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# Curricula Alignment and Workforce Readiness:

## Assessing Jamaica's Education and Training Systems for Labor Market Demands

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# Executive Summary

This study examines the alignment between Jamaica's education and training systems and the competencies demanded by employers in priority economic sectors. Commissioned by the Jamaica Employers' Federation (JEF) with support from the International Labour Organization (ILO), the research applied the Curricula Mismatch Index (CMI) methodology to assess supply-side (curricula and training outputs) and demand-side (employer requirements) competencies. The analysis covered tourism, agriculture, construction, information technology, and other key sectors, and was complemented by qualitative insights from senior JEF representatives.

**Key Findings**

1. **Overall Alignment**

   CMI results show strong technical alignment between curricula and labour market needs, with sector averages consistently within the "No Gap" range (0–0.25). This suggests that vocational and technical training frameworks—particularly those under the Caribbean Vocational Qualifications (CVQ)—are effectively equipping graduates for entry-level industry roles.

2. **Workplace Readiness Gaps**

   Despite technical alignment, employers highlight deficits in applied technical skills, problem-solving ability, and soft skills—including adaptability, teamwork, and communication—particularly among younger workers. Stakeholders also pointed to foundational literacy and numeracy gaps originating in earlier education stages.

3. **Variability in Delivery Quality**

   While curricula content is robust, disparities in instructional quality and resource availability across institutions undermine the consistency of outcomes.

4. **Retention and Workforce Continuity Challenges**

   Stakeholders stressed that skilled graduates are often recruited by overseas markets soon after qualifying, reducing the domestic talent pool. Wage differentials across sectors exacerbate retention issues, with some industries unable to compete for scarce talent.

5. **Macroeconomic Considerations**
   Although youth unemployment declined sharply from 16% in Q1 2024 to 10.4% in Q3 2024, Jamaica's slower growth in new business density signals that job creation may not keep pace with workforce expansion—posing risks to sustained employment gains.

**Recommendations**

1. **Embed Soft Skills and Work-Readiness Training**
   Incorporate structured modules and experiential learning opportunities (e.g., internships, project-based work) into all programmes, with assessment frameworks for interpersonal and problem-solving skills alongside technical competencies.
2. **Standardise Quality Delivery**
   Implement national benchmarks for instructional quality and resource standards, supported by continuous professional development for instructors.
3. **Strengthen Industry–Education Linkages**
   Establish formal advisory mechanisms and expand apprenticeships to ensure curricula remain responsive to evolving sector needs.
4. **Address Foundational Skills Gaps**
   Enhance literacy, numeracy, and critical thinking in earlier education stages to improve downstream technical training outcomes.
5. **Tackle Retention and Brain Drain**
   Develop sector-specific retention strategies, create re-attraction programmes for skilled diaspora, and address wage disparities that fuel outward migration.
6. **Link Workforce Development to Business Growth**
   Promote entrepreneurship, lower barriers to business formation, and use indicators like new business density alongside GDP and unemployment in workforce planning.

**Conclusion**

The findings confirm that Jamaica's vocational and technical training systems are well-aligned with employer needs in technical terms, yet achieving Vision 2030's goals will require addressing applied skills, retention, and quality-of-delivery challenges. By pairing curriculum alignment with strengthened soft skills, consistent training quality, better retention strategies, and a stronger link between workforce development and job creation, Jamaica can build a resilient, competitive workforce capable of meeting both current and future market demands.

# Section 1—Introduction

## Section 1A—Purpose of This Study

The purpose of this study is to investigate whether a mismatch exists between the skills imparted by Jamaica's formal and non-formal education systems and the competencies demanded by employers in key sectors of the economy. With a youth unemployment rate of approximately **16%** at the end of Q1 2024, there is growing concern that structural unemployment—where labor market needs are misaligned with workforce skills—may be contributing to the persistence of joblessness, even as certain industries report labor shortages.

This analysis, commissioned by the **Jamaican Employers' Federation (JEF)** with the support of the **International Labour Organization (ILO)**, seeks to examine the extent and nature of curricula mismatches in Jamaica. By leveraging the **Curricula Mismatch Index (CMI)** framework, the study evaluates alignment between supply-side training systems and demand-side job market requirements across critical sectors, including tourism, hospitality, and travel.

Through this investigation, the study aims to:

- Provide actionable insights into whether the education and training systems adequately prepare graduates for available jobs.
- Assess the relevance of technical and soft skills developed in formal and non-formal curricula to the competencies required by employers.
- Identify potential gaps in alignment that could be exacerbating structural unemployment.

Ultimately, the findings will serve as a tool for stakeholders—including policymakers, educational institutions, and employers—to enhance workforce readiness and reduce unemployment through targeted reforms in training systems. By addressing any identified skill mismatches, this study will contribute to improving labor market outcomes for youth and other vulnerable groups, supporting Jamaica's broader economic and social development goals.

## Section 1B—Overview of the Jamaican Economy

As a starting point, there is utility in reviewing Jamaica's macroeconomic context. Jamaica's economy has exhibited steady growth over the past decade, supported by key industries such as tourism, agriculture, and services. With ongoing structural reforms and strategic investments, the country continues to demonstrate resilience despite challenges related to trade imbalances and external vulnerabilities.

**Recent Economic Performance**

Jamaica's **Gross Domestic Product (GDP)** at constant prices reached approximately **JD$774.34 billion** in 2022 (equivalent to **USD 4.96 billion** at a conversion rate of JD$1 to USD$0.0064), reflecting a growth rate of **5.22%** compared to the previous year. This growth was driven largely by a rebound in tourism and construction activities following the pandemic-induced contraction in 2020. Projections for 2025 indicate further expansion, with GDP expected to exceed **JD$821 billion** (USD 5.26 billion).

The unemployment rate has declined significantly, from **12.3% in 2010** to **6.27% in 2022**, and 4.4% in 2023—according to the International Monetary Fund (IMF)—reflecting progress in job creation across key sectors in July 2024. According to the Statistical Institute of Jamaica (STATIN), unemployment has fallen to 3.6% in Quarter 3 (Q3) 2024.

Main Labour Force Indicators

| Indicators | 2024 Q1 | 2024 Q2 | 2024 Q3 |
|---|---|---|---|
| **BOTH SEXES** | | | |
| TOTAL POPULATION | 2,732,500 | 2,732,500 | 2,732,500 |
| Population 15 years and over | 2,155,800 | 2,155,800 | 2,155,800 |
| Labour Force | 1,486,400 | 1,483,100 | 1,461,600 |
| Employed Labour Force | 1,405,700 | 1,420,300 | 140,900 |
| Time Related Underemployed | 28,100 | 24,800 | 20,000 |
| Unemployed Labour Force | 80,700 | 62,800 | 52,600 |
| Unemployed Youth | 32,300 | 29,400 | 19,500 |
| Youth not in employment education or training (NEET) | 100,700 | 93,900 | 123,200 |
| Outside The Labour Force | 669,400 | 672,700 | 694,200 |
| Potential LF | 34,100 | 23,600 | 32,200 |
| Unemployment Rate (LU1) | 5.4 | 4.2 | 3.6 |
| Combined Rate of time -related underemployment and Unemployment (LU2) | 7.3 | 5.9 | 5.0 |
| Combined Rate of Unemployment and Potential Labour Force (LU3) | 7.5 | 5.7 | 5.7 |
| Composite Measure of Labour Underutilization (LU4) | 9.4 | 7.4 | 7.0 |
| Youth Unemployment Rate | 16.0 | 14.8 | 10.4 |
| NEET Rate | 20.5 | 19.1 | 25.2 |
| Percentage of Population 15 years & over | 78.9 | 78.9 | 78.9 |
| Labour Force Participation Rate | 68.9 | 68.8 | 67.8 |
| Employment to Population Ratio | 65.2 | 65.9 | 65.4 |

At the end of Q1, the Jamaican authorities reported youth unemployment at 16%.[1] This figure, as of Q32024, has reduced to 10.4%, according to STATIN. While relatively high, it is important to note that within the last decade, youth unemployment in Jamaica had been recorded as high as 27%. That fact, combined with a six-percentage-point drop in less than a year (from 16% to 10.4%), is a significant improvement. This improvement has been bolstered by government

[1] Please see full statement at: https://jis.gov.jm/5-4-per-cent-unemployment-rate-for-january-2024/#:~:text=Turning%20to%20other%20labour%20underutilisation,which%20accounted%20for%20197%2C900%20people.

initiatives aimed at expanding employment opportunities in tourism, agriculture, and business process outsourcing (BPO).

**Inflation Trends**

Jamaica's inflation rate has varied over the years, and while showing signs of disinflation, remains above 5% in 2023 at about 6.5%. Nevertheless, the latter figure is significantly down from peaks exceeding 15% in 2013. IMF's outlook predicts a rate closer to 5% for 2024 and 2025.

**Trade Dynamics**

The **current account balance**, as a percentage of GDP, has fluctuated over the years, reflecting Jamaica's reliance on imports and vulnerability to global market changes. In 2022, the current account deficit stood at approximately **-0.8% of GDP**, an improvement from earlier years such as 2013 when deficits exceeded 8% of GDP. This trend indicates some progress in narrowing trade imbalances, supported by recovering exports and tourism inflows. In 2023, IMF data shows Jamaica with a Current Account surplus just below 3%.

**Population Trends**

Jamaica's population stood at **2.743 million** in 2022, up modestly from **2.696 million in 2010**, reflecting stable demographic growth. With a labor force participation rate that is gradually increasing, there is scope for further leveraging the workforce to drive economic development.

**Tourism's Role in Economic Growth**

Tourism continues to play a central role in Jamaica's economic recovery, contributing significantly to GDP and employment. The industry's rebound post-pandemic has catalyzed growth in associated sectors such as hospitality, travel, and transportation. This reinforces the importance of maintaining alignment between workforce competencies and industry demands, particularly in roles such as tour guides, hotel staff, and event managers.

## Section 1C—Significance of the Study

This study holds critical significance as it addresses the persistent issue of unemployment in Jamaica, with a particular focus on youth unemployment, which currently stands at approximately **16%**. By examining the alignment between the competencies developed within Jamaica's education and training systems and the skills demanded by employers, the study provides a framework for understanding the root causes of structural unemployment—should the evidence point in that direction—and offers actionable insights to bridge these gaps.

The findings from this study will benefit several key stakeholders:

1. **Policymakers and National Development Goals**

   The study supports the Jamaican government's broader economic objectives, including those outlined in **Vision 2030 Jamaica**, which aims to transform Jamaica into "the place

of choice to live, work, raise families, and do business." Skill alignment is a crucial enabler of this vision, as it fosters economic growth, improves labor market efficiency, and reduces dependency on social support systems. The study also aligns with international priorities, such as the **United Nations Sustainable Development Goal 8** (Decent Work and Economic Growth), by focusing on workforce readiness and reducing unemployment.

2. **Employers and Industry Stakeholders**

   For employers, particularly in high-growth sectors like tourism and hospitality, addressing skill mismatches is essential to improving productivity and meeting market demands. The study provides employers with insights into areas where the workforce may be underprepared or overqualified, enabling them to refine recruitment strategies, invest in targeted training, and advocate for curriculum reforms that better reflect industry needs.

3. **Educational and Training Institutions**

   The study serves as a tool for educational institutions and training providers to evaluate the relevance of their curricula. By identifying gaps between training curricula and labor market needs, institutions can adapt their programs to focus on high-demand skills and competencies, ensuring graduates are better equipped to succeed in the workforce.

4. **Youth and the Broader Workforce**

   For Jamaican youth, who face disproportionately high unemployment rates, this study provides a pathway to improved employability by ensuring education and training systems deliver the skills employers need. By addressing skill mismatches, the study contributes to reducing the barriers that prevent young people from entering the labor market, empowering them to achieve economic independence and stability.

5. **International Stakeholders**

   Supported by the **International Labour Organization (ILO)**, this study offers a replicable methodology—the **Curricula Mismatch Index (CMI)**—that can be applied to similar labor market challenges in other countries. Jamaica's experience and the insights gained through this study can inform global best practices in workforce alignment, benefiting other economies grappling with skill mismatches and structural unemployment.

By highlighting areas of misalignment and offering practical recommendations, this study is a crucial step toward improving workforce readiness and ensuring that Jamaica's labor market can effectively support the country's economic growth and social development objectives.

## Section 1D—Preliminary Findings and Recommendations

The analysis of curricula alignment across sectors has yielded promising results, as evidenced by the consistent **"No Gap"** Curricula Mismatch Index (CMI) scores throughout the study. These findings suggest that Jamaica's education and training systems, supported by frameworks such as

the Caribbean Vocational Qualifications (CVQs), are effectively equipping individuals with the core skills required by employers. This alignment is particularly evident in high-demand sectors such as tourism, construction, and software development, where the competencies outlined in curricula closely match those needed in the labor market.

Despite these favorable outcomes, several areas for improvement emerge:

1. **Soft Skills Gaps**: While technical competencies are well-aligned, employers frequently express concerns about deficiencies in soft skills, particularly among younger workers (Generation Z). These include communication, teamwork, time management, and problem-solving abilities, which are critical for workforce integration and performance.
2. **Variability in Quality of Delivery**: The alignment of curricula with labor market needs does not automatically ensure that these skills are consistently or adequately taught. Factors such as teacher quality, institutional resources, and pedagogical approaches vary widely, impacting the effectiveness of training programs.
3. **Slow Business Density Growth**: While overall unemployment and youth unemployment rates are on a declining trajectory—falling to 10.4% and 3.6% respectively by Q3 2024—Jamaica's rate of **new business density growth** lags behind regional and income-level comparators. New business formation is critical for job creation, and the slower growth rate may limit opportunities for the expanding youth workforce.

**Recommendations**

To further strengthen workforce alignment and address the nuanced challenges revealed by this study, the following recommendations are proposed:

1. **Enhance Soft Skills Training**
    - Integrate structured soft skills modules into existing technical curricula to address gaps in areas such as communication, conflict resolution, and leadership.
    - Leverage experiential learning approaches, such as internships and team-based projects, to provide real-world opportunities for soft skills development.
2. **Standardize Quality Assurance in Training**
    - Develop and enforce national standards for instructional quality across institutions offering CVQs and similar certifications.
    - Provide regular professional development opportunities for educators to ensure the consistent delivery of curricula.
3. **Support Business Growth to Foster Employment**

- Address barriers to business creation, such as bureaucratic delays and access to financing, to stimulate entrepreneurial activity and job creation.
- Promote policies that encourage small and medium enterprise (SME) development, as SMEs are typically significant contributors to employment in emerging economies.

4. **Expand Employer Partnerships in Training**
    - Collaborate with employers to co-design training programs that reflect evolving industry needs, ensuring students are job-ready upon graduation.
    - Encourage apprenticeship models that bridge the gap between theoretical learning and practical application.
5. **Leverage New Business Density as a Policy Indicator**
    - Use **new business density** (registrations per 1,000 working-age people) as a macroeconomic metric to assess job creation trends alongside GDP and unemployment rates.
    - Develop targeted initiatives to accelerate new business formation, particularly in sectors with high growth potential like tourism and technology.

**Conclusion**

The "No Gap" CMI scores highlight the effectiveness of Jamaica's education and training systems in meeting labor market demands. However, the study identifies areas for enhancement, including soft skills development, consistent quality delivery, and fostering conditions for business growth. Addressing these issues will ensure that the workforce remains competitive, adaptable, and equipped to meet the needs of a dynamic economy, thereby supporting Jamaica's broader economic development goals under Vision 2030.

# 2.1—Methodology for Analysing Job Task Alignment and Competency Assessment

## 2.1.1—Overview of Methodology

5. The methodology for this study is designed to systematically evaluate the alignment between labor market demands and training or education systems. By integrating three major occupational frameworks—ISCO, O*Net, and CVQs[2]—this approach identifies core competencies required for jobs, assesses their representation in curricula, and measures how well these competencies address real-world labor market needs. This rigorous, triangulated methodology ensures global applicability while maintaining a strong focus on regional relevance within the Caribbean labor market. It also incorporates supply- and demand-side considerations to create a comprehensive picture of workforce readiness and identify any curriculum gaps that may exist.

## 2.1.2—Core Data Presentation: Overview of Frameworks

To ground the analysis, it is essential to briefly outline the three frameworks utilized:

- **International Standard Classification of Occupations (ISCO)**: Developed by the International Labour Organization (ILO), ISCO provides a globally recognized structure for classifying occupations based on tasks, duties, and skill levels. It focuses on grouping jobs with similar competency requirements, making it a vital resource for understanding global occupational standards.
- **O*Net (Occupational Information Network)**: Managed by the U.S. Department of Labor, O*Net offers detailed, task-specific data for occupations. It is structured to describe skills, knowledge, and abilities across sectors, making it ideal for capturing granular details of job tasks and their requisite competencies.
- **Caribbean Vocational Qualifications (CVQs)**: The CVQs, developed specifically for the Caribbean region, are competency-based qualifications that align vocational training with industry needs. They emphasize hands-on, practical skills essential for employability in the Caribbean, ensuring regional context and labor market specificity.

6. Together, these frameworks provide a triangulated approach that balances international consistency with local and sector-specific relevance. The CVQs' role in the methodology

[2] The Caribbean Vocational Qualification (CVQs) is the regional framework that CARICOM member states are set to implement so as to standardize competencies across multiple sectors.

is to ensure that Caribbean-specific nuances are adequately reflected alongside ISCO and O*Net's global scope.

### 2.1.3—Supply-Side Methodology: Triangulation Framework

7. The supply-side analysis evaluates how well education and training systems provide the competencies required by the labor market. This is achieved by mapping job tasks to ISCO, O*Net, and CVQ frameworks to identify core skills, knowledge, and abilities.

    - **Triangulation Across Frameworks**: The analysis identifies whether a given skill or competency appears across the three frameworks. Tasks and skills are scored based on their presence in ISCO, O*Net, and CVQs, with higher scores reflecting greater alignment across the frameworks:
        - **10 (Indispensable)**: Competencies that appear in all three frameworks are considered indispensable and universally critical.
        - **6–9 (Important)**: Competencies present in two frameworks are classified as important, with scoring adjusted based on the strength of alignment.
        - **<6 (Niche/Context-Dependent)**: Competencies appearing in only one framework are classified as niche or context-dependent, though some may score higher based on demonstrated regional or sectoral importance.
    - **Role of CVQs in Triangulation**: The CVQs are essential in ensuring that regional labor market priorities are represented. While ISCO and O*Net provide international benchmarks, the CVQs capture competencies tailored to the Caribbean context, such as tourism or agriculture-specific skills. This ensures the methodology remains relevant to regional workforce development initiatives.
    - **Scoring Tasks for Relevance**: Each task in a job description is analyzed against these frameworks. The task's relevance and alignment to curricula are scored, providing a clear measure of whether education systems are equipping workers with the skills demanded by the market.
    - **Supply-Side Proxies**: In instances where curriculum data from local institutions are unavailable, ISCO and O*Net serve ***as proxies for understanding*** what education systems are likely to prioritize, given their global influence on competency frameworks.

### 2.1.4—Demand-Side Methodology: Real-World Labor Market Analysis

8. The demand-side analysis focuses on the competencies and tasks that are most sought after by employers, as reflected in job descriptions and labor market data. This ensures that the

methodology is grounded in real-world labor market needs, bridging the gap between theoretical curricula and practical workplace requirements.

- **Job Vacancy Analysis**: Job descriptions from employers are analyzed to identify the specific tasks and competencies they emphasize. These are then mapped against ISCO, O*Net, and CVQs to determine alignment and relevance.
- **Task Prioritization**: Tasks are weighted based on their frequency and prominence in job postings. For instance, skills that appear consistently across multiple postings are considered high-priority, while niche tasks with limited demand are given lower priority.
- **Regional Context and Sector-Specific Importance**: The Caribbean's unique labor market dynamics, including its focus on industries like tourism, agriculture, and renewable energy, are incorporated into the analysis. Skills critical to these sectors may receive higher priority, even if they are less prominent in international frameworks like ISCO or O*Net.
- **Scoring Relevance to Employers**: Each task is scored for its alignment with employer needs, using the same triangulated scoring methodology as the supply-side analysis. This ensures consistency in evaluating the match between training systems and labor market demands.

### 2.1.5—Integrated Analytical Framework (IAF)

9. The methodology is structured within the Integrated Analytical Framework (IAF), ensuring that both supply-side and demand-side data are analyzed cohesively. By combining triangulated competency assessment with labor market demand, the IAF approach provides a holistic understanding of workforce readiness and training alignment.

- **Scoring Alignment**: Supply-side competencies are mapped to demand-side skills, with scores reflecting the degree of alignment.
- **CMI Calculation**: The Curricula Mismatch Index (CMI) quantifies the gap between labor market needs and curricula offerings, providing actionable insights for policymakers, educators, and employers.
- **Interpretation of Results**: The methodology emphasizes contextual relevance, ensuring that findings support broader goals, such as workforce development strategies under Vision 2030 for Jamaica or other regional development plans.

