TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY

SKILLS NEEDS ANTICIPATION

WORKPLACE SKILLS AND SATISFACTION SURVEY (LOGISTICS SECTOR)

Table of Contents

List of Abbreviations

ACOP	Association of Off-Dock-CFS Operators of the Philippines
ACYOP	Alliance of Container Yard Operators of the Philippines
AISL	Association of International Shipping Lines, Inc.
CBW	Customs Bonded Warehouse Operators Confederation Inc
CCAP	Cold Chain Association of the Philippines
CFS	Container Freight Station
DOLE	Department of Labor and Employment
DTI	Department of Trade and Industry
GTC	Green Technology Center
4IR	Fourth Industrial Revolution
HR	Human Resource
ILO	International Labour Organization
INHTA	Inland Hauler and Truckers Association Corporation
IT-BPM	Information Technology and Business Process Management
LGC	Lina Group of Companies
LSPH	Logistics Services Philippines
MOA	Memorandum of Agreement
NC	National Certificate
NTESDP	National Technical Education and Skills Development Plan
OFW	Overseas Filipino Worker
PDP	Philippine Development Plan
PLSA	Philippine Liner Shipping Association
POEA	Philippine Overseas Employment Administration
PUV	Public Utility Vehicle
RFID	Radio-Frequency Identification
SCMAP	Supply Chain Management Association of the Philippines
SNA	Skills Needs Anticipation
TABS	Trucking Advanced Booking System
TechVoc	Technical Vocational
TESDA	Technical Education and Skills Development Authority
TNVS	Transport Network Vehicle Service
TR	Training Regulation
TVET	Technical-Vocational Education and Training
WSS	Workplace Skills and Satisfaction

List of Tables

List of Figures

EXECUTIVE SUMMARY

The government and the private sectors have been working together to develop the workforce of the country consistent with the Logistics Services Philippines' (LSPH) 10 Commitments. In line with this, the Technical Education and Skills Development Authority (TESDA), the Department of Trade and Industry (DTI), and the industry players conducted an industry consultation which served as a venue for determining the sector's current challenges and opportunities, and skills needs, among others. While it is important to identify current skill requirements, forecasting skill requirements are also critical for policymakers and educators to better perform policy and program development interventions. This can be accomplished by administering a Skills Needs Anticipation through the Workplace Skills and Satisfaction (SNA-WSS) Survey.

The SNA-WSS Survey for the Logistics Sector is especially relevant given that the industry's goals and targets include skills development, as outlined in the Philippine Multimodal Transportation and Logistics Industry Roadmap (Philippine International Seafreight Forwarders Association, 2017). The Logistics sector is also among the priority sectors in the Philippine Development Plan (PDP) and one of the key job generators according to the Department of Labor and Employment (DOLE), as cited in the National Technical Education and Skills Development Plan (NTESDP) 2018-2022.

Methodology

- A descriptive cross-sectional design was used to characterize the variables involved in the study.
- The SNA Manual developed by TESDA with the technical assistance of the International Labour Organization (ILO) served as a basis in the development of the survey questionnaire.
- The questionnaire is subdivided into 12 sections: (1) Profile of the Company, (2) Basic organizational background, (3) Critical human resources, (4) Skills in the business, (5) Emerging skills associated with industry developments, (6) Green jobs and the Logistics sector, (7) Learning and development, (8) Work and employment practice, (9) Business strategy, (10) Work processes and technology, (11) Organizational performance, and (12) Workforce matters.
- Respondents were sampled from 245 companies from various groups including the Association of Off-Dock-CFS Operators of the Philippines (ACOP), Alliance of Container Yard Operators of the Philippines (ACYOP), Association of International Shipping Lines, Inc. (AISL), Customs Bonded Warehouse Operators Confederation Inc. (CBW), Cold Chain Association of the Philippines (CCAP), Inland Hauler and Truckers Association Corporation (INHTA), Philippine Liner Shipping Association (PLSA), Supply Chain Management Association of the

Philippines (SCMAP) and, Lina Group of Companies (LGC). One Port Operator company that is not a member of any of these associations was included in the sample frame.

- Stratified random sampling was used to identify the sample size per subsector, and circular systematic sampling to select the actual respondents who will participate in the study.
- The following subsectors were considered as the strata: (1) Container Service, (2) Port Operators, (3) Customs Bonded Warehouses, (4) Customs Broker, (5) Domestic and International Shipping Lines, (6) Inland Hauler and Trucking, (7) Land/Air/Sea Freight Forwarding, (8) Off-Docks-CFS Operation, (9) Supply Chain Management, and (10) Wet and Dry Warehousing. The Domestic and International Shipping Lines subsector is further categorized into Domestic Shipping Line and International Shipping Line. Likewise, the Wet and Dry Warehousing is further divided into Wet Warehousing and Dry Warehousing.
- A substitution replacement was used for some of the sampled facilities where the enumerators had difficulty contacting or obtaining cooperation. But substitution was not applied for respondents who have expressed their non-commitment for reasons such as hectic schedules and prior commitments, among others.
- The survey yields a sample size of 53 respondents.
- The survey was administered by an enumerator via a Zoom interview and self-administered via an online survey. In both cases, the Jotform version of the questionnaire was utilized.
- For the proper implementation and standardization of the survey, the survey guide and Jotform guide were developed and disseminated to the participating facilities. The documents contain necessary reminders to help respondents navigate through the survey platform and the questionnaire.
- The survey was conducted from October to mid-December 2021.
- The survey collected data on 18 participating facilities from nine subsectors. No responses were received from the Port Operators subsector as well as the Domestic Shipping Lines and Wet Warehousing subcategories. Three of the 18 facilities were surveyed via Zoom interview.
- The validated responses were used to generate tabulations and correlate various indices.

Highlights of the Result of Study

1. Profile of the Logistics Sector
    - Most of the employees are technical rank and file/frontliner for all of the subsectors except for Container Service and Wet and Dry Warehousing where most of the employees are admin and support rank and file, and managers and supervisors, respectively.
    - In terms of employment status, 64.76% are employed full-time while 15.53% are part-time and 19.71% are outsourced. This is true for most of the subsectors except for Customs Broker where the majority are part-

timers, as well as Wet and Dry Warehousing where the employees are equally distributed.

- Of the total employees, 49.69% are classified as technical rank and file/frontliners, 24.61% are admin and support rank and file, and 23.87% are managers and supervisors. There is one Inland Hauler and Trucking facility that did not provide an answer (1.82%).
- The participating companies across the subsectors are dominated by male employees except for Inland Hauler and Trucking, Off-Docks-CFS Operation, and Supply Chain Management.
- In terms of the highest educational attainment, the majority of the employees for most of the subsectors are college-level graduates (44.10%). However, in Inland Hauler and Trucking, and Wet and Dry Warehousing, the majority of employees are high school graduates.
- Concerning the age bracket, 44.17% of the workforce is aged 18 to 34, while 31.55% are aged 35 to 44, and 24.29% are 45 and above. However, in Customs Bonded Warehouses, Inland Hauler and Trucking, and Supply Chain Management the majority of the workforce are aged 35 to 44 while the majority for Off-Docks-CFS Operation is aged 45-above.
- Only 3 out of 18 facilities are multinational. The main offices of these are located in the Philippines, Hong Kong, and the United States of America.
- For all subsectors, the majority of employees earn a gross monthly salary that ranges from above minimum wage to less than PhP26,000, except for Customs Broker, which has an equal percentage of employees earning the said salary range and a minimum or below wage.
- In Customs Broker (100%), Off-Docks-CFS Operation (100%), and Supply Chain Management (33.33%), 10%-50% of their employees are promoted to managerial and supervisory positions while the rest of the subsectors have less than 10% to none.
- With regards to information sharing, the majority of the facilities share financial information, business plans, and market analysis only with some of their employees, while operational challenges are shared with all employees.
- When asked to rate various business approaches, 44.45% of the facilities agree that their business mostly competes in a market of premium quality products or services.
- Almost half of the facilities are neutral that their products and services have a ‘more-than-average’ amount of customization compared to other enterprises in the logistics sector (44.44%), the facilities also noted that their products and services rely on developing unique or innovative products or services (55.56%).
- The facilities rated the statement “the competitive success of their products and services is dependent on price in the vast majority of cases” as equally agreed and neutral.
- When it comes to the core equipment condition, the majority of the facilities for most of the subsectors are up to date compared to the best commonly

available technology in the country (77.78%) while it is 1 to 5 years behind compared to those from overseas (44.44%).

- Inland Hauler and Trucking is the only subsector with facilities that have equipment that is more than five years behind compared to those in the country and overseas.
- In terms of the outcomes rating from 2020 to 2021, the majority of the facilities' profitability and total sales/revenue decreases while the market share stays the same for 44.44% of the facilities. Meanwhile, Customs Broker and Domestic and International Shipping Lines have increased their profitability, total sales/revenue, and market share. As for Customs Bonded Warehouses, profitability stays the same while their market share decreases.

2. Recruitment in the Logistics Sector
    - Almost half (49.39%) of the vacancies in the facilities are to be filled by a college graduate and 5.94% by a college-level undergraduate, and this is true for most of the subsectors except Inland Hauler and Trucking and Wet and Dry Warehousing where majority required a high school diploma as the highest educational attainment.
    - In terms of technical-vocational education, only 1.11% of the facilities have vacancies to be filled by a TechVoc undergraduate and 6.17% by a TechVoc graduate.
    - The facilities' responses with regards to the required educational attainment for the vacancies may be influenced by the old education system; thus, explaining the lack of junior and senior high school undergraduates and graduates. In particular, one Inland Hauler and Trucking facility mentioned that most of their applicants are from the old educational curriculum.
    - By policy, more than 50% of the positions require a college degree for 44.44% of the facilities that responded to the question while Inland Hauler and Trucking, and Supply Chain Management do not require a college degree.
    - Additionally, by policy, more than 50% of the positions require continuous learning or developmental activities (38.89% of the facilities), induction training of more than 2 weeks (33.33% of the facilities), and at least 3 years of industry-relevant experience (22.22% of the facilities).
    - More than 50% of the positions require a Technical Vocational Certificate or National Certificate for 22.22% of the participating facilities. However, Customs Broker and Domestic and International Shipping Lines do not have positions that require Technical Vocational Certificate or National Certificate.

3. Attrition in the Logistics Sector
    - 4 out of 9 subsectors have skills/jobs which are hard-to-fill (i.e jobs that have been unfilled in the last six months) including Container Service, Customs Broker, Land/Air/Sea Freight Forwarding, and Supply Chain Management.

In the case of a facility under the Inland Hauler and Trucking, vacancies are filled within a month and they employ internal or external recruitments in their strategies.

- No hard-to-fill skills were identified for facilities under Domestic and International Shipping Lines and Off-Docks-CFS subsectors.
- The most common hard-to-fill skills under the technical rank and file/frontliners across multiple subsectors are electricians, forklift drivers, forklift operators, master mechanics, and mechanics.
- Among managers and supervisors' occupational types, the operations manager is the most common hard-to-fill skill across multiple subsectors.
- Besides the listed jobs in the survey, Internal Auditor is also cited as one of the hard-to-fill jobs by the Customs Broker facility.
- Only three subsectors identified themselves as having a high attrition rate. Custom Broker (managers and supervisors), Inland Hauler and Trucking (technical rank and file/frontliner), and Supply Chain Management (all occupational types) have a fast turnover (i.e. employees are difficult to retain for more than six months). Particularly, drivers have fast turnover according to one Inland Hauler facility.
- The reasons specified for a fast turnover of employees are the staff's disinterest in long-term commitment and shift to other employment opportunities locally and abroad. Other reasons include personal reasons, establishing their own brokerage company, seeking better employment opportunities, and family matters.
- Less than 10% of the facilities' current employees would be difficult to replace within three months of resignation for the majority of the subsectors; while there is none for the facilities in Customs Bonded Warehouse and Off-Docks-CFS Operation. The percentages vary for the facilities in Inland Hauler and Trucking and Land/Air/Sea Freight Forwarding. One Land/Air/Sea Freight Forwarding facility said that more than 50% of the employees will be difficult to replace since what they are looking for are drivers who are skilled.
- Across the subsectors, managers (e.g. General Manager, Operations Manager) are the common positions that would be difficult to replace within three months of resignation. Further, drivers are also one of the most difficult to replace in one Inland Hauler and Trucking facility and Land/Air/Sea Freight Forwarding facility. Although, the jobs still vary across subsectors and occupational types.
- Most employees leave their jobs due to resignation (77.25%) which is true for the nine subsectors except for the Off-Docks-CFS Operation (only represented by one facility); whereas others leave due to the end of the contract (5.65%) and retirement (17.10%).
- Employees resign due to desire for a higher salary, desire or need to relocate either locally or internationally, health issues, and career advancement. Drivers are among the most difficult to replace and is an in-demand jobs abroad.

4. Performance of Employees
    - The majority (58.97%) of the participating facilities identified their employees as able to perform the job and this is true for most of the subsectors. However, some (36.92%) of the employees have the potential to perform more demanding duties than they currently have as mostly represented by the Customs Broker, Domestic and International Shipping Lines, and Off-Docks-CFS Operation subsectors.
    - As for the employees with the potential to perform more demanding duties, all of the facilities in all subsectors, except Inland Hauler and Trucking, have undertaken actions or interventions. Consequently, most of these subsectors also have policies covering business plans, training plans, training budgets, staff development policies/plans, and the development of high potential staff. In contrast, despite undertaking actions or interventions, the respondents for the Wet and Dry Warehousing and Domestic and International Shipping Lines subsectors noted that they do not have policies covering the development for high potential staff. In terms of statements such as supporting non-job-related training, employees having their say in their training needs, provision of training that is only required by the job, and training that covers future skills needs, more subsectors still agree, although some facilities answered “neutral”.
    - The results show that there are only a few (4.12%) underperforming employees with all of the respondents citing the lack of soft skills (e.g. great interpersonal skills and customer service) and the lack of socio-emotional skills (e.g. accuracy and self-control) as the topmost reasons. Meanwhile, the least common reasons include the lack of advanced Logistics skills (e.g. project management) and the lack of language skills.
    - The respondents were asked to rate their employees’ behavior in terms of going above and beyond the call of duty without being asked, taking up the duties of a colleague without being asked, regularly putting in more hours than contractually expected, and making helpful suggestions for improving the operation within the organization. Based on the survey results, the highest percentage of facilities have 10% to 50% of their employees exhibiting the behavior, which is true for all of the mentioned behaviors.

5. Current and Future Skills Demand
    - From 2020 to 2021, the employee size for 38.89% of the participating facilities decreased (Container Service, Customs Bonded Warehouse, Land/Air/Sea Freight Forwarding, and Wet and Dry Warehousing), 38.89% remained constant (Customs Broker and Inland Hauler and Trucking), and 22.22% increased (Domestic and International Shipping Line, Inland Hauler and Trucking, Off-Docks-CFS Operation, and Supply Chain Management).
    - Whereas it is expected that from 2021 to 2022, 50% will remain constant, 44.44% will increase, and 5.56% will decrease in employee size.

- Only Off-Docks-CFS Operation has an expected decrease in the number of employees. No additional employees will be needed in 2022.
- Supply Chain and Management is the only subsector with a facility that has stated that it will require more than 50% more employees in 2022.
- The skills/jobs which are not applicable (i.e, non-existent) to any of the facilities from across the different subsectors are airline staff, estimator, express operators and integrators, ticketing issuing/travel clerk, Transport Network Vehicle Service (TNVS) driver /taxi driver, and resource czar (works with machine learning in optimal resource consumption).
- Skills/Jobs that are projected to have no change for most of the facilities are cargo handling, customer service representative/associate, dispatcher, documentation clerk, and administrative clerk.
- Master mechanic is the job which is projected to have the highest shortage at 27.78%, followed by truck drivers, forklift operators, welder, and procurement manager at 22.22%.
- In cases where there is a surplus in the skills/job, it only accounts for 5.55% to 11.11% of all responding facilities.
- There are several skills/jobs, including the common skills with shortage and are hard-to-fill, which the facilities said can be addressed by a Technical-Vocational Education and Training (TVET) program. However, in cases where the facilities noted that the jobs cannot be addressed by a TVET program, one of the cited reasons is because the skills/jobs (e.g., cargo handling, courier, delivery associate/helper) needed can already be attained through industry experience.
- The majority of the facilities identified electrician (100%), master mechanic (100%), mechanic (100%), forklift driver (87.50%), and forklift operator (77.78%) to be addressable by TVET programs.

6. Emerging Skills Associated with Industry Developments in the Logistics Sector
    - The majority of the emerging skills associated with the Fourth Industrial Revolution (4IR) that facilities were asked about do not apply to most of them in the next 1-5years. In cases where the skill applies to the facility, the highest percentage accounts for more skills demanded as an impact, except for Autonomous systems, which will have less demand for skills.
    - The emerging skills associated with the new normal will almost always require more skills. This is also true for other industry development such as Radio-Frequency Identification (RFID).
    - Facilities were able to identify various other emerging skills. This includes soft skills (e.g., analytical thinking, people management, crisis management, etc.), digital/IT-related skills (IT-system, data security, software development, etc.), warehouse, supply chain, and trucking-related skills (e.g., end-to-end supply chain, real-time warehouse inventory system, Trucking Advanced Booking System (TABS), etc.), as well as emerging jobs (Customs Import and Export Systems Analysts/Specialists, Online Tariff Classification Practitioner, Customs Valuation System Specialists, etc.).

- All of the facilities in this survey have identified at least one emerging skill that applies to them, and most of these facilities for the majority of the subsectors are prepared for these emerging skills, except for Inland Hauler and Trucking and Wet and Dry Warehousing.
- Most of the facilities have established plans to address the requirements (69.23%) and have started some initiatives or programs in terms of training and development of the human resource (53.85%). There are also some 46.15% that started some initiatives/programs for the acquisition of equipment and materials relevant for the requirements.
- Re-tooling and upskilling to acquire the required competencies of the existing employees is what most of these facilities (50%) do rather than hiring new employee/s with the necessary skills (38.89%). But then, there are also 5.56% of the facilities that do not prepare their human resource yet.

7. Green Jobs in the Logistics Sector
    - The extent to which various aspects of green jobs are implemented varies by facility. The majority of those who have created or changed some jobs have done so to help in reducing energy, materials, and water consumption, minimizing waste, and protecting the ecosystem and biodiversity. Whereas, 44.44% of the facilities have not taken any action yet to help with decarbonization but intend to do so.
    - Management/segregation/disposal of waste, adoption of Euro 4 or Euro 5, and installation of solar panels are common provisions implemented by facilities that have stated that they have plans or have begun to modify or create green jobs.
    - Only 3 out of the 9 subsectors have facilities that made use of the tax incentives/import duty exemption programs. One example cited was the Inland Hauler and Trucking facility's tax incentives through donations to charitable institutions. Since the facility is delivering goods to their customer, receiving returned items is normal. Instead of disposing or storing it, rejected goods are donated to charitable institutions as long as still edible and have not expired. Even wet cardboards are being donated to charitable institutions.
    - Only 4 out of 9 subsectors sought or received assistance from government agencies, with DOLE being the most common among the agencies mentioned.
    - Out of nine subsectors, five have most of their facilities aware of the emerging skills resulting from green jobs. However, note that only 44.44% of the facilities surveyed are aware of the emerging skills resulting from green jobs.
    - Some examples of emerging green skills/jobs include Waste Disposal Professional, Industrial Waste Handling Specialist, and Solar Panel Installers. The existing employees/department have also been tasked to assist with greening, with truck drivers, utility workers, and maintenance department workers as among those in charge of workplace greening.

- The majority of the facilities' business needs in green industry developments, such as clean energy goods transportation, saving technologies, carbon emissions monitoring mechanisms, vehicle retrofitting, cleaner fuels, and fully automated processes, are related to knowledge, with only 44.44% being related to competencies. Most of the facilities only have business needs related to skills when it comes to fuel-saving technologies and eco-driving.

8. Policies/Programs for the Employees in the Logistics Sector
    - Not all of the facilities have a career or structured succession planning policies/practices in place for the current and future development of employees such as all, if not, majority of the facilities in the Domestic and International Shipping Line subsector, and Inland Hauler and Trucking subsector. Moreover, employees in the Customs Broker and Off-Docks-CFS Operation subsectors are most supported by the said policies.
    - For employees who are unable to perform their jobs, the regular actions taken include appraisal or performance reviews (85.71%) and mentoring (85.71%). Those related to training, such as increased training activity/spend or increase/expand trainee programs (57.14%), and conduct of re-training (42.86%) are only at the top 4 and 6 in the list, respectively.
    - On average, only 43% of the facilities that have high-performing employees (i.e. those who have the potential to perform more demanding duties than they currently have) include structured programs for managing such employees. Yet, 92% of facilities reported to have undertaken actions to utilize their potential. Among the actions taken by the facilities, training was the most common (e.g., leadership training, regional/concurrent roles/multifunction training). Other actions include incentives/rewards (e.g., monetary benefits like travel allowance), opportunities for career growth (e.g., promotion), and performance evaluations/team discussions.
    - The majority of facilities provide the majority of their full-time employees pay-related and non-pay benefits. For pay-related benefits, overtime pay is the most available to employees at 62.33%; whereas 61.39% of full-time employees are eligible for non-pay benefits (e.g., child-care, travel allowance, etc.).

9. Performance of TVET Graduates and/or TVET Certified Employees
    - Out of the nine subsectors, only six have TVET Graduate and TVET Certified employees namely, Container Service, Customs Bonded Warehouses, Inland Hauler and Trucking, Land/Air/Sea Freight Forwarding, Supply Chain Management, and Wet and Dry Warehousing.
    - Among the participating facilities that have employees who are TVET graduates and certified, 56.25% gave a satisfactory rating on their TVET graduate and TVET certified employees’ work and performance.
    - In Off-Docks-CFS Operation, 10% to 50% of the existing employees are TVET graduates and no TVET certified.

- Customs Broker and Domestic and International Shipping Lines do not have TVET Graduates and TVET Certified employees.

Recommendations

1. The review of existing or development of new Training Regulations (TR) to fit the technical skills/job requirements of the Logistics sector is recommended.
   1.1. The identified skills/jobs in this survey (found in Annex A and Annex B of this paper) shall comprise the priorities of TESDA for program development and scholarship allocation.
   Meanwhile, the jobs/skills from the list which require higher education or baccalaureate degree may be consulted/ endorsed to government agencies (e.g., Commission on Higher Education) with jurisdiction to it.
   1.3. Airline personnel will be further validated with industry partners during the presentation of this report. The previous industry consultation recommended that this job be prioritized; however, according to this survey, it is one of the jobs that are not applicable to all of the facilities. The result, however, could be influenced by the low response rate.
   1.4. As part of the existing MOA between and among TESDA, DTI, and the LSPH Associations, the support of the member companies/facilities in response to the implementation of the programs should be reiterated. TESDA, through its partner associations and/or established boards, should ensure the support of the industry in terms of the development, review, and implementation of the related programs for the Logistics sector.

