that TVET is intended to provide a foundation for employability through both entrepreneurial skills and employability skills such as teamwork, communication, and problem-solving, yet institutional capacity and labour market conditions can limit impact (Porter-Lewis, 2022; Hutton & Dixon, 2016). Barriers include limited work-based learning opportunities in some sectors, uneven employer engagement in small and micro-enterprises, and persistent social perceptions that academic routes are more prestigious than vocational pathways (NCTVET, 2022; HEART/NSTA Trust, 2021; CARICOM, 2017).

Policy initiatives under Vision 2030 Jamaica and the HEART/NSTA Trust's Triple Access Strategy explicitly seek to address these gaps (PIOJ, 2016). Vision 2030 emphasises aligning training with market demands, improving access to labour market information, integrating TVET and STEM/STEAM, and expanding career development services. HEART/NSTA's current strategy focuses on enhancing training and certification quality, strengthening industry partnerships, increasing services to at-risk youth, and bolstering placement, entrepreneurship, and career development support, all within a competency-based TVET ecosystem (HEART/NSTA Trust, 2021). These policy directions affirm CBET as a core pillar of Jamaica's human capital development plan while recognising that additional measures are needed to fully realise its employability potential (Grenada National Training Agency, 2011; PIOJ, 2016).

Industry partnerships and work-based learning

The effectiveness of competency-based TVET in promoting employability is closely tied to how deeply industry is embedded across the TVET system, from standard setting and curriculum design to delivery, work-based learning, and assessment. Caribbean policy frameworks consistently identify industry as a "key driver" of TVET, emphasising that qualifications, programmes, and assessment regimes must be shaped by the needs and innovation priorities of local and regional employers (HEART/NSTA Trust, 2021; Grenada National Training Agency, 2011). In practice, industry participation can take multiple forms, including serving on sector councils and standards committees, co-developing occupational profiles, providing workplace training slots, mentoring trainees, and participating in assessment panels (HEART/NSTA Trust, 2021).

CARICOM-level initiatives have sought to institutionalise these relationships. The development of regional occupational standards underpins the CVQ system and requires structured collaboration between employers, practitioners, and TVET experts across member states to agree on common competence descriptions (CARICOM, 2017). More recently, CARICOM and its partners have promoted regional digital TVET platforms and the Human Resource Development (HRD) 2030 Strategy, which call for expanded industry, TVET collaboration, including online and blended training, shared use of simulation and digital labs, and joint governance mechanisms for skills development (CARICOM, 2017). These initiatives also link TVET reform to broader agendas such as Industry 4.0, green skills, and digital transformation, underscoring the need for industry partners that can articulate emerging competence requirements (HEART/NSTA Trust, 2021; CARICOM, 2017).

Suyitno et al (2025) reasoned that international evidence indicates that structured work-based learning, apprenticeships, internships, cooperative education, and other forms of workplace experience, is one of the most powerful predictors of successful school-to-work transitions (Jobs for the Future, n.d.). Studies synthesising work-based learning outcomes show that learners who have sustained, high-quality workplace experiences integrated into their TVET programmes tend to have higher employment rates, smoother transitions into their first job, and better early career wages than peers without such exposure (Penttinen & Vesisenaho, 2013).Work-based learning allows students to apply competencies in real work settings, develop vocational identities, and build social capital through professional contacts and networks, all of which are central to employability as understood in contemporary career development literature (Ismail & Mujuru, 2020).

Jobs for the Future (n.d.) argued that recent empirical work on work-based learning and employability skills emphasises that the benefits of work-based learning are not automatic; they depend on programme design, learner self-efficacy, and the quality of mentoring. For instance, Suyitno et al (2025) study found that work-based learning did not have a direct effect on employability skills in isolation, but its impact was mediated by vocational identity and moderated by self-efficacy: work-based learning strengthened students' vocational identity, which in turn influenced employability skills, and higher self-efficacy directly improved employability (Tran, 2024). This finding aligns with broader career development theories that view work-based learning as a context in which students construct a sense of career self, test their interests and abilities, and gain confidence to navigate future transitions (Penttinen & Vesisenaho, 2013).

According to Jobs for the Future (n.d.), in African and other developing contexts, reviews of workplace-based learning and youth employment similarly conclude that apprenticeships, internships, and other workplace-based training components are vital but require strong coordination between training providers and employers. Without such coordination, workplace-based learning can become ad hoc, with limited relevance to occupational standards or curricula, and may even expose youth to exploitative or low-quality placements that do little to enhance employability according to (Ismail & Mujuru, 2020).

Brewer and Comyn (2015) believed that quality frameworks for work-based learning now commonly include indicators such as clear learning objectives, structured supervision, regular feedback, and integration with classroom learning, which resonate with Caribbean efforts to formalise industry partnerships in TVET (Jobs for the Future, n.d.).

Within the Caribbean, Grenada National Training Agency (2011) there has been a concerted push to strengthen work-based learning as a core element of NVQ/J and CVQ pathways. Jamaica Information Service (JIS), (n.d.), HEART/NSTA, for example, has expanded apprenticeship and internship models, and its strategic focus on strengthening industry partnerships explicitly mentions placement services, entrepreneurship support, and multi-agency collaboration as levers to improve employment outcomes for trainees. Studies of TVET evolution in the region also document increased involvement of employers in programme development, policy strategy, and implementation, as well as expanded requirements for on-the-job training and workplace projects at both undergraduate and postgraduate levels (Harvey, 2019). Hutton and Dixon (2016) illuminated that the point that these developments suggest a move toward a more integrated model where CBET and work-based learning are mutually reinforcing.

Transition-to-work models in TVET

Transition-to-work models in TVET typically integrate three core, interdependent components: (1) career guidance and counselling, (2) structured work-based learning, and (3) post-training support such as job placement, labour market information, and alumni tracking (Penttinen & Vesisenaho, 2013). Career guidance and counselling within TVET systems aim to help learners understand their strengths and interests, explore occupational options, and develop realistic and flexible career plans, thereby enhancing career adaptability and informed decision-making (Ismail & Mujuru, 2020). Based on Jobs for the Future (n.d.), work-based learning, as discussed, provides experiential contexts in which learners can test and refine these plans (JIS, n.d.). Suyitno et al (2025) indicated that post-training support ensures that the competencies and experiences gained during training are effectively translated into labour market outcomes, through services such as job matching, résumé support, and access to up-to-date labour market intelligence (Penttinen & Vesisenaho, 2013).

According to National Training Agency (n.d.) vocational qualifications Trinidad and Tobago focuses on developing practical skills for specific job roles. In the Caribbean, transition-to-work strategies are frequently embedded in wider youth employment and skills initiatives rather than being confined to TVET institutions alone (Tran, et al., 2024; (JIS, n.d.). Grenada (2011) indicated that the NVQ-J and CVQ qualifications are often positioned as “passports” to regional labour mobility within CARICOM, in line with the movement of skilled nationals and mutual recognition of qualifications. Policy documents related to Vision 2030 Jamaica and CARICOM’s HRD 2030 Strategy emphasise strengthening career guidance in schools and training centres, expanding access to labour market information, and building robust data systems to track graduates' outcomes and inform policy adjustments (PIOJ, 2016). Furthermore, (Penttinen and Vesisenaho, 2013), stated that these elements reflect a transition-to-work logic that recognises employability as an interaction between individual competencies, institutional support, and labour market structures (Hutton & Dixon, 2016).

Evidence from Ghana, Ethiopia, and other developing-country contexts offers useful insights for Jamaica and the Caribbean. Studies in these settings indicate that when CBET is combined with strong employer engagement and systematic career guidance, graduates tend to experience better employment prospects and smoother transitions into work (Light for the World, 2020; Ismail & Mujuru, 2020). For example, integrated models that include occupational skills training, life skills, entrepreneurship education, and job placement services have been associated with increased employment rates and improved job quality among graduates according to (Brewer & Comyn, 2015). However, according to (Zakiyudin and Hasim, 2025), these positive outcomes are contingent on adequate resourcing; weak organisational capacity, limited soft skills provision, and fragmented labour market information systems can undermine the effectiveness of even well-designed CBET programmes.

Tran et al (2024) alluded that Career development literature reinforces the importance of guidance and counselling in supporting transitions, especially for youth facing social and economic vulnerabilities. Articles in the International Journal for Educational and Vocational Guidance and related journals highlight that students' career concerns often revolve around uncertainty about labour market prospects, lack of information, and difficulties balancing personal aspirations with family and community expectations (Motsepe et al., 2026). Effective guidance within TVET systems therefore needs to attend to both informational and psychosocial dimensions, helping learners build career adaptability resources (concern, control, curiosity, confidence) and navigate contextual constraints (Penttinen & Vesisenaho, 2013).

In Jamaica, Vision 2030 and related TVET policies explicitly underline the need for comprehensive career development services, including counselling, labour market information, and support for lifelong learning (PIOJ, 2016). HEART/NSTA's strategy to enhance career development and lifelong learning services, and to extend support to youth at risk in volatile communities, reflects recognition that technical competencies alone are insufficient for durable employability (JIS, n.d). Nonetheless, Harvey (2019) implementation remains uneven across institutions: some providers offer robust guidance, placement, and alumni tracking services, while others lack the staff or systems to do so consistently. This unevenness can result in inequitable transition outcomes, even when learners hold the same NVQ-J or CVQ qualifications (JIS, n.d.).

Recent reviews of TVET, digital innovation, and employability argue that transition-to-work models also need to adapt to new realities of work, including platform work, remote work, and the growing importance of digital and green skills (Hernández-Fernández &

Marsan, 2026; Light for the World, 2020). For Caribbean TVET systems, this implies integrating digital career development tools, virtual work-based learning experiences where physical placements are limited, and guidance that prepares learners for portfolio careers and lifelong upskilling (Hutton & Dixon, 2016; JIS, n.d.). Journals focused on vocational education and training research underscore that robust, data-informed transition services such as graduate tracking, employer surveys, and labour market analytics are increasingly seen as core components of modern TVET systems rather than optional add-ons (Zakiyudin & Hasim, 2025).

Hutton and Dixon (2016), taken together, the literature suggests that competency-based TVET can be a powerful platform for employability when embedded in integrated transition-to-work models that feature strong industry partnerships, rich work-based learning, and comprehensive career development support (Harvey, 2019; Brewer & Comyn, 2015). For Jamaica and the Caribbean, ongoing reforms around NVQ-J/CVQ, Grenada (2011) and JIS (n.d.) digital innovation, and youth-focused employment strategies provide a foundation to further align CBET with contemporary employability and career development frameworks, while also addressing persistent implementation and equity challenges (Harvey, 2019; PIOJ, 2016).

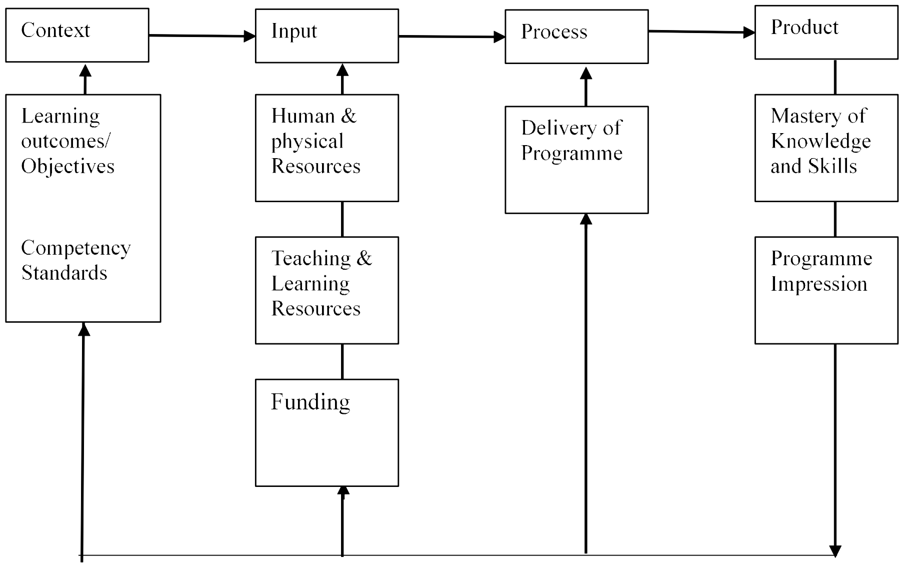
Methodology

Design and evaluation framework

The study employed a sequential exploratory mixed-method design anchored in the CIPP model, which conceptualises programmes as systems comprising context, input, process, and product dimensions. This design allowed initial qualitative exploration of stakeholder perspectives and programme operations to inform the development of quantitative instruments for broader assessment.

1) Context evaluation examined the alignment between programme objectives, NVQ-J standards, national policy priorities, and labour market needs.
2) Input evaluation assessed human, financial, and physical resources; curriculum alignment with NVQ-J; and facilitator qualifications and professional development.
3) Process evaluation focused on the implementation of CBET pedagogy, assessment practices, learning resources, and industry engagement activities.
4) Product evaluation analysed graduates’ technical competence, employability skills, employment outcomes, and stakeholder satisfaction.

Figure 1. *Adaptation of Stufflebeam Model as used in this Study*



Sample and participants

Using purposive and stratified random sampling, the study included 364 participants across four HEART institutions delivering the CCL2 programme. Participant groups comprised:

1) Trainees currently enrolled in the CCL2 programme.
2) Graduates who had completed the programme were in varying employment statuses.
3) Facilitators are responsible for classroom and practical instruction.
4) Employers in the tourism and hospitality sector employ CCL2 graduates.
5) Administrators and programme managers oversee TVET delivery.

This multi-stakeholder sample enabled triangulation of perspectives on programme design, delivery, and outcomes.

Data collection

Multiple methods were used to strengthen validity and provide a comprehensive picture of programme functioning:

1) Structured questionnaires for trainees, graduates, facilitators, and employers captured perceptions of curriculum relevance, resource adequacy, learning experiences, and employability outcomes.
2) Semi-structured interviews with administrators and key employers explored policy alignment, industry partnership, and transition strategies in greater depth.

3) Observations of teaching and practical sessions documented CBET pedagogy, use of resources, and classroom dynamics.
4) Document review covered NVQ-J plans, curriculum outlines, competency standards, institutional policies, tracer studies, and employer surveys.