### 2.1.5—Contextual Relevance

10. By integrating ISCO and O*Net's global perspectives with the CVQs' Caribbean-specific focus, the methodology offers a comprehensive and regionally relevant analysis. This

approach ensures that the study is not only grounded in international standards but also responsive to the unique demands and priorities of the Caribbean labor market.

**Conclusion**

11. The methodology combines global best practices with regional insights to assess and enhance workforce alignment. Through the triangulated use of ISCO, O*Net, and CVQs, this study provides a robust framework for identifying competency gaps and recommending actionable steps to strengthen the link between education systems and labor market needs. The integration of both supply- and demand-side analyses ensures that the findings are both rigorous and contextually relevant, supporting the development of a highly skilled and adaptable workforce for the Caribbean.

# CHAPTER 1—INFORMATION AND COMMUNICATION TECHNOLOGY

# Section 3.1—Software and Applications Developers & Analysts

12. The International Standard Classification of Occupations (ISCO-08) Sub-Major Group 25 encompasses **Information and Communication Technology (ICT) Professionals**, a category dedicated to those who apply their expertise in IT systems, software, and networks to meet the technological needs of businesses and individuals. This sub-major group captures occupations that require highly specialized technical skills, typically at ISCO's fourth skill level, corresponding to university-level education and advanced practical training.

13. Within Sub-Major Group 25, the ISCO framework defines two primary **Minor Groups**:

    1. **Minor Group 251: Software and Applications Developers and Analysts**
    2. **Minor Group 252: Database and Network Professionals**

14. Each minor group is further divided into unit groups that detail specific occupations within the broader category. This section focuses exclusively on **Minor Group 251**, which includes professionals engaged in the research, design, development, and analysis of software and applications.

**Minor Group 251: Software and Applications Developers and Analysts**

15. Minor Group 251 encompasses roles that specialize in the creation and optimization of software systems and applications, serving as critical contributors to technological innovation across industries. This group includes the following unit groups:

    - **2511: Systems Analysts**
    - **2512: Software Developers**
    - **2513: Web and Multimedia Developers**
    - **2514: Applications Programmers**
    - **2519: Software and Applications Developers and Analysts Not Elsewhere Classified**

16. The group is characterized by tasks that require a deep understanding of both theoretical and practical aspects of computing. These tasks include:

- Researching IT use in business to identify opportunities for enhanced efficiency and effectiveness.
- Evaluating, planning, and designing hardware or software configurations for specific applications.
- Writing, testing, and maintaining computer programs tailored to specific needs.
- Designing and developing systems for the Internet, intranets, and multimedia applications.

17. Professionals within Minor Group 251 combine analytical skills with technical expertise to meet organizational needs in dynamic and evolving technological environments. Their work forms the backbone of modern digital systems, driving innovation and ensuring the smooth functioning of critical software and application ecosystems.

18. For the purposes of this study, Minor Group 251 is analyzed in depth, with specific emphasis on the tasks, competencies, and alignment between labor market demands and educational outputs, using ISCO's Unit Group 2512 (Software Developers) as a key reference point.

### 3.1.2—Demand-Side Analysis for Unit Group 251: Software and Applications Developers and Analysts

19. As stated above, *Unit Group 251* encompasses professionals responsible for designing, developing, testing, and maintaining software and applications that meet the operational needs of organizations across industries. The scope of work involves a blend of technical expertise, problem-solving, and collaboration with other stakeholders to ensure that software systems are both functional and aligned with organizational objectives.

20. The primary demand in this sector is for professionals who can effectively analyze requirements, write and maintain high-quality code, and ensure software solutions are robust and scalable. Employers increasingly prioritize skills that demonstrate an ability to adapt software systems to evolving user needs, enhance performance, and troubleshoot issues effectively. These roles require not only technical capabilities but also strong communication and analytical skills to interact with cross-functional teams and stakeholders.

**Key Observations from Demand-Side Analysis**

1. **Core Activities Driving Demand:**
    - Tasks such as "Researching, analyzing, and evaluating requirements for software applications and operating systems" scored high in demand (9). Employers place significant emphasis on the ability to translate business requirements into technical specifications, reflecting the criticality of analysis and planning in software development. (See Table 1 below).
    - Similarly, "Researching, designing, and developing computer software systems" achieved a perfect score of 10. This task represents the essence of software developers' work, emphasizing the creation of functional and innovative software solutions.

Table 1—Demand Side Scores for Software Developers (2512)

| Survey Task | Score (1–10) | Reasoning Based on O*Net Tasks |
|---|---|---|
| **Researching, analyzing, and evaluating requirements** | 9 | Strong alignment with tasks like "Write, analyze, review, and rewrite programs." |
| **Researching, designing, and developing software systems** | 10 | Central to tasks such as "Write, update, and maintain computer programs." |
| **Consulting with engineering staff** | 8 | Aligns with "Consult with managerial, engineering, and technical personnel." |
| **Developing and directing software testing and validation** | 8 | Matches tasks like "Conduct trial runs of programs." |
| **Modifying existing software** | 10 | Core task: "Perform or direct revision, repair, or expansion of existing programs." |
| **Directing programming and development of documentation** | 9 | Matches tasks like "Compile and write documentation of program development." |
| **Assessing, upgrading, and documenting maintenance procedures** | 9 | Matches tasks like "Write, analyze, review, and rewrite programs" and "Perform systems analysis." |
| **Consulting with customers concerning maintenance** | 8 | Related to "Consult with and assist computer operators or system analysts." |

2. **Maintenance and Adaptation of Software:**
    - The task of "Modifying existing software to correct errors, adapt to new hardware, or improve performance" also scored a 10, underscoring the importance employers place on flexibility and the ability to evolve software systems. This reflects the

reality of a dynamic technology environment where maintenance and upgrades are crucial.

3. **Collaboration and Documentation:**
    - Tasks like "Consulting with engineering staff to evaluate interfaces" and "Directing programming and development of documentation" scored 8 and 9, respectively. These tasks highlight the value of teamwork and clear communication, as well as the importance of maintaining comprehensive records for continuity and knowledge sharing.
4. **Testing and Quality Assurance:**
    - Employers expect high proficiency in "Developing and directing software testing and validation procedures" (score: 8). Testing ensures software reliability and functionality, critical aspects for client satisfaction and operational success.
5. **Client Interaction and Support:**
    - While not the most technical of tasks, "Consulting with customers concerning maintenance of software systems" scored an 8. This indicates that employers value developers who can effectively communicate with clients and provide support, reflecting a demand for service-oriented skills alongside technical expertise.

**Implications for Employers**

21. Employers seeking professionals in Unit Group 251 are looking for a blend of technical acumen and soft skills. Developers are expected to be versatile, capable of working across the software development lifecycle, and adept at addressing both technical challenges and user needs. The emphasis on adaptability and maintenance suggests a trend toward hiring professionals who can ensure the longevity and relevance of software solutions in rapidly changing technological landscapes.

22. To remain competitive, organizations should prioritize attracting talent with strong analytical and development skills, while also fostering an environment that supports collaboration and ongoing learning. This will help meet the growing demands for sophisticated, user-friendly, and reliable software systems.

23. In conclusion, the demand-side analysis for Unit Group 251 underscores the integral role of software developers and analysts in driving organizational success, with a clear emphasis on innovation, adaptability, and effective communication

## 3.1.3—Supply-side for Software Developers 2512

24. The supply-side analysis for Unit Group 2512 focuses on the extent to which Jamaica's learning institutions, operating within the framework of the NQF, are preparing individuals

to meet the demands of the labor market. This analysis takes into account both formal education pathways, such as tertiary institutions and vocational training centers, as well as non-formal avenues like specialized coding boot camps, professional certifications, and employer-driven training initiatives. These systems are evaluated in relation to the specific tasks and competencies associated with Software Developers, as articulated in ISCO's Unit Group 2512 and the demand-side proxies used in this study.

**Overview of Supply-Side Preparation**

25. Jamaica's NQF is structured to align learning outcomes with the International Standard Classification of Education (ISCED), ensuring comparability across global frameworks while addressing the unique needs of the local economy. In the context of software development, formal education institutions, particularly universities and colleges, deliver programs in computer science, information technology, and software engineering. These programs aim to build foundational and advanced competencies in coding, systems design, and software lifecycle management, which are critical for the Software Developer role.

26. Beyond formal qualifications, the non-formal sector has gained prominence in addressing the practical and industry-specific skills required in software development. Coding boot camps, for instance, have emerged as an agile and responsive means of equipping learners with in-demand programming languages and tools. Similarly, employer-sponsored certifications, such as those offered by technology giants like Microsoft, Oracle, and AWS, serve as an important supplement to formal education, targeting niche areas such as cloud computing, database management, and advanced software development methodologies.

**Strengths of the Supply-Side**

27. The supply-side system in Jamaica demonstrates several areas of strength in relation to the competencies required for Software Developers:

- **Emphasis on Foundational Skills**: Formal tertiary institutions provide a robust grounding in computer science principles, which aligns well with tasks such as "writing, updating, and maintaining computer programs" and "developing computer software systems." Core subjects like algorithms, data structures, and object-oriented programming are typically covered extensively, ensuring graduates possess the theoretical knowledge needed for entry-level roles.
- **Emergence of Practical Training Pathways**: Coding boot camps and accelerated programs are addressing gaps in practical and hands-on experience, focusing on real-world application of skills. These initiatives align well with tasks like "debugging and testing software" and "adapting software to meet new requirements."

- **Integration of Global Standards**: Programs that incorporate internationally recognized certifications contribute to the global competitiveness of Jamaican developers. These certifications often address demand-side tasks such as "evaluating and planning software configurations" and "analyzing system requirements," enhancing graduates' employability in both local and international markets.
- **Adaptability in Delivery Models**: With the rise of blended learning (a mix of online and in-person training), institutions have demonstrated adaptability in reaching a broader audience. This is particularly important in a rapidly evolving field like software development, where technologies and practices change frequently.

**Table 2—Supply Side 2512 Software Developers**

| Tasks (Software Developers) | Supply-Side Score (1–10) | Reasoning |
|---|---|---|
| **Researching, analyzing, and evaluating requirements for software applications and operating systems** | 8 | Supply-side training often emphasizes coding but may not fully prepare graduates for requirements analysis. |
| **Researching, designing, and developing computer software systems** | 9 | Strong match as institutions focus heavily on foundational coding and design practices. |
| **Consulting with engineering staff to evaluate interfaces between hardware and software** | 7 | Collaboration is taught, but practical hardware-software interface work may be less emphasized. |
| **Developing and directing software testing and validation procedures** | 7 | Institutions train for testing, but leadership in validation processes may not be strongly emphasized. |
| **Modifying existing software to correct errors, adapt to new hardware, or upgrade interfaces** | 9 | Institutions train extensively on debugging and modification, but adapting to new hardware may receive less focus. |
| **Directing software programming and development of documentation** | 8 | Comprehensive documentation is covered but may not align perfectly with real-world standards. |
| **Assessing, developing, upgrading, and documenting maintenance procedures for** | 8 | Maintenance skills are taught but may not be fully aligned with industry needs for legacy systems. |

| | | |
|---|---|---|
| **operating systems, communications environments, and applications software** | | |
| **Consulting with customers concerning maintenance of software systems** | 6 | Limited focus in most curricula on customer-facing or client-specific interactions. |

**Challenges and Gaps**

28. Despite these strengths, several challenges limit the full alignment of the supply-side with demand-side requirements:

- **Limited Focus on Collaboration and Soft Skills**: While technical skills are emphasized, the ability to work effectively in teams and communicate with stakeholders—key components of tasks like "consulting with managerial, engineering, and technical personnel"—is not consistently addressed. Graduates may lack the interpersonal skills required to excel in collaborative development environments.
- **Gaps in Advanced Specialization**: Tasks such as "modifying existing software to correct errors or improve performance" require not only coding expertise but also a deep understanding of legacy systems and advanced debugging techniques. These skills are not always prioritized in formal education, leaving a gap in the preparedness of graduates for mid- to senior-level roles.
- **Mismatch in Industry-Specific Tools**: While many institutions teach general-purpose programming languages, such as Python, Java, and C++, there is less emphasis on industry-specific frameworks and tools that are frequently demanded by employers. This limits the immediate job readiness of graduates, particularly for roles requiring knowledge of niche development environments.
- **Underrepresentation of Non-Formal Training in NQF**: Although coding boot camps and certifications play a vital role in bridging skill gaps, their integration within the NQF remains limited. This undermines their ability to be formally recognized as part of a coherent skills development strategy.

**Summary of Findings**

29. The supply-side analysis reveals a system that is making significant strides in addressing the technical requirements of the Software Developer role, particularly at the entry level. However, gaps remain in the areas of advanced specialization, collaboration skills, and industry-specific tools. These gaps, while not insurmountable, highlight the need for closer alignment between educational institutions, employers, and industry standards. Efforts to

strengthen non-formal training pathways, integrate soft skills into curricula, and emphasize industry-relevant technologies will be critical in closing the remaining mismatch between supply and demand for Software Developers in Jamaica.

30. This evaluation underscores the importance of an agile and responsive education system that evolves alongside the rapidly changing technological landscape, ensuring that Jamaican Software Developers are well-positioned to meet both current and future labor market demands.

## 3.1.4—Curricula Mismatch Index and Analysis for 2512

**Table 3—CMI Scores for 2512—Software Development**

| Tasks (Software Developers) | Demand-Side | Supply-Side | Squared Differences (Difference^2/89) |
|---|---|---|---|
| **Researching, analyzing, and evaluating requirements for software applications and operating systems** | 9 | 8 | 0.011 |
| **Researching, designing, and developing computer software systems** | 10 | 9 | 0.011 |
| **Consulting with engineering staff to evaluate interfaces between hardware and software** | 8 | 7 | 0.011 |
| **Developing and directing software testing and validation procedures** | 8 | 7 | 0.011 |
| **Modifying existing software to correct errors, adapt to new hardware, or upgrade interfaces** | 10 | 9 | 0.011 |
| **Directing software programming and development of documentation** | 9 | 8 | 0.011 |
| **Assessing, developing, upgrading, and documenting maintenance procedures** | 9 | 8 | 0.011 |
| **Consulting with customers concerning maintenance of software systems** | 8 | 6 | 0.045 |
| **Average** | | | **0.015** |
| **Interpretation of CMI** | | | **No Gap** |

31. The Curricula Mismatch Index (CMI)—using the NQF as the supply-side proxy—serves as a critical metric in this study, quantifying the degree of alignment—or misalignment—between the skills demanded by employers and those supplied by educational institutions.

For Unit Group 2512: Software Developers, this evaluation focuses on how well the competencies taught by Jamaica's learning institutions, as structured within the National Qualifications Framework (NQF), match the labor market needs as proxied by demand-side tasks derived from O*Net and normalized through the International Standard Classification of Occupations (ISCO-08).

## 3.2— CMI Analysis for Programmer/Webmaster

32. Consistent with the described methodology, this section reports on the CMI when actual job descriptions and employer-listed duties and tasks (as found in job descriptions or job vacancies) are employed.

Table 3b—CMI for Web Developer

| ISCO Tasks (2513: Web and Multimedia Developers) | Demand Side | Execute Scoring (Supply Side) | CMI Score |
|---|---|---|---|
| **Designing, developing, and maintaining Internet sites using programming and scripting languages and interfacing with operating environments.** | 10 | 10 | 0.00 |
| **Creating and managing websites with multimedia software and utilities for optimal design and function.** | 9 | 9 | 0.00 |
| **Communicating with network specialists about security and hosting issues to enforce web server security.** | 8 | 8 | 0.00 |
| **Writing computer code integrated with multimedia inputs (e.g., images, audio) to produce and maintain websites.** | 10 | 9 | 0.05 |
| **Assisting in developing Internet strategies and web-based methodologies.** | 7 | 8 | 0.05 |
| **Testing and modifying websites for browser compatibility and optimal performance.** | 9 | 9 | 0.00 |
| **Researching and applying emerging web technologies and tools.** | 8 | 8 | 0.00 |
| | Average CMI | | 0.01 |
| | Interpretation | | No Gap |

33. The Programmer/Webmaster role demonstrates a strong alignment between job requirements and training outputs, with an average Curricula Mismatch Index (CMI) score of 0.01, signaling **No Gap** between the supply and demand for skills. Key technical competencies, such as website development, scripting, database integration, and multimedia functionality, are effectively covered by training curricula as outlined in the CVQ framework for Software Development and Web Programming, and in O*Net's Web Developers occupational tasks.

**Strengths in Alignment**

34. Technical tasks such as website creation, multimedia management, and browser compatibility testing are highly aligned across all frameworks. The presence of standard programming languages (e.g., HTML, CSS, JavaScript, PHP) in both curricula and job requirements ensures workforce readiness. The demand for emerging technology adaptation, as highlighted in the job description, is met by supply-side emphasis on research and application of new web tools.

**Areas for Marginal Improvement**

35. While the alignment is robust, there are slight discrepancies in advanced integration tasks such as combining multimedia inputs with programming code, where Execute Scoring was slightly below demand. This indicates a potential need for enhanced focus on integrating multimedia tools in training programs.

**Implications**

36. The near-perfect alignment reinforces the effectiveness of Jamaica's vocational training systems in preparing IT professionals for roles like Programmer/Webmaster. However, as technology evolves rapidly, curricula must remain adaptable to emerging tools and practices.

**Recommendations**

- **Enhance Training in Multimedia Integration**
  Training institutions should emphasize integrating multimedia elements with programming tools, ensuring developers can meet the nuanced demands of modern web environments.

- **Continued Emphasis on Emerging Technologies**
  Training providers should collaborate with industry stakeholders to keep course content updated with the latest web technologies and trends.

- **Employer Partnerships**
  Strengthen ties between training institutions and employers to offer internships and apprenticeships that provide hands-on experience in advanced web development practices.

37. By addressing these minor gaps, Jamaica’s workforce development strategy can ensure sustained excellence and adaptability in the dynamic IT sector.

## 3.2.2—Curricula Mismatch Index (CMI) Analysis for Systems Analyst

38. The methodology was likewise applied to ISCO Unit Group 2511 (Systems Analysts). Results show that the Systems Analyst role has strong alignment between the job market's demands and the training provided in curricula, with an average Curricula Mismatch Index (CMI) score of 0.04, indicating **No Gap**. This reflects well on both formal education systems and vocational frameworks, suggesting that training outputs effectively prepare candidates for this role.

**Table 3c—CMI Analysis for Systems Analyst**

| ISCO Tasks (2511: Systems Analysts) | Demand Side | Execute Scoring (Supply-Side) | CMI Score |
|---|---|---|---|
| **Consulting with users to formulate and document requirements and with management to ensure agreement.** | 10 | 9 | 0.05 |
| **Identifying and analyzing business processes, procedures, and work practices.** | 9 | 9 | 0.00 |
| **Identifying inefficiencies and recommending optimal business practices and system functionality.** | 10 | 9 | 0.05 |
| **Taking responsibility for deploying functional solutions, such as implementing system test plans.** | 9 | 8 | 0.05 |
| **Developing functional specifications for use by systems developers.** | 8 | 7 | 0.10 |
| **Expanding or modifying systems to improve workflow or serve new purposes.** | 9 | 8 | 0.05 |
| **Coordinating and linking computer systems within an organization to increase compatibility.** | 9 | 9 | 0.00 |
| | **Average CMI Score** | | 0.04 |
| | Interpretation | | No Gap |

39. **Strengths in Alignment**

Tasks such as analyzing business processes, identifying inefficiencies, and coordinating computer systems within an organization exhibit perfect or near-perfect alignment across the demand and supply side. These competencies are foundational to systems analysis, and their representation in the CVQ IT Systems Administration and O*Net Computer Systems Analyst framework ensures a robust skills pipeline.

40. The close alignment in deploying functional solutions, expanding systems for new workflows, and ensuring system compatibility highlights that curricula not only cater to

current industry demands but also prepare professionals for adaptive problem-solving in IT environments.

**Areas for Improvement**

41. Some gaps are marginal but worth noting, such as the development of functional specifications for systems developers. This area, scoring a CMI of 0.10, suggests a need for enhanced focus on documentation and collaborative tools in training environments.

42. Similarly, consultation with users and management, while well-covered, could benefit from additional emphasis on stakeholder communication and iterative design principles to close the minor gap observed.

43. **Implications**
The alignment demonstrated here underscores the strength of Jamaica's training systems in meeting industry needs for Systems Analysts. As the role is critical to bridging IT solutions and organizational goals, maintaining and refining these training standards will be essential for sustaining labor market effectiveness.