2. Furthermore, investigating the facilities' or the entire logistics sector's awareness of 4IR and green jobs is critical to ensure readiness for the expected changes in the labor market brought on by industry developments, as well as to encourage compliance with the Green Jobs Act.
   2.1. For those that are still unaware of the green jobs (i.e. less than half of the participating facilities), TESDA may coordinate with DOLE specifically on “programs, projects, and activities pertaining to basic, higher and technical-vocational education and training, database that identifies and links green job opportunities with private and public entities, and information on knowledge and skill requirements of a green economy” as provided in the Green Jobs Act. Through TESDA’s initiatives in greening TVET, TESDA programs that will be implemented must be aligned or useful in the industries that will support the creation of green jobs.
   2.2. Meanwhile, TESDA shall particularly focus on initiatives relating to human resource training and development directed to facilities that are already aware of the emerging skills resulting from industry developments and green jobs and have undertaken steps to address the needs.
   2.3. Particularly, TESDA’s Green Technology Center (GTC) may aid to meet the emerging green demand of industry personnels. The GTC offers a variety of

green skills training courses which are integrated in the TechVoc curriculum. Furthermore, GTC is involved in the “greening of TRs; assessment and certification; and training of trainers on green technologies such as renewable energy, efficient energy use and management, water and wastewater treatment, waste management recovery and recycling and environmental consultancy and green ICT” (DOLE, 2020).

3. Likewise, there is a need to review/re-assess training programs and TRs to cope with the changing demands of the industry in relation to industry developments and green jobs.
   3.1. The higher demand for skills due to industry developments, such as technological advancement and workplace adjustments to the new normal over the next 1-5 years may require the re-assessment of the existing training programs. For instance, emerging skills associated with the industry developments such as digital/IT-related skills (IT-system, data security, automation, Artificial Intelligence, etc.) may be validated with the industry whether these may be embedded in the existing programs or if an entirely new program for the sector should be developed, particularly as some of the emerging skills are cross-sectoral in nature (e.g., Artificial Intelligence).
   3.2. In relation to green jobs, it may be necessary to review and amend the programs and TRs in view of the green competencies which are required/critical to the logistics sector. In doing so, the Implementing Guidelines for Greening the TVET System should be considered (TESDA Circular No. 058, s. 2018).
   3.3. Consequently, the survey identified the status of the facilities’ core equipment in comparison with other Logistics facilities locally and abroad. The subsectors and facilities with up-to-date equipment and tools may be considered equipped with the necessary requirements to cope and support the advancing demands of the industry. It may be considered as a basis for identifying which specific subsectors should the Agency strengthen its engagement with, in response to enterprise-based training. Moreover, DTI may also provide support to the facilities in the sector.
   3.4. Likewise, the trainers and assessors must have the necessary knowledge and skills that can keep up with the industry practices. TESDA should strengthen its capacity for operationalizing the sector's emerging and green skills requirements.

4. Moreover, the socio-emotional and soft skills identified as critical in the sector should be more emphasized in the implementation of the training programs and regulations.
   4.1. Rather than the lack of advanced Logistics skills, the lack of soft skills and socio-emotional skills of the workers are the most common reasons why the employees are unable to perform their job. The cited soft and socio-emotional skills of the participating facilities were mapped with the 21st-century skills. All of the skills mentioned such as communication, negotiation,

and accuracy were already covered and embedded in the TRs. Although the standards appear to be sufficient, the industry is still complaining about the lack of these skills in their workforce; highlighting the need to ensure proper delivery and implementation.

4.2. Critical thinking is a soft skill that is reaffirmed in this study, as it is also one of the skills mentioned as critical to the logistics industry during the consultation. Furthermore, there are other soft skills mentioned in this study, emphasizing the importance of developing workers' soft skills in addition to their technical skills. The full list of soft skills and socio-emotional skills found in this study is in Annex B of this paper.

5. Given that there are shortages of skills/jobs which already have existing TRs, it is necessary for TESDA to further enhance its TVET capacity and soft infrastructures. Dialogue with the industry regarding their perception of TVET programs may also be done.

5.1. Truck drivers, forklift operators, and welders, for example, are among the most in-demand and these are already covered in existing TRs. Generally, there is a relatively high number of enrolled, graduates, assessed, and certified individuals among the Logistics-related TRs. However, shortage of workers still exists and there is only a low percentage of TVET graduates and TVET certified employees in the participating facilities. Thus, further development of these capacities may be required to cope with the demands of the sector.

5.2. TESDA may engage more women to participate in Logistics-related TRs in light of female-dominated sectors and a Supply Chain Management's plan to expand into hiring female warehouse personnel (e.g., Warehousing Services NC II, Warehousing Services NC III, Warehousing Services NC IV). This could be one of the focus areas of TESDA's Gender and Development initiative in the non-traditional trade (NTT) implementation in accordance with the Magna Carta of Women.

6. Continuous training programs and learning and developmental activities must be in place to ensure and maintain the quality performance of the workforce.

6.1. Training comes as one of the interventions for workers with potential to perform more demanding duties and those workers who are unable to perform their job. TESDA to assist through the Tulong Trabaho program or other scholarship programs.

6.2. TESDA to allocate scholarship provisions for those which have not been recommended yet for the prioritization of scholarship allocation and were identified as needed especially for the next 1-5 years.

7. There must be continued dialogue between TESDA, and other key players of the industry such as the academe, government agencies, and key private institutions, among others. This is to ensure that the programs and policies addressing the skills demands and mismatches, and the economic and labor opportunities are aligned. Moreover, a dialogue with the industry shall help ensure that the programs developed are utilized and recognized by the Logistics sector.

CHAPTER 1
INTRODUCTION

The government and the private sectors have been working together to develop the workforce of the country consistent with the Logistics Services Philippines' (LSPH) 10 Commitments:

1. We recognize supply chain management, particularly logistics, as a necessary component of any competitive business;
2. We shall not make for ourselves any additional step that will be burdensome to businesses;
3. We shall establish a platform for genuine dialogue between the public and private sector with the goal of realizing a globally competitive logistics services sector, ultimately leading to competitive supply chains and a competitive economy;
4. We recognize the role that the logistics services sector plays in ensuring ease of doing business;
5. We shall encourage and develop government investment commitments, particularly in the supply chain and logistics services sectors that will foster competitive business and improve quality of life in the Philippines;
6. We commit to finding long-term solutions that address problems that affect the logistics services sector's ability to enable business competitiveness;
7. We shall adopt a high standard of regulatory practices;
8. We shall foster a culture of knowledge-sharing and benchmarking through the establishment of a Logistics Observatory;
9. We shall continue to promote and encourage investments in infrastructure, in critical areas and strategic points in the country, both from the public and private sectors, that will further facilitate the logistics service sector's ability to serve its customers;
10. We shall develop a competitive and future-ready logistics workforce that will address the current and future needs of the logistics services sector. (DTI, 2021)

TESDA, DTI, and the logistics industry collaborated on the development of a program intervention for the sector. An industry consultation was held which provided a venue for determining the sector's current challenges and opportunities, and skills needs, among others. The sector is experiencing a scarcity of qualified/experienced/trained personnel, a lack of technical and soft skills among workers, a lack of training/access to necessary training, workers shifting to other employment opportunities/migrating to other countries, and suchlike. Even so, there are opportunities in the logistics sector in terms of employment, training, upgrading of facilities and warehousing systems, as well as digitalization and automation. In that regard, industry players suggested doing training/certification/standardization to address the shortages for the majority of the skills/jobs. As the authority in technical education and skill development in the Philippines, TESDA can assist in addressing necessary training-related support and programs for the

sector. As such, the information gathered during the consultation served as TESDA's basis for the following:

- Determining whether existing training programs and TVET capacity could meet the industry demand;
- Reviewing of the existing Training Regulations/Competency Standards;
- Developing new training programs as deemed necessary; and
- Prioritizing scholarship allocation

While identifying the current skill requirements is important, forecasting skill requirements is also critical so that policymakers and educators can better perform policy and program development interventions. This can be attained through the conduct of Skills Needs Anticipation through Workplace Skills and Satisfaction (SNA-WSS) Survey. On June 25, 2021, the stakeholders who were engaged in the consultation signed a Memorandum of Agreement (MOA), where a part of this includes the conduct of the SNA-WSS Survey.

TESDA, together with third-party government agencies, piloted SNA-WSS in 2019-2020 for the Construction and Information Technology and Business Process Management (IT-BPM) Industry, which will serve as a benchmark for the conduct of the succeeding WSS surveys. For 2021, TESDA surveyed the Logistics and Health sectors, which are among the priority sectors in the NTESDP 2018-2022.

The conduct of the SNA-WSS Survey for the Logistics Sector is especially relevant given that the industry's goals and targets include skills development, as outlined in the Philippine Multimodal Transportation and Logistics Industry Roadmap (Philippine International Seafreight Forwarders Association, 2017). The roadmap is a private sector roadmap recognized by the Department of Transportation National Implementation Plan and the DTI's National Logistics Master Plan, and it aligns strategies in a phased approach to address issues in the Logistics sector (Romero & Agatep, 2018).

Figure 1 depicts the goals and targets of the industry from Phase I to Phase III. Phase I focuses on "formulation of soft infrastructure as well as refining and concretizing existing policies essential for a solid and environmentally sustainable logistics system..." which includes policies on skills development among others. Phase II, on the other hand, focuses on policy implementation, "specifically programs that promote skills development".

Figure 1

Goals and Targets for the Logistics Industry

Source. Philippine International Seafreight Forwarders Association. (2017). Philippine Multimodal Transportation and Logistics Industry Roadmap.

1.1 Objectives of the Study

The results of the SNA-WSS Survey for the Logistics sector aim to provide information to Technical-Vocational Education and Training (TVET) stakeholders about potential future skills needs and job-skills mismatch, as well as to identify actions that can be taken to address the logistics sector's requirements. The specific objectives of the study are as follows:

1. Provide quantitative measures on skills (e.g., skills gaps, skills shortages, skills utilization in the workplace);
2. Assess factors that are likely to impact skills use;
3. Identify emerging future skills; and
4. Determine the satisfaction of employers on the competencies and performance of TVET graduates in the workplace.

1.2 Scope and Limitations of the Study

To ensure that the various characteristics of the entire logistics sector are covered in this study, the sampling frame was obtained from different logistics associations that represent one or multiple subsectors. Initially, the study would like to cover all of the logistics associations present in the consultation, but due to some reasons such as overlaps in the members of some associations and data privacy concerns, the database that comprised the sampling frame was provided by the following:

1. Association of Off-Dock-CFS Operators of the Philippines (ACOP)
2. Alliance of Container Yard Operators of the Philippines (ACYOP)
3. Association of International Shipping Lines, Inc. (AISL)
4. Customs Bonded Warehouse Operators Confederation Inc. (CBWOCI)
5. Cold Chain Association of the Philippines (CCAP)

6. Inland Hauler and Truckers Association Corporation (INHTA)
7. Philippine Liner Shipping Association (PLSA)
8. Supply Chain Management Association of the Philippines (SCMAP)
9. Lina Group of Companies (LGC)

Moreover, the sampling frame also includes one port operator company that is not a member of the associations mentioned above.

The subsectors characterizing these logistics associations were used as the strata. The scope and descriptions of these subsectors were validated with the industry during the validation meeting for the questionnaire and inception report. Furthermore, a copy of the questionnaire, which includes the description of the subsectors was sent to the associations who attended the said meeting for further comments or validation. The descriptions are as follows:

1. **Container Service**
   Container Depot is where several containers are stored or held in transit, once they are unloaded. This depot serves as a central location for shipping and logistics companies to store their containers until they are ready for reloading (Menon, 2021). This subsector generally includes Port and Container Service, but for this research, Port Operator will be treated as a separate subsector.

2. **Port Operator**
   Port shall refer to a “place where ships may anchor or tie up for shelter, repair, loading, or discharge of cargo or other such activities connected with waterborne-commerce, and including all the land and water areas and the structures, equipment, and facilities related to these functions” (Presidential Decree No. 857 s. 1975). The term "port operator" shall then refer to those in charge of a port as defined.

3. **Customs Bonded Warehouse**
   Customs Bonded Warehouse shall refer to “a warehouse facility licensed by the Bureau of Customs to import, receive, and store, without payment of duties and taxes and under bond, goods, raw materials, accessories, and packaging materials either for manufacture into finished products, for export, or storage for the account of authorized end-users or clients” (CAO No. 13-2019, DOF, 2019).

4. **Customs Broker**
   Customs Broker shall refer to a service, in the form of an individual or a firm, that can process different kinds of shipments through customs smoothly and legitimately (Airspeed, 2021). According to Republic Act No. 9280 or the Customs Broker Act of 2004, Customs Broker “shall be a bona fide holder of a valid Certificate of Registration/Professional Identification Card issued by the Professional Regulatory Board and Professional Regulation Commission”. Moreover, “Customs Broker Profession involves services consisting of

consultation, preparation of customs requisite document for imports and exports, declaration of customs duties and taxes, preparation signing, filing, lodging and processing of import and export entries; representing importers and exporters before any government agency and private entities in cases related to valuation and classification of imported articles and rendering of other professional services in matters relating to customs and tariff laws its procedures and practices" (Customs Brokers Act of 2004, Phil.).

5. **Domestic and International Shipping Lines**

   Domestic and International Shipping Lines is further categorized into two and shall refer to those operating in the shipping industry as defined below:

   a. Domestic Shipping refers to "the transport of passenger or cargo, or both, by ships duly registered and licensed under Philippine law to engage in trade and commerce between Philippine ports and within Philippine territorial or internal waters, for hire or compensation, with general or limited clientele, whether permanent occasional or incidental, with or without fixed routes and done for contractual or commercial purposes" (Republic Act No. 9295, 2004).
   b. International Shipping is "the process of importing and exporting goods between different countries via ocean, air, or over the road" (PLS Logistics Services, n.d.).

6. **Inland Hauler and Trucking**

   Inland Haulage is the "transportation from the seaport to the container terminal, and further on to the final destination, and vice versa" (Rahula, 2015). In relation, the hauler is defined as "a person or company employed in the transport of goods or materials by road" (Oxford Dictionary) or a commercial trucking company (Collins Dictionary). For this paper, Inland Hauler and Trucking shall refer to those involved in the transportation of goods as defined above.

7. **Land/Air/Sea Freight Forwarding**

   Freight forwarding is the planning and coordination of the movement of commodities across international borders on behalf of shippers. A freight forwarder will, among other things, negotiate freight rates, track containers, file customs paperwork, and consolidate freight (CAF Worldwide, 2019). Land/Air/Sea Freight Forwarding refers to this activity that takes place by land, air, or sea.

8. **Off-Docks-CFS Operation**

   Off-Docks is one of three intermodal transportation options for moving international containers. This entails trucking a container mounted on a chassis between the marine terminal and the railroad ramp. These containers are stuffed, de-stuffed, and import/export cargo is separated in Container Freight Station (CFS) (BRIEF, 2016). Furthermore, "warehousing, temporary admissions, re-export, temporary storage for onward transit, and outright export and transhipments all take place at such stations." Internationally, "the concept of a

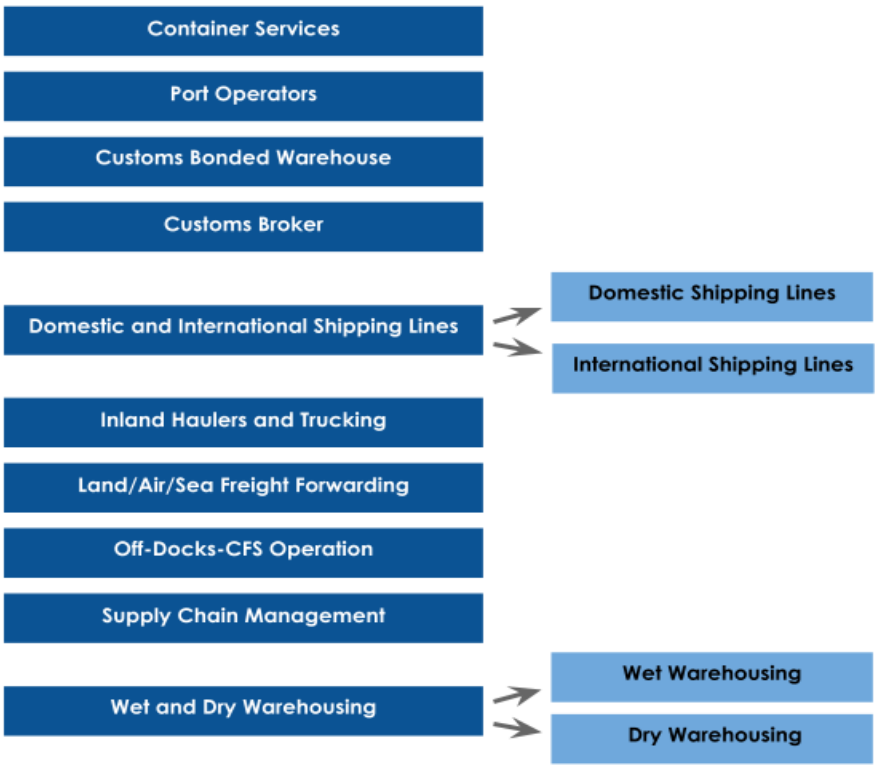
CFS is known as an 'Off Dock Container Yard' (CY), which functions as a port's extended arm" (Manaadiar, 2021). Hence, the operations taking place in this encompass Off-Dock-CFS Operation.

9. **Supply Chain Management**
   Supply Chain Management refers “to the management of the flow of goods and services, and includes all processes that transform raw materials into final products and it involves the active streamlining of a business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace” (Fernando, 2022).

10. **Wet and Dry Warehousing**
    Considering the recommendation of the industry during the scoping meeting, Wet and Dry Warehousing shall include those involved in these types of warehousing:
    a. Dry warehousing is a type of commercial warehousing that specializes in storing consumer goods and packaged food goods at room temperature.
    b. Wet Bonded Warehouses are those that can store alcohol, tobacco, and other excise goods (Johnston Logistics, 2020). Wet warehousing will be defined similarly to how wet bonded warehouse is defined for this study.

Figure 2 shows a visual representation of the subsectors and their subcategories.

Figure 2
Logistics Subsectors and their Subcategories



In terms of respondent characteristics, the respondent should hold at least a senior position in the logistics facility/company, such as Human Resource (HR) head, HR for personnel services, or Operations supervisor. However, collaborative efforts of multiple facility employees are permitted.

Furthermore, if a company is involved in multiple logistics subsectors and operates in multiple locations, the scope of the information must be limited only to the identified facility's location and subsector. As such, the discussion of the results shall only cover the responses of the participating facilities representing the identified location and subsector.

CHAPTER 2
REVIEW OF RELATED LITERATURE

The SNA-WSS Survey is conducted to anticipate the skills requirement in a specific sector with employers as the target respondents. It is the tool used for one of the three methodologies for SNA based on the SNA Framework for Philippine TVET developed by TESDA with consultancy from ILO (TESDA, 2021). This is piloted in two sectors, IT-BPM and Construction. TESDA aims to roll out the survey in other sectors and as such, the survey was conducted in the Logistics sector. The Logistics sector is seen as one of the key job-generating sectors according to DOLE and is identified as one of the priority sectors in the PDP as cited in the NTESDP 2018-2022.

The succeeding sections in this chapter briefly discuss how the logistics operations work, how to ensure its success, and what challenges it faces. Furthermore, it tackles how the technological advancement in the logistics sector and the rise of COVID-19 affect its human resources.

2.1 Logistics Operations

In the research conducted by Kozuch, Marzena, and Sienkiewicz-Malyjurek (2018) it was mentioned that the success of logistic operations involves ensuring the synchronization of material flows to the coordination of processes and the use of resources in the company and the supply chain, and as a consequence ensure the availability of goods in the place and time expected by the customer. The cost of logistics operations would depend on the efficiency of the flow of goods and services to their desired destination. Thus, logistics management needs to be carried out properly.

According to the Council of Supply Chain Management Professionals (CSCMP), logistics management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements (Murphy and Knemeyer, 2015).

Customer satisfaction with the goods and services provided is a major priority. The sector must note that customers have different logistical needs and want; therefore, require a tailored logistics operation. Smart logistics can improve the level of customer service and the optimization of production, and lower the prices of storage and production (Barreto, Amaral and Pereira, 2017). Customers want personalized, convenient, low to no shipping fee, and fast delivery of goods.

However, Logistics operations face many challenges as it operates in global markets. Geographical constraints, language barriers, cultural differences, policies and regulations of a country, and such can greatly affect the operational costs, thus strategic logistics

management is necessary. According to Tongzon (2018), one of the factors behind the poor performance and low international competitiveness of the Philippine logistics sector is its restrictive and incoherent regulatory framework. Moreover, the sector lacks key facilities to make the operations flow efficiently.

Moreover, the pandemic has caused varying economic impacts in the different sectors such that some sectors are at high risk of the collapse of economic activity. A related sector, transport, storage, and communication has a medium-high risk. This sector constitutes 204 million jobs worldwide, “including airline pilots and crew members, drivers, postal and other delivery workers, warehouses personnel that support transport and global supply chains. While some of these workers are negatively affected (e.g. those in the airline industry), others continue to meet the increased demand for online retail” (ILO, 2020).

2.2 Logistics Industry, Technology, and Human Resources

Technology can replace humans in hard and risky tasks thus improving safety and reliability in logistics operations (Cimini et. al, 2019). Many workers are prone to health hazards due to the nature of their work in the industry. Injuries, musculoskeletal diseases, and such are common illnesses.

Moreover, the COVID-19 pandemic poses another threat to employment. With the pandemic, the logistics sector is seeking ways to operate with minimal human interaction, turning to digitalization and automation. Although automation can make tasks easier and increase productivity, this can displace workers. To resolve this crisis, instead of laying off the existing workers, they can be retrained to fill new roles (Gutelius and Theodore, 2019). Training is essential to have advanced logistics skills and workers must be properly trained. For instance, if a maintenance and installation personnel is poor at doing his task, then errors and down-time will increase and the lifecycle costs of the system will soar, compromising the investment in new technology (Calzavara, et al., 2020).

Additionally, the utilization of technology can change the employment demographics. For instance, women are more likely to be employed in e-commerce warehouses versus traditional warehouses, so the growth in e-commerce offers new employment opportunities for female workers (Gutelius and Theodore, 2019). Aging employees can be aided by technology to continue performing their job, especially those engaging in manual labor. They could also serve as a useful and important resource due to their experience (Calzavara, et al., 2020). The new digital industrial revolution holds the promise of increased age-friendly work environments (Calzavara, et al., 2020).