Data analysis

Quantitative data were analysed using descriptive statistics and inferential tests to examine patterns across stakeholder groups and sites. Qualitative data from interviews and observations were coded thematically, guided by the CIPP framework and emergent themes related to employability, industry engagement, and transition-to-work.

Integration of qualitative and quantitative findings occurred at the interpretation stage, with convergent and divergent results mapped across CIPP dimensions to generate a holistic evaluation.

Table 1. *Response Rates of the Participants*

Participants	Number in Sample (*n*)	Number of Respondents	Response Rate (%)
Quantitative (Questionnaires)			
Trainees	150	111	74.0
Graduates	150	83	55.3
Facilitators	12	12	100.0
Employers	45	34	75.6
Sub-Total	357	240	67.2
Qualitative (Interview)			
Administrators	7	5	71.4
Total	364	245	67.3

Findings

Here I summarise the main findings; you can expand each subsection into 300–500 words to reach your word count.

Context: Alignment with industry and policy

Research Question 1: How are the learning outcomes for the Commis Chef Level Two Programme aligned with National Vocational Qualification (NVQ) plan, relevant to trainees, and meet employers' expectations?

Stakeholders generally recognised the CCL2 programme's learning outcomes and confirmed that they are formally aligned with NVQ-J competency standards and national TVET priorities. Employers acknowledged that NVQ-J qualifications, particularly at Level 2, are increasingly valued and perceived as equivalent to other academic qualifications in signalling competence.

However, labour market studies by HEART/NSTA Trust and regional bodies indicate that despite formal alignment, gaps persist between the specific competencies emphasised in training and evolving industry demands, especially in areas such as food safety, creativity in meal preparation, and integration of new technologies. Employers also reported that, while NVQ-J provides a useful baseline, it does not fully capture higher-order capabilities or soft skills needed for progression in the hospitality industry.

Input: Resources, curriculum, and staff

Research Question 2: How adequate are the funding, human resources, and plant and equipment provided for the delivery of the Commis Chef Level Two Programme? The evaluation found that funding levels and staff qualifications met basic standards, and that facilitators were generally pedagogically trained and technically competent. Nevertheless, significant resource constraints were reported, including inadequate facilities, limited tools and equipment, and overcrowded classes, which sometimes necessitated seven-day operations to meet practical training requirements. These constraints align with regional analyses of under-resourced TVET systems in the Caribbean.

Research Question 3: How do the Commis Chef Level Two curriculum contents cover and align with the National Vocational Qualification (NVQ) and represent the practical knowledge (employability skills) required by trainees, graduates, and employers/the industry? Curriculum documents and NVQ-J plans indicate that the CCL2 programme is competency-based and regularly revised to reflect updated standards. However, programme managers reported challenges relating to the relevance of newly added units, increased programme duration, and implications for certification targets. Graduates' feedback from tracer studies suggested that practical sessions were sometimes insufficient, and that employability skills units did not consistently translate into observable workplace behaviours.

Process: CBET pedagogy, assessment, and industry engagement

Research Question 4: What factors account for the differences in how the facilitators in the Commis Chef Level Two Programme use the required National Vocational Qualification (NVQ) plan to deliver the programme? Observations and stakeholder reports showed that CBET pedagogy is partially implemented, with strong emphasis on practical demonstrations and competency assessment, but uneven integration of learner-centred, self-paced approaches and formative feedback. Some facilitators struggled to manage mixed-ability groups and to differentiate instruction, especially where trainees had varied academic preparation and learning needs.

Teaching and learning resources were often limited, with shortages of up-to-date instructional materials, ICT integration, and modern kitchen equipment, constraining the authenticity of practical learning experiences. Industry involvement was strongest at the standard-development and curriculum approval stages, but less consistent in ongoing delivery, guest lecturing, and assessment, and in offering structured work-based learning placements.

Product: Employability outcomes and transitions

Research Question Five: To what extent are there differences in the overall perceptions and satisfactions of stakeholders' (trainees, graduates, facilitators & employers) of the Commis Chef Level Two Programme?

Employers generally rated CCL2 graduates as technically competent and job-ready in core culinary skills, and HEART's tracer studies reported relatively high employment rates in hospitality roles shortly after graduation. Nonetheless, employers expressed dissatisfaction with some graduates' attitudes, time management, creativity, and customer service skills, and noted limited proficiency in specialised areas such as food safety, prevention of cross-contamination, and preparation of diverse cuisines.

Graduates themselves reported that the programme improved their technical skills and confidence, but some felt underprepared in ICT, entrepreneurship, and career management skills necessary for advancing beyond entry-level positions. Regional evidence suggests that such gaps may limit vertical mobility and resilience amid labour market shocks, including those associated with the COVID-19 pandemic and shifts in tourism demand.

Overall Perceptions of the Programme. During the interviews, the administrators collectively agreed that trainees who morphed into graduates are the products of a successful programme. **Dee** [**BT**] explained, "The trainees and graduates are expected to develop competencies, as stated in the NVQ plan, to be employable." **Eve** added:

> "The programme provides the trainees with a skill that allows them to be employable. Consequently, over 95% of our commis chef graduates get employment, and a number of them get employment before they leave school." **[Administrator, BH]**

Dee shared the following:

> "We have a cohort that exited the institution in March; however, usually by September [or] October, when some employers call in to see if they can get workers, we cannot find anybody. They are absorbed in the system, even though it may not be all of them. Some persons find themselves in a few areas outside for which they were not trained. Nevertheless, the majority of them are employed both overseas and locally." **[Administrator BT]**

Bob added:

> "Most of the trainees who complete the commis chef programme are able to hold their own when they go into the industry. They can apply much of what they would have learnt from the NVQ plan for the Commis Chef Level Two programme when they go out into the world of work, and this would allow them to be employable. I think they have enough competence to start at the beginner's level and to grow from there to be employed." **[Administrator BH]**

Ann conveyed the following from a graduate:

> "Miss, we are just able to execute what we learn in theory and practical……and when they see us working, they just leave us because they don't have to supervise us because we know what we are doing."

Eve cited the following case:

> "I serve on a board, and an employer was making a comparison between the graduates from that particular institution and HEART graduates. He said that he does not have to go through so much training with graduates from the Commis Chef Programme from HEART because they have far more technical skills, as opposed to those from the community colleges." **[Administrator BH]**

Dee [BH] extended **Eve's** response by indicating that the graduates are able to hit the ground running and that there is no need for retraining. He explained that the programme is an entry-level programme, and the major areas or learning outcomes that an employee would need in the kitchen are covered in the NVQ plan. Furthermore, he stated that the "reviews from employers about the programme are fairly good and that the trainees and graduates hone the knowledge and skills."

Table 2. *Stakeholders' Overall Views of the CCL2 Programme*

Group	Item	Mean	SD
Trainees	I would recommend the CCL2 programme to others	3.23	0.88
Graduates	I would recommend the CCL2 programme to others	3.70	0.56
Employers	I would recommend the CCL2 programme to others	3.71	0.46
Facilitators	I would recommend the CCL2 programme to others	2.83	0.83
Trainees	Overall, I am satisfied with CCL2 programme	3.12	0.83
Graduates	Overall, I am satisfied with CCL2 programme	3.65	0.59
Facilitators	Overall, I am satisfied with CCL2 programme	2.83	0.84

Note: The *t*-test was only used for the trainees and graduates because the numbers for facilitators and employers were small and could not be computed.

As shown in Table 4.16, the mean values for the recommendation item ranged from 2.83 to 3.71, showing that most of the respondents agreed. The standard deviation values ranged from 0.46 to 0.88, indicating some variations, especially among the trainees, while for the item on satisfaction, the mean values ranged from 2.83 to 3.65 for the trainees and the facilitators. The standard deviation values showed slightly more variation for the trainees and the facilitators.

The independent samples *t*-test conducted to test for difference showed a significant difference in the trainees' and graduates' responses to recommending the Commis Chef Level Two programme, $t(190) = -4.955$, $p = 0.001$. This was done because the data for these groups met the assumptions. For the second item that measured the respondents' overall satisfaction with the Commis Chef Level Two Programme, there was a significant difference in the trainees' and graduates' responses, $t(190) = -5.187$, $p = 0.001$. Both null hypotheses were rejected.

Discussion and Conclusion

CBET and technical competence: Strengths and limits

The study confirms that CBET-based TVET programmes can deliver strong technical competence and baseline employability, as indicated by employers' positive assessments of CCL2 graduates' core skills and their relatively high rates of employment in relevant occupations. This aligns with international evidence that competency-based, standard-aligned programmes enhance occupational readiness when quality assurance mechanisms are robust.

At the same time, the findings highlight the limitations of a narrow competence focus that insufficiently addresses broader career development, including soft skills, creativity, and adaptability, which are increasingly critical in dynamic service industries. For TVET systems in Jamaica and the Caribbean, the policy challenge is to maintain the strengths of CBET in aligning with industry-defined standards while broadening curricula and pedagogies to support holistic employability.

Industry partnerships and transition-to-work

Although industry stakeholders participate in standards development and certification processes, ongoing partnerships at the delivery level remain uneven, limiting opportunities for authentic work-based learning, mentorship, and co-assessment. International transition-to-work models emphasise structured apprenticeships, dual systems, and co-designed work placements as key mechanisms for bridging training and employment.

Strengthening industry partnerships, for example, through formal agreements, sector skills councils, and employer incentives, would support more coherent transition pathways for TVET graduates in Jamaica. In the culinary context, this could include rotational placements across hotels and restaurants, joint evaluation of competencies, and industry-led masterclasses aligned with NVQ-J units.

Inclusivity and differentiated support

Your other work on inclusive TVET for people with disabilities underscores the importance of equitable access, tailored support, and inclusive pedagogy in TVET systems. While the CCL2 evaluation did not centre disability, issues of differentiated instruction, resource constraints, and learner diversity are salient across programmes. Inclusive transition-to-work models in the Caribbean must therefore integrate disability-sensitive measures, accessible infrastructure, assistive technologies, and personalised support services, in line with CRPD obligations and regional disability policies.

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CAMEL based Performance Analysis of Commercial Banks in Bangladesh

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Abstract:

The banking sector plays a pivotal role in the stability and macroeconomic growth of Bangladesh. Therefore, understanding the relative performance and soundness of commercial banks is critically important. The CAMEL (capital adequacy, asset quality, management efficiency, earnings, and liquidity) model is widely used by regulators, analysts, banks, and investors to assess the overall financial performance of banks and financial institutions. This study aims to evaluate the financial performance of commercial banks in Bangladesh using CAMEL model. This study applied the CAMEL framework to make a structured and objective assessment of the performance of commercial banks and identify their strengths and weaknesses. The findings will contribute to a deeper understanding of performance differentials within the banking sector and overall banking sector resilience.
The study adopted a quantitative and descriptive research design. A sample of 20 listed commercial banks of Dhaka Stock Exchange (DSE) was analyzed over a five-year period (2020 - 2024). Secondary data was collected from annual reports of respective selected commercial banks, Bangladesh Bank's publications, newspapers, articles, and other sources. Selective ratios representing the CAMEL model and group average values of these were analyzed to scrutinize and compare the performance of the sampled commercial banks. Descriptive statistic values e.g., mean, standard deviation, range, skewness, kurtosis, etc. were studied and analyzed to illustrate and sum up the statistical properties and behavior of variables. Also, one-way ANOVA was analyzed to examine the mean difference CAMEL ratios across banks. This study findings are expected to contribute to the existing literature by providing empirical evidence on commercial banks' performance in Bangladesh, and providing insights for regulators, bank management, investors, and policymakers.

Introduction:

The banking sector plays a pivotal role in the stability and macroeconomic growth of Bangladesh. Therefore, understanding the relative performance and soundness of commercial banks is critically important. The CAMEL (capital adequacy, asset quality, management efficiency, earnings, and liquidity) model is widely used by regulators, analysts, banks, and investors to assess the overall financial performance of banks and financial institutions. The CAMEL rating system is a crucial supervisory framework employed to assess the financial health, soundness and overall performance of banks. This study aims to evaluate the financial performance of commercial banks in Bangladesh using CAMEL model.

Banks are depository financial institutions connecting the savers and users of fund. These mediators are interpolated between the final borrowers and lenders allowing them well-organized allocation of funds in the economy. Entities having excess funds can advance them for rational return to entrepreneurs and other economic units who need funds to take the advantage of economically and financially feasible investment ventures. The presence of financial markets and financial organizations allows such transfer of financial resources. Thus, both the borrowers and lenders are well off compared to without financial organizations and intermediaries. It is argued that financial establishments have a progressive role in funding and investment in a multidimensional practice linking the difficulty of numerous interconnected and inter-reliant factors of differentiated nature. It is difficult to assess the contribution of each factor independently. The pivotal purpose of financial organization with other non-depository institutions is to support in the distribution of country's scarce capital among several alternative investment areas. Thus, the financial market plays a twin role, providing numerous types of investment fund and disciplining businesses, which are incompetent and fail to follow profitable income objectives. Thus, it is observed that financial institutions especially commercial banks if rightly organized and directed can help expansion of our economy.

In the context of Bangladesh has an option, efforts to be designed at nurturing banking activities for accelerating the economic wheel of the country. Notwithstanding its significant merits, it is also not desirable to overlook the problems of the nation's crisis oriented banking structure, which requires appropriate guideline of the banking procedure in order to safeguard effective use and watching of business funds.

Literature Review:

Concept & Evolution of CAMEL**:** CAMEL Model, first developed in the 1970s in the U.S., it is widely applied for bank supervision, performance assessment, and comparative analysis. CAMEL assesses banks across five key dimensions: Capital, Asset Quality, Management Efficiency, Earnings, and Liquidity, later extended to CAMELS by including Sensitivity to Market Risk. CAMEL Model helps regulators identify weak banks, investors compare performance, and researchers analyze efficiency, profitability, and risk. Empirical Studies in Foreign Countries: Several international studies have used the CAMEL/CAMELS framework to evaluate bank performance and financial soundness. Research in countries such as the U.S., Malaysia, Jordan, Turkey, and India confirms that capital adequacy, asset quality, management efficiency, earnings, and liquidity are key drivers of bank stability and profitability. These studies demonstrate the global applicability of CAMEL for performance evaluation, risk assessment, and regulatory supervision.