**Recommendations**

1. **Enhance Training on Functional Specifications**: Incorporate more detailed modules and practical exercises on functional documentation and its use in developer collaborations.
2. **Focus on Communication and Stakeholder Management**: Expand training on user consultation techniques, particularly iterative and user-focused design principles, to strengthen engagement with end-users and management.
3. **Collaborative Skill Development**: Partner with industry players to create apprenticeship opportunities that focus on real-world application of systems analysis principles.
4. **Maintain Curricula Relevance**: Establish regular review cycles for curricula to ensure alignment with evolving IT industry standards and emerging technologies.

By addressing these minor improvements, Jamaica's educational and training framework can further reinforce its role as a leading enabler of workforce development in the information technology sector.

# CHAPTER 2—AGRICULTURE, FOOD & NATURAL RESOURCES

# Section 4—Agriculture

## 4.1—Demand-Side Analysis for Unit Group 6111: Crop Growers

**Overview of Unit Group 6111**

44. Unit Group 6111 focuses on professionals engaged in the planning, cultivation, maintenance, and harvesting of crops. These activities form the backbone of agricultural productivity and food security. The group encompasses tasks that require a balance of practical farming expertise, equipment operation, and supervisory capabilities. Demand for these roles reflects the critical need for skilled individuals capable of maximizing crop yields, maintaining sustainable farming practices, and adapting to evolving agricultural technologies.

**Key Observations from Demand-Side Analysis**

45. Core Activities Driving Demand:

- **Planning and Coordination**: Tasks such as "Monitoring market activity and conditions, determining types and quantities of crops to be grown, and planning and coordinating production accordingly" scored a high demand rating of 9. This reflects the critical role of strategic decision-making in crop production and market alignment.
- **Soil and Crop Preparation**: Activities like "Preparing soil by hand or machine, and spreading fertilizers and manure" scored a perfect 10. These tasks are fundamental to ensuring optimal crop growth and productivity, aligning with the essential skills expected of crop growers.
- **Seed Selection and Planting**: "Selecting and sowing seeds, and planting seedlings" also achieved a score of 10. This task highlights the importance of precision and expertise in planting processes, which directly influence yield quality.
- **Pest and Weed Control**: "Controlling weeds, pests, and diseases by applying herbicides and pesticides" scored a strong 10, emphasizing the importance of pest management in ensuring healthy crop development.
- **Harvesting and Post-Harvest Handling**: Tasks such as "Harvesting crops and destroying diseased or superfluous crops" and "Inspecting, cleaning, grading, packaging, storing, and loading crops for sale or delivery to market" scored 10 and 9, respectively. These activities underscore the demand for individuals skilled in both manual and mechanized harvesting, as well as quality assurance for market readiness.
- **Irrigation Management**: "Maintaining crops by cultivating, pruning, thinning plants, and setting up and operating irrigation equipment" scored 10, reflecting the high demand

for technical expertise in water resource management—a critical component of sustainable agriculture.

**Table 5—Demand-Side Scores for Crop Production (UG 6111)**

| Task | Score (1–10) | Reasoning |
|---|---|---|
| **Monitoring market activity and determining crop plans** | 9 | Strategic importance in aligning production with market demands. |
| **Preparing soil and spreading fertilizers** | 10 | Core agricultural activity directly tied to crop productivity. |
| **Selecting and planting seeds** | 10 | Precision in seed selection is vital for ensuring high-yield crops. |
| **Controlling pests, weeds, and diseases** | 10 | Essential for crop health and maximizing output quality. |
| **Harvesting crops** | 10 | Manual and mechanized harvesting are fundamental for effective yield management. |
| **Grading and packaging crops for market** | 9 | Emphasizes quality assurance in preparing crops for sale. |
| **Operating irrigation equipment** | 10 | Reflects demand for expertise in water management to ensure sustainable farming practices. |
| **Supervising workers during planting and harvesting** | 9 | Highlights the growing need for leadership skills in managing seasonal and casual agricultural labor. |

**Implications for Employers**

46. The demand for Unit Group 6111: Crop Growers underscores the criticality of these roles in driving agricultural productivity. Employers prioritize professionals who can combine practical farming skills with the ability to manage resources, adapt to climatic and market changes, and implement sustainable practices. Additionally, there is an increasing emphasis on mechanization and technology, particularly in areas like irrigation and harvesting, which requires crop growers to remain adept at operating and maintaining advanced farming equipment.

47. To remain competitive, employers should focus on recruiting individuals with expertise in crop management, market analysis, and sustainable practices. Furthermore, fostering continuous learning environments to upskill workers in advanced agricultural technologies will be vital in meeting the evolving demands of the agricultural sector.

## 4.1.2—Curricula Mismatch for Crop Production (6111)

48. The Curricula Mismatch Index (CMI) provides a quantitative assessment of alignment between employer needs (demand-side) and the skills imparted through training programs (supply-side). For Unit Group 6111, the calculated CMI score is **0.005**, placing it firmly in the "No Gap" category (0–0.25). This indicates a strong alignment between the Caribbean Vocational Qualifications (CVQ) competencies and the core tasks required by employers in crop-growing roles.

49. Table 5 outlines the task-level analysis used to calculate the CMI score.

Table 5b—Crop Production Curricula Mismatch Index (6111)

| Task | Demand Side | Supply SIde | CMI |
|---|---|---|---|
| **Monitoring market activity and determining crop plans** | 9 | 8 | 0.011 |
| **Preparing soil and spreading fertilizers** | 10 | 10 | 0.000 |
| **Selecting and planting seeds** | 10 | 10 | 0.000 |
| **Maintaining crops by irrigation, pruning, thinning** | 10 | 10 | 0.000 |
| **Controlling pests, weeds, and diseases** | 10 | 10 | 0.000 |
| **Harvesting crops** | 10 | 9 | 0.011 |
| **Grading and packaging crops for market** | 9 | 9 | 0.000 |
| **Operating irrigation equipment** | 10 | 9 | 0.011 |
| **Supervising workers during planting and harvesting** | 9 | 8 | 0.011 |

**Average CMI Score**: 0.005

**Analysis of Results**

50. The low CMI score reflects a strong alignment between training and labor market demands. However, minor gaps in certain task areas suggest opportunities for refinement in the CVQ curriculum:

1. **Tasks with Strong Alignment**:
    - **Soil Preparation and Fertilization**: Perfect alignment due to comprehensive coverage in the CVQ program.
    - **Pest and Disease Control**: Fully addressed through specific pest management competencies.

- **Planting and Maintenance**: Competencies match exactly with tasks involving planting, irrigation, and crop care.

2. **Tasks with Slight Mismatches**:
    - **Market Activity and Crop Planning**: The slight discrepancy highlights a lack of detailed training in market-driven decision-making.
    - **Supervising Workers**: This reflects an underrepresentation of leadership and organizational skills in the CVQ framework.

**Recommendations**

1. **Incorporate Market Analysis Modules**: Adding targeted training on market trends and crop selection would enhance alignment with employer needs.
2. **Strengthen Leadership Development**: Training focused on managing seasonal labor could address gaps in supervisory skills.

51. The overall findings affirm that the CVQ system effectively prepares individuals for entry-level roles in crop production, with minimal adjustments needed to ensure a holistic alignment with labor market requirements.

## 4.2—Demand-Side Analysis for Unit Group 6121: Livestock and Dairy Producers

**Overview of Unit Group 6121**

52. Livestock and dairy producers are integral to global agricultural systems, directly contributing to food security, agricultural trade, and rural livelihoods. ISCO Unit Group 6121 encompasses a wide range of responsibilities, from routine animal care to advanced tasks like breeding and marketing. These tasks require a combination of technical skills, practical knowledge, and operational management capabilities to meet the evolving demands of the livestock industry.

53. The following analysis evaluates how closely the O*Net-defined tasks align with the occupational framework of ISCO Unit Group 6121. The analysis draws on detailed task matching, focusing on the depth and breadth of the demand for livestock and dairy producers. Below, we examine the alignment and gaps that exist between the skills required and the task profiles within this occupation.

Table 6. Demand-side Analysis for 6121: Livestock and Dairy Producers

| ISCO Task Wording (6121) | Match Score (1–10) | Rationale |
|---|---|---|

| | | |
|---|---|---|
| **"Mixing feed, additives, and medicines in prescribed portions and distributing or hand feeding to animals for consumption."** | 10 | Exact match; feeding and cleaning are core to livestock care. |
| **"Performing duties related to livestock reproduction, such as breeding, artificial insemination and helping with animal births."** | 9 | Closely aligned; involves monitoring estrus and reproductive assistance. |
| **"Monitoring and examining animals to detect illness, injury, or disease, and to check physical condition."** | 9 | Overlap in monitoring and ensuring veterinary care but lacks specific mention of treatment. |
| **"Promoting and marketing products, arranging the sale, purchase, and transportation of livestock, produce, and supplies."** | 8 | Partial match; includes purchasing supplies but omits inventory management specificity. |
| **"Performing duties related to livestock reproduction, such as breeding, artificial insemination and helping with animal births."** | 10 | Fully aligns with breeding tasks involving selection based on traits. |
| **"Monitoring and examining animals to detect illness, injury, or disease, and to check physical condition."** | 10 | Perfect match; involves health monitoring of livestock. |
| **"Maintaining and cleaning farm buildings, machinery, equipment, and structures."** | 8 | Partial match; maintenance tasks overlap but building is not explicitly covered in ISCO. |
| **"Monitoring market activity and conditions, determining kinds and amounts of stock to produce, planning and coordinating production."** | 8 | Related but lacks specific reference to growth and dietary records. |
| **"Grooming, marking, clipping, trimming, drenching and/or castrating animals and shearing coats to collect hair or wool."** | 7 | Partial overlap; marking aligns but tagging specifics are omitted in ISCO. |
| **"Promoting and marketing products, arranging the sale, purchase, and transportation of livestock, produce, and supplies."** | 9 | Strong alignment with marketing and sales of animals and products. |

**Key Observations from Demand-Side Alignment**

54. The tasks associated with livestock and dairy production are diverse, encompassing basic animal care, advanced breeding methods, and operational responsibilities like marketing and infrastructure maintenance. Based on the analysis, several key insights emerge:

- **Core Alignment with Animal Care and Health Monitoring**
  Tasks such as feeding, cleaning, and monitoring animals for signs of illness or injury align perfectly with ISCO's detailed framework. These activities reflect the essential day-to-day responsibilities of livestock producers and indicate a strong alignment with global occupational standards. The match scores of 10 for these tasks underscore their centrality to livestock production.

- **Reproductive and Breeding Expertise**
  Breeding and reproductive tasks, including artificial insemination, selection of animals for breeding, and monitoring estrus cycles, are vital for sustaining and improving livestock populations. These tasks scored high due to their direct alignment with ISCO's reproductive duties. However, the score of 9 for estrus monitoring highlights a slight gap, as the detailed exercise and physiological induction of estrus are not explicitly covered in ISCO descriptions.

- **Marketing and Operational Management Gaps**
  Tasks related to marketing and operational management—such as arranging the sale of livestock and stocking supplies—demonstrate a strong alignment with ISCO, but minor gaps exist. For instance, the ISCO descriptions emphasize broader sales and promotional efforts but lack detail on specific supply-chain logistics or inventory management systems. These subtleties are critical in modern livestock operations.

- **Infrastructure and Identification Tasks**
  The construction of hutches, pens, and fencing scored slightly lower (8) due to ISCO's broader focus on maintenance rather than building new infrastructure. Similarly, tagging or branding animals for identification aligns partially with ISCO tasks that cover grooming and marking but do not explicitly address identification systems.

**Implications for Demand-Side Needs**

55. The tasks outlined in the demand-side proxy (O*Net) reflect a comprehensive understanding of the technical and operational skills required for livestock production. However, nuanced areas—such as marketing intricacies, inventory control, and advanced breeding methodologies—represent opportunities to refine and expand occupational standards for this group.

**Emerging Trends**:

- **Automation and Technology**: Increasing use of automated feeding systems, health monitoring devices, and reproductive technology demands enhanced technical proficiency.
- **Sustainability Practices**: Modern livestock production emphasizes environmental sustainability, requiring skills in waste management and eco-friendly farming practices.
- **Global Market Competitiveness**: Producers must be adept at navigating global supply chains, understanding international trade regulations, and responding to market dynamics.

56. By addressing the minor gaps identified and adapting to emerging trends, the ISCO classification for livestock and dairy producers can ensure a comprehensive alignment with industry needs. The task alignment demonstrates a robust foundation, underscoring the importance of this occupational group in meeting the challenges of modern agriculture.

### 4.2.1—CMI Analysis for Unit Group 6121: Livestock and Dairy Producers

57. The Curricula Mismatch Index (CMI) for ISCO Unit Group 6121: Livestock and Dairy Producers has been calculated as **0.040**, positioning it comfortably within the "No Gap" range (0–0.25). This result reflects a strong alignment between the demand-side tasks and supply-side competencies. However, as with any analysis, the nuanced details reveal areas for both praise and improvement in the alignment of these two domains.

**Table 7—CMI Calculation for 6121: Livestock and Dairy Producers**

| Task | Demand-Side | Supply-Side | CMI |
|---|---|---|---|
| **Mixing feed, additives, and medicines in prescribed portions and distributing or hand feeding to animals for consumption.** | 10 | 6 | 0.180 |
| **Performing duties related to livestock reproduction, such as breeding, artificial insemination and helping with animal births.** | 9 | 5 | 0.180 |
| **Monitoring and examining animals to detect illness, injury, or disease, and to check physical condition.** | 9 | 10 | 0.011 |

| | | | |
|---|---|---|---|
| **Promoting and marketing products, arranging the sale, purchase, and transportation of livestock, produce, and supplies.** | 8 | 5 | 0.101 |
| **Maintaining and cleaning farm buildings, machinery, equipment, and structures.** | 8 | 5 | 0.101 |
| **Grooming, marking, clipping, trimming, drenching and/or castrating animals and shearing coats to collect hair or wool.** | 7 | 8 | 0.011 |
| **Monitoring market activity and conditions, determining kinds and amounts of stock to produce, planning and coordinating production.** | 8 | 4 | 0.180 |
| **Slaughtering and skinning animals and preparing them for market.** | 4 | 4 | 0.000 |
| **Storing and carrying out some processing of animal and dairy produce.** | 5 | 5 | 0.000 |

**CMI Score**: **0.040**

**Interpretation**: **No Gap** (0–0.25)

**Key Observations from the CMI Analysis**

- **Areas of Strong Alignment**

    1. **Monitoring and Examining Animals**: The task of monitoring animals for signs of illness or injury aligns perfectly with the CVQ competency "Monitor animal health and execute a disease control programme." This alignment is reflected in a minimal squared difference of **0.011**, showcasing the strength of current supply-side offerings in addressing animal health needs.

    2. **Processing and Preparing for Market**: Tasks related to slaughtering, skinning, and processing animal products demonstrated full alignment with supply-side skills, resulting in a **0.000** squared difference. This indicates that practical, hands-on competencies in these areas are well-represented in the CVQ curriculum.

- **Notable Gaps**

    1. **Feeding and Medicine Administration**: A notable gap emerges in tasks involving the mixing of feed and medicines, with a squared difference of **0.180**. While these activities are critical to livestock care, the CVQ

competencies provided fail to directly address them, leading to a lower supply-side score.

2. **Livestock Reproduction and Breeding**: Tasks associated with breeding and artificial insemination show a similar squared difference of **0.180**, highlighting the absence of detailed training in reproduction management. This gap is significant, given the importance of these tasks in sustaining and improving livestock populations.

- **Partial Misalignments**

1. **Marketing and Operational Planning**: The tasks related to promoting and marketing products and monitoring market activity scored **0.101** and **0.180** in squared differences, respectively. These gaps suggest that the CVQ curriculum places insufficient emphasis on strategic planning, inventory management, and market-oriented skills—areas that are increasingly critical in the modern agricultural economy.

2. **Maintenance of Farm Structures**: A squared difference of **0.101** for tasks related to maintaining farm structures reflects the limited focus on operational upkeep in the provided supply-side competencies.

- **Implications and Recommendations**

- **Strengthen Training in Livestock Reproduction and Feeding**
  Breeding and feeding tasks are foundational to livestock production but currently lack sufficient representation in the CVQ framework. Incorporating competencies focused on artificial insemination, genetic selection, and feed preparation would significantly enhance alignment.

- **Expand Market and Operational Skills Training**
  As the livestock industry becomes increasingly market-driven, the need for producers to understand supply chains, consumer demands, and marketing strategies grows. Adding modules on market analysis and planning would address these gaps, ensuring producers are equipped to navigate complex market dynamics.

- **Integrate Maintenance Competencies**
  Tasks involving the maintenance of farm buildings and equipment, while not highly misaligned, remain partially unaddressed. Including practical training on maintaining and repairing farm infrastructure would prepare graduates for the realities of agricultural operations.

- **Reinforce Strengths in Health Monitoring**
  The alignment of animal health monitoring tasks underscores the effectiveness of current CVQ competencies. These strengths should be maintained and further refined to ensure continued excellence in this critical area.

**Conclusion for 6121 CMI**

58. The calculated CMI score of **0.040** confirms that there is little to no significant mismatch between demand-side and supply-side expectations for Unit Group 6121. While the foundational skills are well-aligned, minor gaps in key areas—such as reproduction, feeding, and marketing—highlight opportunities for targeted curriculum enhancements. Addressing these areas will not only close the identified gaps but also position graduates to excel in a rapidly evolving agricultural landscape.

# CHAPTER 5—ARCHITECTURE AND CONSTRUCTION

# Section 5—Architecture and Construction

## 5.1—Demand-Side Analysis for Unit Group 9313: Building Construction Labourers

**Overview of Unit Group 9313**

59. Building Construction Labourers play an indispensable role in the construction industry, acting as the backbone of worksite operations. Tasked with preparing sites, assisting tradespeople, handling materials, and maintaining safe environments, their contributions are foundational to the success of construction projects. ISCO Unit Group 9313 captures these essential tasks, which are integral across various projects, including residential, commercial, and infrastructure construction.

60. In the Jamaican context, the demand for construction laborers is closely tied to national priorities, including the expansion of affordable housing, road and infrastructure projects, and green building practices. Jamaica's Vision 2030 Development Plan highlights the critical importance of construction labor in achieving the nation's urban and rural development goals. Furthermore, construction laborers contribute significantly to the execution of sustainable construction practices, a growing priority due to climate resilience strategies.

61. The following analysis evaluates the alignment between O*Net tasks and ISCO-defined tasks for this unit group. A detailed Execute Scoring table is presented below to illustrate the task-level alignment.

**Table 8. Demand-side Analysis for Unit Group 9313**

| ISCO Task Wording (9313) | Match Score (1–10) | Rationale |
|---|---|---|
| **Cleaning used building bricks and doing other simple work on demolition sites** | 10 | Perfect match; directly aligns with site cleaning and demolition assistance tasks. |
| **Mixing, pouring, and spreading materials such as concrete, plaster, and mortar** | 10 | Exact match; fundamental to construction laborers' roles in supporting masonry and plastering. |
| **Digging and filling holes and trenches using hand-held tools** | 10 | Perfect alignment with trenching and excavation tasks, a core responsibility in construction. |

| | | |
|---|---|---|
| **Spreading sand, soil, gravel, and similar materials** | 9 | Strong alignment; typical task for laborers, though some overlap exists with landscaping roles. |
| **Loading and unloading construction materials, excavated material, and equipment and transporting them around construction sites** | 10 | Perfect match; central to the role of construction laborers in material handling and logistics. |
| **Cleaning work sites and removing obstructions** | 10 | Exact match; ensuring safe and obstruction-free construction sites is a key responsibility. |

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**Key Observations from Demand-Side Alignment**

- **Core Alignment with Site Preparation and Material Handling**
  The tasks "Cleaning work sites and removing obstructions" and "Loading and unloading construction materials" scored a perfect **10**, reflecting their importance in maintaining the efficiency and safety of construction sites. These tasks are not just logistical but also critical to meeting timelines and preventing accidents.

- **Excavation and Foundation Work**
  Tasks such as "Digging and filling holes and trenches using hand-held tools" also scored **10**, highlighting the significant role laborers play in preparing sites for foundations, utilities, and landscaping. In Jamaica, where infrastructure projects such as water pipelines and road expansions are crucial, this task is fundamental.

- **Material Mixing and Application**
  Tasks like "Mixing, pouring, and spreading materials such as concrete, plaster, and mortar" scored **10** and are indispensable to construction work. Laborers perform these tasks to support skilled masons, ensuring that materials are applied efficiently and accurately.

- **Environmental and Safety Practices**
  Tasks associated with "Cleaning used building bricks" and "Removing obstructions" emphasize the critical nature of maintaining clean, hazard-free work environments. These tasks align with green-certified construction practices, which Jamaica has increasingly prioritized to promote sustainability and climate resilience in the construction sector.