CHAPTER 3
METHODOLOGY

3.1 Research Methodology

The main objective of the study is to determine the current skills supply and demand in the workplace and the existing job-skills mismatches, which can help in the projection of future skills needs. Taking into account the described research objective, a descriptive cross-sectional design was used to characterize the variables involved.

According to Ihudiebube-Splendor and Chikeme (2020), this research design provides a "snapshot of the frequency and characteristics of a condition in a population at a particular point in time". It will allow skills measurement of TVET graduates while describing its relationship among phenomena (i.e., employer's satisfaction). Following this, probability sampling was employed to capture various representatives of the population.

Given the characteristics of the sampling frame, the said research methodology was proven to be appropriate. However, due to the low response rate of the survey, the survey results cannot be used for generalization.

3.2 Questionnaire

The questionnaire for this survey was developed based on the SNA Manual developed by TESDA with the technical assistance of the consultant from the ILO. Modifications were made based on the Logistics Sector's context, with the Industry Consultation Report on Logistics Sector Skills Prioritization (TESDA, 2021) serving as one of the guides. The questionnaire was also shared with the associations for their feedback.

The questionnaire was divided into the sections listed below to achieve the survey's objectives. The descriptions were adapted (with minor changes) from the technical report on the SNA-WSS Survey for the IT-BPM Sector (PSRTI, 2020).

1. **Profile of the Company**
   This gathers information such as the position of the respondent, the name of the company, the location of the facility, and the subsector to which the facility belongs.

2. **Basic Organizational Background**
   This section asks for information on the distribution of employees by 1) occupational type and employment status; 2) highest educational attainment; 3) age group; 4) gross monthly salary (PHP). Further, it asks about the percentage of female employees and gathers information on which companies are part of multinational organizations and the location of their main offices.

3. **Critical Human Resources**

   This particular section asks about the status of employee size from 2020 to 2021, the expected change in employee size for the succeeding years, the presence of unfilled positions in the last six months, whether or not the facility has fast turnover, the occupational types that are difficult to retain, as well as the reasons for fast turnover.

   Likewise, it inquires about the approximate percentage of employees who would be difficult to replace within three months if they resigned, as well as the top three jobs that would be difficult to replace in the event of resignation, the percentage of employees who left due to resignation, contract termination, or retirement, and the top three reasons for resignation.

   Moreover, this section gathers information on the percentage of vacancies in the facility relative to education requirements, the number of employees promoted to managerial and supervisory positions, the presence of structured programs for high potential employees, the percentage of employees with outstanding performance, and the percentage of employees supported by career or structured planning policies or practices.

4. **Skills in the Business**

   For this section, respondents are asked about the percentage of employees according to their performance (i.e., able to perform the job, unable to perform the job, and have the potential to perform with more demanding duties), reasons behind poor performance and corresponding actions applied, whether actions were done for those with more potential and whenever applicable, the reason why no action was done.

   Correspondingly, the respondents were also asked on the percentage of all positions in the facility that by policy require a college degree, two to three weeks of induction training, continuous learning or developmental activities, at least three years of industry-relevant experience, and technical vocational certificate or National Certificate. The number of additional employees needed for the succeeding years was also asked, with the list of areas of skills that may have a shortage, no change, or surplus; whether it will be hard-to-fill or not, and whether those skills needs/requirements may be addressed by a TVET Program.

5. **Emerging Skills Associated with Industry Developments**

   This section contains questions on the emerging skills related to 4IR, new normal, and other industry developments, and how likely those skills will impact skills demand in the next 1-5 years. This section also inquires on the readiness for the emerging skills, actions undertaken by facilities who are ready, and preparations done for the human resource relative to the emerging skills.

6. **Green Jobs and the Logistics Sector**
   Questions under this section include the extent of implementation of each facility on various aspects of green jobs, provisions for any aspects of green jobs, whether the facility has made use of the tax incentives or import duties exemption programs and have received support or is seeking support from any government agency, the name of the agency, the list of emerging skills identified relative to green job, and the relevance of the green industry developments to the current and near-future business needs in terms of knowledge, skills, and competencies.

7. **Learning and Development**
   This section seeks information such as the percentage of payroll expenditure allotted for training. It also seeks the facility's rating of various training-related statements using a 5-point scale where 5 means "strongly agree" and 1 means "strongly disagree".

8. **Work and Employment Practice**
   For this section, questions are about the facility's policies covering various documents (i.e., business, training, and staff development plans, training budget, and development for high potential staff), the percentage of full-time employees entitled to various rewards or opportunities, and the extent of information sharing in the facility concerning financial information, business plans, operational challenges, and market analysis.

9. **Business Strategy**
   Under this section, the facilities are asked to rate various statements regarding the approach to business and the extent of implementation of actions for different areas of business development. Questions on plans of expansion on other areas of business development were likewise included.

10. **Work Processes and Technology**
    This section primarily focuses on gathering information on how up-to-date is the facility's core equipment (i.e., used in the production of goods and services) when compared to the best commonly available technology in the country and overseas.

11. **Organizational Performance**
    This particular section asks about the status of outcomes such as profitability, total sales or revenue, and market share for the period 2020 to 2021. Moreover, it seeks information on the percentage of employees exhibiting various behaviors at work.

12. **Workforce Matters**
    The last section of the questionnaire gathers information on the percentage of employees in the facility that are TVET graduates and TVET certified as well as the satisfaction ratings on their work and performance.

Using Jotform, the questionnaire was then converted into an online survey. This online survey form was used in both data collection methods for this study: the researcher-administered via a Zoom interview and the self-administered via an online survey.

3.3 Sampling and Sampling Techniques

A total of 245 companies were provided by the various logistics associations. Every company is classified in only one subsector and is thus counted only once, regardless of whether it is a member of multiple associations or operates in multiple subsectors.

Stratified random sampling was used to identify the sample size per subsector, and circular systematic sampling to select the actual respondents who will participate in the study. Although companies were selected as the sample for the survey, the unit of analysis is the “facility.” In that regard, the respondent shall only talk about the operations they have for that particular subsector’s facility. Table 1 presents the distribution of the companies by subsector.

Table 1
Distribution of the Logistics Companies by Subsector

Subsector	Number of Companies
Container Service	8
Port Operators	1
Customs Bonded Warehouses	14
Customs Broker	7
Domestic and International Shipping Lines	
○ Domestic Shipping Line	4
○ International Shipping Line	23
Inland Haulers and Trucking	93
Land/Air/Sea Freight Forwarding	15
Off-Docks-CFS Operation	13
Supply Chain Management	22
Wet and Dry Warehousing	
○ Dry Warehousing	21
○ Wet Warehousing	24
Total	245

A substitution replacement was used for some of the sampled facilities where the enumerators had difficulty contacting or obtaining cooperation. That is, the enumerator is unable to locate/identify the sampled facility such that there are no responses from emails, SMS, or phone calls. For this survey, a three-day heuristic guideline was taken into consideration where a three-day attempt for a week could mean (1) a combination of email and calls or (2) 3 days of calls. The enumerator should attempt to call 2-3 times to consider it as one day. Contacting the respondent either through email or call may not necessarily be done on consecutive days.

On the other hand, substitution was not applied for respondents who have expressed their non-commitment for reasons such as hectic schedule, prior commitments, and some other business or operation-related reasons, as doing so (data imputation) would only result in a survey bias. In this case, companies falling under the nonresponse error were not considered. Taking these into consideration, alongside a 10% margin of error and a 95% confidence level, the survey yields a sample size of 53.

Table 2

Distribution of the Final Sample Size by Subsector

Subsector	Number of Companies	%
Container Service	2	3.77
Port Operators	1	1.89
Customs Bonded Warehouses	3	5.66
Customs Broker	2	3.77
Domestic and International Shipping Lines		
○ Domestic Shipping Line	2	3.77
○ International Shipping Line	3	5.66
Inland Hauler and Trucking	17	32.08
Land/Air/Sea Freight Forwarding	5	9.43
Off-Docks-CFS Operation	4	7.55
Supply Chain Management	6	11.32
Wet and Dry Warehousing		
○ Dry Warehousing	3	5.66
○ Wet Warehousing	5	9.43
Total	53	100.00

3.4 Preparation for the Survey

To ensure proper implementation and standardization of the survey, an interviewer manual was developed based on the SNA-WSS Survey for IT-BPM. Modifications were made based on the Logistics questionnaire and data collection method. Additionally, a survey guide was developed and disseminated to the respondents, regardless if researcher- or self-administered, to provide instructions on how to accomplish the survey. Another material developed was the Jotform guide which contains directions on how to use the survey platform and some reminders to ensure a successful submission.

Further, a mail merge session was organized before the conduct of the survey to train the enumerators to efficiently customize and send out the invitation letters and emails. A database, which also became the survey monitoring sheet, was prepared following the conducted session.

3.5 Data Collection Strategies and Process

Since an online survey yields low response rates based on the past experiences of the TESDA Planning Office and face-to-face interviews are not an option given the health restrictions, the commitment of DTI, and the various associations involved in the study was critical.

Furthermore, although an interview is preferred for all respondents to ensure that any clarifications regarding the questionnaire will be answered, resources such as time and the number of hired enumerators, serve as limitations of the study. However, to prevent the survey response from being incomplete or invalid, respondents for self-administered questionnaires were contacted as necessary. A survey guide and a Jotform guide were also prepared and emailed to the participants to provide them with reminders before, during, and after answering the survey.

The online survey link was also provided during the initial email to give the companies an idea of what the survey questions will be. This serves as the initial copy of the survey for those who agreed to participate, particularly those who agreed/opted to be interviewed via Zoom. It was encouraged that they prepare some of the data specifically for Section A, which is data-intensive. Approximations are allowed if the actual percentages are not available.

The survey team conducted the data collection from October to mid-December 2021 and followed the process outlined below in the conduct of the survey:

1. An email was sent to some of the associations to inform them that the survey team will start contacting their member logistics companies.
2. The target respondents were sent an email invitation containing guidelines for those who wish to participate in the survey including the mode of data collection,

online survey link, form password, subsector, and some reminders from the survey guide. The initial email also contains the following attachments:
    a. Invitation letter signed by the TESDA Secretary;
    b. Survey guide; and
    c. Consent form
3. Follow-up emails or calls were made depending on the response to the initial email or the lack thereof.
4. Since some of the first few participating facilities experience difficulty in submitting their responses via the survey platform, the survey team developed a Jotform guide, which was then sent to the respondents as additional reference material.
5. There were a series of follow-ups either via email, calls, and SMS.

Contacting the companies proved to be challenging due to the limitations in the sampling frame such as incomplete or incorrect details. The survey team had to request the assistance of DTI and the logistics associations.

3.6 Editing, Encoding, and Analysis

The enumerator checked the accomplished questionnaires for possible errors or inconsistencies using the clarification guide developed. The database was cleaned based on the validated responses.

Moreover, some of the related responses were coded and combined to generate and correlate various indices. This study considered indices with correlation values of 0.4 and above or those that are at least moderately correlated with one another.

The generated tabulations and the highlights are reported in the succeeding chapter.

CHAPTER 4
RESULTS AND DISCUSSION

This chapter contains the survey findings in the form of summary statistics and tabulations, which are organized by section following the format of the questionnaire.

Several issues arose during the field operations, affecting the survey's response rate. Some of the information in the database/frame is incorrect or incomplete, making contact with the target respondents difficult. As a result, replacements were generated, and the survey team had to contact all of the facilities in the sampling frame.

A total of 18 out of the 53 computed sample size, yielding an overall response rate of 33.96%, participated in the study. Three out of these 18 facilities were surveyed via Zoom interview.

Please note that although Domestic Shipping Lines and International Shipping Lines were considered as the subcategories for the Domestic and International Shipping Lines, no responses have been received from the Domestic Shipping Lines. Further, the same is observed with the Wet and Dry Warehousing. There are no responses received from the Wet Warehousing subcategory. Therefore, all succeeding tables and analyses in this report for the Domestic and International Shipping Lines, as well as the Wet and Dry Warehousing shall only cover one subcategory. However, the responses will still refer to the subsector for consistency.

Likewise, no responses were received from the Port Operators subsector, hence, all succeeding tables following table 3 do not include this subsector.

Table 3
Distribution of Participating Facilities and the Response Rate by Subsector

Subsector	Number of Companies	Response Rate (%)
Container Service	2	100.00
Port Operators	0	0.00
Customs Bonded Warehouses	1	33.33
Customs Broker	1	50.00
Domestic and International Shipping Lines		
○ Domestic Shipping Lines	0	0.00
○ International Shipping Lines	1	33.33
Inland Hauler and Trucking	5	29.41
Land/Air/Sea Freight Forwarding	3	60.00

Subsector	Number of Companies	Response Rate (%)
Off-Docks-CFS Operation	1	25.00
Supply Chain Management	3	50.00
Wet and Dry Warehousing		
○ Dry Warehousing	1	33.33
○ Wet Warehousing	0	0.00

4.1 Basic Organizational Background

Employees across all the facilities were classified into three occupational types: managers and supervisors, technical rank and file/frontliners, and administration and support rank and file.

Most of the employees are classified as technical rank and file/frontliner as shown in Table 4. Further, Table 5 shows that this is consistent across all subsectors except the Container Service and Wet and Dry Warehousing. In the case of the Container Service subsector, there is a slightly higher percentage of admin and support rank and file (35.37%) employees than the technical rank and file/frontliner (35.18%), whereas the majority of the employees in the Wet and Dry Warehousing are managers and supervisors (50%).

TESDA develops policies and programs that aim to improve the technical and vocational skills of the country's workforce, including the Logistics sector. As such, the Agency may consider this proportion of the technical workers in the Logistics sector as the size of the labor market who will benefit from the programs and policies

Table 4

Distribution of Employees by Occupational Type

Occupational Type	%
Managers and Supervisors	23.87
Technical Rank and File/Frontliners	49.69
Admin and Support Rank and File	24.61
Not Indicated*	1.82
Total	100.00

Note. *One Inland Hauler and Trucking facility did not provide an answer.

Table 5

Distribution of Employees by Subsector and Occupational Type

Subsector	Occupational Type (%)			
	Managers and Supervisors	Technical Rank and File/ Frontliners	Admin and Support Rank and File	Total
Container Service	29.46	35.18	35.37	100.00
Customs Bonded Warehouses	26.00	68.00	6.00	100.00
Customs Broker	16.23	67.85	15.93	100.00
Domestic and International Shipping Lines	33.33	38.89	27.78	100.00
Inland Hauler and Trucking	16.15	60.28	23.57	100.00
Land/Air/Sea Freight Forwarding	19.01	51.00	29.99	100.00
Off-Docks-CFS Operation	28.10	36.40	35.50	100.00
Supply Chain Management	26.67	46.67	26.67	100.00
Wet and Dry Warehousing	50.00	42.00	8.00	100.00

Table 6 shows that the majority of the employees are working full time. Although this is not the case for all subsectors (Table 7). More employees are working part-time than full-time in Customs Broker. While in the case of Wet and Dry Warehousing, there is an equal percentage of employees across the employment status.

Table 6

Distribution of the Employees by Employment Status

Employment Status	%
Full-Time	64.76
Part-Time	15.53
Outsourced	19.71
Total	100.00

Table 7

Distribution of the Employees by Subsector and Employment Status

Subsector	Employment Status (%)			
	Full-Time	Part-Time	Outsourced	Total
Container Service	46.64	26.68	26.68	100.00
Customs Bonded Warehouses	50.00	0.00	50.00	100.00
Customs Broker	48.47	51.53	0.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	100.00
Inland Hauler and Trucking	57.14	14.29	28.57	100.00
Land/Air/Sea Freight Forwarding	100.00	0.00	0.00	100.00
Off-Docks-CFS Operation	100.00	0.00	0.00	100.00
Supply Chain Management	97.40	0.00	2.60	100.00
Wet and Dry Warehousing	33.33	33.33	33.33	100.00

Table 8 shows the sex distribution of employees across the participating facilities in which only Inland Hauler and Trucking, Off-Docks-CFS Operation, and Supply Chain Management have predominantly female employees.

Table 8

Percentage of Female Employees by Subsector

Subsector	%
Container Service	18.20
Customs Bonded Warehouses	19.00
Customs Broker	6.00
Domestic and International Shipping Lines	33.33
Inland Hauler and Trucking	56.50
Land/Air/Sea Freight Forwarding	20.30
Off-Docks-CFS Operation	55.50
Supply Chain Management	54.00
Wet and Dry Warehousing	17.00

Table 9 shows the distribution of the employees by the highest educational attainment where the highest percentage is college-level graduates (44.10%), followed by high school graduates (32.54%). Most of the employees for the majority of the subsectors are college graduates, except Inland Hauler and Trucking and Wet and Dry Warehousing where the majority are high school graduates (Table 10). The results could be attributed to the country's old education system. One Inland Hauler and Trucking facility, for example, stated that the majority of their applicants come from the old basic educational curriculum.

Further, six out of the nine subsectors have employees who have undergone technical vocational education.

The participating facility under the Off-Docks-CFS stated that in their existing employees, those with college degrees are the ones working in the office. Whereas, most of their warehouse employees are (1) assigned to the actual handling of cargoes, and (2) forklift operators who are mostly high school or vocational graduates and with licenses and training certificates for handling forklifts. They do not consider college degrees to be necessary for these types of employees and would prefer to give opportunities to people who have completed vocational courses or are graduates of public schools, as well as those who live nearby.

Table 9

Distribution of the Employees by Highest Educational Attainment

Educational Attainment	%
High School graduate (HS Grad)	32.54
Junior High School graduate (JHS Grad)	0.28
Senior High School undergraduate (SHS Undergrad)	0.06
Senior High School graduate (SHS Grad)	1.72
TechVoc course undergraduate (TechVoc Undergrad)	2.62
TechVoc course graduate (TechVoc Grad)	8.18
College level undergraduate (College Undergrad)	7.49
College level graduate (College Grad)	44.10
Master's degree	2.67
Doctoral degree	0.35
Total	100.00

Table 10

Distribution of the Employees by Highest Educational Attainment and Subsector

Highest Educational Attainment	Subsector (%)								
	Container Service	Customs Bonded Warehouses	Customs Broker	Domestic and International Shipping Lines	Inland Hauler and Trucking	Land/Air/ Sea Freight Forwarding	Off-Docks-CFS Operation	Supply Chain Management	Wet and Dry Ware-housing
HS Grad	0.00	0.00	0.00	11.11	71.73	22.54	34.30	19.00	57.00
JHS Grad	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
SHS Undergrad	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00
SHS Grad	0.00	0.00	1.00	0.00	0.20	3.33	0.00	6.33	0.00
TechVoc Undergrad	0.00	0.00	0.00	0.00	2.82	1.89	0.00	9.16	0.00
TechVoc Grad	24.02	0.00	0.00	0.00	1.00	14.44	18.80	8.67	6.00
College Undergrad	1.79	10.00	5.00	11.11	0.40	18.67	12.50	9.53	6.00
College Grad	73.70	90.00	85.00	66.67	18.65	35.69	34.40	46.33	31.00
Master's degree	0.50	0.00	8.00	11.11	4.00	1.67	0.00	0.97	0.00
Doctoral degree	0.00	0.00	1.00	0.00	0.00	1.78	0.00	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 11 shows that the largest percentage of the employees belong to the age group of 18 to 34 years old. However, this is only true for five out of nine subsectors, the remaining subsectors, except for the Off-Docks-CFS Operation, have the largest percentage of employees belonging to the age group of 35 to 44 years old.

Table 11

Distribution of the Employees by Age Group

Age Group	%
18 to 34	44.17
35 to 44	31.55
45 and above	24.29
Total	100.00

Table 12

Distribution of the Employees by Subsector and Age Group

Subsector	Age Group (in years) (%)			
	18 to 34	35 to 44	45 and above	Total
Container Service	47.38	36.83	15.78	100.00
Customs Bonded Warehouses	43.00	45.00	12.00	100.00
Customs Broker	64.98	20.34	14.68	100.00
Domestic and International Shipping Lines	61.11	16.67	22.22	100.00
Inland Hauler and Trucking	32.44	41.00	26.56	100.00
Land/Air/Sea Freight Forwarding	44.00	33.33	22.67	100.00
Off-Docks-CFS Operation	15.70	21.80	62.50	100.00
Supply Chain Management	36.99	42.24	20.76	100.00
Wet and Dry Warehousing	79.67	12.33	8.00	100.00

The facilities in the majority of subsectors are not part of a multinational organization, as shown in Table 13, except for Inland Hauler and Trucking and Supply Chain Management. Thus, there are only three multinational companies of the18 participating facilities with its main office located in the Philippines, Hong Kong, and the United States of America.

Table 13

Percentage of Multinational Facilities per Subsector

Subsector	%
Container Service	0.00
Customs Bonded Warehouses	0.00
Customs Broker	0.00
Domestic and International Shipping Lines	0.00
Inland Hauler and Trucking	20.00
Land/Air/Sea Freight Forwarding	0.00

Subsector	%
Off-Docks-CFS Operation	0.00
Supply Chain Management	33.33
Wet and Dry Warehousing	0.00

As shown in Table 14, the majority (64.03%) of employees earn a gross monthly salary that ranges from above minimum wage to less than PhP26,000. Evidently, in Table 15, this is true for the majority of the subsectors, only that Customs Broker has the same percentage of employees earning the minimum wage or less.

Table 14

Distribution of the Employees by Gross Monthly Salary

Gross Monthly Salary (PhP)	%
Minimum Wage or below	18.59
Above minimum wage to less than 26,000	64.03
26,000 to less than 50,000	10.47
50,000 to less than 70,000	3.28
70,000 or more	3.63
Total	100.00

Table 15

Distribution of the Employees by Subsector and Gross Monthly Salary

Subsector	Gross Monthly Salary (PhP) (%)					
	Min. Wage or below	Above Min. Wage to 26K	26K to 50K	50K to 70K	70K or more	Total
Container Service	25.00	53.50	12.45	3.20	5.85	100.00
Customs Bonded Warehouses	3.00	79.00	10.00	7.00	1.00	100.00
Customs Broker	48.00	48.00	2.00	1.00	1.00	100.00
Domestic and International Shipping Lines	0.00	55.56	22.22	11.11	11.11	100.00
Inland Hauler and	*23.00*	71.60	2.60	2.00	0.80	100.00

Trucking						
Land/Air/Sea Freight Forwarding	23.33	63.13	4.84	4.07	4.63	100.00
Off-Docks-CFS Operation	0.00	71.88	21.87	0.00	6.25	100.00
Supply Chain Management	5.15	64.60	22.34	3.44	4.47	100.00
Wet and Dry Warehousing	32.00	50.00	14.00	1.00	3.00	100.00

4.2 Critical Human Resources

As shown in Table 16, 38.89% of the participating facilities decreased in employee size from 2020 to 2021. This includes all of the respondents from Container Service, Customs Bonded Warehouse, Land/Air/Sea Freight Forwarding, and Wet and Dry Warehousing.