Empirical Studies in Bangladesh: Studies by Hossain & Rahman (2011), Rahman (2015), Sultana (2018), and Islam & Khatun (2020) used the CAMEL framework to evaluate bank performance in Bangladesh. Research Gaps and Justification for Study: Existing studies are old and limited in scope. The post-COVID banking landscape and recent turbulence highlight the need for an updated review. Experts also used something called the CAMEL analysis (which stands for Capital adequacy, Asset quality, Managerial competence, Earnings quality, and Liquidity) to evaluate the soundness of a bank's finances (Douglas, Lont, & Scott, 2014). The Capital Adequacy, Asset Quality, Management Capability, Profitability, and Liquidity (CAMEL) Framework was an alternative method of financial analysis and evaluation. It evaluated the financial health of a company based on its capital adequacy, asset quality, management capability, profitability, and liquidity. It was founded in the early 1970s by federal regulators in the United States with the purpose of making the administration of bank inspections easier. Using CAMEL indicators to evaluate the overall regulatory health of banks had become the industry standard. According to Dang, the CAMEL method was an efficient instrument for assessing bank security and lowering the likelihood of a bank failing (2011).

Chowdhury and Islam(2007)investigated the effectiveness of Islamic and conventional banking systems using the CAMEL framework. They asserted that the CAMEL grading system was the most innovative tool currently available for assessing the performance of financial institutions.

Islam and Siddique (2001) identified that commercial banks are performing good and contributing into the development of the country. In this country, the average profitability of Bangladeshi Banks are low.

The CAMEL analysis approach had emerged as the model of choice for determining the level of productivity achieved by a financial institution due to its international standardization and adaptability to both on-site and off-site evaluation. Keovongvichith (2012) evaluated important financial development indicators before employing the CAMEL framework .

The findings of the study would provide the central bank with information valuable for analyzing the condition of the banking system and establishing strategies. Freahat (2009) conducted an investigation into 13 Jordanian banks and discovered that CAMEL ratios had an effect on the institutions' levels of profitability (ROA and ROE).
The five CAMEL criteria were capable of substituting for numerous essential financial statement components. This illustrated that when any of these five elements was weak, the likelihood of a bank collapsing increased. According to Said and co-authors (2008), a bank's

performance could be influenced by its management. Due to the significance of management to a bank's achievements, CAMEL-based evaluations of safety and soundness focus additional weight on this factor. Mamun (2013) presented an evaluation of the performance of the prime bank. Many ratios, including capital, equity, and advances to assets to assets, were calculated to estimate the 2008-2012 health of the bank. According to Mamun (2013), despite having relatively high debt-to-equity ratios, Prime banks' capital levels were significantly greater than the minimum requirement. This information could be utilized by researchers and financial institutions to strengthen capital adequacy and this information would improve performance and increase regulatory compliance.

The performance of a Malaysian Islamic bank was analyzed using a number of financial metrics (Samad and Hassan). The effectiveness of South Africa's commercial banks could be assessed using financial ratio analysis (kumbiari and Webb,2010). A number of Indian commercial banks have experienced an increase in asset, profit, income, investment, and deposit, which is evidence of the country's overall economic growth (Jaladhar, Anchula, & Achari, 2011).

Eyup et al (2017) determined whether bad debts have an effect on Turkish banks' profitability. He employed the regression analysis method to explore time series data set that includes 1809 observations. The association between non-performing or bad loans and profitability, as determined by ROA and ROE, was found to be negatively skewed. Return on equity and return on assets were both low when asset quality were poor and nonperforming loans were high. Eyup et al (2017) used IFRS-compliant quarterly financial reports from 55 Turkish banking sector banks. The time frame for the study was the first quarter of 2005 to the third quarter of 2016. Quality of Asset was evaluated by the proportion of bad or non-performing (follow-up) loans to total assets. According to the findings of the panel regression study, there was a significant inverse relationship between non-performing loans and the ratio of ROA/ROE variable, a measure of bank profitability.

Research Methodology:

The study findings reveal that all the banks in Bangladesh banking sector are divided in different groups from the year2020 to 2024.This study is based on secondary data. For that reason, the researcher has used the data in Annual report of Bangladesh. BRAC Bank Limited ranks first and National Bank Limited (NBL) ranks lowest in terms of CAMEL indicators. Descriptive analysis revealed a substantial dispersion in commercial banks' financial performance. One-way ANOVA also found considerable variation in the financial health and stability across the bank

Research Design: Quantitative and descriptive. As sample16 commercial banks in Bangladesh, analyzed over 2020–2024.

Data Sources: Secondary data from annual reports, Bangladesh Bank publications, newspapers, and articles.

Analysis:

NPLs to Total Loans Ratio:

None performing loans indicates bad loan against the total loans. Here In 2024,the FCBs and the PCBs had the lowest and DFIs had the highest ratio of NPLs to total loans. The SCBs had a gross NPLs ratio of 13.2 % in case of the Private commercial Banks, the FCBs and DFIs, 9.5%2.5%.20.3% respectively at the end of December 2024.

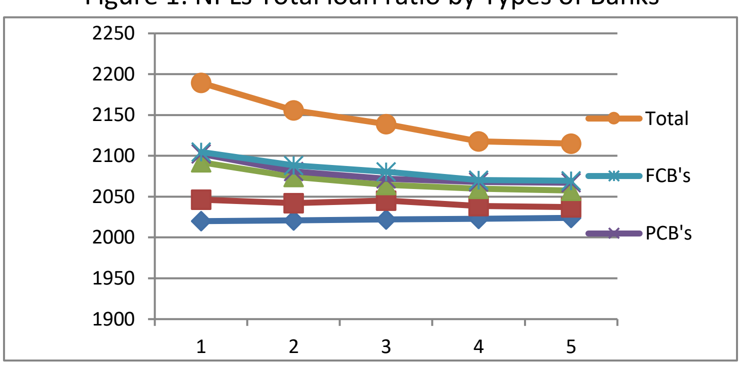
Table 1: NPLs Total loans ratio by Types of Banks (%)

Banks Types	2020	2021	2022	2023	2024
SBB's	26.3	21.2	23.2	15.4	13.2
DFI's	45.8	32.2	19.4	21.2	20.3
PCB's	10.2	6.5	7.4	8.3	9.5
FCB's	2.4	7.4	8.4	2.4	2.5
Total	84.7	67.3	58.4	47.3	45.5

Source: Bangladesh Bank Annual Reports(2020-2024)

The trend is shown in bellow:

Figure 1: NPLs Total loan ratio by Types of Banks



Return on Asset

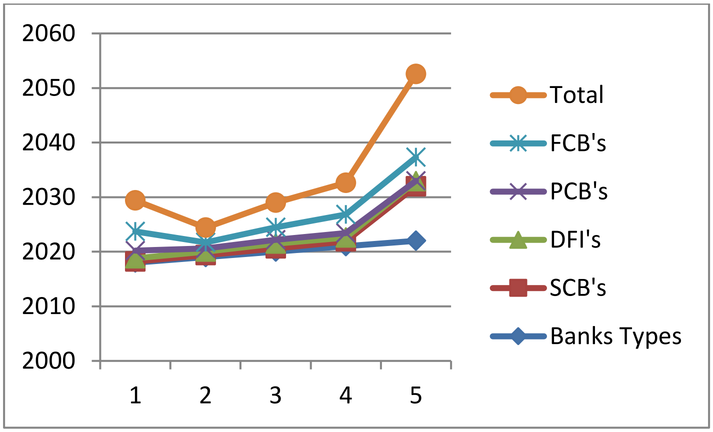
Return on Asset (ROA) indicates the relationship between total asset and total profit that measures how per unit of assets will influence by income .On the basis of Basel-ll, return on asset will be more than 1%. Return on asset identify the profitability ratios of bank's performance. Increasing ROA ratios will represent the positive impact on banking sectors of Bangladesh.

Table 2: Return on Asset(ROA)

Banks Types	2018	2019	2020	2021	2022
SCB's	0.2	0.4	0.6	0.9	10
DFI's	0.6	0.6	0.9	0.7	0.9
PCB's	1.4	0.6	0.7	0.8	0.09
FCB's	3.5	1.1	2.3	3.4	4.3
Total	5.7	2.7	4.5	5.8	15.29

Source:Bangladesh Bank Annual Reports(2020-2024)

Figure 2:Return On Asset(ROA)



Source:Bangladesh BankAnnual Reports(2020-2024)

The table 2 and the figure 2 shows that SCBs achieved approximately zero present return on asset over the whole period. This scenario is more worst in case of DFLs where all the time ROA was low.

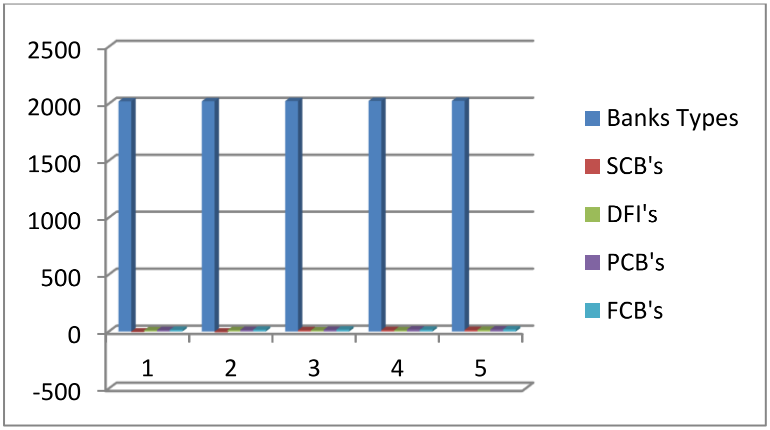
Return on Equity (ROE)

Return on Euqity (ROE) is another measure of profitability and earning factor that measure earning after tax to total equity.Here the total amount of profit for this equity owners are found from this ratios. Greater value of ROE is an factro of greater profitability of equity.

Table 3:Return on Equity(ROE)(Percent)

Banks Types	2020	2021	2022	2023	2024
SCB's	-5.3	-6.9	12	13	14
DFI's	11	12	10	11	15
PCB's	13	14	15	18	18
FCB's	15	16	17	16	19

Figure 3:Return on equity(ROE)



Source; Bangladesh Bank Annual Report (2020-2024)

The table3 and the figure 3 shows that SCBs achieved approximately zero present return on asset over the whole period. This is the worst in case of DFLs where all the time ROE was very low which indicates low profitability on equity investment.

Liquid asset(%)

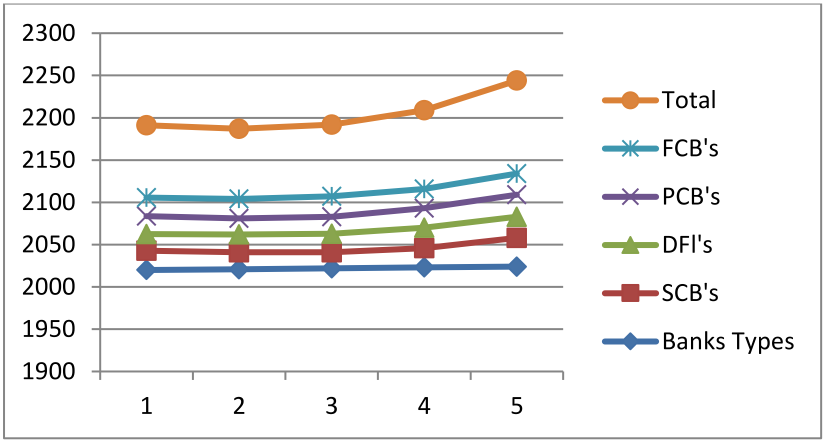
Liquidity reserve indicates cash reserve in bank. Three DFLs are exempted from the requirement of statutory liquidity reserve. Rest of all banks has to maintain the minimum statutory liquidity reserve.

Table 4: Liquidity assets(Percent)

Banks Types	2020	2021	2022	2023	2024
SCB's	22.8	20	19	23	34
DFI's	19.8	21	22	24	25
PCB's	21	19	20	23	26
FCB's	22	23	24	23	25
Total	85.6	83	85	93	110

Source: Bangladesh Bank Annual Report(2020- 2024)

Figure4:Liquid Asset(Percent)



From the Table & figure, we find that all the banks had more liquidity. In 2022,SCBs possessed highest excess liquidity which is more that five times higher than PCBs in 2022 .FCBs had liquidity which is highest in 2023 and 2024.DFIs and PCBs has excess liquidity on last five years. More liquidity represents more loanable fund at low cost.

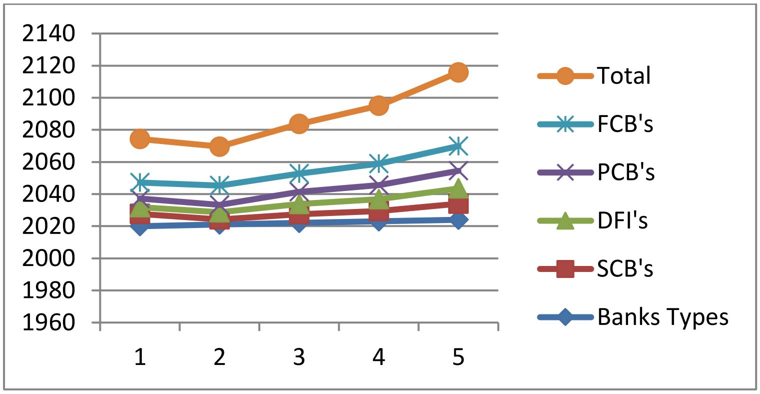
Excess Liquidity (%)

Liquidity excess varies according to the issued circular of Bangladesh bank but average excess liquidity is 20.5% to total deposits including cash reserve are at least 5% of Bangladesh bank account.

Table 5: Excess Liquidity(Percent)

Banks Types	2020	2021	2022	2023	2024
SCB's	7.6	3.2	5.4	6.5	10
DFI's	4.3	4.5	6.5	7.4	9.5
PCB's	5.4	4.6	7.5	8.7	11
FCB's	9.8	12	11.4	13.4	15.4
Total	27.1	24.3	30.8	36	45.9

Figure5: Excess liquidity(Percent)



From the Table5 & figure 5, we find that all the banks had more liquidity. In 2022, SCBs possessed highest excess liquidity which is more that five times higher than PCBs in 2022 .FCBs had liquidity which is highest in 2023 and 2024.DFIs and PCBs has excess liquidity on last five years. More liquidity represents more loanable fund at low cost.