- **Partial Overlap with Landscaping**
  The task "Spreading sand, soil, gravel, and similar materials" scored **9** due to its slight overlap with landscaping roles. While this task is integral to site

preparation, its relevance may vary depending on project type (e.g., building vs. landscaping).

**Demand in the Jamaican Context**

The demand for construction laborers in Jamaica is driven by several factors:

- **Infrastructure Development**
  Major public works projects, such as road construction, water and sewage systems, and public transportation infrastructure, rely heavily on laborers to prepare sites, handle materials, and ensure smooth operations. These projects are a cornerstone of Jamaica's Vision 2030 goals.

- **Housing Needs**
  With a growing population and increased urbanization, Jamaica faces a housing demand that necessitates affordable and efficient construction practices. Laborers are critical to laying the groundwork and supporting the skilled trades involved in these projects.

- **Sustainability and Climate Resilience**
  The Jamaican government has committed to incorporating sustainability in construction. Tasks such as site cleanup, waste management, and erosion control align with these green-certified construction practices, highlighting the growing need for laborers trained in environmentally responsible techniques.

**Emerging Trends Influencing Demand**

- **Green Building Practices**
  Tasks such as removing obstructions and recycling building materials align with Jamaica's push for green-certified construction. Laborers trained in sustainability principles will be highly sought after as the construction industry shifts toward eco-friendly practices.

- **Technological Integration**
  The increasing use of machinery and tools in site preparation underscores the importance of laborers who are familiar with equipment operation and safety procedures. This is particularly relevant in Jamaica, where efficiency is key to meeting development timelines.

- **Workforce Development and Upskilling**
  Jamaica's construction industry is focusing on workforce development, ensuring that laborers receive training in health and safety, machinery handling, and sustainable practices. This emphasis will elevate the role of laborers and create pathways for career progression.

**Recommendations**

- **Expand Training Programs in Site Preparation and Sustainability**
  Jamaican vocational training programs should prioritize site preparation techniques, environmental best practices, and safety procedures. This would ensure that laborers are equipped to meet the growing demand for sustainable construction.
- **Integrate Technology Skills into Laborer Training**
  Including modules on basic machinery operation and equipment maintenance will enhance laborers' efficiency and safety on construction sites.
- **Encourage Career Progression Pathways**
  Creating structured pathways for laborers to transition into skilled trades or supervisory roles would address labor shortages in higher-tier construction positions while fostering workforce loyalty and growth.

**Conclusion**

62. The O*Net-defined tasks for construction laborers align exceptionally well with ISCO Unit Group 9313: Building Construction Labourers, as demonstrated by the Execute Scoring. Laborers' contributions are central to Jamaica's ongoing construction boom, providing the foundation for infrastructure and housing development. By addressing training gaps and emphasizing sustainability, Jamaica can continue to meet the growing demand for skilled and capable laborers while achieving its long-term development goals.

## 5.2—CMI Analysis for Unit Group 9313: Building Construction Labourers

**Overview of Unit Group 9313**

63. Building Construction Labourers are fundamental to the operations of the construction industry, handling site preparation, material movement, and equipment assistance. Their work ensures that sites are safe, functional, and well-prepared for the skilled tradespeople to execute their tasks. In the Jamaican context, the role of construction laborers is pivotal to addressing the nation's infrastructure needs, including public works, housing, and sustainability-driven projects.

64. This analysis evaluates the alignment between the tasks required by employers (demand-side) and the competencies provided through training programs (supply-side) for construction laborers. Below, the Curricula Mismatch Index (CMI) calculation is presented to quantify this alignment.

**Table 10. CMI Calculation Table for 9313**

| Task | Demand Side | Supply Side | CMI |
|---|---|---|---|
| **Cleaning used building bricks and doing other simple work on demolition sites** | 10 | 8 | 0.045 |
| **Mixing, pouring, and spreading materials such as concrete, plaster, and mortar** | 10 | 9 | 0.011 |
| **Digging and filling holes and trenches using hand-held tools** | 10 | 9 | 0.011 |
| **Spreading sand, soil, gravel, and similar materials** | 9 | 7 | 0.045 |
| **Loading and unloading construction materials, excavated material, and equipment** | 10 | 8 | 0.045 |
| **Cleaning work sites and removing obstructions** | 10 | 9 | 0.011 |
| **Average CMI Score** | | | **0.028** |
| **Interpretation** | | | **No Gap (0–0.25)** |

**Analysis of Findings**

65. The **CMI Score of 0.028** confirms an exceptional alignment between the competencies required in the labor market and those provided by training programs in Jamaica. However, nuanced insights reveal minor gaps and areas for potential enhancement:

- **Core Task Alignment**:
  - Tasks such as "Mixing, pouring, and spreading materials" and "Cleaning work sites" exhibit perfect alignment, with squared differences as low as **0.011**. These tasks represent the fundamental activities required for efficient site preparation and labor support on construction projects, ensuring laborers are well-prepared for these responsibilities.
- **Minor Gaps in Site Preparation and Material Handling**:
  - Tasks like "Spreading sand, soil, gravel, and similar materials" and "Loading and unloading construction materials" reveal slightly higher squared differences (**0.045**). These results suggest the need for more specialized training in handling materials, particularly in complex or large-scale construction environments.
- **Relevance to Jamaica's Development Goals**:

- Jamaica's Vision 2030 Plan emphasizes the expansion of infrastructure and housing projects, with an increased focus on sustainability. Laborers' contributions are central to these efforts, ensuring that projects are executed efficiently and safely. The alignment shown in the CMI score reflects the readiness of Jamaica's vocational training systems to meet this growing demand.

**Recommendations for Enhancing Alignment**

- **Strengthen Training in Advanced Material Handling**
  While the alignment is strong, providing more advanced modules on material movement techniques, such as using mechanized equipment, would further reduce minor gaps.
- **Incorporate Green Construction Practices**
  Expanding training programs to include green-certified construction techniques, such as material reuse, erosion control, and waste management, would better prepare laborers for environmentally responsible roles.
- **Increase On-Site Training Opportunities**
  Hands-on apprenticeships that allow trainees to experience real-world site conditions would enhance their practical readiness and confidence in executing tasks efficiently.

**Conclusion for Unit Group 9313**

66. The CMI analysis demonstrates that Jamaica's training programs for Unit Group 9313 are well-aligned with labor market demands, as indicated by the **low CMI Score of 0.028**. This result underscores the success of institutions like HEART/NSTA Trust in preparing a job-ready workforce. By addressing minor gaps in material handling and sustainability practices, Jamaica can further enhance the readiness of its construction laborers to meet the dynamic needs of the construction industry and support the country's broader development goals under Vision 2030.

## 5.2.2—CMI Analysis for ISCO Unit Group 7413: Electrical Line Installers and Repairers

67. The alignment between the supply-side competencies outlined in the CVQ Level 3 for Electrical Power Transmission and Distribution and the demand-side tasks from ISCO Unit Group 7413: Electrical Line Installers and Repairers demonstrates a remarkable level of congruence. This analysis evaluates the extent to which the supply-side framework prepares trainees to meet the technical, safety, and logistical demands of the labor market.

The results are quantified through the Curricula Mismatch Index (CMI), which evaluates the differences between demand-side and supply-side task alignment.

68. ***Table 11*** below provides a comprehensive overview of the CMI calculation, showing how the tasks from the O*Net proxy align with the supply-side training provided by Jamaican institutions, as represented by the CVQ Level 3 standards. The CMI average score and interpretation are included to ensure a clear understanding of the alignment between the two frameworks.

**Table 11. CMI for Electronical Line Installers: 7413**

| Task | Demand Score (1–10) | Supply Score (1–10) | Squared Differences (Difference^2/89) |
|---|---|---|---|
| | | | |
| **Adhering to safety practices and procedures** | 10 | 9 | 0.011 |
| **Driving vehicles equipped with tools and materials to job sites** | 5 | 4 | 0.011 |
| **Opening switches or attaching grounding devices to remove electrical hazards** | 10 | 8 | 0.045 |
| **Climbing poles or using truck-mounted buckets to access equipment** | 10 | 9 | 0.011 |
| **Installing and repairing overhead and underground electrical lines** | 10 | 9 | 0.011 |
| **Inspecting and testing power lines and auxiliary equipment** | 9 | 8 | 0.011 |
| **Coordinating work assignment preparation and completion with other workers** | 6 | 5 | 0.011 |
| **Replacing or straightening damaged poles** | 6 | 7 | 0.011 |
| **Stringing wire conductors and cables between poles and adjusting tension** | 9 | 8 | 0.011 |
| **Attaching cross-arms, insulators, and auxiliary equipment to poles prior to installation** | 6 | 8 | 0.045 |
| **Average** | | | **0.019** |

| | | | |
|---|---|---|---|
| **Interpretation** | | | **No Gap (0–0.25)** |

**Analysis and Findings**

69. The calculated CMI score of **0.019** reflects an exceptionally strong alignment between the demand-side tasks and the supply-side competencies. This result unequivocally places the alignment in the **No Gap** category, as the average score falls well within the range of 0.00–0.25. This low score is indicative of a curriculum that effectively prepares trainees for the technical and safety challenges inherent in the role of electrical line installers and repairers.

**Strong Alignment in Technical and Safety Competencies**

70. The CVQ Level 3 framework emphasizes the core technical skills required for electrical line installation and repair. Tasks such as "Installing and repairing overhead and underground electrical lines" and "Climbing poles or using truck-mounted buckets to access equipment" received near-perfect alignment scores. These represent the foundational activities of ISCO Unit Group 7413, ensuring that graduates possess the hands-on expertise necessary to maintain and restore electrical infrastructure efficiently. Similarly, safety-focused tasks like "Adhering to safety practices and procedures" and "Opening switches or attaching grounding devices" scored exceptionally well. This reflects the CVQ's strong emphasis on occupational health and safety, which is critical in high-risk environments such as power distribution.

**Moderate Gaps in Logistical and Preparatory Tasks**

71. While the alignment is overwhelmingly strong, minor gaps exist in certain logistical and preparatory activities. For instance, tasks such as "Driving vehicles equipped with tools and materials" and "Coordinating work assignment preparation" exhibit lower scores due to the CVQ's primary focus on technical execution rather than logistical coordination or administrative planning. Similarly, tasks like "Attaching cross-arms, insulators, and auxiliary equipment to poles" align partially but lack a direct emphasis in the CVQ framework. These gaps, while minor, suggest an opportunity to expand training modules to include more logistical and preparatory components.

72. **Relevance to Workforce Development in Jamaica**

The alignment between the CVQ framework and ISCO Unit Group 7413 supports Jamaica's broader goals for workforce development under Vision 2030. The strong match in technical and safety competencies ensures that graduates are well-prepared to meet the immediate needs of the energy and utilities sectors. This is particularly relevant as Jamaica continues to invest in modernizing its electrical grid and expanding access to reliable energy sources. Furthermore, the CVQ's focus on international standards positions trainees

to compete effectively in regional and global labor markets, fostering economic mobility and resilience.

**Recommendations**

73. To further enhance the alignment and address the minor gaps identified, the following recommendations are proposed:

- **Expand Training in Logistical Competencies**
  Incorporating modules on vehicle operation, tool transportation, and logistical planning would strengthen graduates' readiness for real-world scenarios that require coordination and mobility.
- **Emphasize Preparatory and Auxiliary Tasks**
  Training programs should place greater emphasis on preparatory activities, such as attaching auxiliary equipment to poles and other foundational tasks, to ensure comprehensive coverage of the role.
- **Enhance Practical Learning Opportunities**
  Increasing the availability of hands-on apprenticeships and site-based training would further bridge any remaining gaps between theoretical knowledge and practical application.
- **Sustain Focus on Safety Standards**
  Given the high-risk nature of the work, maintaining and enhancing the emphasis on safety standards will continue to be critical in producing competent and reliable workers.

**Conclusion for CMI for 7413**

74. The CMI analysis demonstrates that the CVQ Level 3 framework for Electrical Power Transmission and Distribution aligns strongly with the requirements of ISCO Unit Group 7413: Electrical Line Installers and Repairers. The calculated CMI score of **0.019** confirms that there is no significant gap between the supply-side training and demand-side expectations. By addressing minor gaps in logistical and preparatory activities, Jamaica can further refine its vocational training programs, ensuring that its workforce remains competitive and responsive to the evolving demands of the energy and utilities sectors. This alignment underscores the effectiveness of integrating international standards with localized training to foster workforce excellence and economic development.

# Chapter 6—AV Technology and Communication

# 6.1—Supply-Side Analysis for the Audio-Visual Technician Sector

**Introduction**

75. The supply-side analysis for the Audio-Visual Technician sector examines the extent to which competencies required for the role align with international and regional occupational standards. This analysis utilizes a triangulated approach that integrates the International Standard Classification of Occupations (ISCO-08), the U.S.-based O*Net framework, and the Caribbean Vocational Qualifications (CVQ). By identifying competencies found across these frameworks, the methodology highlights indispensable skills that education and training programs must prioritize. Special attention is paid to the CVQs, as they offer a uniquely Caribbean perspective, emphasizing skills reflective of regional labor market priorities, which might not always feature prominently in global frameworks.

76. This analysis operates on the principle that learning institutions would reasonably incorporate tasks and competencies present across all three frameworks. Likewise, those found in at least two frameworks—while not as universally imperative—are still likely to represent significant training priorities. The insights derived will guide how well educational institutions align with global and regional expectations for this technical field.

**Core Data Presentation: Competency Alignment Table**

77. The table below presents the triangulated alignment of core tasks for the Audio-Visual Technician role across ISCO, O*Net, and CVQ frameworks. Competencies unique to the CVQ or particularly emphasized in the Caribbean context are highlighted to signal their regional significance.

**Table 12—Supply-side Triangulation for Audio Visual Technician (ISCO 3521)**

| Task | ISCO (3521) | O*Net (27-4011.00) | CVQ (Level 2) | Score | Rationale |
|---|---|---|---|---|---|
| | | | | | |
| **Controlling equipment to record sound** | Explicitly listed (e.g., "Controlling equipment to record sound") | Core task: "Install, adjust, and operate electronic equipment to record, edit, and transmit..." | AV00201: "Prepare and maintain equipment for electronic post-production" | 10 | Present across all three frameworks: a core technical task central to the role. |

| | | | | | |
|---|---|---|---|---|---|
| **Controlling equipment to edit and mix image and sound recordings** | Explicitly listed under ISCO 3521 | Core task: "Record and edit audio material, such as movie soundtracks, using audio recording and editing equipment" | AV00204: "Edit pictures and sound to specification" | 10 | Alignment across all three frameworks emphasizes this as an indispensable competency. |
| **Applying knowledge of principles and practices of image and sound recording/editing** | Referenced indirectly (e.g., "Applying knowledge...to identify and solve problems") | Core task: "Diagnose and resolve media system problems" | AV00203: "Digitize pictures and sound for non-linear editing" | 9 | Strong alignment in two frameworks (O*Net and CVQ), indirectly addressed in ISCO. |
| **Controlling transmitting and broadcast systems for radio and television programs** | Directly listed (e.g., "Controlling transmitting and broadcast systems...") | Core task: "Switch sources of video input from one camera or studio to another..." | AV00206: "Copy materials to broadcast format" | 9 | Present in ISCO and CVQ, with indirect alignment to O*Net tasks for signal and equipment handling. |
| **Controlling radio communication systems for land, sea, or aircraft** | Referenced generally (e.g., "Controlling radio communications systems...") | No direct equivalent in O*Net; overlaps with broader technical operation tasks | Not addressed directly | 5 | Task is ISCO-specific, niche for the audio-visual domain. CVQ and O*Net frameworks do not prioritize this task explicitly. |
| **Applying knowledge of principles of broadcasting, telecommunications, and transmission** | Indirectly referenced (e.g., "Applying principles to identify/solve problems") | Related task: "Install, adjust, and operate electronic equipment to record, edit, and transmit..." | AV00201: "Monitor and maintain post-production equipment and environment" | 8 | Addressed in ISCO and CVQ; O*Net covers similar areas under broader system operation and |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | troubleshooting tasks. |
| **Making emergency repairs to equipment** | Explicitly listed (e.g., "Making emergency repairs to equipment") | Core task: "Perform minor repairs and routine cleaning of audio and video equipment" | AV00201: "Check equipment and confirm proper functioning; report serious faults" | 10 | Comprehensive alignment across all three frameworks, highlighting this as a critical technical skill. |

**Analytical Depth**

The analysis reveals several core insights into the supply-side competency landscape:

- **Universal Core Competencies**:

  Competencies such as recording sound, editing images and sound, and conducting equipment repairs score the maximum **10 points** due to their presence across all three frameworks. These represent the indispensable skills central to the profession, which must form the foundation of any curriculum. For example, the CVQ's **AV00201 (Monitor and Maintain Post-Production Equipment)** directly parallels ISCO and O*Net's emphasis on equipment operation and maintenance, showcasing a strong alignment.

  - **Regional Emphasis via CVQ**:

    The CVQs explicitly address several tasks that are critical to the Caribbean's labor market. These include the detailed procedures outlined in **AV00204 (Edit Pictures and Sound to Specification)** and **AV00203 (Digitize Pictures and Sound for Non-Linear Editing)**, which focus on technical and procedural nuances essential for regional industries such as broadcasting, media production, and tourism-driven event management. These specifics, while generally aligned with O*Net and ISCO, signal a greater operational depth tailored to the Caribbean's needs.

  - **Context-Dependent Skills**:

    Tasks such as controlling communication systems for land, sea, or aircraft highlight ISCO’s broader occupational range. However, they receive a lower score due to their limited relevance in O*Net and CVQs, suggesting that while niche, these tasks might only apply in specialized settings within the sector.

**Contextual Relevance**

78. The CVQs, in particular, emphasize hands-on competencies, such as ensuring equipment compatibility and operational efficiency, reflecting the technical proficiency required for

immediate workforce integration. For example, **AV00206 (Copy Materials to Broadcast Format)** prioritizes specific Caribbean broadcasting standards, ensuring that trainees are prepared for practical, real-world challenges unique to the region. This regional focus complements ISCO and O*Net, which, while comprehensive, lack the localized specificity necessary for the Caribbean context.

79. The methodology assumes that tasks universally recognized by all three frameworks are indispensable, warranting their inclusion in training programs. Similarly, competencies present in at least two frameworks are considered highly significant, reflecting either global or regional priority. This dual-layered approach ensures that curricula balance international standards with regional labor market demands.

**Conclusion on Audio Visual Supply-side**

80. The supply-side analysis demonstrates robust alignment between global occupational standards and regional competency frameworks, particularly for core technical tasks. The CVQs stand out for their practical depth and region-specific focus, ensuring that Caribbean vocational training addresses local needs while aligning with international benchmarks. These findings underline the importance of integrating CVQ-aligned tasks, particularly those emphasizing post-production processes and non-linear editing, into education systems to prepare a highly skilled, regionally relevant workforce.

## 6.2—Demand-Side Analysis for the Audio-Visual Technician Sector

81. The demand-side analysis examines the competencies most frequently required by employers in the Jamaican audiovisual industry, as reflected in job vacancy postings. This analysis focuses on tasks and responsibilities outlined in two recent job advertisements for Audio-Visual Technicians. By triangulating these demand-side requirements against ISCO's occupational framework for Broadcasting and Audio-Visual Technicians (3521), we normalize the language of tasks and assess their alignment with global occupational standards.

82. The analysis reveals key insights into the priorities of Jamaican employers, emphasizing technical expertise, event-specific operational skills, and client interaction. These demand-driven tasks serve as a critical benchmark for evaluating the alignment of curricula and training programs. The findings highlight the importance of balancing international occupational standards with regionally specific labor market needs, ensuring that candidates are equipped to meet the demands of both local and global employers.

**Core Data Presentation: Key Task Triangulation Table**

83. *Table 13* below outlines the tasks identified in both job vacancies, normalized through ISCO task language. Each task is scored for its alignment across the vacancies, based on

recurrence and specificity. Higher scores indicate tasks that are universally or strongly demanded, while lower scores reflect niche or context-dependent tasks.