Similarly, 38.89% of all the participating facilities had no change or stayed the same in terms of employee size for the same period. This accounts for the facilities under Customs Broker and Inland Hauler and Trucking.

Meanwhile, all of the participating facilities from the remaining subsectors had an increase in employee size.

Table 16
Distribution of the Facilities by Status of Employee Size, 2020 to 2021

Status of Employee Size	%
Decreased	38.89
Stayed the same	38.89
Increased	22.22
Total	100.00

Table 17
Distribution of the Facilities by Subsector and Status of Employee Size, 2020 to 2021

Subsector	Status of Employee Size (%)			
	Decreased	Stayed the Same	Increased	Total
Container Service	100.00	0.00	0.00	100.00

Subsector	Status of Employee Size (%)			
	Decreased	Stayed the Same	Increased	Total
Customs Bonded Warehouses	100.00	0.00	0.00	100.00
Customs Broker	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	0.00	0.00	100.00	100.00
Inland Hauler and Trucking	0.00	60.00	40.00	100.00
Land/Air/Sea Freight Forwarding	100.00	0.00	0.00	100.00
Off-Docks-CFS Operation	0.00	0.00	100.00	100.00
Supply Chain Management	0.00	0.00	100.00	100.00
Wet and Dry Warehousing	100.00	0.00	0.00	100.00

Whereas, as shown in Table 18, it is expected that the number of employees for half of the facilities will remain constant from 2021 to 2022. The Customs Broker, Land/Air/Sea Freight Forwarding, and Wet and Dry Warehousing include the majority of these, if not all. But then, nearly half of the participating facilities, 44.44% stated that an increase in the number of employees is expected, also including the majority if not all from Container Service, Customs Bonded Warehouses, Domestic and International Shipping Lines, and Inland Hauler and Trucking (Table 19). Only in Off-Docks-CFS Operation has an expected decrease in the number of employees.

Table 18

Distribution of the Facilities by Expected Change in the Number of Employees for the year 2022

Expected Change in the Number of Employees	%
Decrease	5.56
Stay the Same	50.00
Increase	44.44
Total	100.00

Table 19

Distribution of the Facilities by Subsector and Expected Change in the Number of Employees for the year 2022

Subsector	Expected Change in the Number of Employees (%)			
	Decreased	Stayed the Same	Increased	Total
Container Service	0.00	0.00	100.00	100.00
Customs Bonded Warehouses	0.00	0.00	100.00	100.00
Customs Broker	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	0.00	0.00	100.00	100.00
Inland Hauler and Trucking	0.00	40.00	60.00	100.00
Land/Air/Sea Freight Forwarding	0.00	66.67	33.33	100.00
Off-Docks-CFS Operation	100.00	0.00	0.00	100.00
Supply Chain Management	0.00	66.67	33.33	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	100.00

Relative to the current total number of employees, the respondents were asked about the estimated additional employees that their facility will be needing in 2022. Based on Table 20, Supply Chain and Management is the only subsector with a facility that has stated that it will require more than 50% more employees. The remaining facilities in this subsector also have about 10% to 50% additional employees needed.

Moreover, consistent with the expected decrease as reflected in Table 19, Off-Docks-CFS Operation stated that no additional employees will be needed by 2022 (Table 20).

Note, however, that there may be inconsistencies/discrepancies between Table 20 and Tables 18 and 19, which presented the expected change in the number of employees from 2021 to 2022 and the estimated additional employees in 2022. For example, as shown in Table 19, the number of employees in Domestic and International Shipping Lines is expected to increase, but according to Table 20, no additional employees are required by 2022.

Table 20

Percentage Distribution of Facilities by Percentage of Estimated Additional Employees in 2022, by Subsector

Subsector	%				Total
	None	<10	10-50	>50	
Container Service	50.00	50.00	0.00	0.00	100.00
Customs Bonded Warehouses	0.00	100.00	0.00	0.00	100.00
Customs Broker	0.00	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	20.00	40.00	40.00	0.00	100.00
Land/Air/Sea Freight Forwarding	33.33	66.67	0.00	0.00	100.00
Off-Docks-CFS Operation	100.00	0.00	0.00	0.00	100.00
Supply Chain Management	0.00	0.00	66.67	33.33	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00

As shown in Table 21, four logistics subsectors, namely Container Service, Customs Broker, Land/Air/Sea Freight Forwarding, and Supply Chain Management, have facilities with hard-to-fill occupations (i.e., occupations that have been unfilled in the last six months). In contrast, one facility in Inland Hauler and Trucking stated that they have no unfilled positions since they are filled within a month. The facility either conducts internal or external recruitments since positions cannot be left unfilled.

Table 21

Percentage of Facilities with Hard-to-Fill Occupations per Subsector

Subsector	%
Container Service	100.00
Customs Bonded Warehouses	0.00
Customs Broker	100.00
Domestic and International Shipping Lines	0.00
Inland Hauler and Trucking	0.00
Land/Air/Sea Freight Forwarding	33.33
Off-Docks-CFS Operation	0.00
Supply Chain Management	33.33
Wet and Dry Warehousing	0.00

Table 22 lists down the hard-to-fill skills of these facilities. Under the technical rank and file/font liners, the most common hard-to-fill skills across multiple subsectors are electrician, forklift driver, forklift operator, master mechanic, and mechanic. On the other hand, among managers and supervisors occupational type, the operations manager is the most common hard-to-fill skill across multiple subsectors. Besides the listed areas of skills/jobs, Internal Auditor is also cited as one of the hard-to-fill jobs by the Customs Broker facility.

Similar to other previous tables, there are inconsistencies with Tables 21 and 22, particularly for Inland Hauler and Trucking and Wet and Dry Warehousing. Table 21 shows that the mentioned subsectors do not have hard-to-fill occupations. According to Table 22, however, the facilities have identified some skills/jobs as hard-to-fill. It should be noted that although the subsectors identified the skills/jobs as inapplicable to them, they still identified these as hard-to-fill. Thus, resulting to inconsistencies. Moreover, the limitation of a self-administered survey and some of the respondent's unresponsiveness during the data validation may have contributed to the inconsistencies.

Table 22

Hard-to-fill Skills under each Subsector for the next 5 years

Areas of Skills/Jobs	Subsector								
	Container Service	Customs Bonded Warehouses	Customs Broker	Domestic and International Shipping Lines	Inland Hauler and Trucking	Land/ Air/Sea Freight Forwar-ding	Off-Docks-CFS Operation	Supply Chain Manage-ment	Wet and Dry Ware-housing
Administrative Clerk	■				■				
Automotive Chassis Specialist	■				■	■			
Automotive Painter					■	■			
Bus Driver					■	■			
Cargo Handling									
Chassis Repair Personnel					■	■			
Conductor					■	■			
Container Checker								■	
Courier					■				
Customer Service Representative /Associate									

Areas of Skills/Jobs	Subsector								
	Container Service	Customs Bonded Warehouses	Customs Broker	Domestic and International Shipping Lines	Inland Hauler and Trucking	Land/ Air/Sea Freight Forwarding	Off-Docks-CFS Operation	Supply Chain Management	Wet and Dry Warehousing
Dangerous Goods Handling								■	
Dangerous Goods Handling for Sea Transport								■	
Dangerous Goods Regulation								■	
Delivery Associate					■				
Delivery Specialist									
Documentation Clerk					■	■		■	
Dispatcher					■			■	
Electrician	■				■	■		■	■
Export Brokerage Clerk					■				■
Forklift Driver	■				■	■		■	
Forklift Operator	■				■	■		■	
Freight Forwarders						■		■	
Ground Handler									
Heavy Equipment Operator	■				■			■	
Helper									
Import Processors, Consolidators Assistant					■			■	■
Import-Export Inspection Specialists					■			■	■
Inventory Clerk					■			■	
Inventory System						■			
Logistics Support Clerk								■	
Machine Operator	■				■	■			
Master Mechanic	■				■	■		■	
Mechanic	■				■	■		■	

Areas of Skills/Jobs	Subsector								
	Container Service	Customs Bonded Warehouses	Customs Broker	Domestic and International Shipping Lines	Inland Hauler and Trucking	Land/ Air/Sea Freight Forwarding	Off-Docks-CFS Operation	Supply Chain Management	Wet and Dry Warehousing
Motorcycle Driver						■			
Multimodal Transport Operator					■				
Order Tracker/Coordinator					■				
Parts Pricing					■				
Perishable Cargo Handling					■				
Refrigeration Mechanic					■				
Refrigeration Technician	■				■				
Route Planner					■			■	
Transport Scheduler					■				
Shipping, Receiving, and Traffic Clerks					■			■	
Shipping Line Personnel					■			■	
Slingman					■				
Stock Clerks and Order Fillers					■				
Terminal and Warehouse Personnel									
Ticket Teller					■			■	
Truck Driver		■			■			■	
Waterside Workers					■			■	
Warehouse Personnel					■				
Welder					■			■	
Procurement Manager					■	■		■	
Distribution Centre Manager					■	■			■

Areas of Skills/Jobs	Subsector								
	Container Service	Customs Bonded Warehouses	Customs Broker	Domestic and International Shipping Lines	Inland Hauler and Trucking	Land/ Air/Sea Freight Forwarding	Off-Docks-CFS Operation	Supply Chain Management	Wet and Dry Warehousing
Operations Manager									
Commercial Troubleshooter (cloud-based planning)									
Customization Master									
Customer Satisfaction Director (works with analytics and automation in logistics fulfillment centers)									
Trainers, Explainers, and Sustainers (AI-driver jobs)									
Digital Engineer									

Note. Colored cells mean the specific skills/jobs are hard-to-fill in the subsector. Skills/Jobs which do not apply to all of the facilities were not considered in this table. This includes airline staff, estimator, express operators and integrators, ticketing issuing/travel clerk, Transport Network Vehicle Service (TNVS) driver /taxi driver, and resource czar (works with machine learning in optimal resource consumption).

Table 23 shows that the majority (77.25%) of the employees left the facility due to resignation. As shown in Table 24, this is true for all the subsectors except for the Off-Docks-CFS Operation whose employees' reason for leaving is retirement. Note that there is only one participating facility for this subsector.

Table 23

Distribution of Separated Employees from the Facility by Reason for Leaving

Reason for Leaving	%
Resignation	77.25
End of Contract	5.65
Retirement	17.10
Total	100.00

Table 24
Distribution of Separated Employees from the Facility, by Subsector and Reason for Leaving

Subsector	Reason for Leaving (%)			
	Resignation	End of Contract	Retirement	Total
Container Service	57.50	2.50	40.00	100.00
Customs Bonded Warehouses	100.00	0.00	0.00	100.00
Customs Broker	70.00	20.00	10.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	100.00
Inland Hauler and Trucking	72.50	20.83	6.67	100.00
Land/Air/Sea Freight Forwarding	73.33	10.00	16.67	100.00
Off-Docks-CFS Operation	0.00	0.00	100.00	100.00
Supply Chain Management	90.26	6.41	3.33	100.00
Wet and Dry Warehousing	100.00	0.00	0.00	100.00

In Table 25, only the Customs Broker, Inland Hauler and Trucking, and Supply Chain Management have facilities with fast turnover, meaning the employees are difficult to retain for more than six months. These facilities were also asked to identify the occupational types that are difficult to retain (Table 27 and Table 28) and the reasons for retaining the employees (Table 26).

Table 25
Percentage of Facilities with Fast Turnover per Subsector

Subsector	%
Container Service	0.00
Customs Bonded Warehouses	0.00
Customs Broker	100.00
Domestic and International Shipping Lines	0.00
Inland Hauler and Trucking	20.00
Land/Air/Sea Freight Forwarding	0.00
Off-Docks-CFS Operation	0.00
Supply Chain Management	33.33
Wet and Dry Warehousing	0.00

Employees with fast turnover are mostly managers and supervisors and technical rank and file/frontliners (Table 26), although only three subsectors have facilities with fast turnover (Table 27). Managers and supervisors have a fast turnover in the Customs Broker subsector, while it is technical rank and file/frontliners in the Inland Hauler and Trucking subsector. Particularly, drivers have fast turnover according to one Inland Hauler facility. Meanwhile, for the Supply Chain Management subsector, all occupational types are equally difficult to retain.

Table 26

Distribution of the Occupational Types with Fast Turnover

Occupational Type	%
Managers and supervisors	66.67
Technical Rank and File/Front liners	66.67
Admin and Support Rank and File	33.33

Note. Multiple responses were allowed.

Table 27

Distribution of the Facilities by Subsector and Occupational Types with Fast Turnover

Subsector	Occupational Type (%)			
	Managers and supervisors	Technical Rank and File/Front liners	Admin and Support Rank and File	Total
Container Service	0.00	0.00	0.00	0.00
Customs Bonded Warehouses	0.00	0.00	0.00	0.00
Customs Broker	100.00	0.00	0.00	100.00
Domestic and International Shipping Lines	0.00	0.00	0.00	0.00
Inland Hauler and Trucking	0.00	100.00	0.00	100.00
Land/Air/Sea Freight Forwarding	0.00	0.00	0.00	0.00
Off-Docks-CFS Operation	0.00	0.00	0.00	0.00
Supply Chain Management	33.33	33.33	33.33	100.00
Wet and Dry Warehousing	0.00	0.00	0.00	0.00

Note: *Multiple responses were allowed.*

The Logistics facilities identified several reasons for fast turnover, as shown in Table 28 particularly citing that the staff is not interested in long-term commitments (33.33%), and is shifting to other employment opportunities locally or abroad (e.g. truck drivers turned to taxi/PUV drivers, shift to other industries, etc) (33.33%). Besides the listed reasons in Table 26, one Customs Brokerage facility stated "personal reasons", and staff's plan of establishing their brokerage company. Other facilities in other subsectors cite reasons for fast turnover such as seeking better employment opportunities and family matters.

Table 28

Percentage of Facilities with Fast Turnover per Reason for the Difficulty in Retaining Employees

Reason	%
Low wage compared to other companies	0.00
Geographical location of the firm	0.00
Unattractive conditions of employment	0.00
Lack of career prospect	0.00
Long working hours	0.00
Unsocial hours (night shift)	0.00
Not enough people who are interested in this type of work	0.00
Staff are not interested in long term commitment	33.33
Poaching	0.00
Lack of access to training	0.00
Shift to other employment opportunities locally or abroad (e.g., truck drivers turned taxi/PUV drivers, shift to other industry, etc.)	33.33
Others	100

Note. Multiple responses were allowed.

Furthermore, when current employees resign, less than 10% of the facilities' current employees would be difficult to replace within three months for the majority of the subsectors, including Container Service, Customs Broker, Domestic and International Shipping Lines, Supply Chain Management, and Wet and Dry Warehousing (Table 29).

The facilities in the Customs Bonded Warehouse and Off-Docks-CFS Operation, on the other hand, will have no trouble replacing the employees who resigned within three months. Meanwhile, the percentage of current employees who would be difficult to replace varies by the facility for Inland Hauler and Trucking and Land/Air/Sea Freight Forwarding. One facility in Land/Air/Sea Freight Forwarding said that more than 50% of the employees will be difficult to replace since what they are looking for are skilled drivers.

Table 29

Percentage Distribution of Current Employees who would be Difficult to Replace within Three Months from Resignation

Subsector	Percentage Distribution (%)				
	None	<10	10-50	>50	Total
Container Service	0.00	100.00	0.00	0.00	100.00
Customs Bonded Warehouses	100.00	0.00	0.00	0.00	100.00
Customs Broker	0.00	100.00	0.00	0.00	100.00
Domestic and International Shipping Lines	0.00	100.00	0.00	0.00	100.00
Inland Hauler and Trucking	60.00	20.00	20.00	0.00	100.00
Land/Air/Sea Freight Forwarding	33.33	33.33	0.00	33.33	100.00
Off-Docks-CFS Operation	100.00	0.00	0.00	0.00	100.00
Supply Chain Management	33.33	66.67	0.00	0.00	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00

Relative to the facilities that have a percentage of their employees who will be difficult to replace in case of resignation, the specific occupations were identified in Table 30. Managers are what most subsectors have in common, though the jobs vary across subsectors and occupational types. For example, in one Inland Hauler and Trucking and Land/Air/Sea freight forwarding facilities, drivers are considered to be the most difficult to replace.

Table 30

Identified Jobs that will be Difficult to Replace in Case of Resignation

Subsector	Jobs that are difficult to replace
Container Service	○ Driver ○ Mechanic ○ Operator ○ Accounting Clerk ○ 20-Ton Forklift Operator ○ Carpenter

Subsector	Jobs that are difficult to replace
Customs Bonded Warehouses	
Customs Broker	○ Operation Managers ○ Compliance ○ Quality Management
Domestic and International Shipping Lines	○ General Manager
Inland Hauler and Trucking	○ Dispatcher ○ Admin ○ Customer Service ○ Encoder (especially those who are software proficient) ○ Truck Drivers (especially trailer drivers) ○ Truck Mechanic
Land/Air/Sea Freight Forwarding	○ Skilled Drivers ○ Automotive Mechanics ○ President
Off-Docks-CFS Operation	
Supply Chain Management	○ BDO ○ Sales ○ Operations ○ Managerial Positions ○ IT Positions
Wet and Dry Warehousing	○ Manager ○ Supervisor ○ Quality Assurance

Note. Gray cells indicate that no facility in the subsector answered given that there are no positions that would be difficult to replace within three months if they resigned.

Reasons for employee resignations are listed in Table 31. The majority of the reasons, such as the desire for a higher salary or compensation, as well as a desire or need to relocate, either locally or internationally, are shared by all subsectors. These are typically intertwined, as workers perceive the need to migrate overseas to seek higher pay or greener pastures. Furthermore, health issues and career advancement are the other common reasons for resignation.

According to the data and projected data of the Philippine Overseas Employment Administration (POEA), the Overseas Filipino Workers (OFW) demand in the Logistics sector will grow. The agency has open applications for truck drivers and seafarers (Fernandez, 2020). Based on the available Job Orders by country on the POEA website, drivers are among the jobs that are in demand mostly in Qatar, Kuwait, Saudi Arabia, etc.

(POEA, 2022). Also, on Workabroad.ph's Overseas Report, general workers including drivers is the second topmost in-demand job specialization for OFW (Hapal, 2016).

As shown in the previous table (Table 30), drivers are among the jobs in Container Service, Inland Hauler and Trucking, and Land/Air/Sea Freight Forwarding which is difficult to replace in case of resignation. One Land/Air/Sea Freight Forwarding facility mentioned during the Zoom interview that one of the reasons for the resignation of their employees is better opportunities abroad/overseas. In the Philippines, the monthly basic salary of drivers or chauffeurs is PhP 13,900 in 2016 (DOLE-NWPC, 2020). Whereas, abroad, qualified workers can earn as much as $400 in the Middle East and $1000 in Slovenia (DOLE, 2019).

Table 31

Identified Reasons for Resignation by Subsector

Subsector	Reasons for Resignation
Container Service	○ Salary ○ Location ○ Opportunities abroad
Customs Bonded Warehouses	○ Higher salary ○ Overseas migration ○ Health reasons
Customs Broker	○ Personal ○ Advancement ○ Workload
Domestic and International Shipping Lines	○ Performance issues
Inland Hauler and Trucking	○ Higher salary ○ Financial constraint ○ Change residence ○ Greener pasture/ New opportunity ○ Family problem/reasons (e.g., when the driver is stationed to work in other location) ○ Health reason ○ Violation of company's code of discipline
Land/Air/Sea Freight Forwarding	○ Higher salary/ compensation ○ Migration/Shift to other work opportunities (Foodpanda, Grab, etc.) ○ Relocated to other province/s ○ Better opportunities abroad/overseas ○ Establishment of own business ○ Job offers from other company ○ Family matters

Subsector	Reasons for Resignation
Off-Docks-CFS Operation	○ Health issues due to age
Supply Chain Management	○ Better opportunities ○ Location ○ Family matters ○ Health reason ○ BDO ○ Sales ○ Operations ○ Personal business ○ Career growth
Wet and Dry Warehousing	○ Higher salary ○ Career growth

The respondents were given a list of relevant skills/jobs in the Logistics sector. This was used to determine which skills are relevant to the facility's subsector over the next five years. And, if the skills/job are applicable, the projected trends, such as whether the skills/job will have a shortage, no change, or surplus, and if hard-to-fill or not. Additionally, for the applicable skill/jobs, the respondents were asked to identify if the skill/job could be addressed by a TVET program.

Table 32 shows the projected distribution of the skills supply for the next five years. The majority of the listed skills/jobs do not apply to most of the facilities. There are even skills/jobs that are not at all applicable to all of the facilities, such as airline staff, estimator, express operators and integrators, ticketing issuing/travel clerk, TNVS driver/taxi driver, and resource czar (works with machine learning in optimal resource consumption).

On the other hand, cargo handling, customer service representative/associate, dispatcher, documentation clerk, and administrative clerk are the skills/jobs that are, although not applicable to some facilities, projected to have no change for most of the facilities.

Furthermore, the master mechanic is the job that is projected to have the highest shortage at 27.78%, followed by truck drivers, forklift operators, welders, and procurement managers at 22.22%. In cases where there is a surplus of skills/jobs, it accounts for only 5.55% to 11.11% of all responding facilities.

The facility in the Customs Broker subsector also cited Internal Auditor as one of the jobs that are expected to have a shortage, will be hard-to-fill, and may be addressed by a TVET program. Further, in the case of the Land/Air/Sea Freight Forwarding subsector, the facility cited System Technician (responsible for their cashless mode of payment) as projected to have shortage but not hard-to-fill.