Descriptive:

Bank	N	Mean	Std.Deviation	Std.Error	95%Confidence	Minimum	Maximum
					lowerBound		
SCB's	9	797.06	324.98	67.34	543.83	466	1324
DFT's	9	234.67	53.43	28.32	100.2	85.1	234.2
PCB's	9	1305	772.35	323.7	174.34	633	2334
FCB's	9	1453	65.78	342	354	103	245
Total	36	3789.73	1216.54	761.4	1172.37	1287.1	4137.2

The researcher wanted to find out the significant difference regarding the performance related to deposits under all four banking groups during 2020 to 2024 or not. That was tested as under.

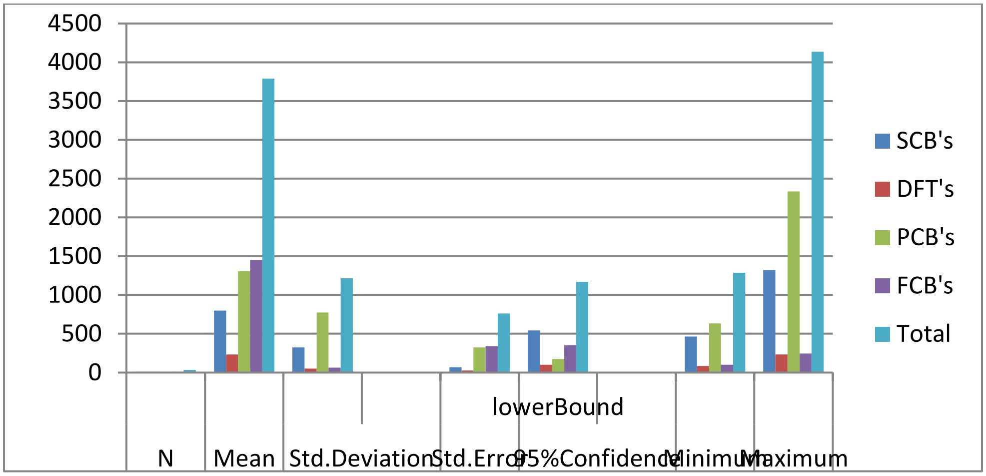


Table 6: ANOVA Table

	Sum of Squares	df	Mean Square	F	Sig	5%limit(From table F)
Between Group	8269466.02	5	3202433.6	18.554	0	F(4,25)3.93
Within Group	4604397.8	29	301137.45			
Total	13863863.8	29				

ANOVA table identifies that the total calculated value of F is 18.55, which is higher that the table value of 3 at 5% level of significance. Here, the null hypothesis is rejected and alternative hypothesis is accepted. It explains the significant difference in total deposits the four banking groups under 2020 to2024 or not. This was tested as under.

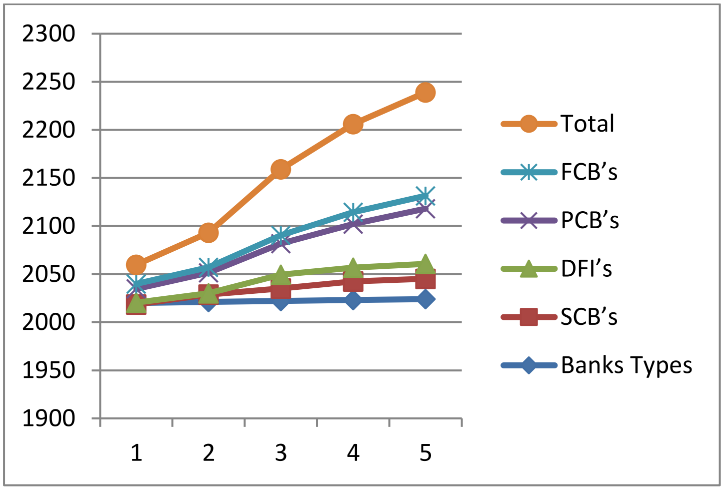
Net Interest Income (NII)

Another major technics is the earning and profitability is Net Interest Income(NII).Net Interest income is the ration between interest earnings from loans and advances and interest paid on depositors. The high level of NII means the extend between interest receipts and paid is high.

Table 6: Net Interest Income (NII)

Banks Types	2020	2021	2022	2023	2024
SCB's	-1.5	7.9	13.2	19.3	21.2
DFI's	1.9	1.3	14.2	14.5	15.5
PCB's	14.3	21.1	32.2	45.3	57.4
FCB's	5.2	5.8	8.9	12.4	13.4
Total	19.9	36.1	68.5	91.5	107.5

Figure: Net Interest Income



The aggregate net interest Income (NII) of the banking industry has consistently increased. Here NII of the SCBs was a poor amount of taka in 2020. And started to become upword sloping from 2020 to 2024.The DFI had a positive trend in NII since 2020 .Here the trend of NII indicates that the PCBs and the FCBs' interest spreads higher than SCB's and DFIs

CAMEL ratios: CAMEL ratios are used to evaluate Capital Adequacy, Asset Quality, Management Efficiency, Earnings Quality, and Liquidity Management.

Descriptive statistics: Mean, standard deviation, range, skewness, kurtosis are analyzed to understand the behavior of variables.

Ranking Method: Each bank was first ranked for individual sub-ratios within each CAMEL component. The average of these sub-ratios ranks was then calculated to determine the overall rank for each CAMEL component. Finally, the composite ranking of each bank was determined by taking the grand average of all five CAMEL component ranks.

One-way ANOVA tested for significant differences in means values of CAMEL ratios across banks.

CAMEL Dimensions and Sub-ratios Analyzed

Capital Adequacy Analysis

CAR: Prime Bank (17.24%), Bank Asia (16.53%), and Jamuna Bank (16.27%) lead in CAR, indicating strong capital buffers. IFIC Bank (11.44%) and One Bank (12.70%) are at the lower end, signaling weaker capitalization.

Leverage Ratio: **Brac Bank (10.06%),** Jamuna Bank (7.45%), and Uttara Bank (7.39%) have the highest leverage ratios, indicating a higher proportion of Tier 1 capital relative to total exposures and efficient use of equity to support assets. Dhaka Bank (4.66%) and Pubali Bank (4.57%) have the lowest ratios, reflecting more conservative funding with lower core capital relative to total exposures.

Composite Ranking : Jamuna Bank tops overall performance with the best combination of CAR and leverage . Pubali Bank and Premier Bank are at the bottom.

Assets Quality Analysis

NPL/TL: Pubali Bank (3.12%) and Eastern Bank (3.13%) have the lowest NPLs, showing strong loan portfolio management. IFIC Bank (15.73%) and One Bank (10.78%) have the highest NPLs, indicating weaker asset quality and higher credit risk.

NPL Coverage : Dhaka Bank (161.79%) and Pubali Bank (160.86%) maintain high coverage ratios, reflecting effective provisioning against potential loan losses.One Bank (36.78%) and IFIC Bank (48.38%) have low coverage, highlighting vulnerability to non-performing loans.

Composite Ranking : Pubali Bank and Eastern Bank top the composite ranking, demonstrating the strongest overall asset quality. IFIC Bank and One Bank rank lowest, signaling high credit risk combined with inadequate loan loss coverage.

Management Efficiency Analysis

Eastern Bank (42.49%), NCC Bank (43.24%), and Dhaka Bank (45.11%) have the lowest CI ratios, reflecting efficient operational management and cost control. IFIC Bank (66.38%) and Dutch Bangla Bank (58.50%) have the highest CI ratios, indicating higher operating costs relative to income.

PPE: Eastern Bank (4.79) and Bank Asia (4.07) top PPE, showing higher productivity per staff member. NRBC Bank (1.12) and One Bank (1.42) have the lowest PPE, signaling lower staff efficiency in generating profits.

Composite Ranking : Eastern Bank ranks first overall, reflecting strong cost control and high staff productivity. One Bank and NRBC Bank rank lowest, indicating inefficient management and lower operational performance.

Earnings Quality Analysis:

ROA: City Bank (1.27%), Eastern Bank (1.26%), and Uttara Bank (1.17%) have the highest ROA, indicating efficient use of assets to generate profits. IFIC Bank (0.34%), Dhaka Bank (0.53%), and One Bank (0.44%) have the lowest ROA, reflecting weak asset profitability.

Liquidity Management Analysis

Uttara Bank (500.02%), Brac Bank (239.37%), and Pubali Bank (204.91%) have the highest LCR, indicating strong short-term liquidity and ability to cover net cash outflows. Premier Bank (111.78%) and Dhaka Bank (119.03%) have the lowest LCR, reflecting weaker liquidity buffers. One Bank (119.75%), Premier Bank (118.01%), and Prime Bank (117.88%) lead NSFR, showing stable long-term funding relative to required stable funding. Dhaka Bank (102.73%) and NRBC Bank (103.33%) are at the bottom, signaling less stable funding structures.

Composite Ranking : Brac Bank tops overall liquidity performance, reflecting strong short-term and stable funding. Dhaka Bank ranks lowest, indicating high liquidity risk.

Performance of the Types of Banks Based on Different Components of CAMEL CAMEL is used to measure overall performance of the banking system as well as to find out strength and weakness which ensures the safety and soundness of banking company. Performance of the types of banks regarding different components of CAMEL has been analyzed here in after. Financial indicators used are summarized in Table.

Table 7: Noted that these indicators are considered according to the CAMEL.

Key Indicator	Indicators
Capital Adequacy	Capital to Risk Weighted Assets Ratio
Assets Quality	Non-performing Loan Rate
Management soundness	Expenditure-Income Ratio
Earning performance	Return on Assets, Return on Equity, Net Interest Income
Liquidity	Liquid Assets/Deposit Ratio, Ratio Excess Liquidity/Deposit Ratio

Financial Indicators to Evaluate Bank Performance

Capital Adequacy (C): Capital adequacy measures the total financial position of banks' that express a ratio of shareholders' fund to total assets. This ratio indicates all possible financial risks like credit risk, market risk, operational risk residual risk, liquidity risk, strategic risk, interest rate risk, environment & climate change risk etc.

Asset Quality (A): Asset quality is the important indicator of financial performance of banks.. This ratio is the relationship between non-performing loans and advances to total assets. This ratio measures the extend of asset development in earning asset.

Management Quality (M): Management efficiency is the most essential part of financial performance. This ratio will identify the efficiency of financial management which will be considered total loans and advances to total deposits, and interest expenses to total deposits and operating cost to total asset. Management quality is the nature of qualitative indicator which will be positively influence the financial management system.

Earning Performance (E): Earning ability is the most reflecting ability to support present and future sound operation. Here ROA and ROE are two strong indicators, which determines the capacity to absorb losses by building an adequate capital base, finance base expansion. And adequate dividends payment to absorb losses by creating adequate capital base finance. On the other hand, there are many indicators of earning and profitability, the most representative and important indicators is return on Asset (ROA), which is alternative by Return on Equity(ROE) and Net Interest Margin(NIM). Liquidity(L):There are two indicators of liquidity level of the banks. One is total liquid assets to total asset. The second ratio is liquid asset to customers'' deposit.

Overall CAMEL Based Ranking:

Top Performer

Eastern Bank has the strongest overall performance across capital adequacy, asset quality, management efficiency, earnings, and liquidity. Brac Bank and Jamuna Bank follow closely.

Lowest Performer

IFIC Bank has the weakest overall performance. Mercantile Bank and One Bank are also among the lowest performers.

CAMEL Rating of All Banks

CAMEL rating is expressed on a scale of 1 to 5 in ascending order of supervisory concern, 1 representing the best rating, while 5 indicating the worst. Any bank rated 4 or 5 i.e. Marginal or Unsatisfactory under composite CAMEL rating is generally identified as a problem bank. Activities of these banks are closely monitored by the BB. On the basis of five components of CAMEL banks are rated from 2020 to 2025.

Table:1 CAMEL rating of all Banks in Bangladesh Rating

Rating	2020	2021	2022	2023	2024
1 or strong	13	14	5	6	3
2 or satisfactory	14	15	16	31	15
3 or Fair	10	8	7	5	8
4 or Marginal	8	6	5	6	13
5 or Unsatisfactory	4	5	3	4	7
Total	49	48	36	52	51

Source: Bangladesh Bank Annual Reports (2020-2024)

As of end 2024, CAMEL rating of 3 banks was 1 or Strong; 15 banks were rated 2 or Satisfactory; 8 banks were rated 3 or Fair; 13 were rated 4 or Marginal and 7 bank got 5 or Unsatisfactory rating.

Hypothesis Testing Results: ANOVA test was conducted to examine whether there are significant differences in the means of CAMEL ratios across the banks.

The calculated F-value (63.13) is much greater than the critical F-value (1.90). Therefore, we reject the null hypothesis that all banks have equal means for CAMEL ratios.

Based on one-way ANOVA test results, we can conclude that there is a statistically significant difference in the mean CAMEL ratios across the banks, indicating that banks differ significantly in their overall financial performance and stability.

ANOVA Test

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	126.24219	9	14.02691	63.12609	1.5E-46	1.94E+00
Within Groups	33.330698	150	0.2222047			
Total	159.57289	159				

Bangladesh bank monitors the performance of all schedule banks operating in the country through CAMEL rating system. The ratio used in CAMEL rating system reflects the performance. Based on this CAMEL rating performance analysis, Bangladesh Bank undertakes necessary initiatives. For this purpose, Bangladesh Bank depends mostly on historic data. Bangladesh Bank also introduced the risk based inspection system for the supervision of schedule banks. In a report of IMF 2010, it is stated that the supervision of commercial banks is still compliance based to see whether policy and procedures are followed for which it has to primarily rely on checklist and it lacks proper forward-looking qualitative judgment [IMF, 2010]. The performance of types of banks is not equal and there are some banks which are in need of monitoring closely to enhance sound banking. It is expected that the overall performance will be improved in near future provided that appropriate actions are taken in some lagged areas.