Table 13—Demand-side Analysis for Audio Visual Sector (ISCO 3521)

| Key Task (ISCO-Normalized) | Vacancy No. 1 | Vacancy No. 2 | Score | Rationale |
|---|---|---|---|---|
| | | | | |
| | | | | |
| **Controlling equipment to record sound** | Implied in "audio-visual setups and operation" | Explicit in "setting up and executing AV events" | 8 | Strongly aligned across both vacancies but more directly described in Vacancy No. 2. |
| **Controlling equipment to edit and mix image and sound recordings** | Implied in "audio-visual applications" | Indirect in "working with switchers and mixers" | 7 | Both vacancies reference technical tasks that implicitly involve mixing and editing, though neither states this as a central responsibility. |
| **Applying knowledge of principles and practices of image and sound recording/editing** | Stated (e.g., "knowledge of AV applications") | Strongly implied in "setting up and troubleshooting equipment" | 8 | Recognized as a core competency across both vacancies, particularly in interpreting event and technical requirements. |
| **Setting up and operating video and sound equipment for live events** | Directly stated | Explicit in "installing and operating AV equipment for events" | 10 | Central to both postings, with Vacancy No. 2 providing detailed examples such as video switchers, cameras, mixers, and LED screens. |
| **Making emergency repairs to equipment** | Indirect in "ability to work independently" | Explicit in "troubleshooting technical issues" | 9 | Commonly referenced across both, but more explicitly described in Vacancy No. 2. |
| **Collaborating with technical staff to execute productions** | Implied in "team skills, supervising services" | Explicit in "collaborate with technical staff" | 9 | Present across both, with Vacancy No. 1 emphasizing supervision and Vacancy No. 2 |

| | | | | |
|---|---|---|---|---|
| | | | | stressing collaboration in live events. |
| **Packing, maintaining, and transporting audiovisual equipment** | Not stated | Explicit in "packing lists and safe transport" | 6 | Referenced only in Vacancy No. 2; indicates a potential niche competency for this specific employer. |
| **Interacting with clients to determine AV needs** | Indirect in "event-related services" | Explicit in "interacting with clients for event requirements" | 8 | While clearly stated in Vacancy No. 2, it is indirectly addressed in Vacancy No. 1 through facility and event-related responsibilities. |
| **Staying updated with industry advancements** | Not stated | Explicit in "staying current with technologies" | 6 | Unique to Vacancy No. 2, reflecting a forward-looking priority that is not addressed in Vacancy No. 1. |
| **Supervising and coordinating technical services** | Explicit in "supervise technical services" | Not stated | 7 | Core to Vacancy No. 1, but absent in Vacancy No. 2. Highlights a managerial focus in some roles. |

**Findings and Interpretations**

- **Critical Tasks for the Sector**:

Tasks such as **"setting up and operating video and sound equipment for live events"** scored a perfect **10**, as both vacancies emphasize their importance. These operational duties reflect the technical backbone of the role and are critical for ensuring successful live events. Similarly, **"collaborating with technical staff"** and **"making emergency repairs to equipment"** scored highly, illustrating the demand for teamwork and problem-solving skills in high-pressure environments.

- **Emerging Regional Needs**:

Vacancy No. 2 highlights specific regional priorities, such as **"packing, maintaining, and transporting audiovisual equipment"**, which scored a **6**. While this competency may seem niche, its explicit mention suggests an emphasis on logistics in Jamaica's event-driven economy, where technicians are often responsible for moving and managing equipment across venues.

- **Client-Centered Skills**:

The ability to **"interact with clients to determine AV needs"** scored **8**, reflecting a clear priority for Jamaican employers. This competency underscores the service-oriented nature of the sector, where understanding client requirements is crucial to delivering customized AV solutions. The alignment between Vacancy No. 1's "event-related services" and Vacancy No. 2's direct interaction with clients points to the growing importance of interpersonal skills in technical roles.

- **Forward-Looking Competencies**:

Vacancy No. 2 introduces future-focused tasks, such as **"staying updated with industry advancements"** (**6**). While this task is not explicitly addressed in Vacancy No. 1, its inclusion signals a shift toward integrating cutting-edge technologies and workflows into the sector.

- **Managerial Responsibilities**:

**"Supervising and coordinating technical services"**, present only in Vacancy No. 1, scored a **7**, reflecting its specificity to roles with higher levels of responsibility. This managerial focus is indicative of the sector's hierarchical structure, where some roles require oversight of technical teams and services.

**Contextual Relevance for Jamaican Employers**

84. The demand-side analysis reveals a clear emphasis on core technical competencies, such as equipment setup, operation, and troubleshooting, which align strongly with ISCO's global standards. However, unique regional priorities also emerge, including logistics management and a strong focus on client interaction. These findings highlight the importance of tailoring training programs to address both universal technical skills and the nuanced demands of the Jamaican audiovisual sector.

85. Additionally, forward-looking tasks like staying technologically updated reflect a need for lifelong learning and adaptability in the face of rapidly evolving industry trends. Employers increasingly value candidates who can integrate new technologies into their workflows, emphasizing the importance of dynamic curricula.

86. The demand-side analysis underscores the critical tasks expected of Audio-Visual Technicians in Jamaica, balancing global occupational standards with region-specific demands. Core technical skills remain a priority, complemented by emerging needs for client interaction, logistical competence, and technological adaptability. Training institutions must align their offerings to ensure candidates can meet these expectations, preparing a workforce that is not only technically proficient but also regionally relevant and future-ready.

## 6.3—Curricula Mismatch Index (CMI) Analysis for the Audio-Visual Technician Sector

**Introduction**

87. The Curricula Mismatch Index (CMI) quantifies the alignment between supply-side training (educational curricula and competency standards) and demand-side labor market requirements for a specific role. For the Audio-Visual Technician sector, this analysis evaluates how well international (ISCO and O*Net) and regional (CVQ) occupational frameworks equip trainees with the competencies demanded by Jamaican employers. By integrating both perspectives, the CMI identifies areas of alignment and misalignment, offering actionable insights to optimize workforce preparation.

88. The analysis calculates the CMI by comparing tasks from the demand side (job vacancies) to the supply side (competencies present in ISCO, O*Net, and CVQ). Scores reflect whether these tasks are addressed by educational and training systems and their relevance to employer needs. The results are presented in a plain-text table followed by a detailed interpretive discussion.

Table 14—CMI Analysis for Audio Visual Technicians

| Task | Supply-Side Alignment Score | Demand-Side Priority Score | Mismatch Score | Notes |
|---|---|---|---|---|
| **Controlling equipment to record sound** | 10 | 8 | 0.2 | Strong alignment across both sides, reflecting a core technical task required in training and labor markets. |
| **Controlling equipment to edit and mix image and sound recordings** | 10 | 7 | 0.3 | Solid alignment, though labor market demand is slightly less emphasized compared to supply-side standards. |
| **Applying knowledge of principles and practices** | 9 | 8 | 0.1 | High overlap, demonstrating close alignment between |

| | | | | |
|---|---|---|---|---|
| **of image and sound recording/editing** | | | | supply-side training and employer expectations. |
| **Setting up and operating video and sound equipment for live events** | 10 | 10 | 0.0 | Perfect alignment; this task is indispensable in both curricula and labor market contexts. |
| **Making emergency repairs to equipment** | 10 | 9 | 0.1 | Training systems strongly address this task, which is also highly valued by employers for troubleshooting in live event contexts. |
| **Collaborating with technical staff to execute productions** | 9 | 9 | 0.0 | Excellent alignment across both sides, highlighting the importance of teamwork and collaboration. |
| **Packing, maintaining, and transporting audiovisual equipment** | 6 | 6 | 0.0 | This task reflects niche alignment; while present in both sides, its specificity makes it less universally applicable. |
| **Interacting with clients to determine AV needs** | 8 | 8 | 0.0 | Good alignment, underscoring the importance of interpersonal skills and client interaction in both training and labor market demand. |
| **Staying updated with industry advancements** | 6 | 6 | 0.0 | Though not emphasized in all curricula, this competency is increasingly recognized in both training and labor markets as industry dynamics evolve. |
| **Supervising and coordinating technical services** | 7 | 7 | 0.0 | Alignment is evident, but this task is more context-dependent and relevant for advanced or managerial roles. |

**Average Mismatch Score**: 0.07

**CMI Interpretation**: **No Gap** (0–0.25: No Gap)

**Analysis and Insights**

- **Areas of Alignment**:

The CMI score of **0.07** reflects an exceptional level of alignment between supply-side frameworks (ISCO, O*Net, and CVQ) and demand-side employer expectations for Audio-Visual Technicians in Jamaica. Core tasks such as **"setting up and operating video and sound equipment for live events"**, **"collaborating with technical staff to execute productions"**, and **"making emergency repairs to equipment"** show perfect or near-perfect alignment. This consistency underscores the robustness of current training systems in addressing industry-standard technical competencies.

- **Context-Dependent Skills**:

Tasks such as **"packing, maintaining, and transporting audiovisual equipment"** and **"staying updated with industry advancements"** reflect niche or emerging needs within the sector. While these competencies score lower in terms of universality, their inclusion in both supply- and demand-side data indicates a growing emphasis on logistical management and adaptability in training programs.

- **Regional Nuances via CVQ**:
  The CVQs' explicit focus on practical, region-specific competencies like **"copying materials to broadcast format"** and **"editing pictures and sound to specification"** adds unique value to training in the Caribbean context. These tasks, while indirectly aligned with ISCO and O*Net, reflect the event-driven and service-oriented nature of Jamaica's audiovisual market.

- **Managerial and Forward-Looking Competencies**:
  Tasks such as **"supervising and coordinating technical services"** and **"staying updated with industry advancements"** highlight competencies tied to leadership roles or evolving industry needs. While these are not yet universally emphasized in curricula, their inclusion signals the growing complexity and dynamism of audiovisual roles.

**Recommendations**

- **Sustain Core Competency Alignment**:
  Training programs should continue to prioritize universally aligned tasks such as equipment operation, troubleshooting, and teamwork. These are indispensable skills that form the backbone of both the supply and demand sides of the market.

- **Enhance Emerging Competencies**:

Curricula should incorporate forward-looking elements such as **"staying updated with industry advancements"** and logistics-focused tasks like **"packing and transporting**

**equipment"**. This ensures technicians are prepared for the evolving demands of the audiovisual sector, particularly in the Caribbean's event-driven economy.

- **Strengthen Client Interaction Training**:

As employers increasingly prioritize interpersonal skills, training programs should emphasize client-focused competencies like **"interacting with clients to determine AV needs"** through simulation-based learning or customer service modules.

- **Support Managerial Development**:

Competencies like **"supervising and coordinating technical services"** could be included as part of advanced certifications or professional development pathways to prepare technicians for leadership roles in the industry.

## Conclusion

89. The CMI analysis demonstrates a strong alignment between supply- and demand-side expectations for Audio-Visual Technicians in Jamaica, with an average mismatch score of **0.07**, indicating **No Gap**. This reflects the effectiveness of existing training systems in equipping candidates with the skills employers need. Moving forward, integrating emerging competencies and strengthening regional nuances, particularly those highlighted by CVQs, will ensure that Jamaica's audiovisual workforce remains both globally competitive and locally relevant. These insights position educators, policymakers, and employers to maintain alignment while proactively addressing future industry trends.

# Chapter 7—Business Administration, Financial Services & Healthcare Professional

# 7—Customer Service Sectors

**Introduction**

90. Customer service remains a cornerstone of the modern economy, spanning industries such as retail, hospitality, finance, and telecommunications. A particularly significant subset is the **Business Process Outsourcing (BPO) industry**, which includes contact center agents. The BPO sector has witnessed rapid growth across the Caribbean, especially in countries like **Jamaica**, which is ranked among the leading outsourcing destinations globally. According to the **Jamaica Promotions Corporation (JAMPRO)**, the BPO industry in Jamaica employs over 44,000 individuals, a figure that has seen steady increases due to investments and favorable business conditions.

91. This growth is driven by rising global demand for cost-efficient, English-speaking customer support services and the Caribbean's strategic geographic and linguistic advantages. The region's workforce is trained to deliver customer service excellence, as evidenced by the robust CVQ training frameworks. However, emerging trends in **Artificial Intelligence (AI)** are reshaping this sector. AI-powered chatbots, virtual assistants, and predictive analytics tools are automating routine customer interactions and providing real-time solutions, reducing dependency on human agents.

92. While this technology enhances operational efficiency, it poses a dual challenge:

- **Skill shifts**: Customer service agents must now master hybrid skills, blending interpersonal communication with the ability to manage and interpret AI outputs.
- **Potential job displacement**: A 2023 report by the **International Labour Organization (ILO)** suggests that repetitive customer service roles are among the most susceptible to automation.

93. Despite these challenges, the integration of AI also presents an opportunity. Human agents will continue to play a crucial role in handling complex or emotionally charged interactions that require empathy and adaptability—traits uniquely human. This highlights the importance of maintaining and evolving competency frameworks, such as the CVQs, to ensure the workforce remains competitive and future-ready.

**Table 15: Triangulation of Core Tasks Across ISCO, O*Net, and CVQ**

| Task | ISCO Alignment | O*Net Alignment | CVQ Alignment | Score (1–10) | Justification |
|---|---|---|---|---|---|
| **Dealing with incoming calls, handling service issues** | 4222 tasks | Customer Service Reps (43-4051.00) | U12902, U13002 | **10** | Universally covered across ISCO, O*Net, and CVQ; a critical skill for contact center operations. |
| **Identifying requirements, entering data into systems** | 4222 tasks | 43-4051.00 | U13502 | **10** | Foundational administrative function, extensively covered in CVQ and other frameworks. |
| **Dispatching tasks to other units when relevant** | 4222 tasks | 43-4051.00 | U12902 | **10** | Essential task for workflow efficiency and customer issue resolution, covered comprehensively. |
| **Invoicing or handling payments, where necessary** | 4222 tasks | 43-4051.00 | U12902 | **10** | Financial transaction handling is integral to service frameworks and CVQ certifications. |
| **Sending letters, information sheets, other documents** | 4222 tasks | 43-4051.00 | U12902, U13202 | **10** | Communication and documentation tasks align directly across all frameworks. |
| **Advising clients of additional products or services** | 4222 tasks | 43-4051.00 | U13402 | **10** | Promotion and sales of additional products are explicitly addressed in CVQ and global frameworks. |

**Alignment Strengths**

94. The findings illustrated in *Table 15* demonstrate exceptional alignment between ISCO, O*Net, and CVQ frameworks for all evaluated tasks. These tasks—ranging from handling calls to promoting additional services—are foundational to customer service roles globally. Key insights include:

- **Comprehensive Alignment**: Each task is embedded across all three frameworks, achieving a score of **10** in every category. This alignment reflects the universality of these competencies and the robustness of Caribbean vocational qualifications.
- **Administrative Functions**: Tasks such as "identifying requirements and entering data" and "dispatching tasks to other units" highlight the operational backbone of customer service roles. These are essential for efficient service delivery and are well-covered by units like **U13502 (Process Customer Service Information)** in the CVQ framework.
- **Sales-Oriented Skills**: Tasks like "advising clients of additional products or services" align directly with CVQ's **U13402**, ensuring agents are equipped to contribute to organizational growth through upselling and cross-selling.

**Sector Trends and Growth**

95. O*Net identifies customer service representatives as a **Bright Outlook** occupation, reflecting the sector's growth potential. For Jamaica and the Caribbean, this growth is particularly pronounced in the BPO sector, driven by the region's comparative advantages in cost, language, and location. However, the sector is also navigating challenges posed by automation and AI integration.

**Insights into the Supply Side**

- **Curriculum Depth and Relevance**:

  The CVQ framework provides an excellent competency-based structure, ensuring alignment with global and regional demands. Units such as **U12902 (Deliver Reliable Customer Service)** and **U13502 (Process Customer Service Information)** are instrumental in preparing candidates for customer-facing and administrative responsibilities.

- **Adaptation to Sector-Specific Needs**:

  The CVQ addresses Caribbean-specific contexts, including cultural sensitivity and organizational priorities, aligning with global frameworks like ISCO and O*Net. This contextualization ensures that graduates meet both regional and international workforce expectations.

- **Emerging Skill Gaps**:

  While the frameworks comprehensively address traditional customer service roles, they lack explicit modules on managing **AI-driven tools** or **digital-first interactions**. With AI increasingly automating routine tasks, customer service agents must transition to handling hybrid roles, combining interpersonal skills with technology management.

**Contextual Relevance**

96. As Jamaica pursues initiatives like **Vision 2030 Jamaica**, which aims to position the country as a globally competitive economy, the customer service sector remains critical. The alignment of vocational qualifications with global standards positions the workforce to capitalize on the growing BPO industry. However, emerging technologies and AI integration necessitate continuous curriculum updates to maintain competitiveness.

**Recommendations**

- **Integrate AI Training Modules**:
  CVQ frameworks should introduce modules focused on AI-enabled tools, such as chatbot management, CRM systems, and data analytics. This ensures candidates are equipped to manage technology-driven customer interactions effectively.
- **Upskilling Initiatives for the Workforce**:
  Short-term certifications targeting AI skills, digital tools, and advanced troubleshooting should be offered to the existing workforce. This prepares employees for evolving roles and minimizes the risk of displacement.
- **Curriculum Modernization**:
  Regularly review CVQ training structures to incorporate industry trends, including virtual customer service delivery and e-commerce-related competencies.

**Conclusion**

97. The analysis demonstrates that customer service roles, particularly within the BPO sector, are well-supported by existing supply-side frameworks. The perfect alignment across ISCO, O*Net, and CVQ underscores the strength of current training programs. However, with the rapid adoption of AI in the customer service industry, integrating future-ready skills into vocational qualifications is essential to sustain regional competitiveness and support economic diversification.

## 7.2—CMI Analysis for the Customer Service Sector

98. The **Curricula Mismatch Index (CMI)** serves as a critical tool to evaluate the alignment between training frameworks and labor market demands. For the customer service sector, especially roles tied to **contact center agents** within the expanding **Business Process Outsourcing (BPO)** industry, this analysis highlights the extent to which current curricula meet job market expectations. With global trends increasingly dominated by **Artificial**

**Intelligence (AI)** and automated solutions, assessing the effectiveness of supply-side training becomes essential.

99. This section delves into the sector's performance based on tasks identified in Table 15, integrating findings from ISCO, O*Net, and CVQ frameworks. It also emphasizes areas of alignment and mismatch while addressing implications for the Caribbean workforce, particularly in a rapidly evolving BPO landscape.

**High Alignment Across Core Tasks**

100. The analysis confirms a robust alignment between supply-side training and labor market demands for customer service roles, especially in areas of core competencies:

- **Customer Service and Communication**: Tasks such as handling incoming calls, addressing customer complaints, and advising clients on products/services received perfect scores in both the **Execute Scoring** and **Run Grading** evaluations. These are fully addressed under CVQ units like **U12902 (Deliver Reliable Customer Service)** and **U13402 (Promote Additional Products or Services)**, and align strongly with ISCO's **4222 Contact Centre Salespersons** category.
- **Administrative and Operational Skills**: Activities like entering customer data, dispatching tasks, and invoicing are comprehensively covered under **U13502 (Process Customer Service Information)** and corresponding ISCO tasks. The supply-side's perfect score for these competencies underscores its readiness to equip workers with the technical skills required for seamless operational execution.

101. This alignment reflects a well-integrated framework where international standards (ISCO), national labor priorities (O*Net), and regional qualifications (CVQ) work in concert to prepare job-ready candidates.

**Moderate Gaps in Technology and Multitasking**

Despite its strengths, the analysis reveals areas of potential mismatch requiring attention:

- **Technological Proficiency**:
  While basic technological skills, such as using Microsoft Office and CRM tools, are included in frameworks, emerging competencies tied to AI-based tools, chatbot management, and data analytics are largely absent. As AI and automation reshape the BPO sector, the lack of explicit training on such tools creates a notable but addressable gap.
- **Multitasking Under Pressure**:
  Multitasking is an implicit expectation in customer service roles, particularly within call center environments where agents manage high call volumes, address multiple queries, and update data systems in real-time. While covered broadly under units like **U12902**,

training does not sufficiently address the nuances of high-pressure, real-time task management, reflected in a moderate CMI score for this area.

**Implications for the Sector**

102. The customer service sector's low average CMI score confirms its alignment with labor market requirements. However, addressing these minor gaps is essential to sustain regional competitiveness:

- **Technological Disruption**:
  As Jamaica and the wider Caribbean expand their BPO operations, integrating AI-specific training into CVQ frameworks will ensure that candidates are equipped for hybrid roles requiring both interpersonal and technological fluency.
- **Workforce Resilience**:
  Closing gaps in multitasking and adaptability training will enhance agents' capacity to thrive in dynamic environments, particularly as automation increases efficiency demands.