Table 32

Projected Distribution of the Skills Supply for the Next 5 years

Areas of Skills/Jobs	Changes (%)				
	Shortage	No Change	Surplus	Not Applicable	Total
Airline Staff	0.00	0.00	0.00	100.00	100.00
Estimator	0.00	0.00	0.00	100.00	100.00
Express Operators and Integrators	0.00	0.00	0.00	100.00	100.00
Ticketing Issuing/Travel Clerk	0.00	0.00	0.00	100.00	100.00
Transport Network Vehicle Service (TNVS) Driver /Taxi Driver	0.00	0.00	0.00	100.00	100.00
Resource Czar (works with machine learning in optimal resource consumption)	0.00	0.00	0.00	100.00	100.00
Customization master	0.00	5.56	0.00	94.44	100.00
Customer satisfaction director (works with analytics and automation in logistics fulfillment centers)	0.00	5.56	0.00	94.44	100.00
Refrigeration Mechanic	5.88	0.00	0.00	94.12	100.00
Digital Engineer	10.00	0.00	0.00	90.00	100.00
Bus Driver	0.00	11.11	0.00	88.89	100.00
Ground Handler	0.00	11.11	0.00	88.89	100.00
Stock Clerks and Order Fillers	0.00	11.11	0.00	88.89	100.00
Terminal and Warehouse Personnel	0.00	11.11	0.00	88.89	100.00
Warehouse Personnel	0.00	11.11	0.00	88.89	100.00
Perishable Cargo Handling	5.56	0.00	5.56	88.88	100.00
Transport Scheduler	5.56	0.00	5.56	88.88	100.00
Multimodal Transport Operator	0.00	5.56	5.56	88.88	100.00
Order Tracker/Coordinator	0.00	5.56	5.56	88.88	100.00
Conductor	5.56	5.56	0.00	88.88	100.00
Parts Pricing	5.56	5.56	0.00	88.88	100.00
Commercial troubleshooter (cloud-based planning)	5.56	5.56	0.00	88.88	100.00
Motorcycle Driver	0.00	11.11	5.56	83.33	100.00
Slingman	0.00	11.11	5.56	83.33	100.00
Distribution Centre Manager	5.56	5.56	5.55	83.33	100.00

Areas of Skills/Jobs	Changes (%)				
	Shortage	No Change	Surplus	Not Applicable	Total
Heavy Equipment Operator	16.67	0.00	0.00	83.33	100.00
Export Brokerage Clerk	5.56	11.11	0.00	83.33	100.00
Machine Operator	5.56	11.11	0.00	83.33	100.00
Shipping Line Personnel	5.56	11.11	0.00	83.33	100.00
Automotive Painter	0.00	16.67	0.00	83.33	100.00
Trainers, Explainers, And Sustainers (AI-driver jobs)	0.00	10.00	10.00	80	100.00
Delivery Specialist	5.56	16.66	0.00	77.78	100.00
Courier	0.00	22.22	0.00	77.78	100.00
Delivery Associate	0.00	22.22	0.00	77.78	100.00
Freight forwarders	5.56	11.11	5.56	77.77	100.00
Refrigeration Technician	5.56	11.11	5.56	77.77	100.00
Inventory System	0	16.67	5.56	77.77	100.00
Dangerous Goods Handling	5.56	16.67	0.00	77.77	100.00
Dangerous Goods Handling for Sea Transport	5.56	16.67	0.00	77.77	100.00
Ticket Teller	11.11	11.11	5.56	72.22	100.00
Logistics Support Clerk	5.56	16.66	5.56	72.22	100.00
Route Planner	0.00	22.22	5.56	72.22	100.00
Dangerous Goods Regulation	11.11	16.67	0.00	72.22	100.00
Import-Export Inspection Specialists	5.56	22.22	0.00	72.22	100.00
Shipping, Receiving, and Traffic Clerks	5.56	22.22	0.00	72.22	100.00
Automotive Chassis Specialist	11.11	16.67	5.55	66.67	100.00
Waterside workers	5.56	16.67	11.11	66.66	100.00
Truck Driver	22.22	5.56	5.56	66.66	100.00
Import Processors, consolidators assistant	0.00	27.78	5.56	66.66	100.00
Chassis Repair Personnel	5.56	27.78	0.00	66.66	100.00
Inventory Clerk	0.00	33.33	5.56	61.11	100.00
Forklift Driver	16.67	22.22	0.00	61.11	100.00
Mechanic	16.67	16.67	5.56	61.1	100.00
Operations Manager	16.67	16.67	5.56	61.1	100.00
Container checker	0.00	38.88	5.56	55.56	100.00
Helper	0.00	38.89	5.56	55.55	100.00

Areas of Skills/Jobs	Changes (%)				
	Shortage	No Change	Surplus	Not Applicable	Total
Welder	22.22	22.22	5.56	50.00	100.00
Procurement Manager	22.22	22.22	5.56	50.00	100.00
Electrician	16.67	27.77	5.56	50.00	100.00
Master Mechanic	27.78	22.22	0.00	50.00	100.00
Forklift Operator	22.22	27.78	5.56	44.44	100.00
Cargo Handling	5.56	50	5.56	38.88	100.00
Documentation Clerk	0.00	61.11	5.56	33.33	100.00
Customer Service Representative/Associate	11.11	55.56	0.00	33.33	100.00
Dispatcher	5.56	61.11	0.00	33.33	100.00
Administrative Clerk	5.56	83.33	11.11	0.00	100.00

Table 33 shows the distribution of the facilities by skills needs/requirements that TVET programs can address. Similar to Table 33, this only shows all skills that respondents determined to be applicable to the Logistics sector. As shown in the table, all respondents who stated that the skills expected to have a shortage, such as master mechanic and truck driver, also stated that these can be addressed by TVET programs.

Likewise, there are hard-to-fill skills that the facilities agreed to be addressable by TVET programs. For instance, the most common hard-to-fill skills such as electrician, master mechanic, mechanic, forklift driver, and forklift operator are said to be the skills needs/requirements which majority of the facilities mentioned being addressable by TVET programs. For some of the jobs which most of the facilities said cannot be addressed by a TVET program, one facility said that the skills/jobs (e.g. cargo handling, courier, delivery associate/helper) do not need a TVET program as it can already be attained through industry experience.

Related (Table 22 and Table 32) tables to Table 33 are presented in a single table found in Annex A.

Table 33

Distribution of Facilities by Skills Needs/Requirements Addressable by TVET programs

Areas of Skills/Jobs	%
Electrician	100.00
Machine Operator	100.00
Master Mechanic	100.00
Mechanic	100.00

Areas of Skills/Jobs	%
Multimodal Transport Operator	100.00
Refrigeration Mechanic	100.00
Truck Driver	100.00
Automotive Chassis Specialist	87.50
Forklift Driver	87.50
Chassis Repair Personnel	83.33
Bus Driver	80.00
Export Brokerage Clerk	80.00
Order Tracker/Coordinator	80.00
Transport Scheduler	80.00
Forklift Operator	77.78
Heavy Equipment Operator	75.00
Perishable Cargo Handling	75.00
Refrigeration Technician	75.00
Trainers, Explainers, And Sustainers (AI-driver jobs)	75.00
Automotive Painter	66.67
Waterside workers	66.67
Welder	66.67
Customization master	66.67
Import-Export Inspection Specialists	60.00
Route Planner	60.00
Slingman	60.00
Ticket Teller	60.00
Distribution Centre Manager	60.00
Operations Manager	60.00
Procurement Manager	55.56
Customer Service Representative/Associate	54.55
Conductor	50.00
Dangerous Goods Handling	50.00
Dangerous Goods Handling for Sea Transport	50.00
Import Processors, consolidators assistant	50.00
Motorcycle Driver	50.00
Stock Clerks and Order Fillers	50.00
Warehouse Personnel	50.00

Areas of Skills/Jobs	%
Dangerous Goods Regulation	42.86
Delivery Associate	40.00
Inventory System	40.00
Shipping, Receiving, and Traffic Clerks	40.00
Terminal and Warehouse Personnel	40.00
Administrative Clerk	35.71
Cargo Handling	33.33
Container checker	33.33
Commercial troubleshooter (cloud-based planning)	33.33
Documentation Clerk	30.00
Inventory Clerk	28.57
Delivery Specialist	25.00
Ground Handler	25.00
Parts Pricing	25.00
Courier	20.00
Dispatcher	20.00
Logistics Support Clerk	20.00
Shipping Line Personnel	20.00
Freight forwarders	0.00
Helper	0.00
Customer satisfaction director (works with analytics and automation in logistics fulfillment centers)	0.00
Digital Engineer	0.00

Note. The denominator used to get the percentage per skill was based on the total number of responses in C11.3

Skills/Jobs which do not apply to all of the facilities that were not considered in this table. This includes airline staff, estimator, express operators and integrators, ticketing issuing/travel clerk, Transport Network Vehicle Service (TNVS) driver /taxi driver, and resource czar (works with machine learning in optimal resource consumption).

The recruitment conducted in 2021 by the participating facilities requires the vacancies to be filled by college graduates (49.39%) as shown in Table 34. Next to this is high school graduates with 35.50%. This is true for most of the subsectors where the majority of the applicants require to be college graduates. Yet, for Inland Hauler and Trucking and Wet and Dry Warehousing (as seen in Table 35), the majority required a high school diploma as the highest educational requirement. The results could be attributed to the country's old education system.

According to one Inland Hauler and Trucking facility, they normally require a high school diploma for helpers and drivers, but on occasion, some undergraduate applicants are given an opportunity based on their skills. Particularly, if the applicant is proficient in driving a specific type of truck corresponding to their driver's license. And if it is admin staff, what they require is for the applicant to be a college undergraduate or graduate and also take into account the working experience.

In addition, vacancies in Off-Docks-CFS Operation require applicants to either be high school graduates (50%) or college undergraduates (50%) (Table 35).

Table 34

Distribution of the Vacancies in the Facilities by Required Educational Qualification

Educational Qualification	%
HS Grad	35.50
JHS Grad	0.00
SHS Undergrad	0.00
SHS Grad	0.50
TechVoc Undergrad	1.11
TechVoc Grad	6.17
College Undergrad	5.94
College Grad	49.39
Master's Degree	0.78
Doctoral Degree	0.61
Total	100.00

Table 35

Distribution of the Vacancies in the Facilities by Subsector and Required Educational Qualification

Required Educational Qualification	Subsector (%)								
	Container Service	Customs Bonded Warehouses	Customs Broker	Domestic and International Shipping Lines	Inland Hauler and Trucking	Land/Air/ Sea Freight Forwarding	Off-Docks-CFS Operation	Supply Chain Manage-ment	Wet and Dry Ware-housing
HS Grad	0.00	10.00	0.00	0.00	72.00	18.33	50.00	33.33	64.00
JHS Grad	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHS Undergrad	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHS Grad	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00

Required Educational Qualification	Subsector (%)								
	Container Service	Customs Bonded Warehouses	Customs Broker	Domestic and International Shipping Lines	Inland Hauler and Trucking	Land/Air/ Sea Freight Forwarding	Off-Docks-CFS Operation	Supply Chain Manage-ment	Wet and Dry Ware-housing
TechVoc Undergrad	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00
TechVoc Grad	20.00	20.00	0.00	0.00	2.00	11.67	0.00	2.00	0.00
College Undergrad	0.00	20.00	3.00	0.00	2.00	6.67	50.00	1.33	0.00
College Grad	79.50	50.00	95.00	100.00	24.00	50.00	0.00	59.67	36.00
Master's Degree	0.50	0.00	1.00	0.00	0.00	3.33	0.00	0.67	0.00
Doctoral Degree	0.00	0.00	1.00	0.00	0.00	3.33	0.00	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 36 shows that for most of the subsectors, there are only less than 10% of the employees who are promoted to managerial and supervisory positions.

Table 36

Distribution of the Employees Promoted to Managerial and Supervisory Positions per Subsector

Subsector	Percentage Distribution (%)				
	None	<10	10-50	>50	Total
Container Service	0.00	100.00	0.00	0.00	100.00
Customs Bonded Warehouses	0.00	100.00	0.00	0.00	100.00
Customs Broker	0.00	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	60.00	40.00	0.00	0.00	100.00
Land/Air/Sea Freight Forwarding	0.00	100.00	0.00	0.00	100.00
Off-Docks-CFS Operation	0.00	0.00	100.00	0.00	100.00
Supply Chain Management	0.00	66.67	33.33	0.00	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00

Five subsectors have facilities with structured programs for managing high potential employees in place as shown in Table 37.

Table 37

Percentage of Facilities with Structured Program for Managing High Potential Employees per Subsector

Subsector	%
Container Service	0.00
Customs Bonded Warehouses	0.00
Customs Broker	100.00
Domestic and International Shipping Lines	0.00
Inland Hauler and Trucking	20.00
Land/Air/Sea Freight Forwarding	66.67
Off-Docks-CFS Operation	0.00
Supply Chain Management	100.00
Wet and Dry Warehousing	100.00

As shown in Table 38, in most cases across the different subsectors, more than 50% of the employees contribute to the outstanding performance of the business.

Table 38

Percentage Distribution of Employees Contributing Outstanding Performance to the Facility per Subsector

Subsector	Percentage Distribution (%)				
	None	<10	10-50	>50	Total
Container Service	0.00	0.00	50.00	50.00	100.00
Customs Bonded Warehouses	0.00	0.00	0.00	100.00	100.00
Customs Broker	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	0.00	0.00	0.00	100.00	100.00
Inland Hauler and Trucking	20.00	60.00	0.00	20.00	100.00
Land/Air/Sea Freight Forwarding	0.00	33.33	33.33	33.33	100.00
Off-Docks-CFS Operation	0.00	0.00	0.00	100.00	100.00
Supply Chain Management	0.00	33.33	33.33	33.33	100.00
Wet and Dry Warehousing	0.00	0.00	0.00	100.00	100.00

Table 39 shows that not all subsectors have career/structured succession planning policies/practices in place for current and future development, such as the majority, if not all, of the facilities under the Domestic and International Shipping Line and Inland Hauler and Trucking. It reveals that the percentage of facilities that support such policies is highest in the Customs Broker and Off-Docks-CFS Operation, accounting for more than half of their employees.

Table 39

Percentage Distribution of Employees Supported by Career/Structured Succession Planning Policy/Practices for Current and Future Development per Subsector

Subsector	Percentage Distribution (%)				
	None	<10	10-50	>50	Total
Container Service	0.00	0.00	50.00	50.00	100.00
Customs Bonded Warehouses	0.00	0.00	100.00	0.00	100.00
Customs Broker	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	60.00	20.00	20.00	0.00	100.00
Land/Air/Sea Freight Forwarding	0.00	33.33	33.33	33.33	100.00
Off-Docks-CFS Operation	0.00	0.00	0.00	100.00	100.00
Supply Chain Management	0.00	33.33	33.33	33.33	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00

For the majority of the subsectors, more than 50% of the facilities have career/structured succession planning policies/programs, while many of these subsectors also have structured programs to manage high potential employees. Consequently, these subsectors with structured programs related to their employees' performance also tend to allocate a part of their budget to learning and development programs. Therefore, it is worth considering how workplaces take advantage of their available talent through the provision of policies supporting development programs, budget allocation, and support in learning and development initiatives whether conducted by the company or external providers.

It is also worth mentioning that there are subsectors such as the Domestic and International Shipping Lines that do not have any allocated budget for learning and development programs in their expenditure in 2021 (Table 62). Yet, at some level, all subsectors support such programs. Thus, it may be possible that some facilities will support programs to further utilize their employees' potentials so long as there is minimum or no expense incurred.

4.3 Skills in Your Business

This section discusses information about employees based on performance evaluation and related questions, as well as the percentage of employees related to specific skills policy requirements.

Table 40 shows that a majority (58.97%) of the facilities' employees can perform the job but not beyond. This is true for most of the subsectors except Customs Broker, Domestic and International Shipping Lines, and Off-Docks-CFS Operation in which most of the employees have the potential to perform more demanding duties than they currently have (Table 41).

On the other hand, there are 4.12% of the employees who are unable to perform the job. These are from Container Service, Inland Hauler and Trucking, Land/Air/Sea Freight Forwarding, and Supply Chain Management. When linked to the reasons for the employees' underperformance (Table 42), all the facilities cited the lack of soft skills and socio-emotional skills. In this context, it may be presumed that to at least perform the given duties, the mentioned skills will be needed on top of the technical skills.

Furthermore, 36.92% of the employees have the potential to perform more demanding duties than they currently have. In the SNA-WSS Survey report for the IT-BPM industry, it was noted that several studies/literature refer to these types of employees as "over-skilled workers or employees whose skills are underutilized in their current jobs" (TESDA & PSRTI, 2020). Despite the employees' potential, only less than 10% of employees in the participating facilities were promoted to managerial and supervisory positions (Table 36).

Table 40

Distribution of the Employees by Performance Evaluation

Performance Evaluation	%
Able to perform the job but not beyond	58.97
Unable to perform the job	4.12
Have the potential to perform with more demanding duties than they currently have	36.92
Total	100.00

Table 41

Distribution of the Employees by Performance Evaluation per Subsector

Subsector	Performance Evaluation (%)			
	Able to perform the job but not beyond	Unable to perform the job	Have the potential to perform with more demanding duties than they currently have	Total
Container Service	65.00	5.00	30.00	100.00
Customs Bonded Warehouses	50.00	0.00	50.00	100.00
Customs Broker	10.00	0.00	90.00	100.00
Domestic and International Shipping Lines	44.44	0.00	55.56	100.00
Inland Hauler and Trucking	69.36	4.90	25.74	100.00
Land/Air/Sea Freight Forwarding	79.67	3.33	17.00	100.00
Off-Docks-CFS Operation	10.00	0.00	90.00	100.00
Supply Chain Management	63.33	10.00	26.67	100.00
Wet and Dry Warehousing	54.00	0.00	46.00	100.00

The most common reasons employees are unable to perform their job as cited by the facilities are the lack of soft skills (100%) and the lack of socio-emotional skills (100%), as shown in Table 42. The least common reasons are the lack of advanced Logistics skills and the lack of language skills. Table 42 also lists down some critical skills in their subsector or attributes that the facilities are looking for in their employees, as well as some examples of advanced Logistics skills specific to the company's requirement. According to one Inland Hauler and Trucking facility, they consider it advanced when the employee is a National Certificate Holder, has undergone a Defensive Driving Course, and is up to date on new LGU policies.

Table 42

Percentage of Facilities with Underperforming Employees per Reason

Reason	%
Lack of basic logistics skills (e.g., business environment, customer needs, work procedures, use of core equipment, etc.)	50.00

Reason	%
Lack of specialized technical skills for Logistics ○ Troubleshooting ○ Computer Skills	50.00
Lack of advanced Logistics skills ○ Warehousing ○ National Certificate Holder ○ Knowledgeable and up to date on new LGU policies ○ Defensive Driving	25.00
Lack of soft skills (e.g., communication, collaboration and teamwork, etc.) ○ Great Interpersonal Skills ○ Customer Service ○ Negotiation ○ Public Speaking Skills	100.00
Lack of socio-emotional skills (e.g., extraversion, emotional stability, agreeableness, grit, consciousness, decision-making, openness, etc.) ○ Accuracy ○ Self-Control ○ People Person	100.00
Lack of management and leadership skills	50.00
Lack of language skills (including listening, speaking, reading, and writing skills)	25.00
Lack of office and admin skills	50.00
Lack of digital skills	50.00

Note. Multiple responses are allowed. Also, these answers only came from two out of three facilities in Supply Chain Management, two from Inland Hauler and Trucking, one from Container Service, and one from Land/Air/Sea Freight Forwarding.

With the presence of employees who are unable to perform the job, the frequency of implementing actions and interventions applied to employees was asked to the facilities. Appraisal/performance reviews (85.71%) and mentoring (85.71%) are the top actions/interventions that the facilities are implementing always or regularly. Those relating to training, such as increased training activity/spend or increase/expand trainee programs (57.14%) and conduct of re-training (42.86%) are only at the top 4 and 6 in the list, respectively (Table 43).

Table 43

Distribution of the Facilities by Frequency of Implementation of Various Actions or Interventions for Underperforming Employees

Actions/Interventions	Frequency of Implementation (%)			
	Never	Sometimes or when necessary	Always or regularly	Total
Increase training activity/ spend or increase/expand trainee programs	0.00	42.86	57.14	100.00
Conduct of re-training	14.28	42.86	42.86	100.00
Reallocating work	28.57	42.86	28.57	100.00
Review of appraisals/performance	0.00	14.29	85.71	100.00
Conduct mentoring	0.00	14.29	85.71	100.00
Intensify supervision of staff	0.00	42.86	57.14	100.00
Apply corresponding disciplinary procedures of the company	0.00	28.57	71.43	100.00
Add people to complement the work	0.00	71.43	28.57	100.00
Change work practices	0.00	85.71	14.29	100.00

Note. As in Table 39, and in relation to Table 38, these answers only came from two out of three facilities in Supply Chain Management, two from Inland Hauler and Trucking, one from Container Service, and one from Land/Air/Sea Freight Forwarding.

As previously mentioned in the discussion on the distribution of the employees by performance evaluation per subsector (Table 41), 36.92% of the employees have the potential to perform more demanding duties than they currently have. In regards to that, Table 44 shows that all the facilities in all subsectors, except for the Inland Hauler and Trucking, have undertaken actions or interventions for these types of employees.

Table 44

Percentage of Facilities that have Undertaken Actions or Interventions to Employees with the Potential to Perform More Demanding Duties per Subsector

Subsector	%
Container Service	100.00
Customs Bonded Warehouses	100.00
Customs Broker	100.00
Domestic and International Shipping Lines	100.00
Inland Hauler and Trucking	25.00
Land/Air/Sea Freight Forwarding	100.00

Subsector	%
Off-Docks-CFS Operation	100.00
Supply Chain Management	100.00
Wet and Dry Warehousing	100.00

Note. The percentage calculation for Inland Hauler and Trucking only accounts for three facilities because the other two do not have employees who have the potential to perform more demanding duties.

The actions taken by facilities in these subsectors are listed below, with training being the most common intervention, followed by promotion.

a. Training (e.g., leadership training, regional/concurrent roles/multifunction trainings) / Cross-training
b. Promotion
c. Increased monetary benefits (e.g., travel allowance)
d. Exposure to more challenging jobs/ Provision of greater responsibilities
e. Commendations/ Rewards (i.e., Perfect Attendance, Best Driver, etc.)
f. Regular evaluation
g. Continuing professional development
h. Relocating work
i. Team discussion
j. Appointment as Officer in Charge (OIC)

For the facilities in Inland Hauler and Trucking that have not taken any action to utilize the potential of employees who have the potential to perform more demanding duties, there are a variety of reasons selected, including:

a. Management is aware of the potential, but there are no definite plans yet
b. Current organizational structure and work practices do not allow changes
c. The organization is aware of the potential performance capability and it will review and re-deploy if necessary

Table 45 depicts the distribution of positions in each facility per specific policy requirement, with the results indicating that the facilities differ in terms of the percentage of positions that require the stated requirements. As shown, more than 50% of the positions require a college degree for 44.44% of the facilities that responded to the question. This backs up the finding in Table 32, which shows that 49.39% of the vacancies in 2021 require applicants to be college graduates. Similarly, 44.10% of current employees in 2021 are college graduates (Table 9).

Furthermore, this policy is also not shared by all of the facilities across the different subsectors. Based on Table 46, there are facilities under Inland Hauler and Trucking (20.00%) and Supply Chain Management (33.33%) which have positions that do not require a college degree.

In terms of the requirement for a Technical Vocational Certificate or National Certificate, facilities under Customs Broker (100%) and Domestic and International Shipping Lines (100%) do not have positions that require this.