Conclusion:

Generally, the continuous expansion of the economy as well as banking performance and financial market. To identify the growth of commercial banks in Bangladesh, there are always a plethora of global norms to comply with. In this research, the information of commercial banks in Bangladesh is collected and analyzed over the period of 5 years from 2020 to 2024.Thus, state-owned banks should identify on minimizing the difference between their actual and optimal values. The smooth financial performance of an economy enables an efficient operation of banking sector. Economic growth is partially depend on effective growth of resource allocation of banking sector. Researchers are always analysis the economy by evaluating banking sector. The study concluded that, among 16 Bangladeshi banks analyzed over 2020–2024, Eastern Bank is the top performer while IFIC Bank ranks lowest across CAMEL dimensions. High-performing banks exhibit strong capital, efficient management, robust earnings, and liquidity, whereas weaker banks show vulnerabilities. There are significant differences in financial performance among banks, reflecting variations in stability and efficiency across the sector.

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The Impact of Employee Job Satisfaction on Organizational Performance: A Study on The Pharmaceutical Industry in Dhaka City

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Abstract

Happy workers are considered to be productive workers and productive workers are likely to be contended. Employee job satisfaction is essential to face the dynamic and ever-increasing challenges of maintaining productivity of the organization by keeping their workforce constantly engaged and motivated. This paper outlines the broad contours of various variables responsible for employee satisfaction and various ways by which one can maximize employee satisfaction. The quantitative study tried to identify the relationship between demographic variables and the employee job satisfaction of pharmaceutical industry. This research collected data from a questionnaire survey from three hundred sixty-nine employees of pharmaceutical industries in Dhaka city. Different statistical methods like Pearson's Chi-Square tests are applied to conduct statistical analysis of the collected data. The findings of the research are that there is a direct relationship between different variables and employee job satisfaction and employee performance. The findings of this paper will benefit policymakers, academic researchers, professionals and others to know about the factors affecting the employee satisfaction and how to develop employee performance in workplace.

Keywords:

Productivity, employee performance, job satisfaction, turnover, Dhaka, Bangladesh

1.Background of the Study

Employee satisfaction is the terminology used to describe whether employees are happy, contended and fulfilling their desires and needs at work. Employee satisfaction is the one of the prime measures of an individual's orientation towards his/ her work. It can be considered as an overall feeling about the job or as a related constellation of attitudes about various aspects of the job (Sageer 2012). Affective disposition on job satisfaction consists of two facets: positive affectivity and negative affectivity. High energy, eager, and pleasurable involvement represent positive affectivity while distress, unpleasant involvement and nervousness show negative affectivity (Naser Hoboubi, 2017). In Bangladesh's perspective as well this change of the nature of work has been strongly visible. More and more workers in Bangladesh's business sector are also looking for flexible work schedules, and the COVID-19 effect has brought evidence to support the viability of working remotely. As a result, businesses are attempting to live up to these expectations by providing a range of family-friendly policies.

According to Heskett et al (1994), more satisfied employees, stimulate a chain of positive actions which end in an improved company performance. In another research it is said that employee satisfaction influenced employee productivity, absenteeism and retention, {Derek R. Allen & Merris Wilburn, (2002), Freeman, (2005)}. Studies shows that businesses that excel in employee satisfaction issues reduce turnover by 50% from the norms, increase customer satisfaction to an average of 95 % & lower labor cost by 12%., Carpitella, (2003). The more satisfied an employee is, the less turnover and absenteeism occurs, Maloney, & McFillen, (1986). Judge, et. al, (1993), on the other hand, mentions that employee satisfaction is positively correlated with motivation, job involvement, organizational citizenship behavior, organizational commitment, life satisfaction, mental health, and job performance, and negatively related to absenteeism, turnover, and perceived stress and identify it as the degree to which a person feels satisfied by his/her job. In contrast, Rousseau (1978) identified three components of employee satisfaction: they are characteristics of the organization, job task factors, and personal characteristics.

Profit and growth are stimulated directly by customer loyalty. Customer loyalty is a direct consequence of customer satisfaction. Customer satisfaction is heavily influenced by customer perceptions of the value of services they receive. Value is created by satisfied, loyal and productive employees. Employees who feel a sense of teamwork and common purpose, a strong commitment to communication, and managerial empowerment are most able, and willing, to deliver the results that customers expect (Zobal, C. (1998). Human Relations perspective posits that satisfied workers are productive workers (e.g., Likert, 1961; McGregor, 1960). Human relations researchers further argue that employee satisfaction sentiments are best achieved through maintaining a positive social organizational environment, such as by providing autonomy, participation, and mutual trust (Likert, 1961). Employees "job satisfaction" sentiments are important because they can determine collaborative effort. Consistent with this reasoning, Likert (1961) has argued that collaborative effort directed towards the organization's goals is necessary for achievement of organizational objectives, with unhappy employees failing to participate (effectively) in such efforts. Pharmaceutical industry is an important sector in Bangladesh from the viewpoint of economics and employment. There are critical jobs in every sector of pharmaceutical industry, from production, maintenance and quality assurance to the payroll and overall operation of the industry. The present study will be carried out to investigate the impact of job satisfaction on employees' productivity in the pharmaceutical companies.

2. Problem Statement

Employee satisfaction is essential to the success of any business. A high rate of employee contentedness is directly related to a lower turnover rate. Thus, keeping employees satisfied with their careers should be a major priority for every employer. While this is a well-known fact in management practices, economic downturns like the current one seems to cause employers to ignore it. There are numerous reasons why employees can become discouraged with their jobs and resign, including high stress, lack of communication within the company, lack of recognition, or limited opportunity for growth (Wright & Haggerty ,2005). In a unique study conducted by Harter et al. (2002), based on 7,939 business units in 36 organizations, the researchers found positive and substantive correlations between employee satisfaction-engagement and the business unit outcomes of productivity, profit, employee turnover, employee accidents, and customer satisfaction. The predominant view has focused on the situational context (e.g., supervisory support) as a cause of satisfaction and has argued that high-performance work practices and thus a positive working climate foster employee satisfaction (Bowen, & Ostroff, 2004; Wright, Dunford, & Snell, 2001; Wright, Gardner, Moynihan, & Allen, 2005).

According to Mark graham Brown, (2006), there is a strong link between employee satisfaction and customer satisfaction and between customer satisfaction and future revenue. The purpose of this research study is to observe the relationship between employee's job satisfaction and organizational performance. This paper attempted to identify the research problem by examining the key employee satisfaction measures and their effect on the performances.

3.Research Objectives

The objective of this research is to investigate the job satisfaction and identify factors associated with productivity decrement among employees. The specific objective are as follows: -
To identify the relationship between the demographic characteristics and employee job satisfaction and performance.

4. Research Gap

There is a knowledge gap between satisfaction of employees and the effect of their performances in the pharmaceutical industries of Bangladesh. There are very few research works available about "the employee satisfaction and performance" in international perspectives. In the case of Bangladesh perspective, there is no significant research work available. This research fills the research gap by examining the factors that influence the satisfaction of employees in the case of employees of Dhaka city. This research paper edifying the fact that the researcher emphasized the narrow section of satisfaction and performance of employees in Dhaka city in the case of pharmaceutical industries. There is a significant role of employee satisfaction in controlling the turnover rate of various industries. As the significant economic contribution of pharmaceutical industry is identified, this study helps to ensure the continuous development of employees as well as the employers in the pharmaceutical industry of Bangladesh.

5. Research Methodology

The study is a single city-based study. The researcher of this study has decided to go with two pharmaceutical companies of Dhaka city, namely Eskayef Pharmaceutical Ltd. and ACME Laboratories as part of research data collection. Dhaka city is divided into two parts; namely Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC). Here only DNCC and its surrounding areas were selected as study areas. In this research paper, both primary and secondary data were used. There are many published articles, books, case studies, thesis papers and study-related websites are used for secondary data analysis. To know the proper relationship between these two variables and the job satisfaction of employees and their performance, **Chi-Square Test** is used. the quantitative research part, the sample size is 369 respondents ((Field, 2013; Hamilton, 2012). This sample size is selected based on the sample size formula for when proper population size is unknown. In the quantitative research part, structured questions are used to identify related data. For the survey purpose, a structured questionnaire was used. For the quantitative research part, the data is collected from both pharmaceutical companies of Dhaka city. The data collection took about a month from December 2025 to January 2026. The researcher collects primary and secondary data from different sources. This research work is based on primary data analysis with a survey questionnaire. The survey questionnaire was influenced by some ideas of Dzisi (2008). Convenience sampling is used due to the lack of statistical data on pharmaceutical professionals in Dhaka city. In this research paper target group should fulfill four criteria: (i) professionals of pharmaceutical industry based on work experience, (ii) location is Dhaka city (DNCC) and (iii) age limit's 22-60 years (due to productive age considered as Bangladesh context (Dzisi, 2008). For analysis of the data, **"IBM SPSS Statistics version 26"** software is used to conduct this research work. The survey questionnaires are structured questionnaires based on demographic information.

5.1. Data Analysis

The quantitative approach allowed to verify the data analysis process with four hypotheses tests. It has also determined the relationship between the two variables and the job satisfaction of employees and their performance in the case of pharmaceutical industry.

5.1.1 Hypothesis 1

For quantitative data analysis, age is one of the important demographic variables (Reynolds et al, 2000). The variable age is hypothesized as below: -

There is a significant relationship between age and the job satisfaction of employees and their performance.

H_0: There is no relationship between age and the job satisfaction of employees and their performance.

H_1: There is a relationship between age and the job satisfaction of employees' performance

Table 5.1.1: Case Processing Summary

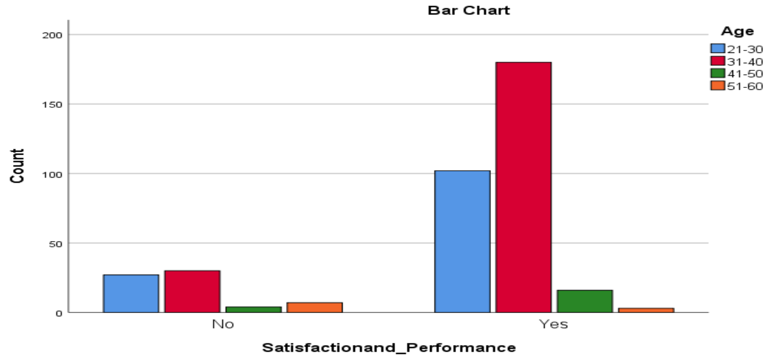
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Satisfaction &_Performance * Age	369	100.0%	0	0.0%	369	100.0%

Table 5.1.2: Results of Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	20.660[a]	3	.000
Likelihood Ratio	15.790	3	.001
Linear-by-Linear Association	2.169	1	.141
N of Valid Cases	369		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.84.

P= 0.000<0.05, H_0 rejected. As here null hypothesis is rejected, so there is a relationship between age and the and the job satisfaction of employees and their performance. From the Figure 5.1.1 it is clear that, the age group from 18-40 have a high job satisfaction and performance than the age group from 41-60.



Source: Own Survey December, 2025 to January, 2026

Figure 5.1.1: The relationship between age the job satisfaction of employees and their performance

5.2.2. Hypothesis 2

For quantitative data analysis, family status is one of the important demographic variables (Rousseau,1978). The variable "family status" is hypothesized as below: -
There is a significant relationship between family status and the job satisfaction of employees and their performance.
H_0: There is no relationship between family status and the job satisfaction of employees and their performance.
H_1: There is a relationship between family status and the job satisfaction of employees and their performance.
P= 0.000<0.05, H_0 is rejected. As here null hypothesis is rejected, so there is an association between family status and the job satisfaction of employees and their performance.

Table 5.2.2: Case Processing Summary

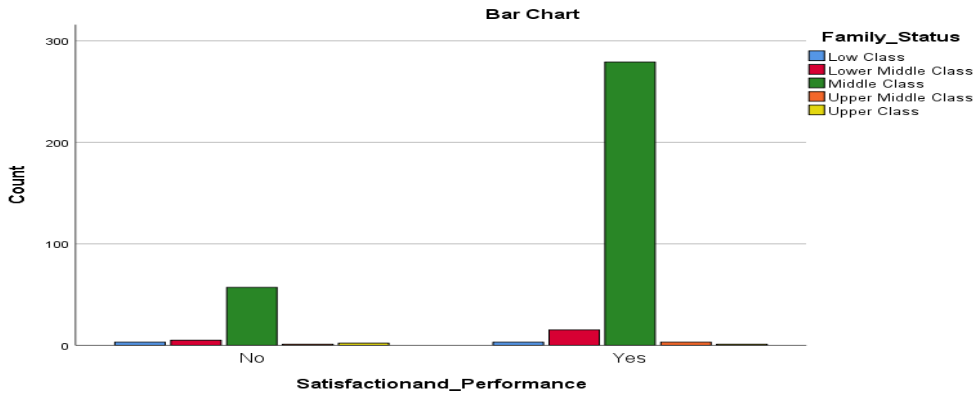
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Satisfactionand_Performance * Family_Status	369	100.0%	0	0.0%	369	100.0%

Table 5.2.3: Results of Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.791[a]	4	.044
Likelihood Ratio	7.531	4	.110
Linear-by-Linear Association	.428	1	.513
N of Valid Cases	369		

a. 7 cells (70.0%) have expected count less than 5. The minimum expected count is .55.

P= 0.000<0.05, H_0 is rejected. As here null hypothesis is rejected, so there is an association between family status and the job satisfaction of employees and their performance.



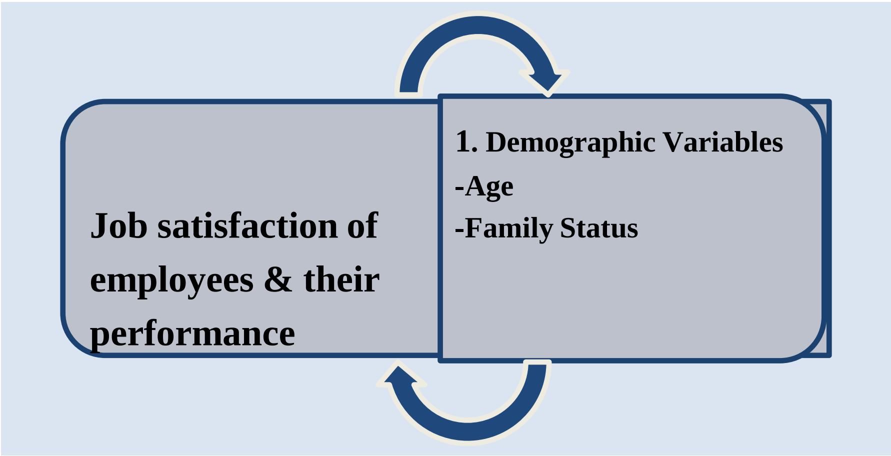
Source: Own Survey December, 2025 to January, 2026

Figure 5.2.2. The relationship between family status and the job satisfaction of employees and their performance

From the above Figure 5.2.2, it is vibrant that family status is a very strong variable in the case of the job satisfaction of employees and their performance. It is also evident that the middle class are most satisfied and highest performers in their respective jobs.