**Table 16: Curricula Mismatch Index (CMI) for Customer Service Sector**

| Task | ISCO Skills Description | Demand-Side Scoring (Run Grading) | Supply-Side Scoring (Execute Scoring) | CMI Score |
|---|---|---|---|---|
| **Dealing with incoming calls, handling service issues** | Handling customer inquiries, providing solutions, managing complaints effectively (ISCO 4222 tasks) | **10** | **10** | **0.00** |
| **Identifying requirements, entering data into systems** | Entering customer data accurately and processing requests (ISCO 4222 tasks) | **10** | **10** | **0.00** |
| **Dispatching tasks to other units when relevant** | Assigning inquiries or complaints to relevant departments or units (ISCO 4222 tasks) | **10** | **10** | **0.00** |
| **Invoicing or handling payments, where necessary** | Managing invoicing and payment processes for customer transactions (ISCO 4222 tasks) | **10** | **10** | **0.00** |
| **Sending letters, information sheets, other documents** | Preparing and delivering communications to clients (ISCO 4222 tasks) | **10** | **10** | **0.00** |

| | | | | |
|---|---|---|---|---|
| **Advising clients of additional products or services** | Recommending products/services to customers to meet their needs (ISCO 4222 tasks, linked to sales competencies) | **10** | **10** | **0.00** |
| **Using CRM systems and Microsoft Office tools** | Operating software to manage customer data and communications (ISCO workflow coordination context) | **8** | **10** | **0.20** |
| **Multitasking and managing multiple projects simultaneously** | Coordinating multiple tasks and responsibilities in high-pressure environments (ISCO coordination context) | **9** | **10** | **0.10** |
| | | **Average CMI Score** | | **0.04** |
| | | **Interpretation** | | **No Gap** |

**Interpretation of Results**

103. The **CMI Score of 0.04** firmly places the customer service sector in the **No Gap** category. This reflects a strong alignment between labor market needs and supply-side training frameworks, affirming that the region is well-prepared to meet current demands for roles such as contact center agents.

104. However, minor mismatches in technology-related competencies and multitasking training reveal opportunities for proactive improvements. By addressing these gaps, training institutions can future-proof the workforce and ensure resilience in the face of automation and evolving customer service models.

105. The customer service sector, particularly its contact center operations, demonstrates exemplary alignment between demand and supply. As the Caribbean continues to solidify its position in the global BPO market, maintaining this alignment while addressing emerging challenges in technology and adaptability will be key to sustaining growth and workforce competitiveness.

## 7.3—Supply-Side Triangulation Analysis for Accounting Clerk Tasks

106. The following analysis triangulates tasks listed in the uploaded vacancies for **Accounting Clerks** across ISCO, O*Net, and CVQ frameworks using the tasks provided under ISCO 4311, O*Net code **43-3031.00**, and CVQ Level 2 Payroll Clerk. This process identifies areas

of alignment to determine the comprehensiveness of the supply-side training and competency frameworks.

**Table 17—Triangulation Table: Accounting Clerk Tasks**

| Task | ISCO (4311) | O*Net (43-3031.00) | CVQ (Payroll Clerk) | Score (1–10) | Justification |
|---|---|---|---|---|---|
| **Checking figures, postings, and documents for correct entry, accuracy, and proper codes** | Includes checking records for mathematical accuracy and adherence to proper coding standards. | Core task: Checking figures, postings, and documents for accuracy. | **FSFACC0482A (Maintain petty cash account); FSFACC0432A (Record payroll transactions)** | **10** | Fully covered across all frameworks as a fundamental accounting task. |
| **Operating accounting software to record, store, and analyze financial information** | Includes operating systems to process financial data and generate records. | Core task: Operating computers programmed with accounting software. | **ITIDAT0332A (Operate accounting applications); ITIDAT0171A (Spreadsheet use)** | **10** | Universally covered as a mandatory skill in bookkeeping and accounting roles. |
| **Classifying, recording, and summarizing numerical and financial data in ledgers or computers** | Core competency includes maintaining ledgers, journals, and computerized accounting systems. | Core task: Recording numerical data to keep financial records complete. | **FSFACC0432A (Record payroll transactions); FSFACC0392A (Process payroll)** | **10** | Fundamental to all accounting functions; fully aligned with CVQ and global frameworks. |
| **Calculating, preparing, and issuing bills, invoices, and account statements** | Focuses on financial calculations, issuing invoices, and preparing related reports. | Core task: Performing financial calculations and preparing financial statements. | **FSFACC0392A (Process payroll); FSFACC0482A (Maintain petty cash account)** | **10** | Fully addressed under invoice preparation and payroll functions in CVQ and other frameworks. |
| **Compiling statistical, financial, or auditing** | Includes preparing summaries on cash receipts, | Core task: Compiling statistical and financial | **FSFCMP0032A (Comply with financial services regulations);** | **10** | Comprehensive alignment across ISCO, O*Net, and CVQ |

| | | | | | |
|---|---|---|---|---|---|
| **reports on accounts payable, receivable, and cash flows** | expenses, and losses for compliance and reporting. | reports for cash receipts and other data. | **FSFACC0122A (Prepare returns)** | | frameworks for reporting and compliance tasks. |

**Findings from the Triangulation Table**

- **Perfect Alignment Across Core Tasks**:
  Each evaluated task scored **10**, reflecting full alignment across ISCO, O*Net, and CVQ frameworks. These tasks represent foundational skills universally required for accounting clerks, covering financial record-keeping, reconciliations, software use, and reporting.
- **Technology Integration**:
  CVQ's inclusion of modules like **ITIDAT0332A (Operate Accounting Applications)** and **ITIDAT0171A (Spreadsheet Applications)** ensures candidates are trained to handle contemporary accounting technologies, aligning with global standards outlined by ISCO and O*Net.
- **Regulatory and Compliance Readiness**:
  Tasks related to compliance and reporting (e.g., preparing statutory returns) are addressed under CVQ competencies like **FSFCMP0032A (Comply with Financial Services Regulations)**, ensuring candidates meet both local and international standards.
- **Data Analysis and Financial Summaries**:
  Tasks requiring the compilation of statistical and financial data are supported by CVQ units and recognized as critical by ISCO and O*Net. This ensures candidates can generate actionable insights from financial data.

107. The accounting clerk roles outlined in the job vacancies are well-supported by ISCO, O*Net, and CVQ frameworks. The triangulated analysis highlights **no gaps** in task coverage, confirming that supply-side training comprehensively addresses demand-side expectations. This positions CVQ-qualified candidates to seamlessly integrate into roles requiring foundational accounting and bookkeeping skills, while also being prepared for modern software and compliance demands.

## 7.4—CMI Calculation for Accounting Clerk Roles

108. The **Curricula Mismatch Index (CMI)** measures the gap between demand-side tasks outlined in the vacancies and supply-side competencies derived from ISCO, O*Net, and CVQ frameworks. Below, tasks from the vacancies are matched against competencies, and CMI scores are calculated for each task.

**Table 17: Curricula Mismatch Index (CMI) for Accounting Clerk Roles**

| Task | ISCO Skills Description | Demand-Side Scoring (Run Grading) | Supply-Side Scoring (Execute Scoring) | CMI Score |
|---|---|---|---|---|
| **Checking figures, postings, and documents for correct entry, accuracy, and proper codes** | Ensuring mathematical accuracy and adherence to proper procedures. | **10** | **10** | **0.00** |
| **Operating accounting software to record, store, and analyze financial information** | Using computers programmed with accounting applications for data storage, processing, and analysis. | **10** | **10** | **0.00** |
| **Classifying, recording, and summarizing numerical and financial data in ledgers or computers** | Recording numerical data in journals, ledgers, or computerized systems. | **10** | **10** | **0.00** |
| **Calculating, preparing, and issuing bills, invoices, and account statements** | Preparing and processing financial documents and performing calculations. | **10** | **10** | **0.00** |
| **Compiling statistical, financial, or auditing reports on accounts payable,** | Preparing reports and summaries related to cash receipts, expenditures, | **10** | **10** | **0.00** |

| | | | | |
|---|---|---|---|---|
| **receivable, and cash flows** | and profit/loss analysis. | | | |
| **Reconciling accounts and addressing discrepancies** | Identifying and resolving differences in account balances and transactions. | **10** | **10** | **0.00** |
| **Managing petty cash** | Handling petty cash systems, maintaining balances, and ensuring accurate recording of expenses. | **10** | **10** | **0.00** |
| **Generating financial reports** | Preparing reports on financial performance and cash flow analysis for decision-making purposes. | **10** | **10** | **0.00** |
| | | **Interpretation** | | **No Gap** |
| | | | | |

**Analysis of CMI Findings**

- **Perfect Alignment Across Tasks**:
  The **CMI score of 0.00** indicates perfect alignment between demand-side requirements and supply-side training for accounting clerks. Tasks such as checking figures, reconciling accounts, and operating accounting software are comprehensively covered by ISCO, O*Net, and CVQ frameworks.

- **Coverage of Key Skills**:

  - **Technical Accounting Skills**: Tasks such as preparing invoices, reconciling accounts, and compiling reports align with competencies outlined in **CVQ Level 2**

**Payroll Clerk** units like **FSFACC0432A (Record Payroll Transactions)** and **FSFACC0482A (Maintain Petty Cash Accounts)**.

- **Technological Proficiency**: ISCO and CVQ's inclusion of software use through units like **ITIDAT0332A (Operate Accounting Applications)** ensures candidates are equipped to manage digital accounting systems, fully addressing employer expectations.

- **Sector Readiness**:
  The lack of any gaps in the alignment reflects the robustness of supply-side frameworks in preparing candidates for accounting clerk roles. This positions graduates to meet labor market demands effectively, ensuring employability and productivity from day one.

109. The **No Gap** classification underscores the strong alignment between supply-side training and demand-side labor market requirements for accounting clerks. This result reflects the effectiveness of CVQ, ISCO, and O*Net frameworks in covering all essential competencies, ensuring that graduates are job-ready and capable of excelling in accounting roles.

## 7.5—CMI Analysis for Loan Sales Officer

104. Loan officers play a critical role in financial institutions, balancing portfolio growth with credit risk management. The position of **Loan Sales Officer**, as detailed in the proxy, reflects the multifaceted responsibilities of such roles, including client acquisition, loan processing, credit evaluation, and portfolio expansion. These functions require a mix of analytical, interpersonal, and sales-oriented skills.

105. Given the rapid evolution of the financial services sector, alignment between labor market requirements and training frameworks is essential. This **Curricula Mismatch Index (CMI)** calculation evaluates how well the supply-side frameworks—represented by ISCO 3312, O*Net 13-2072.00, and CVQ standards—align with the demand-side requirements for loan officers.

**Table 18: Curricula Mismatch Index (CMI) for Loan Sales Officer**

| Task | ISCO Skills Description | Demand-Side Scoring (Run Grading) | Supply-Side Scoring (Execute Scoring) | CMI Score |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| **Interviewing applicants for loans** | Interviewing applicants for personal, business, or collateral loans. | **10** | **10** | **0.00** |
| **Analyzing applicants' financial status, creditworthiness, and collateral** | Evaluating credit reports, financial ratios, and collateral margins to determine loan feasibility. | **10** | **10** | **0.00** |
| **Submitting loan applications to management for approval** | Submitting completed applications for review and recommendations. | **10** | **10** | **0.00** |
| **Approving or rejecting loan applications** | Approving or rejecting applications within assigned credit limits. | **10** | **10** | **0.00** |
| **Keeping records of payments, managing overdue accounts, and initiating legal action** | Maintaining financial records, managing delinquent accounts, and escalating for legal resolution. | **10** | **10** | **0.00** |
| **Completing loan documentation and ensuring compliance** | Preparing and reviewing loan agreements to ensure completeness and compliance. | **10** | **10** | **0.00** |
| **Advising customers on loan options and repayment plans** | Explaining loan types, repayment schedules, and financial management strategies. | **10** | **10** | **0.00** |
| **Researching the market to identify new business opportunities** | Identifying and pursuing leads to expand the loan portfolio. | **9** | **8** | **0.10** |
| **Developing creative strategies to retain clients** | Designing retention strategies based on client feedback and market trends. | **9** | **8** | **0.10** |
| **Promoting loan products via marketing strategies such as hosting desks at organizations** | Promoting loan services to attract new customers through direct engagement strategies. | **10** | **10** | **0.00** |
| | | **Average CMI** | | **0.02** |
| | | **Interpretation** | | **No Gap** |

104. The **CMI score of 0.02** places the Loan Sales Officer role in the **No Gap** category, reflecting a strong alignment between labor market demands and supply-side training frameworks. Below is a detailed analysis of the findings:

- **Core Lending and Risk Management**

  Tasks such as interviewing applicants, evaluating financial status, and approving or rejecting loans are foundational to loan officer roles. These are comprehensively addressed by ISCO 3312 and O*Net 13-2072.00 and are explicitly supported by CVQ-aligned competencies in customer service, credit evaluation, and compliance.

  - **Strength**: Universal coverage across supply-side frameworks ensures candidates possess the technical skills to assess creditworthiness, manage risks, and process loans efficiently.

- **Customer Service and Retention**

  Advising customers on loan products and repayment plans aligns fully with supply-side training, scoring **0.00 CMI**. However, tasks related to **retention strategies** are less explicitly covered, with ISCO and O*Net focusing broadly on customer service rather than targeted retention.

  - **Gap**: CVQ and global frameworks, or more importantly local institutions, could benefit from integrating explicit retention strategies, including client feedback incorporation and loyalty-building practices, to enhance alignment further.

- **Market Research and Business Development**

  Tasks requiring proactive identification of new business opportunities received a **CMI score of 0.10**, reflecting minor gaps in supply-side coverage. ISCO and O*Net frameworks emphasize customer engagement and sales promotion but do not extensively cover market research and lead generation strategies.

  - **Recommendation**: Incorporating modules on **market analysis and portfolio growth strategies** into training programs could bridge this gap and better prepare candidates for dynamic market conditions.

**Contextual Relevance**

105. Loan officers serve as critical enablers of financial inclusion, particularly in emerging economies where access to credit is essential for economic growth. In regions like the Caribbean, expanding loan portfolios through innovative market penetration strategies and robust credit evaluation frameworks is vital. The **No Gap** classification underscores the preparedness of CVQ, ISCO, and O*Net frameworks to support this role effectively.

106. However, as the sector evolves with technology and heightened client expectations, supply-side training must adapt to include forward-looking competencies such as data-driven client retention, advanced risk modeling, and AI-enabled credit evaluations.

**Recommendations**

- **Enhance Retention Training**

  CVQ and related frameworks should incorporate modules on designing customer retention strategies, including feedback analysis and client loyalty programs.

- **Market Research Modules**
  Develop specialized training on market analysis, portfolio growth, and lead generation strategies to address minor gaps in proactive business development skills.

- **Digital and AI Integration**
  Introduce competencies related to AI-driven credit evaluation and predictive analytics tools to ensure workforce readiness for the next wave of financial technology innovation.

107. The **Loan Sales Officer** demand proxy demonstrates a high degree of alignment with global and regional training standards, as evidenced by the **No Gap CMI score of 0.02**. While the frameworks comprehensively address core lending and customer advisory tasks, integrating modules on retention and market analysis will ensure continued alignment with evolving industry demands. By addressing these minor gaps, financial institutions can maintain workforce competitiveness and enhance service delivery in a rapidly changing economic landscape.

## 7.6—Curricula Mismatch Index (CMI) Analysis for Practical Nurse Tasks Based on Midwifery Standards

110. The **Practical Nurse** vacancy highlights a critical demand for professionals capable of delivering high-quality maternal and newborn care within home-health environments. The tasks outlined in the job description emphasize a broad spectrum of responsibilities, including implementing nursing care plans, providing rehabilitative and preventive procedures, assisting with specialized medical tasks, and teaching patients self-care techniques.

**111.** To assess the alignment between demand-side expectations and supply-side training competencies, the tasks from the vacancy were evaluated against the ISCO 3222 standard for **Midwifery Associate Professionals**. O*Net's **29-9099.01 (Midwives)** was used for cross-referencing task-specific competencies, alongside the **CVQ Level 1 Health Care Services** framework. The **CMI score** provides a measure of the alignment, revealing gaps and strengths in the preparation of Practical Nurses for these responsibilities.

**Table 20: CMI for Practical Nurse Tasks Based on Midwifery Standards**

| Task | ISCO Skills Description (3222 – Midwifery Associate Professionals) | Demand-Side Scoring (Run Grading) | Supply-Side Scoring (Execute Scoring) | CMI Score |
|---|---|---|---|---|
| **Providing advice to women, families, and communities on health, nutrition, hygiene, exercise, birth and emergency plans, breastfeeding, infant care, family planning and contraception, lifestyle, and other topics related to pregnancy and childbirth.** | Advising individuals, families, or groups on topics related to pregnancy, childbirth, and postpartum health. | **9** | **7** | **0.20** |
| **Assessing progress during pregnancy and childbirth, and recognizing signs and symptoms requiring referral to a health professional.** | Monitoring maternal and fetal health during pregnancy and labor, identifying complications. | **10** | **8** | **0.10** |
| **Providing delivery care, usually only in the absence of identified potential complications, or assisting medical doctors or midwifery professionals with delivery care.** | Assisting during childbirth in low-risk situations or supporting physicians in delivery procedures. | **8** | **8** | **0.00** |
| **Providing care and support to women and newborns following childbirth, monitoring their health status, and identifying signs and symptoms requiring referral to a health professional.** | Caring for mothers and newborns post-delivery, ensuring recovery and health monitoring. | **9** | **8** | **0.10** |
| **Average CMI Score** | | | | **0.10** |
| **Interpretation** | | | | **No Gap** |

### Analysis of Alignment

112. The tasks required for the Practical Nurse role were mapped against ISCO 3222 to serve as the baseline, ensuring that the international benchmarks for midwifery are maintained. The results, as presented in **Table 20**, show an **average CMI score of 0.10**, indicating a **No Gap** in alignment between supply- and demand-side frameworks. However, nuanced

differences between task-specific requirements and training frameworks provide important insights into potential areas for improvement.

113. One of the strongest areas of alignment lies in the implementation of nursing care plans and the provision of nursing services and treatments. These tasks received perfect scores of **0.00** in the CMI, as they are comprehensively covered by both O*Net and CVQ frameworks. ISCO 3222 emphasizes the role of midwifery professionals in monitoring maternal and fetal health, a responsibility mirrored in the vacancy's focus on observing and reporting patient conditions. This demonstrates that both global and regional standards address fundamental competencies required for Practical Nurses to perform effectively in midwifery-related roles.

114. The **supply-side scoring for CVQ**, however, reveals notable gaps in areas requiring specialized midwifery training, such as providing advice to women and families on topics like breastfeeding, family planning, and emergency preparedness. While the vacancy's demand-side scoring for this task indicates a high priority (**9**), CVQ's focus on general patient care assistance does not explicitly extend to midwifery-specific educational roles, resulting in a higher CMI score (**0.20**) for this task. Similarly, the task of assisting patients in learning appropriate self-care techniques reflects a partial misalignment. Although CVQ frameworks address this competency broadly, their scope is limited to fundamental health education rather than the targeted training required for maternal and newborn care.

115. Delivery care and postpartum support present interesting alignment dynamics. The job vacancy emphasizes practical roles in assisting physicians or nurses during specialized procedures, as well as providing care to women and newborns after childbirth. These responsibilities align closely with ISCO and O*Net standards, which detail the importance of monitoring health status and managing emergency situations. Despite this alignment, the CVQ framework does not currently provide direct training for childbirth assistance, leading to a partial gap. This is reflected in CMI scores of **0.10** for related tasks, driven by the CVQ's generalist nature.

**Implications of the CMI Score**

116. The **No Gap classification** suggests that current supply-side frameworks provide a robust foundation for Practical Nurses entering home-health care roles with midwifery elements. ISCO and O*Net standards ensure global competency alignment, while CVQ supports foundational skills in personal care, hygiene, and basic health monitoring. However, the nuances in the CMI score indicate room for improvement in addressing specialized competencies for maternal and newborn care.

117. Institutions leveraging CVQ frameworks for Practical Nurse training would benefit from expanding their curricula to include midwifery-focused training modules. Specific gaps, such as providing targeted advice on family planning and assisting with childbirth, could be addressed by adapting existing training to include these critical tasks. This would not only strengthen alignment with ISCO and O*Net but also ensure that Practical Nurses are fully prepared to meet the unique demands of home-health care settings.

**Conclusion**

118. The **average CMI score of 0.10** highlights the overall strength of alignment between demand-side requirements and supply-side training. Practical Nurses trained using frameworks informed by ISCO, O*Net, and CVQ are well-equipped for core responsibilities. Nevertheless, the analysis underscores the importance of integrating midwifery-specific training into regional curricula to address minor gaps and enhance workforce readiness. This would ensure that Practical Nurses are not only prepared to meet employer expectations but also capable of adapting to evolving patient needs in the increasingly specialized field of home-health care.

# Chapter 8—Hospitality & Tourism

# 8.1—Supply-Side Analysis: Housekeeping Tasks Alignment

119. This supply-side analysis examines the alignment of the housekeeper role's tasks with international and regional occupational standards, using ISCO as the universal baseline. By triangulating with O*Net (37-2012.00) and the CVQ Housekeeping Level 2 framework, we aim to evaluate the comprehensiveness and coherence of training systems in preparing workers for labor market demands. The analysis is designed to inform both global policy recommendations and region-specific workforce strategies.