Table 45

Distribution of the Facilities per Specific Policy Requirements of the Existing Job Positions

Requirements by Policy	%			
	None	<10	10-50	>50
College degree to do the job	11.11	16.67	27.78	44.44
Induction training of more than two weeks	11.11	38.89	16.67	33.33
Continuous learning or developmental activities	16.67	22.22	22.22	38.89
At least three years of industry-relevant experience	5.56	27.78	44.44	22.22
Technical Vocational Certificate or National Certificate	22.22	27.78	27.78	22.22

Table 46

Percentage Distribution of the Facilities per Specific Policy Requirements of the Existing Job Positions, per Subsector

Subsector	Requirements by Policy (%)				
	None	<10	10-50	>50	Total
College degree to do the job					
Container Service	0.00	0.00	0.00	100.00	100.00
Customs Bonded Warehouses	0.00	0.00	100.00	0.00	100.00
Customs Broker	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	0.00	0.00	0.00	100.00	100.00
Inland Hauler and Trucking	20.00	20.00	60.00	0.00	100.00
Land/Air/Sea Freight Forwarding	0.00	33.33	0.00	66.67	100.00
Off-Docks-CFS Operation	0.00	0.00	100.00	0.00	100.00
Supply Chain Management	33.33	0.00	0.00	66.67	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00
Induction training of more than two weeks					
Container Service	0.00	0.00	0.00	100.00	100.00

Subsector	Requirements by Policy (%)				
	None	<10	10-50	>50	Total
Customs Bonded Warehouses	0.00	100.00	0.00	0.00	100.00
Customs Broker	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	0.00	0.00	100.00	0.00	100.00
Inland Hauler and Trucking	20.00	60.00	20.00	0.00	100.00
Land/Air/Sea Freight Forwarding	0.00	0.00	33.33	66.67	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	0.00	100.00
Supply Chain Management	33.33	33.33	0.00	33.33	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00
Continuous learning or developmental activities					
Container Service	0.00	0.00	50.00	50.00	100.00
Customs Bonded Warehouses	0.00	100.00	0.00	0.00	100.00
Customs Broker	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	0.00	0.00	0.00	100.00	100.00
Inland Hauler and Trucking	20.00	40.00	20.00	20.00	100.00
Land/Air/Sea Freight Forwarding	0.00	0.00	66.67	33.33	100.00
Off-Docks-CFS Operation	100.00	0.00	0.00	0.00	100.00
Supply Chain Management	33.33	0.00	0.00	66.67	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00
At least three years of industry-relevant experience					
Container Service	0.00	0.00	100.00	0.00	100.00
Customs Bonded Warehouses	0.00	0.00	100.00	0.00	100.00
Customs Broker	0.00	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	0.00	0.00	100.00	0.00	100.00
Inland Hauler and Trucking	20.00	40.00	20.00	20.00	100.00
Land/Air/Sea Freight Forwarding	0.00	0.00	66.67	33.33	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	0.00	100.00
Supply Chain Management	0.00	33.33	0.00	66.67	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00
Technical Vocational Certificate or National Certificate					
Container Service	0.00	0.00	50.00	50.00	100.00
Customs Bonded Warehouses	0.00	100.00	0.00	0.00	100.00

Subsector	Requirements by Policy (%)				
	None	<10	10-50	>50	Total
Customs Broker	100.00	0.00	0.00	0.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	40.00	0.00	20.00	40.00	100.00
Land/Air/Sea Freight Forwarding	0.00	66.67	0.00	33.33	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	0.00	100.00
Supply Chain Management	0.00	0.00	100.00	0.00	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00

A Skills Content Index was generated based on the responses to the above-mentioned requirements in Tables 45 and 46. Based on the Philippine TVET SNA Study Manual (TESDA, 2021), this index provides various aspects of a company's skills content based on job demands, such as

- Qualifications required for doing the job rather than what the job holder possesses
- Initial induction training to do the job
- Need for continuous learning and development
- Need for industry-relevant experience

The scores for each of the facets were added to compute for the Skills Content Index of a facility. The implications are as follows:

- Skilled jobs, which correspond to more complex jobs, tend to score high on the above-mentioned job demand categories. In that sense, a workplace with a greater number of jobs with high scores is also a "high-skilled" location.
- The skills index assessment also identifies the skills that are applicable or important to workplace performance. These skills are defined primarily by the way work is structured, but they also define the skill complexity or degree required by the entire industry.

In this paper, two Skills Content Index Scores were computed based on the qualification requirements, which are college degree policy requirement and TechVoc Certificate/NC policy requirement (Table 47). The average for each of these skills content indices were also calculated (Table 48).

In terms of the Skills Content Index score generated using the responses on college degree policy requirement, Table 47 shows that the Supply Chain Management facility has both the highest and lowest scorer facilities. It is interesting to note that the Supply Chain Management facility which garnered the lowest score has greater recognition for TechVoc Certificate/NC in comparison to the facility which scored the highest. Aside from

the Supply Chain Management facility, two Inland Hauler and Trucking facilities, and one Land/Air/Sea Freight Forwarding facility have a greater demand for TechVoc/NC.

Moreover, Customs Broker facility and a Container Service facility ranked second with a score of 15. Although their scores are the same in relation to their college degree policy requirement, the Container Service facility has more jobs which demand a college diploma rather than TechVoc Certificate/NC. Besides Customs Broker facility, the Domestic and International Shipping Lines facility, Land/Air/Sea Freight Forwarding facilities, and an Inland Hauler and Trucking facility also has more jobs which demand a college degree.

Table 47
Skills Content Index Score by Facility

Respondent Code	Subsector	Skills Content Index Score		
		In relation to College degree policy requirement	In relation to Technical Vocational/ National Certificate policy requirement	Skills Content Index Score Difference
CS_005	Supply Chain Management	16	15	1
CB_001	Customs Broker	15	12	3
CS_004	Container Service	15	14	1
LASFF_001	Land/Air/Sea Freight Forwarding	14	12	2
CS_003	Container Service	14	14	0
LASFF_003	Land/Air/Sea Freight Forwarding	14	12	2
DISL_I_015	Domestic and International Shipping Lines	14	11	3
WW_W_011	Supply Chain Management	14	13	1
LASFF_002	Land/Air/Sea Freight Forwarding	13	15	-2
IHT_044	Inland Hauler and Trucking	11	9	2

Respondent Code	Subsector	Skills Content Index Score		Skills Content Index Score Difference
		In relation to College degree policy requirement	In relation to Technical Vocational/ National Certificate policy requirement	
CB_Z_001	Inland Hauler and Trucking	11	11	0
IHT_002	Inland Hauler and Trucking	10	11	-1
CBW_002	Customs Bonded Warehouse	10	9	1
IHT_069	Inland Hauler and Trucking	8	10	-2
ODCO_001	Off-Docks-CFS Operation	8	7	1
WW_W_009	Wet and Dry Warehousing	8	8	0
IHT_018	Inland Hauler and Trucking	6	6	0
WW_D_002	Supply Chain Management	5	7	-2

And on average, as shown in Table 48, the Customs Broker facility received the highest skills content index score in relation to college degree policy requirement, followed by a Container Service facility. But then among the two, the Container Service facility has a higher average in terms of TechVoc Certificate/NC requirement. More so, the Customs Broker facility is among the facilities which have a huge gap between the two average skills content index scores.

On the other hand, Off-Docks CFS and Wet and Dry Warehousing have the lowest average Skills Content Index Score in relation to both of the policy requirements.

Further, only in Inland Hauler and Trucking have more jobs requiring the TechVoc Certificate/NC rather than college diploma.

Table 48

Average Skills Content Index Score by Subsector

Subsector	Average Skills Content Index Score		Difference between the Average Skills Content Index Score
	In relation to College Degree Policy Requirement	In relation to Technical Vocational/ National Certificate Policy Requirement	
Container Service	14.50	14.0	0.50
Customs Bonded Warehouses	10.00	9.00	1.00
Customs Broker	15.00	12.00	3.00
Domestic and International Shipping Lines	14.00	11.00	3.00
Inland Hauler and Trucking	9.20	9.40	-0.20
Land/Air/Sea Freight Forwarding	13.67	13.00	0.67
Off-Docks-CFS Operation	8.00	7.00	1.00
Supply Chain Management	11.67	11.67	0.00
Wet and Dry Warehousing	8.00	8.00	0.00

In retrospect, the Skills Content Index for the required qualifications almost always reveals the same observations regarding the facilities and subsectors that scored the highest and lowest. That is, the facilities that have the highest skills scores are either from Customs Broker, Container Service, Supply Chain Management, and Land/Air/Sea Freight Forwarding. These are considered to be high-skilled facilities. While among the facilities with the lowest scores are from Off-Docks-CFS Operation and Wet and Dry Warehousing.

However, most of the facilities mentioned to have the highest and lowest scores have more jobs demanding college diploma instead of TechVoc Certificate/NC. Only Inland Hauler and Trucking has jobs which require TechVoc Certificate/NC.

Furthermore, it was found out that in this study, the skills content concerning the policy requirement on Technical Vocational/ National Certificate is moderately correlated (0.47) with employee participation. Highly skilled employees are well-informed about the situation of the facility.

4.4 Emerging Skills associated with Industry Developments

This section discusses the relationship between emerging skills and industry developments. Specifically, respondents were asked to assess the impact of various industry developments associated with 4IR, New Normal, and others on skills demand in the next 1-5 years. In addition, they were asked about their readiness for the emerging skills, as well as the actions that were undertaken by those who were ready. Finally, questions were raised about the HR preparations made regarding emerging skills.

Table 49 shows how industry developments, such as technological advancement and workplace adjustments to the new normal, will impact the skills demand in the given emerging skills over the next 1-5 years. The majority of the emerging skills associated with the 4IR in the list do not apply to most of the logistics facilities. In cases where the skill applies to the facility, the highest percentage accounts for more skills demanded as an impact, except for Autonomous systems where the demand for skills will be fewer.

Moreover, with the new normal, the emerging skills will mostly demand more skills. This is also true for RFID, one of the emerging skills under the other industry developments.

Table 49

Distribution of the Impact of Skills Demand in Emerging Skills Associated with the Industry Developments over the Next 1-5 years

Emerging Skills	Impact of Skills (%)				
	More Skills Demanded	Staying the same	Fewer skills demanded	Not Applicable	Total
	Fourth Industrial Revolution				
Artificial Intelligence	16.67	5.56	11.10	66.67	100.00
Autonomous systems	16.67	0.00	22.22	61.11	100.00
Digital Supply Chain (e.g., Additive Manufacturing, Logistics Visibility, Smart Warehousing, Efficient space parts management, Prescriptive Supply Chain Analytics, etc.)	38.88	16.67	16.67	27.78	100.00
Advanced Robotics	5.56	5.56	0.00	88.88	100.00
Augmented Reality	16.66	5.56	0.00	77.78	100.00
3D Printing/additive manufacturing	11.11	5.56	5.56	77.77	100.00
UAVs/Drones	5.56	5.56	0.00	88.88	100.00

Emerging Skills	Impact of Skills (%)				
	More Skills Demanded	Staying the same	Fewer skills demanded	Not Applicable	Total
Blockchain	16.67	5.55	11.11	66.67	100.00
Internet of Things (IoT)	33.33	5.56	27.78	33.33	100.00
Technical skills for equipment/tools (i.e., machine operation)	33.33	11.11	11.11	44.45	100.00
Analytics	44.44	11.11	16.67	27.78	100.00
E-Commerce and Social Media Specialists	38.89	11.11	0.00	50.00	100.00
Information Security Analysts	50.00	16.67	5.56	27.77	100.00
Industrial and Production Engineers	11.11	5.56	5.56	77.77	100.00
Product Managers	16.67	5.56	0.00	77.77	100.00
Service and Solutions Designers	33.33	5.56	5.56	55.55	100.00
Sales and Marketing Professionals	44.44	16.67	0.00	38.89	100.00
Software and Applications Developers and Analysts	44.44	11.12	0.00	44.44	100.00
Transport Network Vehicle Service (TNVS) Vehicle Sharing Service	27.77	0.00	5.56	66.67	100.00
New Normal					
Internet of Things (IoT)	50	22.22	11.11	16.67	100.00
Cloud Computing	50	27.78	11.11	11.11	100.00
Data Analytics	44.44	27.78	22.22	5.56	100.00
Autonomous Vehicles (AV)	22.22	22.22	11.11	44.45	100.00
Other Industry Developments					
Telematics	21.05	31.58	21.05	26.32	100.00
Radio-Frequency Identification (RFID)	33.33	22.22	27.78	16.67	100.00

Aside from the list provided, respondents were asked to identify any other emerging skills/jobs that they were aware of, which are now presented in Table 50. This includes soft skills (e.g., analytical thinking, people management, crisis management, etc.), digital/IT-related skills (IT-system, data security, software development, etc.), warehouse, supply chain, and trucking-related skills (e.g., end-to-end supply chain, real-time warehouse inventory system, TABS, etc), as well as emerging jobs (Customs Import and Export Systems Analysts/Specialists, Online Tariff Classification Practitioner, Customs Valuation System Specialists, etc.). Most of the emerging skills/jobs specified by the facilities primarily necessitate a greater demand for skills. Mostly those that will require fewer demand for skills are soft skills.

Table 50

Distribution of the Impact of Skills Demand in Emerging Skills (Others) Associated with the Industry Developments over the Next 1-5 years

Other Emerging Skills	Impact on Skills Demand%			
	More skills demanded	Staying the same	Fewer skills demanded	Total
	Fourth Industrial Revolution			
WMS	100.00	0.00	0.00	100.00
End-to-end supply chain	100.00	0.00	0.00	100.00
Analytical thinking	50.00	0.00	50.00	100.00
Customs import and export systems analysts/ specialists	100.00	0.00	0.00	100.00
People management	0.00	0.00	100.00	100.00
IT system (Digital)	100.00	0.00	0.00	100.00
Decision making skills	33.33	0.00	66.67	100.00
Real time warehouse inventory system	0.00	0.00	100.00	100.00
Warehousing	100.00	0.00	0.00	100.00
Online tariff classification practitioner	100.00	0.00	0.00	100.00
Active listening	0.00	0.00	100.00	100.00
Active learning with a growth mindset	100.00	0.00	0.00	100.00
Customs valuation system specialists	100.00	0.00	0.00	100.00
	New Normal			
Supply chain	100.00	0.00	0.00	100.00

Other Emerging Skills	Impact on Skills Demand%			
	More skills demanded	Staying the same	Fewer skills demanded	Total
Customer service	100.00	0.00	0.00	100.00
Analytical thinking and innovation	0.00	0.00	100.00	100.00
Learning strategies	100.00	0.00	0.00	100.00
Strong work ethic	0.00	0.00	100.00	100.00
Telecommuting	100.00	0.00	0.00	100.00
Virtual assistance	100.00	0.00	0.00	100.00
Chat bot	100	0.00	0.00	100.00
Flexibility and adaptability	0.00	0.00	100	100.00
Digital skills	100.00	0.00	0.00	100.00
Software development	100.00	0.00	0.00	100.00
Programmer	100.00	0.00	0.00	100.00
Mechatronics	100.00	0.00	0.00	100.00
Portals and drop off boxes for documents	0.00	0.00	100.00	100.00
Other Industry Developments				
Crisis management	0.00	0.00	100.00	100.00
Critical thinking	0.00	0.00	100.00	100.00
Data security	100.00	0.00	0.00	100.00
Ethical hacker	100.00	0.00	0.00	100.00
QR coding	0.00	0.00	100.00	100.00
Tech-savvy	0.00	0.00	100.00	100.00
Route mapping	100.00	0.00	0.00	100.00
Enhanced GPS	100.00	0.00	0.00	100.00
CCTV operation	0.00	0.00	100.00	100.00
Trucking Advanced Booking System (TABS)	0.00	0.00	100.00	100.00
Fuel sensor (in trucks)	100.00	0.00	0.00	100.00

Given that the respondent identified at least one emerging skill in any of the industry development areas, several follow-up questions were posed. First, they were asked if they were prepared concerning the identified emerging skills in the facility's subsector. According to Table 51, the majority of the facilities are ready for the emerging skills, except for Container Service (50%), Inland Hauler and Trucking (40%), and Wet and Dry Warehousing (0%).

Table 51

Percentage of Facilities that are Aware of and Ready for the Emerging Skills Associated with the Industry Developments, by Subsector

Subsector	%
Container Service	50.00
Customs Bonded Warehouses	100.00
Customs Broker	100.00
Domestic and International Shipping Lines	100.00
Inland Hauler and Trucking	40.00
Land/Air/Sea Freight Forwarding	100.00
Off-Docks-CFS Operation	100.00
Supply Chain Management	100.00
Wet and Dry Warehousing	0.00

For those who were ready for the emerging skills, they were asked to select from the list or identify other actions which have been undertaken. The majority of these facilities have established plans to address the requirements (69.23%) and have started some initiatives or programs in terms of training and development of the human resource (53.85%), as seen in Table 52. There was also one facility (7.69%) that selected others, however, the facility did not state what other actions they have undertaken.

Table 52

Percentage of Facilities that are Aware of the Emerging Skills Associated with the Industry Developments by Relative Actions Undertaken

Actions Undertaken	%
Established plans to address the requirements.	69.23
Started some initiatives/programs in terms of training and development of the human resource.	53.85
Started some initiatives/programs for the acquisition of equipment and materials relevant to the requirements.	46.15
Others	7.69
No action has been taken yet.	0.00

Note. Multiple Responses were allowed.

Those who were aware of at least one emerging skill were also asked how their facility prepares its human resources. According to Table 53, half of the facilities have re-tooled or upskilled their existing employee/s to acquire the required competencies. Hiring new employee/s with the necessary skills (38.89%) is another way the facilities are preparing their human resources. Still, there are 5.56% of the facilities that do not prepare their human resource yet.

Table 53

Percentage of Facilities that are Aware of and Ready for the Emerging Skills Associated with the Fourth Industrial Revolution by Preparations on Human Resource

Preparations	%
Hire new employee/s who have the required skills	38.89
Re-tool/Upskill existing employee/s to acquire the required competencies	50.00
Others	0.00
No preparation is being done yet.	5.56

Note. Multiple Responses were allowed.

4.5 Green Jobs and the Logistics Sector

As shown in Table 54, the facilities vary in their level of implementation of the various aspects of green jobs. When it comes to contributions to decarbonization, the highest percentage (44.44%) corresponds to facilities that have taken no action so far but plan to do so in the future.

Furthermore, 44.44% of the facilities have created or changed some jobs to contribute to the protection of the ecosystem and biodiversity. Meanwhile, half to the majority of the facilities have created or changed some jobs to contribute to reducing energy, materials, and water consumption and in minimizing waste and pollution. In these aspects of green jobs, all the facilities in the Supply Chain and Management subsector have created/changed jobs.

Three out of five Inland Hauler and Trucking facilities have taken no action so far and have no plans to take action in the near future for all aspects of green jobs. One Inland Hauler and Trucking facility has taken no action thus far, but plans to contribute to decarbonization and has created/changed some jobs for the remaining aspects of green jobs. In contrast, one Inland Hauler and Trucking facility has created/changed some jobs to contribute to reducing waste and pollution but has taken no action thus far but plans to act on the remaining aspects of green jobs.

Table 54
Distribution of the Facilities by Extent of Implementation of Different Aspects of Green Jobs

Aspects of Green Jobs	Extent of Implementation (%)			
	No action so far and no plan in the near future	No action so far but planning to act	Have created/ changed some jobs as described	Total
Contribute to 'decarbonization'	27.78	44.44	27.78	100.00
Contribute to 'protecting the ecosystem and biodiversity'	22.22	33.33	44.44	100.00
Contribute to 'reducing energy, materials and water consumption'	22.22	27.78	50.00	100.00
Contribute to 'minimizing waste and pollution'	22.22	22.22	55.56	100.00

Table 55 shows the organizational provisions of the facilities who have taken action or plans to contribute to the various aspects of green jobs. Provisions for proper waste segregation and disposal or management of waste are implemented in various subsectors such as Customs Broker, Land/Air/Sea Freight Forwarding, Off-Docks-CFS Operation, and Supply Chain Management. At the time of the interview, one facility under Land/Air/Sea Freight Forwarding was working with the Department of Health on the disposal of vaccine vials. Other common provisions are the adoption of Euro 4 or Euro 5, and the installation of solar panels.

Meanwhile, one facility has indicated a specific green job which is Pollution Control Officer. In addition, there is one facility from Inland Hauler and Trucking that stated that the maintenance of trucks is the responsibility of the existing employees/drivers.

Table 55
Examples of Organizational Provisions from any Aspects of Green Jobs, by Subsector

Subsector	Provisions
Container Service	○ Protecting the ecosystem and biodiversity
Customs Bonded Warehouses	
Customs Broker	○ Proper Waste Segregation and Disposal

Subsector	Provisions
	○ Quality Maintenance and Water Consumption ○ Information Campaign
Domestic and International Shipping Lines	
Inland Hauler and Trucking	○ Use of Euro 4 ○ Organize tree planting activity in the facility's vicinity ○ Observe preventive maintenance (e.g., regular changing of oils) ○ Upgrade trucks to new models ○ Built-in solar panels in the perimeter fence and plan to use solar panels for the LED-lighting system in the warehouse (which gives minimal heat) ○ Regular checking of truck's smoke emission
Land/Air/Sea Freight Forwarding	○ Solar panel installation ○ Proper waste disposal (segregation of hazardous to non-hazardous, recycling) ○ Use of Euro 4 ○ Use of Euro 5
Off-Docks-CFS Operation	○ Proper waste segregation (reuse and recycle)
Supply Chain Management	○ Solar Panel Installation ○ Waste Management ○ Pollution Control Officer
Wet and Dry Warehousing	

Note. Cells in gray indicate that no responses are available for the specific subsector, either because the question is not applicable or because they did not provide an answer other than "not applicable" or "none". Two respondents from Inland Hauler and Trucking, one from Customs Bonded Warehouse, one from Container Service, one from Land/Air/Sea Freight Forwarding, and one from Wet and Dry Warehousing did not provide a specific organizational provision. No response is received from Domestic and International Shipping Lines as the facilities under this subsector have no action so far and no plan in the near future yet to contribute to the implementation of the different aspects of green jobs as initially stated in the preceding topic (Table 54).

Only some facilities with plans and acts on green jobs have taken advantage of tax incentives/import duty exemption programs as can be seen from Table 56. These include the majority of the facilities in Land/Air/Sea Freight Forwarding (100%) and Supply Chain Management (66.67%).

One example cited was the Inland Hauler and Trucking facility's tax incentives through donations to charitable institutions. Since the facility is delivering goods to their customer, receiving returned items is normal. Instead of disposing or storing it, rejected goods are donated to charitable institutions as long as they are still edible and have not expired. Even wet cardboards are being donated to charitable institutions.

Table 56

Percentage of Facilities that used the Tax Incentives/Import Duties Exemption Programs, by Subsector

Subsector	%
Container Service	0.00
Customs Bonded Warehouses	0.00
Customs Broker	0.00
Domestic and International Shipping Lines	0.00
Inland Hauler and Trucking	50.00
Land/Air/Sea Freight Forwarding	100.00
Off-Docks-CFS Operation	0.00
Supply Chain Management	66.67
Wet and Dry Warehousing	0.00

Note. One respondent from Inland Hauler and Trucking, and one from Wet and Dry Warehousing did not answer.