6. Discussion

This research discovers the analysis by examining two variables that influence the job satisfaction of employees and their performance. To describe more about the relevance of the theoretical framework of this study is presented as below: -



Source: Own survey (December 2025 - January 2026)

Figure 6: Relevance of theoretical framework of quantitative research.

In this paper, the age limit of respondents is between 21 to 60 years. After testing the hypothesis with the help of a Chi-Square Test it is observed that there is a relationship between age and the employee job satisfaction and performance. In this study, the level of family status is five, which are low class, lower-middle class, middle class, upper-middle class and upper class. After testing the hypothesis in the previous data analysis, it is verified that there is an association between the level of family status and employee job satisfaction and performance.

6.1. Summary of Overall Findings

In this research, employee job satisfaction and performance were explored concerning pharmaceutical industry in a quantitative research study. In quantitative data analysis, there are two hypotheses selected to test the relationship between employee job satisfaction, performance and age, family status. The findings of this research have been identified that - (i) There is a weak negative linear correlation between age the employee job satisfaction and performance. (ii) There is a weak positive correlation between family status and the employee job satisfaction and performance. To sum up, this study attempted to some extent in filling-up the research gap by using quantitative research approach.

7.1. Conclusion

Employee satisfaction is a broad term used in the HR industry worldwide to explain how satisfied or content employees are with elements like their jobs, their employee experience, and the organizations they work for. This study of research contributed to the advanced knowledge about the job satisfaction of employees and their performance in the pharmaceutical industry to guide future directions for policymakers, academic scholars and other concerned people. The findings of the study will hopefully assist to solve the present crisis in the field of employee job satisfaction that can overall develop their job performances.

7.2. Suggestions for Further Study

The researcher of this study found that employee job satisfaction and performance is a vast concept. Time was one of the main limitations of the study. Further study may be conducted in identifying other variables and factors that can create impact on employee job satisfaction and performance. Also, the study was limited to only two pharmaceutical companies of specific departments based on head offices in Dhaka city due to issues of proper access and confidentiality. So further study is required to collect data from other pharmaceutical companies in every department to have more precise findings in future.

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Education Management System: What needs to be fixed

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Abstract:

Education is improved and enriched when government officials, school administrators, teachers, and support staff work together. The ecosystem of a school requires management at every turn. Organizational formation, operation, assessment, and incorporation are all included. Educational Management system involves organizing, planning, and overseeing all the resources and activities needed to reach academic goals. Its main aim is to create policies, develop plans, and build an effective education system that supports a positive environment for both students and staff. A superior education management system should offer a comprehensive suite of features, seamlessly integrating student information management, academic planning tools, communication systems, and financial modules. It serves as the backbone of efficient educational administration.

Introduction

Managing an educational institution is a very complex task. In addition to maintaining a good educational routine, managers need to deal with the administrative part of the business, such as finances, people, and customers.

This study highlights private schools' management and leadership strategies in dealing with conflicts. School conflicts occur for many reasons. To address the conflicts effectively, schools need to have the ability to thoroughly examine the root cause of such conflicts. The impact on school development in terms of performance largely depends on how school leaders effectively manage and address conflicts. This qualitative research specifically chooses private schools due to their autonomy, which distinguishes them from public schools in terms of decision-making and leadership approaches. Data was collected through semi-structured interviews, and analyzed using manual thematic analysis methods. This study discovered that conflicts often occur within the scope of appointing new school principals, upholding the integrity of school members, and managing the resistance among teachers. The strategy predominantly used in schools in this study is a win-lose approach, where problems are resolved quickly without considering the need for negotiation. The two schools investigated in this study view future conflicts as a form of competition with other schools, placing strong emphasis on the significance of fair policies for all, and the stakeholders’ trust as the main key.

Education management relies on complex institutional and organizational administrative arrangements mobilizing resources such as teachers, educational infrastructures, materials, and equipment to deliver quality education services to the population. Access to accurate and timely information is critical for ministries of education to implement, monitor and evaluate administrative and educational processes.

For decades, UNESCO has been providing technical assistance and capacity development services on education management, monitoring and evaluation to Member States, mobilizing its network of field offices and specialized institutes (notably IIEP and UIS). UNESCO also promotes the development of standards, methodologies, and tools to help governments strengthen their education management capacities and setup digitalized information systems (EMIS).

Types of Educational Management

Here are the types of Educational Management:

Internal and External

Internal Educational Management is managed by individuals directly responsible for each educational program. They handle planning, organizing, coordinating, supervising, controlling, administering, and evaluating.

On the other hand, external Educational Management is managed by government bodies or external organizations. They oversee policies, curriculum development, teacher training programs, and more.

Autocratic and Democratic

In autocratic Educational Management, authority and control are concentrated in the hands of a single individual, group, or institution. This is common in unitary states or authoritarian systems.

On the other hand, in democratic Educational Management, power and responsibilities are shared among different levels of management. This approach is widely used today and is essential for fostering positive changes in the education system.

Centralized

In this type, one person has all the power and authority to run the education system. Every decision is made by this individual at the top level and then passed down to lower levels for implementation.

Decentralized

This approach involves sharing control and authority from the top level to various levels of management and school administrators. For example, top-level management makes major policies, while middle and lower levels make necessary adjustments.

Key Principles of Educational Management

Some of the key principles include:

a) Equal Division of Work: Responsibilities are evenly divided among all staff members, including principals, directors, and teachers.

b) Authority and Responsibility: Align authority with corresponding responsibilities to ensure an efficient administrative structure. For example, teachers are responsible for student care, not policy-making.

c**)** Prioritize Organizational Goals: Academic objectives and organizational goals should take precedence over individual interests.

d) Fair Remuneration: Provide fair compensation to employees, ensuring that teachers and staff receive competitive salaries and benefits.

e) Appropriate Resource Allocation: Distribute resources effectively to meet the needs of both employees and the institution.

f) Collaboration and Innovation: Encourage a culture of innovation and collaboration, where ideas are freely shared to continuously improve the work environment.

What is the importance of an education management system?

When it comes to educational institutions, there's a lot of focus on teaching solutions and, often, the managerial parts end up by the wayside. But we must remember that a school is also a business.

Management software helps to deal with the daily challenges of this complex business, with benefits for administration, academic management, teachers, and students.

1. It improves decision-making processes

Management systems work by capturing and analyzing data. This information can become valuable insights for managers as it helps them better understand the profile of students and even other organizations.

The information managed on platforms optimizes decision-making, since data becomes structured based on consistent information, be it in relation to finances, the market, business trends, or customer behavior.

2. It increases teams' productivity

Education management systems make teams more productive as they begin to deal with more reliable information.

The academic secretary, for example, can manage student documentation more efficiently. The financial sector can accurately track

payment dates and students in debt, optimizing processes.

3. It organizes users' routines better

With a management system, all the tools' users need are concentrated in one place.

From managers to teachers, everyone sees improvement in their routines regardless of area of performance. And, in turn, students have more control and information about their education journey and their relationship with the institution.

4. It reduces dropout rates

Dropout happens when students leave classes and fail to complete the school term. Dropout can happen for several reasons, such as lack of interest in school, poor relationship with the institution, and even financial problems.

It is worth noting that, although there are several reasons, none makes a student leave school overnight. Therefore, good management can help to identify and better deal with these factors.

With an education management system aligned to the needs of the organization, dropout rates also decrease. This is because the school can propose financial alternatives for students, in addition to perceiving social and relational problems among students.

By getting to know the students better, managers can propose new teaching models, making the institution more attractive.

- Enhanced Communication:

  Provides a centralized platform for effective and clear communication between educators, students, and parents.

- Improved Financial Management:

  Facilitates online fee collection, paperless accounting, and better budgetary management, supporting the institution's financial stability.

- Centralized Information:

  Acts as a single, centralized platform to manage various aspects of the institution, from academics and finances to admissions and examinations.

- Drives Strategic Vision & Planning

  Education management involves setting clear, long-term goals, developing actionable strategies, and adapting to future needs. This purposeful planning helps institutions stay mission-aligned and proactive.

- Promotes Efficient Resource Utilization

  From financial assets to human capital, good management ensures resources are allocated where they have the most impact—enhancing teaching quality and reducing waste.

- Boosts Staff Morale & Retention

  When educators feel supported and are part of a collaborative community, their morale naturally rises. Creating an environment with open communication and offering professional development opportunities not only fosters a sense of belonging but also helps retain dedicated and talented teachers.

- Fosters Stakeholder Engagement & Collaboration

  Fostering Stakeholder Engagement & Collaboration In the realm of education management, it's essential to actively involve parents, communities, and stakeholders. This engagement is not just a checkbox; it's a vital part of creating supportive learning environments where everyone feels invested in the success of our students. By building these connections, we nurture a sense of shared ownership that enhances educational experiences for everyone involved.

- **Encouraging Leadership, Innovation, and Change**

  In today's fast-paced world, effective educational leaders play a crucial role in fostering innovation and embracing technology. They are the guiding force as schools and institutions navigate through constant changes, ensuring that both teachers and students can thrive amidst evolving trends.

- **Supporting Inclusive and Equitable Education**

  It's essential to recognize the diverse needs of all students. By carefully analyzing data and identifying gaps, education systems can be redesigned to provide equitable support to everyone, especially those who are marginalized or come from diverse backgrounds. This approach helps create a learning environment where every student has the opportunity to succeed.

Global Challenges in Educational Management

The global challenges in educational management include inadequate funding and resources, a failure to adapt to the rapid pace of societal change, ineffective communication and collaboration, challenges with staff training and evaluation, outdated administrative processes (like paper-based systems), and difficulties integrating modern technologies, new skills into the curriculum and teaching practices, lack of adequate information on students' registration in tertiary institutions, inadequate school infrastructures, lack of quality education assurance, inadequate proficient on Artificial Intelligence on school management.

How to Reduce the Global Challenges in Educational Management

Based on these findings, the educational stakeholders and school managers should provide adequate training to graduates, availabilities of resource materials on new courses in accordance to new courses according to core curriculum and minimum academic standard on educational management programs, enhance provision of information on students' registration, adequate school infrastructures, enhance on education quality assurance, effective proficient on Artificial Intelligence on school management so that they can be more effective in their day-today operations. The school managers also should provide to their institutions with necessary solutions towards any challenges facing them locally and globally. It was also recommended that the school managers should review upward and provide solutions to any challenges tackles effectiveness of educational management by enhance using of Artificial Intelligence on teaching and e-learning process.

Benefits of Educational Management

Despite of having challenges, here are some of the advantages of Educational Management:

a) Enhanced Student Outcomes: Effective Educational Management and planning lead to improved student achievement. This is achieved by utilizing resources efficiently to support learning.

b) Improved Collaboration: It fosters collaboration and partnerships among stakeholders. This creates a more interconnected education system.

c) Boosted Morale: Effective management increases job satisfaction and morale among educators. This encourages a positive and supportive learning environment.

d) Strategic Planning: It involves long-term planning to set goals and define a clear vision for the institution's future. This includes forecasting trends, anticipating challenges, identifying opportunities for growth, and developing strategies to achieve desired outcomes.

e) Efficient Resource Allocation: By managing resources such as finances, facilities, technology, and human capital effectively, educational institutions ensure proper utilization. This maximizes the impact of these resources.

Case study for inappropriate educational management

Based on research into educational administration, inappropriate management often stems from a combination of poor leadership, lack of training, and ineffective communication. Below are several case study examples focusing on different aspects of mismanagement.

Case 1:

Case Study: The Autocratic School Leadership

- Context: A private secondary school.

- The Issue: The school administration, particularly the headmaster, adopted a strict, top-down management approach without allowing teacher input on policies.
- Mismanagement Actions:
  - Arbitrary classroom rule changes without notice, confusing staff and students.
  - Ignoring teacher concerns regarding resources and workload.
  - A high-conflict environment due to lack of transparent, effective conflict resolution.
- Consequences:
  - A massive drop in staff morale and high teacher turnover.
  - A decrease in student academic performance due to disrupted learning environments.
  - Increased mistrust between parents, teachers, and school leadership

Case 2

Case: Inconsistent Discipline and School Culture

- Context: Research into school bullying and discipline highlights that a lack of consistent, school-wide policy is a major management failure
- The Inappropriate Practice: Teachers and administrators applied rules inconsistently, creating a "trust gap" among students, particularly students of color who may face harsher discipline for similar infractions.
- Failure in Management: Leaders failed to provide consistent, systemic anti-bullying strategies, allowing bullying to remain largely unrecognized and unchecked.
- Consequences: A "law-based" approach, which focuses only on the "letter of the law," often creates an adversarial relationship between teachers and parents, where teachers feel they have no authority to manage classroom behavior, leading to increased disruption.

Case 3

Case: Financial Mismanagement in Public Schools

- Context: A case study of selected schools in the Chittagong District showed that financial management was often handled behind closed doors, lacking transparency and accountability
- The Inappropriate Practice: Headteachers were solely responsible for financial accounting, creating a risk of mismanagement, particularly when they lacked formal training.
- Failure in Management: Funds intended for learning materials (textbooks, laboratory equipment) were misallocated or misappropriated. The study found that school heads often used funds for personal gain or failed to plan, leading to unfinished projects.
- Consequences: A lack of instructional materials and poor infrastructure (leaking roofs, broken windows) significantly lowered the quality of education and lowered student performance.