**The Universal Role of ISCO**

120. The International Standard Classification of Occupations (ISCO) serves as the foundational framework for this study. ISCO Minor Group 911 (Cleaners and Helpers) provides a clear, universal description of core cleaning and maintenance responsibilities. These tasks encompass essential housekeeping functions, including sweeping and mopping floors, maintaining hygiene in bathrooms, handling laundry, and replenishing supplies. ISCO's language is broad yet sufficiently detailed to act as a reference for aligning training content across diverse occupational frameworks. Its universality makes it particularly suitable for inter-sectoral and inter-regional comparisons, ensuring that no key competency is overlooked when contextualizing job requirements.

**Translating ISCO into O*Net and CVQ Frameworks**

121. O*Net offers a granular view of occupational competencies, with specific emphasis on tasks relevant to housekeeping roles, such as making beds, cleaning rooms, and maintaining hygiene standards in commercial settings. It provides detailed descriptors like "cleaning rooms and hallways," "disinfecting equipment and supplies," and "emptying wastebaskets," which are closely aligned with ISCO. However, O*Net focuses more on operational tasks in institutional or commercial environments, making it highly complementary to ISCO but occasionally less aligned with domestic cleaning contexts.

122. The CVQ Housekeeping Level 2 framework adds a regional layer, emphasizing competencies tailored to Caribbean labor market needs. CVQ tasks reflect the dual necessity for technical cleaning skills and operational knowledge of safety standards, as seen in units like "Service toilet, bathroom and public areas" and "Handle and store cleaning equipment and materials." This framework is particularly strong in addressing tasks that involve maintaining public spaces, replenishing guest supplies, and following safety regulations, making it highly relevant to the hospitality-heavy labor markets of the Caribbean. However, CVQ's treatment of certain ISCO-aligned tasks, such as inspecting rooms or managing urgent cleaning requests, is less explicit.

**Alignment Analysis**

123. The triangulated alignment is presented in ***Table 21***, which uses ISCO as the baseline for interpreting and comparing corresponding tasks across O*Net and CVQ frameworks.

**Table 21: Triangulation Across ISCO, O*Net, and CVQ Frameworks**

| ISCO Task (Universal Baseline) | O*Net Translation | CVQ Translation | Score (1–10) | Notes |
|---|---|---|---|---|
| **Sweeping, vacuum cleaning, polishing, and washing floors and furniture, or washing windows and other fixtures** | Sweep, scrub, wax, or polish floors; clean rugs, carpets, and furniture. | Clean and protect hard and semi-hard floor surfaces; Clean public areas. | 10 | Strong alignment across all frameworks. Universal cleaning activity. |
| **Washing, ironing, and mending linen and other textiles** | Launder clothing, towels, or linens. | Provide laundry services: Sort, wash, iron, and handle linen and clothes. | 10 | Core alignment with O*Net and CVQ, reflecting universal housekeeping standards. |
| **Washing dishes** | Not explicitly listed. | Clean kitchens and generally help with kitchen work, including dishwashing. | 6 | Covered in CVQ but less explicitly detailed in O*Net tasks. |
| **Helping with preparation, cooking, and serving of meals and refreshments** | Not explicitly listed. | CVQ does not focus on food preparation as part of core housekeeping. | 3 | Low alignment due to the task being outside core cleaning responsibilities in O*Net and CVQ. |
| **Purchasing food and various other household supplies** | Not explicitly listed. | Not explicitly listed. | 2 | Minimal alignment; purchasing supplies is outside core cleaning scope for both O*Net and CVQ. |
| **Cleaning, disinfecting, and deodorizing kitchens, bathrooms, and toilets** | Clean rooms, hallways, restrooms; disinfect | Service toilet, bathroom, and public areas; maintain a safe and secure working environment. | 10 | Hygiene-focused tasks strongly aligned across all frameworks. |

| | | | | |
|---|---|---|---|---|
| | equipment and supplies. | | | |
| **Cleaning windows and other glass surfaces** | Wash windows, walls, ceilings, and woodwork, waxing and polishing as necessary. | Clean doors, windows, walls, ceilings, and fixtures. | 10 | Cleaning glass and surfaces is a universal housekeeping standard. |
| **Making beds, cleaning bathrooms, supplying towels, soap, and related items** | Make beds, replenish linens, and clean rooms. | Prepare beds and handle linen and bed coverings; service toilet and bathroom areas. | 10 | Fully aligned as a fundamental housekeeping responsibility. |
| **Picking up rubbish, emptying garbage containers, and taking contents to waste areas for removal** | Empty wastebaskets and transport trash to disposal areas. | Handle and store cleaning equipment and materials; maintain a safe and secure working environment. | 10 | Waste management and disposal tasks are essential and fully aligned across all frameworks. |

**Key Findings from Supply-side Analysis**

124. Table 21 highlights significant alignment in key housekeeping tasks across ISCO, O*Net, and CVQ. Tasks such as floor cleaning, making beds, and waste disposal achieve perfect alignment (score: 10), emphasizing their universal importance. O*Net and CVQ frameworks strongly reinforce these core competencies, ensuring that training prepares workers for global labor market expectations. However, the lower scores for tasks like "washing dishes" and "purchasing supplies" reflect their peripheral nature in O*Net and CVQ and underscore the need for specificity in employer requirements when these tasks are expected.

125. A notable observation is the partial alignment of tasks like dishwashing, which is covered explicitly in CVQ but not emphasized in O*Net. This discrepancy reflects a regional focus in CVQ on broader household responsibilities, catering to the multi-faceted nature of domestic roles in the Caribbean.

**Broader Implications for Training Systems**

126. The analysis underscores the importance of integrating universal competencies while adapting training programs to regional labor market needs. The CVQ framework's strengths in areas like maintaining public areas and ensuring safety complement the O*Net focus on institutional cleaning tasks, creating a robust, multi-dimensional skill set. However, certain gaps in CVQ, such as the omission of room inspection protocols and urgent response procedures, could hinder competitiveness in international markets where these competencies are prioritized.

**Recommendations**

127. To strengthen alignment, CVQ training programs should explicitly incorporate tasks like room inspections and rapid cleaning responses, which are standard in both ISCO and O*Net. Additionally, employers in the Caribbean should work closely with training providers to tailor curricula to specific industry requirements, especially in the hospitality sector. Finally, the strong alignment of hygiene-focused tasks across all frameworks should inform global labor policies, reinforcing the universality of health and safety competencies in housekeeping roles.

128. This supply-side analysis demonstrates the adaptability of ISCO as a universal baseline, ensuring consistency across regions while highlighting areas for localized improvement in training systems.

## 8.1.2—Supply-Side Alignment and Curricula Mismatch Index Analysis for Housekeeper Roles

**Strengths in Task Alignment**

129. The analysis reveals robust alignment between the demand-side requirements (from the job description) and supply-side competencies (derived from O*Net and CVQ frameworks) for most tasks. Tasks such as ***floor cleaning***, ***bed-making***, and ***cleaning bathrooms and toilets*** received perfect or near-perfect alignment scores. These activities are core housekeeping functions universally emphasized in ISCO, O*Net, and CVQ frameworks. Similarly, tasks like **waste removal** and **window cleaning** show strong alignment, reflecting the thorough inclusion of these competencies in regional and international training standards.

130. The hygiene-related task of **cleaning, disinfecting, and deodorizing kitchens, bathrooms, and toilets** is another standout, scoring a CMI of 0.00. This reflects its prioritization by employers and training systems, particularly given the critical importance of sanitation in both domestic and commercial environments. The full alignment observed here underscores the universal necessity of maintaining cleanliness in all workspaces.

**Table 22: Curricula Mismatch Index for Housekeeper**

| ISCO Task | Demand-Side Scoring (Run Grading) | Supply-Side Scoring (Execute Scoring) | CMI Score | Notes |
|---|---|---|---|---|
| **Sweeping, vacuum cleaning, polishing, and washing floors and furniture, or washing windows and other fixtures** | 10 | 10 | 0.00 | Perfect alignment; task is universally recognized in all frameworks as core housekeeping activity. |
| **Washing, ironing, and mending linen and other textiles** | 9 | 10 | 0.05 | High alignment; task is prioritized in both demand and supply sides. |
| **Washing dishes** | 8 | 6 | 0.25 | Partial alignment; emphasized more in CVQ but less so in O*Net. |
| **Helping with preparation, cooking, and serving of meals and refreshments** | 6 | 3 | 0.50 | Significant gap; task is minimally covered in supply-side frameworks. |
| **Purchasing food and various other household supplies** | 5 | 2 | 0.60 | Large gap; not a focus in most supply-side frameworks. |
| **Cleaning, disinfecting, and deodorizing kitchens, bathrooms, and toilets** | 10 | 10 | 0.00 | Full alignment; universally prioritized hygiene-focused task. |
| **Cleaning windows and other glass surfaces** | 9 | 10 | 0.05 | High alignment; supply-side frameworks fully address this task. |
| **Making beds, cleaning bathrooms, supplying towels, soap, and related items** | 10 | 10 | 0.00 | Strong alignment across all frameworks; fundamental housekeeping responsibility. |
| **Picking up rubbish, emptying garbage containers, and taking contents to waste areas for removal** | 9 | 10 | 0.05 | Near-perfect alignment; waste management is well-covered in supply frameworks. |

**Average CMI Score**: **0.17**
**Interpretation**: **No Gap**

**Weaknesses in Task Alignment**

131. Despite these strengths, several tasks exhibit notable gaps between demand-side and supply-side expectations. The task of **helping with preparation, cooking, and serving of meals and refreshments** scored a CMI of 0.50, indicating a significant mismatch. This task is not a core housekeeping competency in O*Net or CVQ frameworks, which instead focus on cleaning-specific responsibilities. Employers requiring this skill may need to provide on-the-job training or adjust expectations to better align with existing curricula.

132. A similar mismatch is observed for **purchasing food and other household supplies**, with a CMI of 0.60. This task is rarely addressed in the supply-side frameworks, as it is generally outside the traditional scope of housekeeping roles. Its inclusion in the job description reflects employer-specific needs rather than a universal competency, which may explain the gap.

133. The task of **washing dishes** also shows partial alignment, with a CMI of 0.25. While this task is emphasized in the CVQ framework, it is less prominent in O*Net, which focuses on institutional housekeeping tasks over domestic-specific duties like dishwashing.

**Interpretation of the Average CMI Score**

134. The overall CMI score of **0.17** falls within the "No Gap" range, indicating that the supply-side training frameworks are generally well-aligned with employer demands for the housekeeper role. This suggests that most core housekeeping competencies are effectively covered in training programs and that the workforce is well-prepared to meet labor market requirements. However, the analysis also highlights the presence of niche or employer-specific tasks that fall outside the standard scope of housekeeping curricula. These outlier tasks drive the observed discrepancies and merit targeted attention to ensure full alignment.

**Implications for Policy and Workforce Development**

135. The findings demonstrate the efficacy of ISCO, O*Net, and CVQ frameworks in preparing workers for essential housekeeping tasks, particularly hygiene and maintenance-focused activities. However, the gaps identified for tasks like meal preparation and supply purchasing highlight a need for greater customization in training programs to meet regional or employer-specific needs. Without addressing these gaps, workers may face challenges meeting unique job requirements, particularly in domestic or informal employment contexts.

**Recommendations**

136. To improve supply-side alignment and address identified gaps, the following actions are recommended:

- **Enhance Curriculum Coverage for Niche Tasks**
  Training institutions should consider including optional modules or electives for tasks such as meal preparation and supply purchasing. This would allow workers to gain additional competencies that align with specific employer expectations, particularly in domestic housekeeping roles.

- **Employer-Specific Training Partnerships**
  Employers requiring skills outside traditional housekeeping competencies, such as dishwashing or purchasing, should partner with training providers to develop targeted upskilling programs. This approach would ensure that niche skills are developed without overburdening standardized curricula.

- **Strengthen Regional Context in CVQs**
  While CVQs already address regional needs, greater emphasis on domestic-specific tasks like dishwashing and meal assistance could enhance their relevance. These additions would support workers seeking employment in domestic contexts, particularly in the Caribbean.

- **Ongoing Curriculum Review and Feedback Loops**
  Establish mechanisms for employers to regularly provide feedback to training institutions about emerging labor market needs. This would ensure that curricula remain responsive to evolving industry expectations.

- **Promote On-the-Job Training for Non-Core Tasks**
  For tasks that are employer-specific or low-priority in training frameworks, on-the-job training should be encouraged. Employers can design task-specific orientation sessions to address unique job demands without requiring structural changes to standardized curricula.

133. The supply-side analysis highlights strong alignment between training systems and labor market expectations for core housekeeping competencies. The low average CMI score (0.17) confirms that current curricula effectively prepare workers for most aspects of the housekeeper role. However, specific gaps for niche tasks underscore the need for enhanced customization in training programs and closer collaboration between employers and training providers. These recommendations, if implemented, can bridge the remaining gaps, ensuring that both domestic and commercial housekeeping roles are comprehensively supported by supply-side systems.

# 8.2—Food Preparation

## 8.2.1—Executive Sous Chef

**Alignment Strengths**

134. The analysis reveals strong alignment between the demand-side requirements for the Executive Sous Chef role and supply-side competencies defined by ISCO, O*Net, and CVQ frameworks. Tasks such as **planning menus**, **ensuring health and safety compliance**, and **maintaining hygiene standards** achieved perfect alignment (CMI: 0.00). These competencies are universally emphasized in culinary training programs and represent fundamental responsibilities for sous chefs globally.

135. The high scores for tasks like **staff training and supervision** and **arranging purchasing and pricing** reflect the robust inclusion of managerial and operational skills in the CVQ framework, which closely mirrors industry needs. Additionally, the emphasis on maintaining stock records and adhering to hygiene regulations demonstrates a shared understanding between demand and supply systems of the core requirements for successful kitchen management.

**Table 23: Curricula Mismatch Index (CMI) for Executive Sous Chef Role**

| ISCO Task (Baseline) | Demand-Side Scoring (Run Grading) | Supply-Side Scoring (Execute Scoring) | CMI Score | Notes |
|---|---|---|---|---|
| **Planning menus in consultation with chefs and cooks** | 10 | 10 | 0.00 | Fully aligned; task is universally covered in all frameworks. |
| **Planning and organizing special functions** | 8 | 9 | 0.05 | Strong alignment, with minor variation in specific execution emphasis. |
| **Arranging the purchasing and pricing of goods according to budget** | 9 | 8 | 0.05 | Good alignment; slight variation in CVQ emphasis on purchasing practices. |
| **Maintaining records of stock levels and financial transactions** | 7 | 8 | 0.10 | Mostly aligned; O*Net and CVQ address this task adequately. |
| **Ensuring dining, kitchen, and food storage facilities comply with health regulations and are clean, functional, and of suitable appearance** | 10 | 10 | 0.00 | Full alignment with a universal focus on hygiene and safety standards. |

| | | | | |
|---|---|---|---|---|
| **Selecting, setting staff work schedules, training, and supervising waiting and kitchen staff** | 10 | 9 | 0.05 | Strong alignment; minor gaps in CVQ emphasis on staffing strategies. |
| **Negotiating arrangements with clients and suppliers** | 8 | 6 | 0.25 | Partial alignment; CVQ less explicitly focuses on negotiation skills. |
| **Ensuring compliance with occupational health and safety regulations** | 10 | 10 | 0.00 | Fully aligned; universal priority for training and demand-side expectations. |

**Average CMI Score**: **0.06**
**Interpretation**: **No Gap**

**Alignment Weaknesses**

136. Despite the strong overall alignment, a few tasks exhibit minor discrepancies. For example, **negotiating arrangements with clients and suppliers** scored a higher CMI (0.25), reflecting partial alignment. This task is less explicitly addressed in CVQ competency standards, which prioritize technical culinary skills over business or negotiation practices. Similarly, slight variations in **staff scheduling and supervision** highlight the need for more detailed operational management training in CVQ programs.

137. Tasks such as **maintaining records of stock levels** and **planning special functions** scored marginally higher CMIs due to slight differences in emphasis between frameworks. These discrepancies are not significant enough to represent critical gaps but suggest areas where CVQ programs could provide additional depth or specificity.

**Interpretation of the Average CMI**

138. The average CMI score of **0.06** confirms that there is **no significant gap** between the supply-side frameworks and the demand-side job requirements for the Executive Sous Chef role. This indicates that current training systems, particularly CVQ Level 3 in Commercial Food Preparation, are highly effective at preparing candidates for industry roles. However, the minor gaps identified suggest that training curricula could benefit from targeted enhancements in business management and operational efficiency training.

**Implications for Policy and Workforce Development**

139. The low CMI score reflects the Caribbean's strong focus on culinary training through CVQs, which equip workers with both technical and managerial competencies. However, the identified gaps suggest an opportunity to expand the curriculum's coverage of negotiation skills and detailed business operations, which are becoming increasingly important in franchise and high-volume restaurant systems. Strengthening these areas would enhance graduates' readiness for roles that demand strategic thinking and client engagement, particularly in the context of global restaurant chains and high-profile hospitality ventures.

**Recommendations**

- **Enhance Business Management Modules**
  CVQ programs should incorporate additional training on negotiation techniques and supplier relations, emphasizing their importance in operational success for Executive Sous Chef roles.

- **Expand Focus on Staff Management**
  To fully align with industry needs, training programs should include detailed modules on staff scheduling, performance evaluation, and team leadership. These skills are critical for managing diverse back-of-house teams in dynamic kitchen environments.

- **Introduce Advanced Operational Training**
  Modules focusing on financial management, stock control, and event-specific planning should be expanded. This will address minor gaps identified in tasks such as maintaining records and planning special functions.

- **Collaboration with Employers**
  Training institutions should collaborate with franchise and restaurant chains to align CVQ curricula with the specific operational requirements of these businesses. Employers can provide insights into emerging industry trends, such as software usage in inventory and scheduling.

- **Periodic Curriculum Reviews**
  To maintain relevance, CVQ programs should undergo regular reviews to incorporate feedback from employers and graduates, ensuring continuous alignment with evolving labor market demands.

**Conclusion**

140. The Executive Sous Chef role demonstrates strong alignment between supply-side frameworks and demand-side expectations, as evidenced by the low average CMI score of 0.06. While no significant gaps exist, enhancing training in areas such as negotiation,

advanced management, and operational efficiency would further strengthen the alignment. By implementing these recommendations, the CVQ framework can continue to position Caribbean culinary professionals as competitive and highly skilled contributors to the global hospitality industry.

## 8.2.2—Curricula Mismatch Index (CMI) Analysis for Restaurant Manager Role

141. This analysis evaluates the alignment of the **Restaurant Manager** role as advertised by various restaurants in the Caribbean with international (ISCO 1412) and regional (CVQ Level 4/5 in Food and Beverage Management) training frameworks. Using ISCO as the baseline, we calculate the CMI by triangulating demand-side requirements from the job vacancy with supply-side competencies from ISCO and CVQ.

142. The role's responsibilities, such as managing operations, supervising staff, maintaining quality standards, and adhering to safety regulations, align with both global and regional training frameworks. However, some gaps emerge in competencies like marketing, entertainment, and customer engagement strategies, which are less emphasized in traditional training programs.

**Table 23: Curricula Mismatch Index (CMI) for Restaurant Manager Role**

| ISCO Task (Baseline) | Demand-Side Scoring (Run Grading) | Supply-Side Scoring (Execute Scoring) | CMI Score | Notes |
|---|---|---|---|---|
| **Planning menus in consultation with chefs and cooks** | 8 | 9 | 0.05 | Slight variance; CVQ emphasizes collaboration in menu planning. |
| **Planning and organizing special functions** | 9 | 8 | 0.05 | Strong alignment, though CVQ places less emphasis on event-specific operations. |
| **Arranging the purchasing and pricing of goods according to budget** | 9 | 9 | 0.00 | Fully aligned; task is covered comprehensively in both frameworks. |
| **Maintaining records of stock levels and financial transactions** | 10 | 9 | 0.05 | High alignment; minor gap in CVQ emphasis on financial forecasting. |

| | | | | |
|---|---|---|---|---|
| **Ensuring dining, kitchen, and food storage facilities comply with health regulations and are clean, functional, and of suitable appearance** | 10 | 10 | 0.00 | Perfect alignment; hygiene and safety are universal priorities. |
| **Selecting, setting staff work schedules, training, and supervising waiting and kitchen staff** | 10 | 9 | 0.05 | Strong alignment; CVQ slightly underemphasizes scheduling techniques. |
| **Negotiating arrangements with clients and suppliers** | 8 | 7 | 0.15 | Partial alignment; less focus on negotiation skills in CVQ curriculum. |
| **Ensuring compliance with occupational health and safety regulations** | 10 | 10 | 0.00 | Full alignment; universally prioritized in all frameworks. |

**Average CMI Score**: **0.05**
**Interpretation**: **No Gap**

**Strengths in Alignment**

133. The **Restaurant Manager** role demonstrates excellent alignment between demand-side requirements and supply-side competencies, as evidenced by the low average CMI score of 0.05. Tasks such as **arranging purchasing and pricing**, **ensuring hygiene and safety compliance**, and **maintaining financial records** achieve near-perfect alignment. These responsibilities are central to both ISCO 1412 and CVQ Level 4/5 and highlight the robust preparation provided by current training programs for core operational management tasks.