Likewise, only some of the facilities have received support or are seeking support from the government. These facilities are from Customs Broker, Inland Hauler and Trucking, Land/Air/Sea Freight Forwarding, and Supply Chain Management (Table 57). The DOLE is the most common government agency from which the facilities have received or sought assistance, as shown in Table 58.

Table 57

Percentage of Facilities with Plans and Acts on Aspects of Green Jobs that have Received Support or are Seeking Support from any Government Agency by Subsector

Subsector	%
Container Service	0.00
Customs Bonded Warehouses	0.00

Subsector	%
Customs Broker	100.00
Domestic and International Shipping Lines	0.00
Inland Hauler and Trucking	50.00
Land/Air/Sea Freight Forwarding	33.33
Off-Docks-CFS Operation	0.00
Supply Chain Management	33.33
Wet and Dry Warehousing	0.00

Note. One respondent from Inland Hauler and Trucking, and one from Wet and Dry Warehousing did not answer.

Table 58

Government Agencies where the Facilities Receive/Seek Assistance in relation to Green Jobs, by Subsector

Subsector	Government Agency
Container Service	
Customs Bonded Warehouses	
Customs Broker	○ Department of Environment and Natural Resources (DENR) ○ Department of Energy (DOE) ○ Department of Labor and Employment (DOLE) ○ Department of Tourism (DOT) ○ Department of Trade and Industry (DTI) ○ Professional Regulation Commission (PRC)
Domestic and International Shipping Lines	
Inland Hauler and Trucking	○ Department of Labor and Employment (DOLE) - MUNTAPARLAS
Land/Air/Sea Freight Forwarding	○ Department of Health (DOH)
Off-Docks-CFS Operation	
Supply Chain Management	○ Department of Labor and Employment (DOLE) ○ Technical Education and Skills Development Authority (TESDA)
Wet and Dry Warehousing	

Note. Multiple responses are allowed. Gray cells indicate that no facilities from the subsector have received/sought support from any government agency, as indicated by the 0% in Table 57.

Except for Container Service, Customs Bonded Warehouse, and Wet and Dry Warehousing, the majority of the subsectors have facilities that are aware of the emerging skills resulting from green jobs (Table 59). However, keep in mind that those who are aware account for only 44.44% of all facilities surveyed.

Table 59

Percentage of Facilities that are Aware of Emerging Skills Resulting from Green Jobs, by Subsector

Subsector	%
Container Service	0.00
Customs Bonded Warehouses	0.00
Customs Broker	100.00
Domestic and International Shipping Lines	100.00
Inland Hauler and Trucking	*20.00*
Land/Air/Sea Freight Forwarding	66.67
Off-Docks-CFS Operation	100.00
Supply Chain Management	66.67
Wet and Dry Warehousing	0.00

Table 64 summarizes the emerging skills/jobs as a result of green jobs identified by facilities that have stated that they are aware of this in their subsector, but not necessarily in their facility. For instance, one facility under Domestic and International Shipping Line has no action so far and no plan in the near future to contribute to the implementation of the different aspects of green jobs but is aware of the A.P. Moller - Maersk Decarbonisation program.

Furthermore, it can be noticed that the emerging skills/jobs, such as Waste Disposal Professional, Industrial Waste Handling Specialist, and Solar Panel Installers, identified by the facilities (Table 60) are somehow related to the facilities' common provisions as seen in the previous table (Table 55).

The facilities' existing department is also being tasked to help with the greening. One facility under Land/Air/Sea Freight Forwarding has its Maintenance Department whose duties include the proper tire and battery disposal, as well as the filtration of used oil.

One Inland Hauler and Trucking facility underwent Sedex Members Ethical Trade Audit (SMETA) Certification for their entire operations and policies. This includes auditing on waste management among others.

Table 60

Identified Emerging Skills as a Result of Green Jobs by Subsector

Subsector	Identified Emerging Skills/Jobs
Container Service	
Customs Bonded Warehouses	
Customs Broker	○ Industrial Waste Management ○ Waste Disposal Professional ○ Industrial Waste Handling Specialist
Domestic and International Shipping Lines	○ A.P. Moller - Maersk Decarbonisation program
Inland Hauler and Trucking	○ Utility workers are multifunctional in terms of recycling, waste management, etc. ○ Solar panel installers
Land/Air/Sea Freight Forwarding	○ Tree Planting ○ Use of recycled papers ○ Proper Documentation (in terms of permits) ○ Proper tire and battery disposal (Maintenance Department) ○ Used oil filtration (Maintenance Department)
Off-Docks-CFS Operation	○ Strict waste segregation management ○ Reuse and recycle
Supply Chain Management	○ Real-time end-to-end Supply Chain ○ Automation ○ Strategic Planning ○ Sustainability Managers
Wet and Dry Warehousing	

Note. Gray cells indicate that no facilities from the subsector are aware of the emerging skills as a result of green jobs, as indicated by the 0% in Table 59.

In all green industry advancements described in Table 61, the majority of the facilities have knowledge business needs. Whereas, in terms of skills, most of the facilities only have business needs in relation to fuel-saving technologies (e.g. low rolling resistance tires, idle reduction technology, engine efficiency technologies, etc.) and eco-driving. While at most 44.44% of the facilities have business needs in terms of competencies for the majority of the green industry developments.

A Customs Broker facility also identified port operations as one of the green industry developments that are relevant to all areas of business needs. Furthermore, an Inland

Hauler and Trucking facility stated that upgrading vehicles, which is refleeting on newer engine models, is relevant to skills and competencies business needs.

Table 61

Distribution of the Facilities by 'green' industry developments relevant to (current and near-future) business needs

"Green" Industry Development	Knowledge (Critical Understanding, theories, and principles)	Skills (Skills mastery and innovation for solving complex problems)	Competencies (Managing activities and tasks)	Not Applicable
Clean energy goods transportation/ Green Transportation (e.g. electric car)	66.67	38.89	44.44	27.78
Fuel saving technologies (e.g. Low rolling resistance tires, idle reduction technology, engine efficiency technologies, etc.)	72.22	50.00	44.44	22.22
Eco-driving	72.22	55.56	44.44	16.67
Carbon emissions monitoring mechanism	72.22	38.89	33.33	33.33
Vehicle retrofitting	50.00	22.22	22.22	55.56
Cleaner fuels	72.22	44.44	44.44	22.22
Fully automated processes	61.11	44.44	44.44	33.33

Note. If the 'green' industry development is relevant to the facility, multiple responses are allowed.

4.6 Learning and Development

Table 62 shows that there is varying allotment in the payroll expenditure for learning and training programs, especially when the training is conducted by the company.

Customs Broker and Land/Air/Sea Freight Forwarding are the only subsectors that have allocated more than half of their payroll expenditure to learning and training programs developed and conducted by the company. The majority of facilities in Domestic and International Shipping Lines, as well as Inland Hauler and Trucking, do not have budget allocations for this.

Furthermore, when it comes to the budget allocated for learning and training programs developed and delivered by external providers (both public and private training providers),

most of the subsectors allot between 10% to 50%. Again, there are none allocated in the Domestic and International Shipping Line subsector. Note that only one facility represents Domestic and International Shipping Line in this study.

Table 62

Percentage Distribution of Payroll Expenditure Allocated for Learning and training programs Conducted by the Company and External Providers by Subsector

Subsector	Extent of Implementation (%)				
	None	<10	10-50	>50	Total
Learning and training programs developed and conducted by the company					
Container Service	0.00	0.00	100	0.00	100.00
Customs Bonded Warehouses	0.00	0.00	100	0.00	100.00
Customs Broker	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	60.00	20.00	20.00	0.00	100.00
Land/Air/Sea Freight Forwarding	0.00	33.33	33.33	33.33	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	0.00	100.00
Supply Chain Management	33.33	33.33	33.33	0.00	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00
Learning and training programs developed and conducted by external providers (public and private training providers)					
Container Service	0.00	0.00	100	0.00	100.00
Customs Bonded Warehouses	0.00	0.00	100	0.00	100.00
Customs Broker	0.00	0.00	100	0.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	20.00	40.00	20.00	20.00	100.00

Subsector	Extent of Implementation (%)				
	None	<10	10-50	>50	Total
Land/Air/Sea Freight Forwarding	0.00	33.33	66.67	0.00	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	0.00	100.00
Supply Chain Management	33.33	33.33	33.33	0.00	100.00
Wet and Dry Warehousing	0.00	0.00	100.00	0.00	100.00

Respondents were then asked to rate various statements about learning and development. Table 63 shows the distribution of facilities, while Table 64 breaks this down into subsectors.

Table 63 shows that 44.45% of the facilities provide in-house learning and training programs. As shown in Table 64, this is true for the vast majority of facilities in Container Service, Customs Broker, Off-Docks-CFS Operation, Supply Chain Management, and Wet and Dry Warehousing. Domestic and International Shipping Lines facility, as well as some Inland Hauler and Trucking facilities, strongly disagree with this.

On the other hand, more facilities (61.11%) strongly agree in terms of supporting private and public training organizations' learning and training programs and this is true for the majority of facilities across all subsectors. Except for Inland Hauler and Trucking and Land/Air/Sea Freight Forwarding, where less than half of the facilities agree.

However, when it comes to providing or supporting learning and training programs that are only required for the job, more facilities strongly agreed (33.33%) than disagreed (16.67%), which may imply that the programs provided thus far by these facilities are job-related. Only Container Service, Land/Air/Sea Freight Forwarding, and Off-Docks-CFS Operation have facilities that disagree with this statement. It may also be worth noting that 27.78% are neutral.

While this is true, facilities' ratings differ when it comes to whether employees have a say in their learning and training needs. The highest percentage (38.89%) accounts for the facilities that have agreed to this statement, the majority of which are from Container Service, Customs Bonded Warehouses, and Customs Broker. While the facility in Wet and Dry Warehousing strongly agreed with this statement.

Interestingly, 55.56% of the facilities agreed that their learning and training programs cover future skills needs. Only the facility in Domestic and International Shipping Lines strongly disagreed.

Table 63

Distribution of Facilities by Rating Various Statements related to Learning and Development

Statement	Rating Scale (%)					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
We provide in-house learning and training programs.	11.11	0.00	11.11	33.33	44.45	100.00
We support learning and training programs conducted by private and public training providers.	0.00	0.00	16.67	22.22	61.11	100.00
We only provide or support learning and training programs that are required by the job (includes both in-house and external programs).	0.00	16.67	27.78	22.22	33.33	100.00
Employees have a say in their own learning and training needs.	0.00	16.67	22.22	38.89	22.22	100.00
Our learning and training programs cover future skills needs.	5.56	0.00	11.11	27.77	55.56	100.00

Table 64

Distribution of Facilities by Rating Various Statements related to Learning and Development, by Subsector

Statement	Rating Scale (%)					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
We provide in-house learning and training programs.						
Container Service	0.00	0.00	0.00	50.00	50.00	100.00
Customs Bonded Warehouses	0.00	0.00	0.00	100.00	0.00	100.00
Customs Broker	0.00	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	20.00	0.00	40.00	20.00	20.00	100.00
Land/Air/Sea Freight Forwarding	0.00	0.00	0.00	66.67	33.33	100.00
Off-Docks-CFS Operation	0.00	0.00	0.00	0.00	100.00	100.00
Supply Chain Management	0.00	0.00	0.00	33.33	66.67	100.00
Wet and Dry Warehousing	0.00	0.00	0.00	0.00	100.00	100.00
We support learning and training programs conducted by private and public training providers.						
Container Service	0.00	0.00	0.00	50.00	50.00	100.00
Customs Bonded Warehouses	0.00	0.00	0.00	0.00	100.00	100.00
Customs Broker	0.00	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	0.00	0.00	0.00	0.00	100.00	100.00
Inland Hauler and Trucking	0.00	0.00	40.00	20.00	40.00	100.00
Land/Air/Sea Freight Forwarding	0.00	0.00	33.33	33.33	33.33	100.00

Statement	Rating Scale (%)					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Off-Docks-CFS Operation	0.00	0.00	0.00	0.00	100.00	100.00
Supply Chain Management	0.00	0.00	0.00	33.33	66.67	100.00
Wet and Dry Warehousing	0.00	0.00	0.00	0.00	100.00	100.00
We only provide or support learning and training programs that are required by the job (includes both in-house and external programs).						
Container Service	0.00	0.00	0.00	50.00	50.00	100.00
Customs Bonded Warehouses	0.00	0.00	0.00	100.00	0.00	100.00
Customs Broker	0.00	0.00	100.00	0.00	0.00	100.00
Domestic and International Shipping Lines	0.00	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	0.00	20.00	20.00	20.00	40.00	100.00
Land/Air/Sea Freight Forwarding	0.00	0.00	33.33	33.33	33.33	100.00
Off-Docks-CFS Operation	0.00	0.00	100.00	0.00	0.00	100.00
Supply Chain Management	0.00	33.33	33.33	0.00	33.33	100.00
Wet and Dry Warehousing	0.00	0.00	0.00	0.00	100.00	100.00
Employees have a say in their own learning and training needs.						
Container Service	0.00	50.00	0.00	50.00	0.00	100.00
Customs Bonded Warehouses	0.00	0.00	0.00	100.00	0.00	100.00
Customs Broker	0.00	0.00	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	0.00	0.00	100.00	0.00	0.00	100.00

Statement	Rating Scale (%)					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Inland Hauler and Trucking	0.00	0.00	20.00	40.00	40.00	100.00
Land/Air/Sea Freight Forwarding	0.00	33.33	33.33	33.33	0.00	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	0.00	0.00	100.00
Supply Chain Management	0.00	0.00	33.33	33.33	33.33	100.00
Wet and Dry Warehousing	0.00	0.00	0.00	0.00	100.00	100.00
Our learning and training programs cover future skills needs.						
Container Service	0.00	0.00	0.00	50.00	50.00	100.00
Customs Bonded Warehouses	0.00	0.00	0.00	0.00	100.00	100.00
Customs Broker	0.00	0.00	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	0.00	0.00	40.00	20.00	40.00	100.00
Land/Air/Sea Freight Forwarding	0.00	0.00	0.00	66.67	33.33	100.00
Off-Docks-CFS Operation	0.00	0.00	0.00	0.00	100.00	100.00
Supply Chain Management	0.00	0.00	0.00	33.33	66.67	100.00
Wet and Dry Warehousing	0.00	0.00	0.00	0.00	100.00	100.00

4.7 Work and Employment Practice

This section discusses information about the facility's policies, the percentage of full-time employees who are eligible for rewards and opportunities, and the extent of information sharing in the facility regarding financial information, business plans, operational challenges, and market analysis.

The majority of the facilities have policies covering various documents as shown in Table 65. However, among the various documents, only 66.67% of facilities have policies covering training budget and the development for high potential staff.

Table 65

Percentage of Facilities with Policies Covering Various Documents

Documents	%
Business Plan	88.89
Training Plan	77.78
Training Budget	66.67
Staff Development Policy/Plan	83.33
Development for High Potential Staff	66.67

Note. Multiple responses were allowed.

Only Wet and Dry Warehousing, Domestic and International Shipping Lines, and Off-Docks-CFS Operations lack policies for some of the documents listed in Table 66, such as the business plan, training plan, training budget, staff development policy/plan, and document regarding the Development for high potential staff. It is important to note, however, that each of these subsectors has only one respondent.

Domestic and International Shipping Lines have no policies in place for employee training and development. Off-Docks-CFS Operation does not have any training policies either. Wet and Dry Warehousing, on the other hand, lacks policies covering business planning and development for high-potential employees.

Table 66

Percentage of Facilities with Policies Covering Various Documents by Subsector

Subsector	Business Plan	Training Plan	Training Budget	Staff Development Policy/Plan	Development for High Potential Staff
Container Service	100.00	100.00	100.00	100.00	100.00

Subsector	Business Plan	Training Plan	Training Budget	Staff Development Policy/Plan	Development for High Potential Staff
Customs Bonded Warehouses	100.00	100.00	100.00	100.00	100.00
Customs Broker	100.00	100.00	100.00	100.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	0.00
Inland Hauler and Trucking	80.00	60.00	40.00	60.00	40.00
Land/Air/Sea Freight Forwarding	100.00	100.00	66.67	100.00	66.67
Off-Docks-CFS Operation	100.00	0.00	0.00	100.00	100.00
Supply Chain Management	100.00	100.00	100.00	100.00	100.00
Wet and Dry Warehousing	0.00	100.00	100.00	100.00	0.00

Note. Multiple responses are allowed.

The respondents were also asked about the percentage of full-time employees in their facility who are entitled to certain rewards or opportunities to understand how systems work within the business that supports performance outcomes and competitiveness.

According to Table 67, the majority of facilities provide the majority of their full-time employees pay-related and non-pay benefits. For pay-related benefits, overtime pay is available to 62.33% of employees, bonuses based on overall organization performance are available to 55.6% of employees, and individual performance pay is available to 49.72% of employees. Whereas, non-pay benefits such as child-care, health insurance, travel allowance, study leave, food subsidies among others, are available to 61.39% of the employees. It may be recalled from Section 4.3 that one of the actions taken by one of the facilities under Inland Hauler and Trucking is to provide travel allowance increases from time to time for employees who perform more demanding duties than they currently have.

Table 67

Percentage of Full-Time Employees in the Facilities Entitled to Various Rewards or Opportunities

Rewards or Opportunities	%
Individual performance-related pay	49.72
Bonuses based on overall organizational performance	55.56
Share options for employees	9.72
Eligible for internal promotion	44.44
Non-pay benefits (such as child-care, health insurance, travel allowance, study leave, food subsidies, etc.)	61.39
Opportunities for job rotation at other locations (including overseas)	25.00
Overtime pay	62.33

A Mutual Gains Index has been created based on the responses from the facilities in Table 61. This index reflects the facility's provisions for pay and non-pay benefits to entice workers to commit. In this survey, mutual gains have a moderate correlation with employee participation (0.45) and state of technology (0.47). Employees in facilities with a high mutual gains index score are well informed about their facility's business situation, and technology adoption is higher.

Customs Broker, Wet and Dry Warehousing, and Customs Bonded Warehouse are the top three facilities with the highest Mutual Gains Index score. The majority of facilities with the lowest Mutual Gains Index score are from Inland Hauler and Trucking (Table 68). Likewise, the respective subsectors have the highest and lowest average Mutual Gains Index Scores (Table 69).

Table 68

Mutual Gains Index by Facility

Respondent Code	Subsector	Mutual Gains Index Score
CB_001	Customs Broker	690
WW_W_009	Wet and Dry Warehousing	610
CBW_002	Customs Bonded Warehouse	525
DISL_I_015	Domestic and International Shipping Lines	500
LASFF_002	Land/Air/Sea Freight Forwarding	450
WW_W_011	Supply Chain Management	450
ODCO_001	Off-Docks-CFS Operation	352

Respondent Code	Subsector	Mutual Gains Index Score
CS_004	Container Service	330
LASFF_001	Land/Air/Sea Freight Forwarding	315
CS_003	Container Service	300
CS_005	Supply Chain Management	235
IHT_002	Inland Hauler and Trucking	200
IHT_018	Inland Hauler and Trucking	200
WW_D_002	Supply Chain Management	100
IHT_069	Inland Hauler and Trucking	90
CB_Z_001	Inland Hauler and Trucking	90
LASFF_003	Land/Air/Sea Freight Forwarding	70
IHT_044	Inland Hauler and Trucking	40

Table 69

Average Mutual Gains Index by Subsector

Subsector	Average Mutual Gains Index Score
Container Service	315.00
Customs Bonded Warehouses	525.00
Customs Broker	690.00
Domestic and International Shipping Lines	500.00
Inland Hauler and Trucking	124.00
Land/Air/Sea Freight Forwarding	278.33
Off-Docks-CFS Operation	352.00
Supply Chain Management	261.67
Wet and Dry Warehousing	610.00

In terms of information sharing, the results in Table 70 show that most facilities only share financial information, business plans, and market analysis with some of their employees. However, operational challenges were shared with all employees by the majority of the facilities. Moreover, some 5.56% of the facilities noted that the stated information/documents were inapplicable.

Table 70
Distribution of the Facilities by Extent of Sharing Various Information

Information	Extent of Sharing (%)				
	Not generally shared	Only with some employees (e.g. management only)	Shared with ALL employees	Not Applicable	Total
Financial Information	22.22	66.67	11.11	0.00	100.00
Business Plans	5.56	61.11	27.77	5.56	100.00
Operational Challenges	0.00	22.22	72.22	5.56	100.00
Market Analysis	0.00	83.33	11.11	5.56	100.00

Based on the responses of the facilities in Table 70, an Employee Participation Index was generated. This index evaluates the extent to which a business unit is increasing performance/improvement input from those who are critical to the business's operation. Highly efficient business units are known to make use of their employees' tacit knowledge and participatory energy (TESDA, 2021).

Employee Participation in this study has a moderate correlation with skills content (0.47) in relation to policy requirements on the Technical Vocational/National Certificate. Employee participation is also moderately correlated with mutual gains (0.45). Highly skilled employees turn out to be well-informed about the business situation at their facility, and they are compensated for it.

The facility in Land/Air/Sea Freight Forwarding had the highest Employee Participation Index (15). Following that are two Supply Chain Management facilities, one Customs Broker facility, and one Domestic and International Shipping Lines facility, all of which have a score of 14 (Table 71).

Table 71
Employee Participation Index Score by Facility

Respondent Code	Subsector	Employee Participation Index Score
LASFF_002	Land/Air/Sea Freight Forwarding	15
CS_005	Supply Chain Management	14
CB_001	Customs Broker	14
DISL_I_015	Domestic and International Shipping Lines	14

Respondent Code	Subsector	Employee Participation Index Score
WW_W_011	Supply Chain Management	14
IHT_002	Inland Hauler and Trucking	13
LASFF_001	Land/Air/Sea Freight Forwarding	13
CBW_002	Customs Bonded Warehouses	13
LASFF_003	Land/Air/Sea Freight Forwarding	13
ODCO_001	Off-Docks-CFS Operation	13
CB_Z_001	Inland Hauler and Trucking	13
WW_W_009	Wet and Dry Warehousing	13
IHT_069	Inland Hauler and Trucking	12
IHT_044	Inland Hauler and Trucking	12
CS_004	Container Service	12
WW_D_002	Supply Chain Management	10
IHT_018	Inland Hauler and Trucking	10
CS_003	Container Service	9

Although the facility in Land/Air/Sea Freight Forwarding obtained the highest employee participation index score in the previous table (Table 71), the subsector ranks second only in terms of average employee participation index score in Table 72. The subsectors with the highest average are Customs Broker and Domestic and International Shipping Lines. It is worth noting that the number of respondents may have played a factor — the number of responses for Land/Air/Sea Freight Forwarding is three, compared to one for Customs Broker and one for Domestic and International Shipping Lines.