Conclusion and Recommendations

In conclusion, the findings of the study indicated that among the leading causes of financial mismanagement in schools included lack of adequate planning, lack of financial skills on the part of the accountants and head teachers, misapplication and misappropriation of funds, lack of external and internal auditing, lack of transparency and lack of financial discipline. The findings revealed that the possible implications of financial mismanagement included lack of adequate infrastructure and poor sanitation, compromised quality of education, lack of adequate teaching and learning materials, and failure to achieve the set goals or planned activities. From the study, the suggested measures that can be put in place to ensure effective use of finances in schools, the findings of the study suggested that providing training of Head teachers and their administration with skills in finances would help in curbing financial mismanagement in secondary schools, along with monitoring and control of the schools budget, internal and external auditing ,adequate funding and better salaries and strong disciplinary measures against offenders so as to warn those who might want to indulge in financial mismanagement. Recommendations Following the research findings and in response to the conclusions drawn from the study the following recommendations have been made; 1. The Ministry of Education should intensify the training of Head teachers and their administration through workshops in financial management skills. 2. The Ministry of

Education should implement policies that foster the use of the Financial Management Act of 2018 to act as a basis for which finances are managed and serve as a repellant for would be offenders. 3. There is need for regular auditing in schools so as to have check and balances and avoid financial mismanagement.

As a conclusion, we can say that Education management systems are indispensable tools that help streamline administrative processes and enhance communication between students, teachers, and parents. So updated educational management is crucial for a brighter future.

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Career Development Through Sustainable Entrepreneurship and Green Innovation in Bangladesh

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Abstract

Career development is more than ever linked to sustainable economic growth, thus is very important in developing countries where job creation and environmental sustainability are significant issues. In Bangladesh, sustainable entrepreneurship and green innovation have turned out to become effective methods of getting career opportunities and solving environmental issues through usage of resource-efficient and waste-to-wealth concepts of running businesses. This particular research paper is designed to show the role of sustainable entrepreneurial activity and green innovation in the process of career improvement as well as achieving sustainable development goals. The results of the research suggest that sustainable enterprises are of utmost importance in terms of career development due to their ability to provide people with employment opportunities and self-employment, develop business mindset, and improve employment skills, such as leadership, creativity, adaptability, and problem-solving. Green innovation supports economic opportunities by transforming waste products into value-added goods, which leads to environmental responsibility as well as attraction to economy. The present research also pays attention to such areas as jute products, banana fiber, water hyacinth, eggshells, and fish waste as the sectors that can help in the process of achieving green career and inclusive growth in Bangladesh. The article claims that green innovation and sustainable entrepreneurship can be effective tools for career development and simultaneously contribute to economic development, the well-being of society, and environmental sustainability. The results have important implications for policymakers, trainers, entrepreneurs, and practitioners in their quest to advance the development of career options that are sustainable and lead to progress toward a greener economy in Bangladesh.

1. Introduction

The role of career development has become increasingly important for economic and social development in countries that are still developing like the countries which are undergoing demographic change and transformation of the labor market. In the past, career development meant achieving a stable job in traditional firms. However, changes in the economic environment, technological progress, globalization, and growing competition in labor markets have broadened the understanding of career development beyond jobs. Entrepreneurship is minimizing in importance as another way to make money by creating jobs for oneself and other people and developing the economy.

The last few years have seen the rise of sustainability as a determinant of entrepreneurship all over the world. Sustainable entrepreneurship stands for merging economic targets with ecological prerogatives and social welfare principles. Unlike the former type of business that creates value mostly in terms of money, sustainable entrepreneurs produce a commercial instrument that helps solve social and environmental problems. Green innovation is another element contributing to creating products aimed at environmental protection.

Bangladesh is experiencing a number of development problems, such as graduate unemployment, underemployment, pollution and waste management issues. Although there are some uneasy positive economic indicators, it remains very problematic for many young people to get a job. The state produces a big quantity of agricultural, industrial and household waste that is not properly used. Among the natural resources thrown away are jute waste, banana tree stalks, water hyacinths, eggshells and fish scales. As more people around the world become aware of environmental issues, the demand for eco-friendly goods has been on the rise. This increase in the demand for eco-friendly products provides opportunities for entrepreneurs in Bangladesh to produce commercially viable products from waste materials. The ''waste-to-wealth'' businesses are not only environmentally friendly but also create jobs, help people start their own business, and enhance their entrepreneurial skills. In this way, sustainable entrepreneurship has turned into not just a business concept but into a factor of career growth for fresh graduates, young people in villages, women entrepreneurs, and those looking for alternative forms of job.

2. Purpose of the Research

This research intends to find out the ways in which sustainable entrepreneurship and green innovation help in career development while tackling one of the most crucial issues developing economies are facing today like, unemployment, environmental degradation, and wastage of resources. The study is conducted with the help of investigating successful waste-to-wealth ventures in Bangladesh and aims to show how the issues related to the environment can be turned into the means of obtaining sustainable career and employment prospects. The research also reveals how local resources and waste can be applied to make environmentally sustainable businesses that can help people gain their skills, foster entrepreneurship, create income-generating opportunities, and eventually make a positive contribution to the process of economic growth, social development, and environmental protection.

3. Research Questions

How do sustainable entrepreneurship and green innovation contribute to career development and employment opportunities in Bangladesh?

4. Research Gap

Sustainable entrepreneurship and green innovation have gained prominence among researchers and academics, but most studies have concentrated on issues such as the sustainable development of the environment and the impact of entrepreneurship on corporate performance, innovative results, and competitive edge. There has been little interest in researching the links between entrepreneurial activities and their contribution to the skills required for career advancement, employability, and professional growth.

Bangladesh struggles with problems of unemployment, under-employment, environmental pollution, and poor waste management technology. Although waste management companies have proved the capacity to earn profit and bring environmental benefits, very few studies exist on the role of these businesses in creating jobs and enhancing their workers' employability.

Moreover, most of the studies focus on single businesses and sectors instead of covering the entire sustainable business model spectrum. Thus, the issue that remains unsolved is how different waste-based companies contribute to job creation, skills development, self-employment, and career advancement in Bangladesh. The present research will fill this gap by looking at sustainability entrepreneurship from the perspective of career development and analyzing the ways the selected waste-to-wealth companies are able to provide career opportunities, develop entrepreneurial competences, and bring about sustainable economic growth.

5. Literature Review

Prior research has emphasized how important green innovation and sustainable entrepreneurship are becoming in Bangladesh and other developing nations.

Polas et al. (2023) investigated the uptake of green innovation among Bangladeshi rural entrepreneurs and discovered that the adoption of sustainable business practices is strongly influenced by environmental concern, positive attitudes, and the ease of employing green technology. Their research illustrates how green innovation promotes the growth of entrepreneurship.

Islam (2021) looked at sustainable entrepreneurship in Bangladesh's light engineering sectors and found that while many businesses have significant economic potential, there is still a lack of environmental consciousness and sustainable practices. The report highlights the obstacles to the shift to sustainable business strategies.

Uddin et al. (2025) investigated how Bangladeshi manufacturing companies' sustainable competitive advantage and green innovation are related. According to their results, green technical, process, and product innovations have a favorable impact on corporate competitiveness and performance.

Niloy (2021) emphasized the economic and environmental advantages of jute-based goods while concentrating on the Bangladeshi jute sector. According to the study, jute is a promising sustainable substitute for synthetic materials and a significant factor in the growth of the green economy.

Mallik et al. (2025) investigated how indigenous technology and green innovation are integrated in Bangladeshi rural areas. According to their results, integrating eco-friendly ideas with local expertise may boost competitiveness and sustainability while fostering rural development.

Together, these studies prove that green innovation is positively associated with environmental sustainability, performance of businesses, and growth of entrepreneurship. However, they mainly focus on different sectors and do not cover the various waste-to-wealth sectors fully in a combined manner.

6. Research Methodology

This research adopts a qualitative multiple-case study methodology in order to explore the role of waste-based green innovations in the process of achieving sustainable entrepreneurship and circular economy development in the context of Bangladesh’s economy. Using qualitative research design was deemed fit because it enables to create a holistic understanding of the sustainable business practices as well as their economic, social, and environmental implications. The research is entirely based on the secondary data obtained from peer-reviewed journal publications, official Facebook pages, as well as a variety of trustworthy scholarly sources. By addressing the chosen waste-to-wealth enterprises using various scholarly sources, it becomes possible to fulfill the research objectives.

7. Career Development

The career development process is defined as the process by which individuals go through continuous and long-term acquiring of any new skills including professional knowledge and experiences that will lead to career goals being achieved and adapting to changes occurring in the labor market. The main characteristics of this process are career planning, skill acquisition, lifelong learning, and progress throughout a career. Traditional career development theories were concentrated on the idea of working in a formal organization only but nowadays, people can employ themselves and even work for several different companies at the same time and be self-employed.

According to Super (1990), career development is a process that does not stop until a person attains their objectives or goals. Career development process includes career planning, development of required skills, lifelong learning and advancement of one's career. With fast changing labor markets, it is important for individuals not to stop developing new skills. In countries like Bangladesh, where unemployment and underemployment of graduates is a serious issue, entrepreneurship seems to be a viable solution for entering the workforce and developing a career. People can create their enterprises and develop sustainable careers by doing so. Sustainable career development is about not only economic success, but also the importance of social and environmental aspects.

8. Sustainable Entrepreneurship

Sustainable entrepreneurship implies the development of business initiatives that create economic returns, which also have an environmental and social impact. As opposed to traditional entrepreneurship that has business profit generation as its primary goal, this type of entrepreneurship aims to find solutions to environmental and social problems.

According to Schaltegger and Wagner (2011) sustainable entrepreneurship is seen as a process of discovering, assessing, and exploiting sustainable development opportunities. This concept is rooted in the concept of triple-bottom-line accounting suggesting the idea of economic sustainability, environmental sustainability, and social sustainability.

Sustainable entrepreneurship refers to the practice of developing entrepreneurial models in a manner that helps in minimizing environmental damage, cutting down consumption of resources, maximizing recycling, and making communal welfare better. Through innovations and responsible business practices, these entrepreneurs have the potential to not only make profits but also contribute to economic growth by ensuring that natural resources are present for future generations.

In Bangladesh, the significance of sustainable entrepreneurship has been increasing due to increasing concerns about the environment, lack of resources, and demand for eco-friendly products by consumers. As a result, businesses engaging in utilizing agricultural wastes, biodegradable materials, recycled materials, and renewable materials have emerged as major contributors to sustainable development and the creation of jobs.

9. Green Innovation

Solar innovation can be defined as the creation of eco-friendly products, processes, and technologies, which can improve organizational performance while minimizing environmental impacts (Chen et al., 2006). It is regarded as an important contributor to sustainable entrepreneurship, as it allows firms to generate profits and promote ecology at the same time.

Basically, solar innovation has four main aspects, namely green product innovation, green process innovation, green technological innovation, and green organizational innovation. The purpose of this innovation is to enhance resource use efficiency, decrease waste production, reduce pollution, and support sustainable ways of production and consumption.

Green innovation also distinguishes itself from traditional innovation due to the fact that while it aims to earn profits, it also takes into account environmental aspects. Organizations embracing green innovations enjoy greater competitiveness, better image among consumers, and such benefits as consumer loyalty and sustainable practices. The examples of green innovations are utilizing the waste derived from agriculture to produce commercial products, using renewable energy solutions, and creating biodegradable alternatives to synthetic materials.

With reference to Bangladesh, the issue of green innovations is becoming more and more significant as a result of rising environmental problems and the necessity to develop industries in a sustainable way. Increasing numbers of entrepreneurs attempt to use waste materials that can be found locally to produce eco-friendly products which could find market opportunities both domestically and abroad.

10. Relationship Between Career Development and Sustainable Entrepreneurship

Since ancient times, entrepreneurship has been a known route of career development. Unlike conventional employment, entrepreneurship allows individuals to be employers instead of job seekers (Gibb, 2002). In a similar way, sustainable entrepreneurship enhances this concept as it creates possibilities not only for professional development, but also for environmental protection and social welfare.

Participation in sustainable entrepreneurship allows individuals to acquire many different skills and capabilities, such as leadership, innovativeness, communication, finance, strategic planning, marketing, problem solving, and decision-making capabilities, among others.

In addition, sustainable entrepreneurship promotes experiential learning through participatory involvement in all business areas related to operations and the use of resources, customer interactions, and market establishment. Such activities make people more confident entrepreneurs and give them skills to interact with changing business realities. Therefore, sustainable entrepreneurship acts as an employment tool and shows businesses possibilities for development.

11.Circular Economy

The circular economy is a form of economic activity that focuses on reducing waste and improving efficiency by keeping products and resources in constant use through reusing and recycling. In contrast to the linear economy that takes resources and disposes of them, the circular economy promotes the concept of resource recovery and sustainable production systems.

The waste-to-wealth companies provide a vivid example of the circular economy in that they turn waste into valuable products. For instance, banana trees can produce textile fibers, eggshells can be converted into calcium powder, fish scales into collagen, water hyacinth into crafts and jute into green consumables.

The circular economy allows increasing resource efficiency through recycling and repurpose (Ellen MacArthur Foundation, 2013). It also plays an important role in career development, as it leads to the emergence of new industries, new products and innovation. This means that the need for specialists with knowledge about resource management and recycling technologies as well as sustainable business development will grow.

12. Employability Skills Developed Through Sustainable Entrepreneurship

One of the most significant contributions of sustainable entrepreneurship is its ability to develop employability skills that enhance long-term career prospects (Yorke, 2006). Individuals involved in sustainable enterprises acquire practical competencies through direct participation in business operations and innovation activities.

Key employability skills developed through sustainable entrepreneurship include leadership, business planning, financial literacy, communication, negotiation, teamwork, creativity, innovation, customer relationship management, digital marketing, supply chain management, strategic thinking, and environmental awareness. These skills improve both entrepreneurial success and employability within traditional organizational settings.

Furthermore, sustainable entrepreneurs develop resilience, adaptability, and problem-solving abilities by addressing complex environmental and market challenges. Such competencies are increasingly valued by employers and contribute to professional advancement across various industries.

13. Conceptual Framework

The idea is that green innovations make sustainable entrepreneurship possible because sustainable businesses create jobs and consolidate entrepreneurial skills and opportunities which in turn promotes career development and economic growth.

14.Case Evidence and Success Stories from Bangladesh

14.1 Jute-Based Business

The name you'd commonly associate with Bangladesh is jute, nicknamed "golden fiber," which holds immense significance as it aids economic growth and livelihood of rural people. The sector has gained momentum over the years as jute-based ventures have developed from a conventional production of jute into various jute-oriented enterprises, combining local raw materials and the modern market. These enterprises utilize jute as the raw material to produce a variety of green products. Thus, bringing economic benefit and environmental value.