134. Competencies related to **staff supervision** and **health and safety compliance** are also well-covered, reflecting the universal importance of these skills in restaurant management. CVQ's emphasis on training and coaching staff, as well as monitoring hygiene standards, ensures that candidates are well-prepared for these responsibilities. Similarly, the ISCO framework's focus on maintaining operational efficiency aligns seamlessly with the role's requirements for day-to-day management of the restaurant.

**Weaknesses in Alignment**

135. While overall alignment is strong, minor gaps exist in areas like **negotiation skills** and **financial forecasting**. These tasks, which involve client and supplier relations or advanced budgeting, are not as heavily emphasized in the CVQ framework compared to ISCO. For example, the task of **negotiating arrangements with clients and suppliers** received a

CMI score of 0.15 due to partial coverage in the supply-side frameworks. This reflects a broader trend where soft skills, such as negotiation and marketing, are sometimes underrepresented in technical training programs.

136. Additionally, the task of **planning and organizing special functions** demonstrates slight variability, as the CVQ framework tends to prioritize standard operational management over event-specific requirements. This suggests that training institutions may need to consider incorporating modules that address event management and promotional activities, particularly for high-profile or multi-concept establishments like Margaritaville.

**Implications of the Average CMI Score**

137. The low average CMI score of 0.05 indicates that there is **no significant gap** between demand-side and supply-side expectations for the restaurant manager role. This reflects a strong alignment between employer needs and the competencies taught in training programs. However, the identified gaps, while minor, highlight opportunities to refine curricula to better address soft skills and niche operational requirements. As the hospitality industry evolves, greater emphasis on business acumen and customer engagement strategies will be critical for maintaining alignment with employer expectations.

**Recommendations**

- **Enhance Negotiation and Client Engagement Modules**
  CVQ training programs should incorporate more explicit training on negotiation techniques, supplier relations, and client engagement strategies. These skills are increasingly relevant in high-volume and multi-concept restaurant environments.
- **Expand Event Management Training**
  To better align with ISCO's focus on special function planning, CVQ curricula should include modules on event-specific operations, including logistics and promotional strategies. This would prepare candidates for roles requiring advanced event coordination.
- **Integrate Advanced Financial Training**
  While financial management is covered in existing frameworks, additional emphasis on forecasting, strategic budgeting, and profit analysis would address the minor gaps identified in tasks related to maintaining records and cost control.
- **Regular Industry Feedback Mechanisms**
  Establish structured feedback loops with employers to ensure that curricula remain responsive to the evolving needs of the hospitality sector. This would allow training institutions to continuously refine their programs to reflect industry demands.

- **Promote On-the-Job Soft Skills Training**
  Employers should provide targeted on-the-job training for skills like marketing and negotiation that may not be fully covered in formal curricula. This would bridge any remaining gaps and prepare employees for the dynamic demands of restaurant management.

**Conclusion**

138. The Restaurant Manager role at various establishments in the Caribbean demonstrates strong alignment between training systems and labor market expectations, with an average CMI score of 0.05 indicating no significant gaps. While the overall alignment is excellent, refining curricula to better address negotiation, event management, and advanced financial skills will further enhance readiness for high-profile roles in the hospitality sector. By addressing these areas, training systems can ensure that Caribbean restaurant managers remain competitive and well-equipped for both regional and international opportunities.

# 8.3—Travel and Transportation

139. The travel and transportation sub-sector is a critical pillar of the tourism industry, facilitating the movement of visitors and enhancing their overall experience. This sub-sector encompasses roles such as tour guides, travel agents, and transport operators, all of whom are instrumental in ensuring seamless logistics, providing engaging experiences, and delivering exceptional customer service. Tour guides, in particular, serve as the face of destinations, offering cultural, historical, and environmental insights that enrich the visitor journey. As global tourism evolves, the need for well-trained professionals in this sub-sector remains vital to maintaining high service standards and promoting sustainable tourism practices. This report focuses on the alignment between labor market demands and training frameworks for tour guides, a pivotal role in this dynamic sub-sector.

## 8.3.1—Curricula Mismatch Index (CMI) Analysis for Tour Guide Role

140. This section evaluates the alignment of the **Tour Guide** role with training standards from ISCO (Unit Group 5113: Travel Guides) and CVQ Tour Guiding Level I. Using ISCO as the baseline, the CMI calculation triangulates demand-side requirements from the job description with supply-side competencies from ISCO and CVQ frameworks.

**Table 24: Curricula Mismatch Index (CMI) for Tour Guide Role**

| ISCO Task (Baseline) | Demand-Side Scoring (Run Grading) | Supply-Side Scoring (Execute Scoring) | CMI Score | Notes |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| **Escorting and guiding tourists on cruises and sightseeing tours** | 10 | 10 | 0.00 | Full alignment; core guiding task is universally prioritized in both frameworks. |
| **Escorting visitors through places of interest such as museums, exhibitions, theme parks, factories, and other industrial establishments** | 9 | 10 | 0.05 | Strong alignment; CVQ includes content on site-specific guiding with slight variations. |
| **Describing and providing information on points of interest and exhibits and responding to questions** | 10 | 10 | 0.00 | Fully aligned; core focus of ISCO and CVQ, emphasizing communication and information sharing. |
| **Conducting educational activities for school children** | 7 | 6 | 0.10 | Partial alignment; CVQ less explicitly emphasizes school-specific educational activities. |
| **Monitoring visitors' activities to ensure compliance with establishment or tour regulations and safety practices** | 10 | 9 | 0.05 | Strong alignment; CVQ includes safety procedures but emphasizes general rather than specific monitoring. |
| **Greeting and registering visitors and tour participants, and issuing any required identification badges or safety devices** | 8 | 7 | 0.10 | Partial alignment; CVQ covers greeting and orientation but lacks emphasis on badge issuance. |
| **Distributing brochures, showing audiovisual presentations, and explaining procedures and operations at tour sites** | 8 | 8 | 0.00 | Perfect alignment; task is well-covered in CVQ and ISCO for tour engagement and communication. |

| | | | | |
|---|---|---|---|---|
| **Providing for physical safety of groups, and performing activities such as providing first aid and directing emergency evacuations** | 10 | 10 | 0.00 | Fully aligned; CVQ and ISCO both emphasize safety and first aid as key competencies. |
| **Resolving any problems with tour itineraries, service, or accommodation** | 9 | 7 | 0.10 | Partial alignment; CVQ addresses issue resolution generally but does not focus on accommodations. |

**Average CMI Score**: **0.05**
**Interpretation**: **No Gap**

**Alignment Strengths**

The **Tour Guide** role demonstrates strong alignment with ISCO and CVQ frameworks, as evidenced by the low average CMI score of 0.05. Tasks such as **escorting tourists on sightseeing tours**, **describing points of interest**, and **ensuring group safety** received perfect alignment scores (CMI: 0.00), reflecting their universal inclusion in training programs. The CVQ framework, in particular, offers comprehensive training in areas like **customer interaction**, **tour safety**, and **communication of local knowledge**, which align directly with the job description's expectations.

Additionally, competencies such as **distributing brochures**, **showing audiovisual presentations**, and **explaining procedures** are well-addressed, ensuring that candidates are prepared to engage guests and deliver information in an accessible and professional manner. The emphasis on physical safety, including **first aid training** and emergency evacuation procedures, highlights the practical applicability of CVQ standards to the job's core responsibilities.

**Alignment Weaknesses**

Despite the strong overall alignment, minor gaps exist in tasks like **conducting educational activities for school children** and **resolving issues with accommodations**. These discrepancies stem from CVQ's focus on general tour guiding rather than specific niche tasks. For example, while CVQ emphasizes safety and communication, it provides less explicit coverage of school-specific educational programming or addressing accommodation-related concerns. These tasks, while relevant to certain tour settings, are not universally emphasized in guiding frameworks.

The task of **greeting and registering visitors** also shows a slight mismatch, with CVQ addressing general client orientation but not explicitly covering technical aspects like issuing badges or safety devices. Similarly, tasks related to **monitoring compliance with tour regulations** are covered in

CVQ but lack specificity compared to ISCO, which emphasizes detailed oversight of visitor activities.

**Implications of the Average CMI Score**

The low average CMI score of **0.05** confirms that there is **no significant gap** between demand-side expectations and supply-side training for the Tour Guide role. This indicates that the competencies developed in CVQ Tour Guiding Level I programs are highly relevant to employer needs in the tourism sector. However, the minor gaps identified suggest opportunities to enhance curricula to better address niche skills and specific operational challenges that may arise in specialized or high-demand tour contexts.

**Recommendations**

1. **Expand Training on Niche Tour Types**
   CVQ programs should include additional modules on specialized tours, such as educational activities for school children or resolving issues related to accommodations. This would ensure that candidates are fully equipped to handle diverse tour formats and guest requirements.
2. **Enhance Focus on Compliance Monitoring**
   While CVQ addresses safety broadly, more emphasis on the specific monitoring of visitor compliance with tour regulations would strengthen alignment with ISCO standards. Training scenarios or simulations could be used to develop these skills.
3. **Integrate Technological Aspects of Greeting and Orientation**
   CVQ curricula could incorporate training on the use of digital tools or systems for tasks like issuing identification badges or tracking visitor participation. This would prepare candidates for roles requiring more technical proficiency.
4. **Strengthen Problem-Solving Training**
   Modules focused on conflict resolution and issue management should be expanded to cover specific scenarios like itinerary changes or accommodation disputes. This would ensure candidates are better prepared for unexpected challenges during tours.
5. **Regular Curriculum Reviews with Industry Feedback**
   Partnering with tour operators to gather feedback on emerging needs and challenges in the tourism industry would help ensure CVQ programs remain relevant and comprehensive.

**Conclusion**

The Tour Guide role demonstrates strong alignment between job market demands and training frameworks, as reflected in the low average CMI score of 0.05. While no significant gaps exist, targeted enhancements in niche tour formats, compliance monitoring, and problem-solving could further improve the alignment. By addressing these areas, training institutions can ensure that Caribbean tour guides are well-equipped to meet the evolving demands of the global tourism industry.

# 9—Stakeholder Perspective

## 9.1—Introduction

As part of the Jamaica Skills Mismatch Study, a focus group discussion was convened to gather qualitative perspectives from senior representatives of the Jamaica Employers' Federation (JEF). The objective was to complement the desk research findings with employer-based insights on the extent, nature, and causes of skills mismatches in the Jamaican labour market.

Despite multiple attempts to increase participation during the study period, both the preceding questionnaire exercise and the later focus group session ultimately included only two respondents. Given their leadership positions within the JEF, these participants are regarded as expert interviewees, capable of providing informed, sector-wide perspectives.

While the low number of respondents limits the breadth of representation, their contributions provided valuable confirmation of the narrow gap observed in the desk research between proxy indicators of demand-side skills needs and the curricula offered by learning institutions on the supply side. More importantly, their insights helped clarify the source of this apparent contradiction, offering a deeper understanding of structural and contextual factors influencing the Jamaican labour market.

## 9.2 Perceived Nature of the Skills Mismatch

The respondents described the skills mismatch in Jamaica as more nuanced than a simple imbalance between available skills and employer needs. They acknowledged that, at a broad level, there is reasonable alignment between the formal curricula of educational and training institutions and the general competencies required in the labour market. This aligns with the desk research finding of a narrow gap when comparing proxy indicators for demand and supply.

However, the respondents stressed that this alignment at the curriculum level masks qualitative deficiencies in workforce readiness. Employers continue to encounter candidates who, despite having relevant academic qualifications or certifications, lack the applied skills, workplace behaviours, and adaptive capacities needed to perform effectively in real-world job environments. The issue, therefore, is less about the absence of formally taught skills and more about the depth, quality, and practical applicability of those skills.

The perceived mismatch is thus one of *effectiveness rather than existence*—a gap in execution, preparedness, and contextual understanding that diminishes the value of otherwise relevant qualifications. This interpretation reframes the skills challenge as a combination of systemic training delivery issues, evolving workplace demands, and socio-economic factors affecting talent retention.

## 9.3 Key Contributing Factors Identified by Stakeholders

Stakeholder feedback highlighted that the observed mismatch is driven less by formal curriculum misalignment and more by a set of interrelated systemic and contextual factors that influence the readiness and retention of talent. The following themes emerged from the discussions:

**(a) Migration and Brain Drain**

Respondents identified the sustained outflow of skilled workers as a critical contributor to labour shortages in key sectors. Talent loss to higher-paying overseas markets undermines workforce stability and increases turnover, particularly in technical and professional roles. This dynamic also reduces the return on investment in local training, as graduates often migrate shortly after qualifying. Closely connected to the "Brain-drain" phenomenon is an implicit confirmation to the quality of the local curricula-based output: That is, if the Jamaica-trained workers can secure higher-paying employment in more developed and more competitive markets, then it speaks to the quality of the learning institutions' output.

**(b) Remuneration and Incentives**

Linked to the brain-drain dynamic, the respondents underscored the persistent gap between local wage levels and those offered internationally. This was cited as a key driver of both migration and sectoral attrition. Even within Jamaica, pay disparities between industries—such as tourism, manufacturing, and financial services—affect the ability of some sectors to attract and retain the skills they require.

**(c) Training Quality and Relevance**

While curricula may reflect the competencies sought by employers, respondents pointed to inconsistencies in the depth and delivery of training. Some graduates lack the applied technical proficiency or problem-solving capacity expected at entry-level. Weak linkages between training institutions and industry in designing, updating, and evaluating programmes exacerbate this gap. This phenomenon is worsened by skilled educators—especially for technical areas—being unavailable.

**(d) Work Readiness and Soft Skills**

Employers encounter recurring challenges with recruits' adaptability, punctuality, teamwork, and customer engagement. Respondents emphasised that these "soft" or transferable skills are as critical to employability as technical knowledge, yet they remain insufficiently embedded in many training programmes.

**(e) Early Education Foundations**

Deficits in foundational literacy, numeracy, and critical thinking from the primary and secondary education levels continue to affect the ability of trainees to benefit fully from higher-level technical

instruction. Respondents viewed these early-stage gaps as a structural issue with long-term implications for the labour market.

These factors, while distinct, interact to create a labour market where the supply of formally trained individuals may appear sufficient, yet the availability of work-ready, retained, and adaptable talent remains constrained.

## 9.4 Implications for Policy and Advocacy

The stakeholder perspectives reinforce the desk research conclusion that the skills mismatch in Jamaica is narrow in formal curriculum terms, but significant in practical readiness, retention, and adaptability. This has several implications for policy design and advocacy priorities:

**(a) Retention Strategies as a Core Policy Objective**

Given the central role of migration and wage disparities in driving talent loss, retention measures must be embedded within labour market policy. This could include sector-specific incentive schemes, career development pathways, and non-wage benefits to improve job satisfaction and loyalty.

**(b) Stronger Industry–Training Institution Linkages**

While curricula may be broadly aligned with demand, the disconnect between training delivery and workplace realities remains. Policy advocacy should prioritise mechanisms for continuous, structured collaboration between employers, industry associations, and training providers to ensure currency of skills, alignment with evolving technologies, and integration of practical exposure.

**(c) Soft Skills and Work-Readiness Integration**

Employability hinges on behavioural competencies as much as technical expertise. Advocacy efforts should encourage the formal embedding of soft skills—such as adaptability, problem-solving, communication, and teamwork—into training frameworks, assessed alongside technical competencies.

**(d) Strengthening Foundational Education**

Weaknesses in early literacy, numeracy, and critical thinking must be addressed to improve downstream technical training outcomes. This implies an advocacy role not only in post-secondary reforms but also in early education policy, particularly in teacher training and curriculum design at the primary and secondary levels.

**(e) Sector-Specific Workforce Development Plans**

As sectoral dynamics vary, targeted workforce strategies—developed jointly by government, industry, and training bodies—are necessary to address retention, migration pressures, and skills obsolescence within each priority sector.

Collectively, these implications point to a need for an advocacy agenda that shifts the conversation from "curriculum alignment" alone toward a more holistic labour market strengthening approach. This would address not only what is taught, but also how skills are applied, sustained, and updated over time in Jamaica's economic context.

## 9.5 Limitations

A key limitation of the stakeholder engagement component was the low participation rate in the focus group discussions. Despite multiple attempts to broaden representation, only two respondents participated in the session. Both individuals, however, hold senior roles within the Jamaica Employers' Federation (JEF) and possess extensive knowledge of workforce trends and employer perspectives.

Given their positions, their inputs are treated as expert interviews, offering valuable qualitative confirmation of the desk research findings. Nevertheless, the small sample size limits the **transferability** of the stakeholder perspectives to the wider labour market context.

This limitation is particularly relevant in interpreting sector-specific insights. While the respondents spoke authoritatively on broad patterns and sectoral challenges, their views cannot be assumed to fully represent the diversity of experiences across all industries, firm sizes, or geographic regions.

The findings should therefore be understood as a complementary, expert-informed lens on the skills mismatch—enriching the quantitative and documentary evidence from the desk research—rather than as a statistically representative basis for sector-wide conclusions.

# 10—Conclusion and Recommendations

This study examined the alignment between Jamaica's education and training systems and the competencies demanded by employers across priority sectors. Quantitative and documentary evidence consistently indicate a narrow "curriculum gap": formal vocational and technical programmes, including those under the Caribbean Vocational Qualifications (CVQ) framework, generally reflect the technical skills sought by industry in tourism, agriculture, information technology, and other growth areas.

However, focus group feedback from senior representatives of the Jamaica Employers' Federation underscores that this alignment masks deeper issues in **workforce readiness, retention, and adaptability**. The skills challenge is not primarily one of content misalignment but of **quality, depth, and application**—with multiple, interlinked factors shaping employer perceptions and outcomes.

Foremost among these is the **migration-driven brain drain**, where well-trained graduates are quickly absorbed into higher-paying overseas markets, depleting domestic talent pools and undermining returns on local training investment. While this exodus implicitly affirms the international competitiveness of Jamaican training outputs, it intensifies shortages in technical and professional roles. Wage disparities—both internationally and across domestic sectors—compound the challenge, influencing where talent chooses to work.

Stakeholders also highlighted **inconsistent training quality** across institutions, particularly in applied technical proficiency and problem-solving ability. The shortage of qualified technical instructors, weak industry–training linkages, and insufficiently updated programmes all contribute. Employers further emphasised persistent **soft skills gaps**—adaptability, punctuality, teamwork, and customer service—that limit productivity even among technically qualified recruits. These are reinforced by **foundational learning deficits** in literacy, numeracy, and critical thinking at the primary and secondary levels, which reduce the effectiveness of later technical training.

To address these multi-dimensional challenges, the following recommendations are proposed:

1. **Retention and Re-Attraction Strategies**
    - Develop sector-specific retention packages, including career-path planning, targeted allowances, housing support, and other non-wage benefits.
    - Explore "returnee" programmes to re-attract skilled diaspora talent, especially in sectors facing chronic shortages.
2. **Strengthening Industry–Training Institution Collaboration**

- Institutionalise formal advisory councils for each priority sector, enabling continuous curriculum review and integration of emerging technologies.
- Expand structured work-based learning (internships, apprenticeships) to bridge theory and practice.

3. **Embedding Soft Skills and Work Readiness**
    - Integrate transferable skills training—communication, teamwork, problem-solving—into all vocational and tertiary programmes, with assessment frameworks equal in rigour to technical evaluations.
    - Promote simulation-based learning and industry-led workshops to model real-world work environments.
4. **Improving Training Delivery Quality**
    - Invest in capacity-building for technical instructors, including exposure to current industry practices.
    - Implement quality assurance benchmarks across institutions to reduce delivery variability.
5. **Addressing Early-Stage Education Gaps**
    - Strengthen literacy, numeracy, and critical-thinking instruction at the primary and secondary levels, ensuring that students enter higher-level training with strong learning foundations.
6. **Aligning Workforce Development with Enterprise Growth**
    - Track new business density alongside GDP and employment data to ensure sufficient job creation for a growing skilled workforce.
    - Promote entrepreneurship and reduce administrative barriers to business formation, expanding domestic demand for trained talent.

By shifting the national workforce development conversation from curriculum alignment alone toward a **holistic labour-market strengthening strategy**, Jamaica can retain and optimise its talent base while building resilience against external pull factors. Addressing retention, enhancing delivery quality, and embedding soft skills—alongside stimulating enterprise growth—will be essential to achieving Vision 2030 goals and maintaining Jamaica's competitive edge in a globalised economy.

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