The production process starts with growing the jute in the rural area. Upon harvesting, the stalks are submerged in water for a specific period of time for fiber extraction, called the retting process. The fibers that are obtained require washing and drying. Then, the fibers are converted into the yarn or used straight for producing jute goods. When the fibers are further processed into jute products, small and medium enterprises can produce the following products: bags, mats, ropes, carpets, and many more.

In Bangladesh, great numbers of farmers and laborers work in the jute industry. Moreover, this branch of economy enables small entrepreneurs to invest minimally in business. The jute market is steadily booming due to people's increasing preference for durable and biodegradable products given the declining use of plastic across the globe. Modern businesses thrive because of the combination of traditional skills and modern digital marketing techniques.

Business Model Canvas – JUTE INDUSTRY (Green Product Model)

BMC Element	Details
Value Proposition:	Eco-friendly, biodegradable alternative to plastic products
Customer Segments:	Export buyers, local retailers, and eco-conscious consumers
Channels:	Export companies, local markets, and online stores
Customer Relationships:	Long-term contracts with buyers, brand trust
Revenue Streams:	Sale of jute bags, carpets, and handicrafts
Key Resources:	Raw jute, skilled workers, and weaving tools
Key Activities:	Processing jute, product design, and manufacturing
Key Partners:	Farmers, export agencies, and government support
Cost Structure:	Raw material, labor, transportation, export cost

14.2 Banana Fiber Innovation

In Bangladesh, banana farming is very common, and after the fruit harvesting process, banana tree components, particularly banana stems, are often seen as agricultural waste. In this situation, the banana fibers initiative is established, which effectively recycling this waste into useful textiles and crafts, providing benefits for the environment and the rural economy.

The process of fiber production begins with the banana stems collection from the agricultural field. Then the banana stems are cut, and the fiber extraction occurs. It can be performed using manual or semi-mechanical methods. The fiber extraction process includes crushing or decorticating the stem to retrieve long and strong fibers. Once the fibers are extracted, they are washed, cleaned, and dried to improve the properties.

Once the fibers are ready, they get spun into yarn or used directly for weaving and clothing production. The products produced can include bags, ropes, carpets, fabrics, or accessories. The banana fibers are more biodegradable, durable, and eco-friendlier than synthetic materials.

The production process shows a model of agricultural and small-scale manufacturing integration. Farmers get a profit from selling the previously waste product, while entrepreneurs and workers are involved in processing and producing activities.

In addition, this indicates that the model is scalable, as demand growth leads to machinery and manufacturing expansion.

Marketing techniques focus on the plants' origin, sustainability, and uniqueness of the items. The use of digital channels and local sales networks allows access to different customer segments. Over time, the consumer needs the stable quality of the products.

Business Model Canvas – BANANA FIBER (Waste-to-Wealth Model)

BMC Element	Details
Value Proposition:	Eco-friendly products made from agricultural waste (banana stem)
Customer Segments:	Handicraft buyers, eco-product markets, exporters
Channels:	Local markets, social media, craft exhibitions
Customer Relationships:	Direct sales, community-based trust
Revenue Streams:	Bags, ropes, textiles, decorative items
Key Resources:	Banana stems, simple extraction tools, labor
Key Activities:	Fiber extraction, drying, product manufacturing
Key Partners:	Farmers, local NGOs, small entrepreneurs
Cost Structure:	Low-cost raw material, labor, processing

14.3 Kochuripana (Water Hyacinth) Utilization

In Bangladesh, the presence of water hyacinth, an alien plant species that invades waterways, presents a problem and unique opportunity due to its versatility. By making handicrafts out of it, small-scale entrepreneurs have found a way to make money while using this invasive species as an input.

The process begins with the collection of water hyacinth from local waterways and reservoirs. The plant is then washed and left in the sun until it dries and becomes flexible enough for processing. The stems are then transformed into usable fiber, which involves either cutting them into thin strands or twisting them. Finally, the fibers can be woven into various products such as bags, baskets, mats, pieces of furniture, and ornaments.

This manufacturing method relies heavily on labor, especially women workers in rural areas. This practice creates jobs in the community and raises awareness of traditional weaving techniques. In Bangladesh, where rural employment and natural resource utilization are most essential, this scheme is effective, transforming the waste problem into an economic opportunity while offering sustainable substitutes to plastic and other synthetic materials.

The items produced are advertised locally and internationally, noting their eco-friendly, biodegradable, and handmade nature. The role of social networks is crucial in demonstrating the manufacturing process as well as the product itself, winning the interest of eco-conscious customers. In response to the increase in demand, such companies improve their design and quality and enhance production capacity leading to transformation from informal operations into organized business.

Business Model Canvas – KOCHURIPANA (Water Hyacinth Business)

BMC Element	Details
Value Proposition:	Sustainable furniture and handicrafts from aquatic weed
Customer Segments:	Home décor buyers, eco-friendly product users, tourists
Channels:	Handicraft shops, online platforms, fairs
Customer Relationships:	Personalized handmade product service
Revenue Streams:	Furniture, baskets, decorative items

Key Resources:	Kochuripana plants, artisans, tools
Key Activities:	Collection, drying, weaving, designing
Key Partners:	Local communities, NGOs, water resource groups
Cost Structure:	Labor cost, transportation, simple tools

14.4 Eggshell-Based Calcium Production

Eggshells which are usually discarded are converted into calcium. This is a unique example of utilizing waste to create wealth as well as reducing environmental pollution.

Business Model Canvas – EGG SHELL CALCIUM (Circular Economy Model)

BMC Element	Details
Value Proposition:	Natural calcium source from recycled eggshell waste
Customer Segments:	Health supplement companies, agriculture sector, food industry
Channels:	B2B supply chain, pharmaceutical companies, distributors
Customer Relationships:	Industrial contracts, bulk supply agreements
Revenue Streams:	Sale of processed calcium powder
Key Resources:	Eggshell waste, processing machines, chemical knowledge
Key Activities:	Collection, sterilization, grinding, processing
Key Partners:	Poultry farms, food industries, and chemical processors
Cost Structure:	Collection, processing, machinery, quality control

14.5 Fish Scale-Based Collagen Business

Bangladesh's fish processing sector produces a massive amount of waste, especially fish scales that are often left unused. But now entrepreneurs have started a new business to utilize this waste and extract collagen, which is a highly useful protein that is used in a wider variety of products in the field of cosmetics, pharmaceuticals, food and more.

The whole process starts with the collection of fish scales from fish markets and processing units. All scales have to be cleaned properly to remove impurities. After cleaning fish scales go through heating and chemical processes that will yield collagen. The extracted collagen is then processed through a purifying and drying process to get a product as powder, gel, or liquid.

This company creates value by connecting the fisheries sector to the growing health and beauty industry in Bangladesh while reducing pollution from waste materials. Entrepreneurs working in this sector often pay attention to quality control to meet the local and international requirements. As people become more aware of health and skincare issues, the demand for collagen products is still on the rise.

The business is also scalable. Introduction of new technologies and capital would allow the business to expand from small processing units to large factories.

Business Model Canvas – Fish Scale Collagen Business

BMC Elements	Details
Customer Segments	Fertilizer companies, agricultural users, pharmaceutical and cosmetic industries, environmentally conscious consumers
Value Proposition	Value-added products made from recycled eggshell waste; eco-friendly and cost-effective alternative for industrial and agricultural use
Channels	Direct supply to industries, distributors, online platforms, local markets
Customer Relationships	Quality-focused, reliability-driven, long-term partnerships
Revenue Streams	Sales of processed eggshell powder, calcium-based products, bulk industrial supply

Key Resources	Eggshell waste, processing machines, chemical knowledge
Key Activities	Collection, sterilization, grinding, processing
Key Partners	Poultry farms, food industries, chemical processors
Cost Structure	Collection, processing, machinery, quality control

15. Findings

The study proves that there is a strong correlation between eco-friendly entrepreneurship and green innovation in Bangladesh. The results show that discarded materials that were once considered harmful to the environment can be turned into valuable economic resources as long as innovative entrepreneurs are involved.

Additionally, the study proves that wastes obtained from agricultural and industrial fields, including banana stalks, water lilies, eggshells, and fish scales, can be turned into marketable goods that involve income generation and pollution reduction. Such waste-to-wealth business initiatives lead to the creation of jobs for farmers, artisans, and small businessmen, thus being a good step towards poverty relief.

In addition, the research reveals that businesses taking into account the environment are committed to using resources properly and recycling materials while choosing biodegradable substitutes for plastic. More specifically, jute enterprises create outstanding possibilities for sustainable advancement of the economy through eco-friendly product transformation as well as exports. Another key conclusion is that circular economy practices are coming into existence to replace the linear approach to production investments and waste release. The eggshell calcium and fish scale hydrocolloid industries are good examples of how waste materials can be efficiently used in production and transformed into products that are valued.

This study also discusses significant social benefits, such as the empowerment of communities, preservation of traditional skills, and greater inclusion of women in rural industry. However, certain obstacles still exist, such as lack of access to finance, weak technology support, insufficient training and lack of understanding, and weak enforcement of policies.

As a result, it can be said that Bangladesh has the potential necessary for sustainable entrepreneurship and green innovations. With further investments and better institutional support, waste-based businesses can become an important driver of economic growth, environmental protection, and people's inclusion.

16. Recommendation

On the basis of the results, some recommendations are put forward to improve the influence of sustainable entrepreneurship and green innovations in career development in Bangladesh. Firstly, the higher education institutions should integrate sustainable entrepreneurship and green innovations into the educational programs and courses on career development. Universities can contribute immensely to shaping students' minds to seize opportunities in the green economy by providing them entrepreneurship classes, practical courses, business incubation, and partnerships with companies. These actions will provide the basis for obtaining the skills necessary to run sustainable businesses. Secondly, financial institutions and government agencies should facilitate access to funding and other financial resources for green startups and waste-to-benefit companies. The majority of sustainable entrepreneurs are struggling to acquire capital due to the lack of capital and investment risks. Thirdly, efforts should be made to improve entrepreneurship development initiatives that emphasize innovation, digital marketing, managerial skills, and sustainable production methods. Educational programs need to be built to instill both technical and management skills so that entrepreneurs can improve productivity, competitiveness, and sustainability. Special attention should be paid to supporting young people and women entrepreneurs who are key players in this country's entrepreneurial environment. Fourthly, there should be more funding for research, development, and technological innovations in sustainable sectors. Academic and industry partners should collaborate in research to derive innovative technology of production and waste treatment as well as eco-insensitive products. Fifthly, implementation of strong PPPs should be initiated to promote waste-to-wealth businesses and further commercialization of sustainable innovations. Cooperation between the governmental bodies, private businesses, NGOs, and research institutions will enhance knowledge sharing, resource mobilization, market entry, and capacity-building processes. Therefore, these partnerships will promote development of sustainable industries, and create new jobs.

Sixthly, export promotion schemes should be introduced to help sustainable entrepreneurs enter the international market. Despite the large export potential of many eco-friendly goods produced in Bangladesh, they suffer from limited market visibility, branding, certification, and distribution. Therefore, the support from the government provided in international trade fairs, certification provisions, and export promotion will increase their competitiveness on the global market. Seventhly, support should be given to women entrepreneurs and regions engaged in sustainable entrepreneurship. Being provided with training, financing, technologies, and information about the market this group of social innovators will be able to participate in economic developments more effectively.

In conclusion, public policies should support the wider implementation of circular economy principles and eco-friendly practices in business. By promoting waste management, recycling, being resource-efficient, and greening innovations in policy documents and through awareness-raising campaigns, a favorable environment for sustainable entrepreneurship will be created. This shall be an effective means of protecting the environment, but also creating job opportunities in entrepreneurship, in addition to the development of entrepreneurship in the long run.

This set of recommendations can help enhance the sustainable entrepreneurship ecosystem in Bangladesh and provide local companies with more chances to create real job opportunities and flourish, taking into account economic, social, and environmental considerations.

17. Conclusion

The research considered how sustainable entrepreneurship and green innovation impact career creation in Bangladesh by studying five waste-to-wealth business models including jute products, banana fiber business, water hyacinth handicrafts, eggshell calcium production, and fish scale collagen extraction. It showed that sustainable entrepreneurship is an effective tool for converting environmental problems into business opportunities, thus creating jobs, developing entrepreneurship and achieving sustainability.

It was found that waste-to-wealth companies provide jobs in agriculture, manufacturing, handicrafts, biotechnology, pharmaceuticals, marketing, logistics, and export. Waste-to-wealth businesses are able not only to create jobs directly or indirectly but also promote entrepreneurship.

Involvement in sustainable entrepreneurship lets acquire skills such as leadership skills, innovation skills, communication skills, financial management skills, strategic planning skills, problem-solving skills, digital marketing skills, which are supposed to ensure employment in the long run.

The research illustrates that green innovation is essential in expanding career prospects in the emerging green economy. Entrepreneurs can turn untapped or wasted resources into commercially beneficial products, thereby opening up new markets and job opportunities that advance economic progress and protect the environment. Furthermore, it shows the significance of the principles of circular economy and how resource optimization and waste minimization can provide people with sustainable jobs without harming nature.

Moreover, sustainable entrepreneurship is of great importance for inclusive development because women, rural citizens, and youth benefit from the opportunities created in the country. In the examples presented in the research paper sustainable enterprises help to foster marginalized groups, improve local economies, and ensure social well-being without having a negative impact on the environment.

The present study contributes to the literature by looking at sustainable entrepreneurship from the point of view of career advancement. This issue has not been widely covered in previous research. While the majority of works on sustainable entrepreneurship emphasize environmental performance or innovation as well as competitiveness of the business, the current study focuses on the possibilities of sustainable entrepreneurship in gaining employability skills, entrepreneurial capabilities, and sustainable careers in Bangladesh.

While many contributions were made, the research is affected by its heavy reliance on secondary data as well as qualitative multiple-case study methods. Future studies can make use of primary data through surveys or interviews and even perform field observations in order to understand the experiences of stakeholders better. Quantitative studies can also be conducted in order to measure the effect of sustainable entrepreneurship on career outcomes and employment generation in different sectors.

To conclude, it is important to acknowledge that sustainable entrepreneurship is not only a means to achieve economic as well as environmental purposes in business, but also a powerful driver of career development and social change in the society. With proper policy support, investment, technological innovations, and institutional cooperation, Bangladesh can become a leader of sustainable entrepreneurship in the region.

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