Table 72

Average Employee Participation Index Score by Subsector

Subsector	Average Employee Participation Index Score
Container Service	10.50
Customs Bonded Warehouses	13.00
Customs Broker	14.00
Domestic and International Shipping Lines	14.00
Inland Hauler and Trucking	12.00
Land/Air/Sea Freight Forwarding	13.67
Off-Docks-CFS Operation	13.00
Supply Chain Management	12.67
Wet and Dry Warehousing	13.00

4.8 Business Strategy

In Table 73, 44.45% agree that their business mostly competes in a market of premium quality products or services. However, the large percentage of facilities (44.44%) are neutral that their products and services have a 'more-than-average' amount of customization in comparison to other enterprises in the Logistics sectors; the majority (55.56%) is also neutral that their products and services rely on developing unique or innovative products or services.

Table 73

Distribution of the Facilities by Rating Various Approaches to Business

Approach to Business	Rating Scale (%)					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Compared to other enterprises in the Logistics Sector, there is a ‘more-than-average’ amount of customization in our products and services	5.56	0.00	44.44	27.78	22.22	100.00
Compared to other enterprises in Logistics Sector the competitive success of our products and services is dependent on price in the vast majority of cases	0.00	0.00	38.89	38.89	22.22	100.00
Our business mostly competes in a market of premium quality products or services	0.00	0.00	22.22	44.45	33.33	100.00
Our products and services rely on developing unique or innovative products or services	0.00	0.00	55.56	27.78	16.66	100.00

According to Table 74, the majority of facilities across the various subsectors have not yet collaborated with the government's academe and education agencies for future skills supply, but they intend to do so. Only Customs Broker, Inland Hauler and Trucking, and Supply Chain Management have facilities where jobs have been created/changed as a result of the collaboration. However, it is worth noting that the same percentage of facilities in Inland Hauler and Trucking (40%) and Supply Chain Management (33.33%) have taken no action and have no plans for the near future. In addition, the facility in Domestic and International Shipping Lines has also no action and no plan in the near future.

Table 74

Distribution of the Facilities by Extent of Implementation on Collaborating with the Academe and the Government Education Agencies for Future Skills Supply by Subsector

Subsector	Extent of Implementation (%)			
	No action so far and no plan in the near future	No action so far but planning to act	Have created/changed some jobs as described	Total
Container Service	0.00	100.00	0.00	100.00
Customs Bonded Warehouses	0.00	100.00	0.00	100.00
Customs Broker	0.00	0.00	100.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	100.00
Inland Hauler and Trucking	40.00	20.00	40.00	100.00
Land/Air/Sea Freight Forwarding	0.00	100.00	0.00	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	100.00
Supply Chain Management	33.33	33.33	33.33	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	100.00

As shown in Table 75, most of the facilities in the majority of subsectors intend to expand into other areas of development. Although Inland Hauler and Trucking has a facility that plans to extend, this only corresponds to one out of five respondents (20%). Only Customs Bonded Warehouse and Wet and Dry Warehousing do not have plans but note that each of these subsectors has only one representative.

When linked to the expected increase in the number of employees for 2022 (Table 19), it may be recalled that Container Service, Customs Bonded Warehouses, Domestic and International Shipping Lines, and Inland Hauler and Trucking had expressed the expected additional manpower. Interestingly, Customs Bonded Warehouse does not have any plans to expand. Thus, expansion in other areas of development may not always lead to the production of new jobs.

Table 75

Percentage of Facilities with Plans to Expand on Other Areas of Development by Subsector

Subsector	%
Container Service	100.00
Customs Bonded Warehouses	0.00
Customs Broker	100.00
Domestic and International Shipping Lines	100.00
Inland Hauler and Trucking	20.00
Land/Air/Sea Freight Forwarding	66.67
Off-Docks-CFS Operation	100.00
Supply Chain Management	66.67
Wet and Dry Warehousing	0.00

For those who have plans to expand to other areas of development, commonly, subsectors are planning to expand their services or operations to other ports/airports in other parts of the country (Table 76). Some would also like to venture into the development of professional and personal skills, as well as the adoption of a management trainee program.

Meanwhile, it may be worth noting that in this study, the majority of the employees in the Supply Chain and Management are female and they are still moving towards the direction of hiring more female employees. Although the survey did not specifically dwell on the gender aspect of the subsectors and the jobs/skills, it may be a point of interest that as the logistics sector becomes more modernized with the utilization of modern technologies, more opportunities for women to enter the sector exist. According to Gutelius and Theodore (2019), the use of technology can alter employment demographics, with women being more likely to work in e-commerce warehouses than traditional warehouses.

Table 76

Areas of Development for Expansion by Subsector

Subsector	Identified Areas of Development
Container Service	○ Establish domestic service in different provinces in the Philippines
Customs Bonded Warehouses	
Customs Broker	○ Technology development and innovation of services
Domestic and International Shipping Lines	○ Deployment of principal's vessel for the regular services in the Philippines
Inland Hauler and Trucking	○ Expand on Cold Chain ○ Selling of farm-to-market products ○ Market distribution of imported products
Land/Air/Sea Freight Forwarding	○ Professional and personal skills ○ Expand to other international airports in the Philippines (such as Davao, Caticlan airport, Iloilo)
Off-Docks-CFS Operation	○ Venture on other seaports like Cebu, Batangas and Subic
Supply Chain Management	○ Warehousing ○ Adoption of management trainee program ○ Hiring of female warehouse personnel
Wet and Dry Warehousing	

Note. Gray cells indicate that no facility in the subsector has plans to expand into other areas of development, as evident by the 0% in Table 74.

4.9 Work Processes and Technology

This section discusses how up-to-date is the facility's core equipment (i.e., used in the production of goods and services) when compared to the best commonly available technologies in the country and overseas. The analysis in this section also aims to highlight how technology impacts other workplace matters.

The majority of the facilities, according to Table 77 are up to date in comparison to the best commonly available technology in the country. When compared to other countries, a large percentage of facilities are one to five years behind.

Table 77

Distribution of Facilities by Core Equipment Condition as Compared with the Best Commonly Available Technology

Comparison	Equipment Condition (%)			
	Up to Date	1 to 5 years behind	More than 5 years behind	Total
Compared with those in the country	77.78	11.11	11.11	100.00
Compared with those overseas	38.89	44.44	16.67	100.00

Table 78 breaks down this comparison by subsector. As shown, for the majority of the subsectors, all of the facilities surveyed are up to date in terms of the best commonly available technology in the country. This is except for Container Service and Inland Hauler and Trucking, where only 50% and 40% said they are up to date, respectively. Further, there are also 40% of the facilities in Inland Hauler and Trucking who said that their core equipment is more than five years behind.

Customs Bonded Warehouses, Customs Broker, Land/Air/Sea Freight Forwarding, and Wet and Dry Warehousing, on the other hand, are the only subsectors that have all of their facilities up to date when compared to those overseas. However, each of the mentioned subsectors had only one survey representative except for Land/Air/Sea Freight Forwarding, which had two participating facilities.

Table 78

Distribution of the Facilities by Core Equipment Condition as Compared with the Best Commonly Available Technology by Subsector

Subsector	How up-to-date is the equipment (%)			
	Up to date	1 to 5 years behind	More than 5 years behind	Total
Compared with those in the country				
Container Service	50.00	50.00	0.00	100.00
Customs Bonded Warehouses	100.00	0.00	0.00	100.00
Customs Broker	100.00	0.00	0.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	100.00
Inland Hauler and Trucking	40.00	20.00	40.00	100.00
Land/Air/Sea Freight Forwarding	100.00	0.00	0.00	100.00

Subsector	How up-to-date is the equipment (%)			
	Up to date	1 to 5 years behind	More than 5 years behind	Total
Off-Docks-CFS Operation	100.00	0.00	0.00	100.00
Supply Chain Management	100.00	0.00	0.00	100.00
Wet and Dry Warehousing	100.00	0.00	0.00	100.00
Compared with those overseas				
Container Service	0.00	100.00	0.00	100.00
Customs Bonded Warehouses	100.00	0.00	0.00	100.00
Customs Broker	100.00	0.00	0.00	100.00
Domestic and International Shipping Lines	0.00	100.00	0.00	100.00
Inland Hauler and Trucking	20.00	20.00	60.00	100.00
Land/Air/Sea Freight Forwarding	100.00	0.00	0.00	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	100.00
Supply Chain Management	0.00	100.00	0.00	100.00
Wet and Dry Warehousing	100.00	0.00	0.00	100.00

There is a common observation that increasing technology adoption is related with higher skill utilization, and that technological gains should be complemented by a careful assessment of accompanying changes in skill demands and needs (TESDA, 2021). The State of Technology Index generated has a moderate correlation of 0.47 with the Mutual Gains Index. Facilities with high scores in the state of technology index have employees who are compensated for their high technology adoption.

A related study on organizational barriers to technology adoption discovered that a conflict of interest, specifically the misalignment of incentives, between employees and owners within firms is a significant barrier to adoption (Atkin, Chaudhry, Chaudry, Khandelwal, & Verhoogen, 2014).

Table 79 shows that seven facilities from various subsectors received the same highest State of Technology Index score of 6. Based on Table 68, the top three facilities with the highest Mutual Gains Index are from Customs Broker, Wet and Dry Warehousing, and Customs Bonded Warehouses, which is also consistent with Table 79 results. However, this is not the case for the facilities in Inland Hauler and Trucking, which received the lowest scores and consequently had the lowest average Mutual Gains Index Score.

Table 79

State of Technology Index by Facility

Respondent Code	Subsector	State of Technology Index Score
IHT_044	Inland Hauler and Trucking	6
CB_001	Customs Broker	6
LASFF_001	Land/Air/Sea Freight Forwarding	6
CBW_002	Customs Bonded Warehouses	6
LASFF_002	Land/Air/Sea Freight Forwarding	6
LASFF_003	Land/Air/Sea Freight Forwarding	6
WW_W_009	Wet and Dry Warehousing	6
WW_D_002	Supply Chain Management	5
CS_005	Supply Chain Management	5
CS_003	Container Service	5
ODCO_001	Off-Docks-CFS Operation	5
DISL_I_015	Domestic and International Shipping Lines	5
WW_W_011	Supply Chain Management	5
IHT_002	Inland Hauler and Trucking	4
CS_004	Container Service	4
IHT_018	Inland Hauler and Trucking	3
CB_Z_001	Inland Hauler and Trucking	3
IHT_069	Inland Hauler and Trucking	2

Furthermore, all three of the aforementioned subsectors (Customs Broker, Wet and Dry Warehousing, and Customs Bonded Warehouses), as well as Land/Air/Sea Freight Forwarding, scored the highest on average (Table 80).

Table 80

Average State of Technology Index by Subsector

Subsector	Average State of Technology Index Score
Container Service	4.50
Customs Bonded Warehouses	6.00
Customs Broker	6.00
Domestic and International Shipping Lines	5.00
Inland Hauler and Trucking	3.60

Subsector	Average State of Technology Index Score
Land/Air/Sea Freight Forwarding	6.00
Off-Docks-CFS Operation	5.00
Supply Chain Management	5.00
Wet and Dry Warehousing	6.00

4.10 Organizational Performance

Section 4.10 discusses the information gathered about the distribution of the participating facilities by the status of outcomes for the period 2020 to 2021, and by the percentage of employees exhibiting various behaviors at work.

According to Table 81, the profitability and total sales/revenue of the majority of the facilities have decreased. This applies to Container Service, Inland Hauler and Trucking, Land/Air/Sea Freight Forwarding, and Off-Docks-CFS Operations (Table 82). Meanwhile, 44.44% of the facilities maintained their market share (Table 81); these are from Inland Hauler and Trucking, Off-Docks-CFS Operation, Supply Chain Management, and Wet and Dry Warehousing. Moreover, all of the facilities under Customs Broker and Domestic International Shipping have increased in all three outcomes (Table 82).

There are several contributing factors to the profitability, total sales/revenue, and market share of the participating companies including, but not limited to, support and high regard for training, employee performance, and core equipment condition. However, profitability and total sales/revenue still decreased despite the following: (1) support of the facilities for the conduct of training, especially from external providers, (2) budget allocation for learning and development programs, (3) employees' performance (e.g. majority can perform their tasks), and (4) competitive core equipment condition.

Still, it is important to note that the survey was conducted at the time of the COVID-19 pandemic and the economy is yet to fully recover from the impact of movement restrictions and lockdowns.

Table 81

Distribution of the Facilities by Rating of Different Outcomes from 2020 to 2021

Outcome	Rating (%)				
	Decrease	Stay the same	Increase	Not Applicable	Total
Profitability	50.00	22.22	16.67	11.11	100.00
Total sales/revenue	55.55	16.67	16.67	11.11	100.00
Market share	33.33	44.44	16.67	5.56	100.00

Table 82

Distribution of the Facilities by Subsector and Rating of Different Outcomes from 2020 to 2021

Subsector	Rating (%)				
	Decrease	Stay the same	Increase	Not Applicable	Total
			Profitability		
Container Service	50.00	0.00	0.00	50.00	100.00
Customs Bonded Warehouses	0.00	100.00	0.00	0.00	100.00
Customs Broker	0.00	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	0.00	0.00	100.00	0.00	100.00
Inland Hauler and Trucking	60.00	20.00	20.00	0.00	100.00
Land/Air/Sea Freight Forwarding	66.67	0.00	0.00	33.33	100.00
Off-Docks-CFS Operation	100.00	0.00	0.00	0.00	100.00
Supply Chain Management	33.33	66.67	0.00	0.00	100.00
Wet and Dry Warehousing	100.00	0.00	0.00	0.00	100.00
			Total Sales/ Revenue		
Container Service	50.00	0.00	0.00	50.00	100.00
Customs Bonded Warehouses	100.00	0.00	0.00	0.00	100.00
Customs Broker	0.00	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	0.00	0.00	100.00	0.00	100.00
Inland Hauler and Trucking	60.00	20.00	20.00	0.00	100.00
Land/Air/Sea Freight Forwarding	66.67	0.00	0.00	33.33	100.00
Off-Docks-CFS Operation	100.00	0.00	0.00	0.00	100.00
Supply Chain Management	33.33	66.67	0.00	0.00	100.00
Wet and Dry Warehousing	100.00	0.00	0.00	0.00	100.00
			Market Share		
Container Service	50.00	0.00	50.00	0.00	100.00
Customs Bonded Warehouses	100.00	0.00	0.00	0.00	100.00
Customs Broker	0.00	0.00	100.00	0.00	100.00
Domestic and International Shipping Lines	0.00	0.00	100.00	0.00	100.00

Subsector	Rating (%)				
	Decrease	Stay the same	Increase	Not Applicable	Total
Inland Hauler and Trucking	40.00	60.00	0.00	0.00	100.00
Land/Air/Sea Freight Forwarding	66.67	0.00	0.00	33.33	100.00
Off-Docks-CFS Operation	0.00	100.00	0.00	0.00	100.00
Supply Chain Management	0.00	100.00	0.00	0.00	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00

Another question asked about the organizational performance of the logistics facilities is the percentage of employees who exhibit various behaviors at work, as shown in Table 83. According to the survey results, the highest percentage of facilities have 10% to 50% of their employees exhibiting the behavior, and this is true for all of the behaviors listed in this table.

Further, the data for the employees with the potential to perform more demanding duties than they currently have (Table 40) is consistent with the percentage of employees that exhibit behaviors such as going above and beyond the call of duty.

The relevant cognitive, technical, and soft skills are critical for an employee to perform above and beyond the call of duty. Such skills may be acquired and developed through the conduct of learning and capacity-building activities. Although not all participating companies have in-house training, all of the facilities, at some level, support learning and training programs conducted by external providers (Table 63).

Table 83

Percentage Distribution of the Facilities by Percentage of Employees Exhibiting Various Behavior at Work

Behavior	Percentage of Employees (%)				
	None	<10	10-50	>50	Total
Go above and beyond the ‘call of duty’ without being asked	0.00	16.67	44.44	38.89	100.00
Take up the duties of a colleague without being asked	0.00	27.78	38.89	33.33	100.00

Behavior	Percentage of Employees (%)				
	None	<10	10-50	>50	Total
Regularly put in more hours than contractually expected into their jobs	0.00	22.22	55.56	22.22	100.00
Make helpful suggestions for improving the operation within the organization	0.00	11.11	55.56	33.33	100.00

4.11 Workforce Matters

This section discusses the workforce in relation to TVET graduates and TVET certified, including the percentage and the satisfaction level of their employers. Based on Table 84, Customs Broker and Domestic and International Shipping Lines are the only subsectors that do not have TVET graduate employees. However, as with the other tables, each of these subsectors has only one representative. Furthermore, there is no policy requiring a Technical Vocational Certificate or a National Certificate to do the job at these facilities.

In terms of TVET-certified employees, Customs Broker, Domestic and International Shipping Lines, as well as Off-Docks-CFS Operations, do not have any.

Table 84

Percentage Distribution of TVET Graduate Employees and TVET-Certified Employees by Subsector

Subsector	Percentage of the Existing Employees (%)				
	None	<10	10-50	>50	Total
	TVET Graduate Employees				
Container Service	0.00	50.00	50.00	0.00	100.00
Customs Bonded Warehouses	0.00	100.00	0.00	0.00	100.00
Customs Broker	100.00	0.00	0.00	0.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	20.00	40.00	40.00	0.00	100.00
Land/Air/Sea Freight Forwarding	0.00	66.67	33.33	0.00	100.00
Off-Docks-CFS Operation	0.00	0.00	100.00	0.00	100.00

Subsector	Percentage of the Existing Employees (%)				
	None	<10	10-50	>50	Total
Supply Chain Management	33.33	0.00	66.67	0.00	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00
TVET Certified Employees					
Container Service	0.00	50.00	50.00	0.00	100.00
Customs Bonded Warehouses	0.00	100.00	0.00	0.00	100.00
Customs Broker	100.00	0.00	0.00	0.00	100.00
Domestic and International Shipping Lines	100.00	0.00	0.00	0.00	100.00
Inland Hauler and Trucking	20.00	40.00	40.00	0.00	100.00
Land/Air/Sea Freight Forwarding	0.00	66.67	33.33	0.00	100.00
Off-Docks-CFS Operation	100.00	0.00	0.00	0.00	100.00
Supply Chain Management	0.00	33.33	66.67	0.00	100.00
Wet and Dry Warehousing	0.00	100.00	0.00	0.00	100.00

Those facilities that have employed TVET graduates and TVET certified employees are generally satisfied with their work and performance (Table 85). Among the participating facilities that have employees who are TVET graduates and certified, 56.25% gave a satisfactory rating on their TVET graduate and TVET certified employees' work and performance. According to one Inland Hauler and Trucking facility, the standard of knowledge is expected to be high because the employees are TESDA certified.

Table 85

Distribution of Facilities with TVET-Graduate Employees by Satisfaction Rating on Employees Work and Performance

TVET Workforce	Satisfaction Rating (%)						
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable	Total
TVET Graduate	0.00	0.00	0.00	56.25	25	18.75	100.00
TVET Certified	0.00	0.00	0.00	56.25	25	18.75	100.00

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

The survey collected data on a variety of topics, including employee demographics, skill gaps and demand, employee size projections, as well as site development plans and existing TVET graduates and TVET certified employees, among others, which will be an important input to the SNA study.

In summary, the Logistics sector's workforce is relatively young; the majority are technical rank and file/front-liners, work full-time, and college graduates. Most facilities' employee sizes decreased or remained constant between 2020 and 2021. It is also expected that employee size will remain constant for half of the participating facilities from 2021 to 2022, but will increase for nearly half of the participating facilities.

By policy, more than half of the facilities require a college degree for more than half of their positions. Training is the more commonly used intervention for high potential employees as opposed to low performing employees. Although the majority of the facilities have increased or expanded their training activity/programs for low-performing employees, appraisal/performance reviews and mentoring are what the facilities usually do. Moreover, the Logistics facilities are planning to expand their services or operations to other ports/airports in other parts of the country. Some would also like to venture into the development of professional and personal skills, as well as the adoption of a management trainee program.

Moreover, some of the related responses were coded and combined to generate and correlate various indices. In this study, indices that have a correlation to at least one of the indices are skills content, mutual gains, employee participation, and state of technology. The correlations show that index related to training such as skills content index contribute to good work performance, gainful employment, and high adoption of technology.

The presence and demand of TVET graduates and TVET-certified employees range only less than 10% of the total employees. Nonetheless, the sites are at least satisfied with the performance of the TVET employees that they have.

5.1 Recommendations on the Identified Issues and Policy Implication

Anticipation of the skills needs of the industry is necessary to ensure that the programs and policies are appropriate and sufficient to meet the demands of the industry in line with their commitment to developing a “competitive and future-ready logistics”. With ever-changing demands, it is critical that existing programs and regulations address the necessary skills and competencies of the future workforce, and new programs must be developed as needed.

1. The review of existing or development of new Training Regulations (TR) to fit the technical skills/job requirements of the Logistics sector is recommended.
   1.1. The identified skills/jobs in this survey (found in Annex A and Annex B of this paper) shall comprise the priorities of TESDA for program development and scholarship allocation.
   Meanwhile, the jobs/skills from the list which require higher education or baccalaureate degree may be consulted/ endorsed to government agencies (e.g., Commission on Higher Education) with jurisdiction to it.
   1.3. Airline personnel will be further validated with industry partners during the presentation of this report. The previous industry consultation recommended that this job be prioritized; however, according to this survey, it is one of the jobs that are not applicable to all of the facilities. The result, however, could be influenced by the low response rate.
   1.4. As part of the existing MOA between and among TESDA, DTI, and the LSPH Associations, the support of the member companies/facilities in response to the implementation of the programs should be reiterated. TESDA, through its partner associations and/or established boards, should ensure the support of the industry in terms of the development, review, and implementation of the related programs for the Logistics sector.

2. Furthermore, investigating the facilities' or the entire logistics sector's awareness of 4IR and green jobs is critical to ensure readiness for the expected changes in the labor market brought on by industry developments, as well as to encourage compliance with the Green Jobs Act.
   2.1. For those that are still unaware of the green jobs (i.e., less than half of the participating facilities), TESDA may coordinate with DOLE specifically on “programs, projects, and activities pertaining to basic, higher and technical-vocational education and training, database that identifies and links green job opportunities with private and public entities, and information on knowledge and skill requirements of a green economy” as provided in the Green Jobs Act. Through TESDA’s initiatives in greening TVET, TESDA programs that will be implemented must be aligned or useful in the industries that will support the creation of green jobs.
   2.2. Meanwhile, TESDA shall particularly focus on initiatives relating to human resource training and development directed to facilities that are already aware of the emerging skills resulting from industry developments and green jobs and have undertaken steps to address the needs.
   2.3. Particularly, TESDA’s Green Technology Center (GTC) may aid to meet the emerging green demand of industry personnels. The GTC offers a variety of green skills training courses which are integrated in the TechVoc curriculum. Furthermore, GTC is involved in the “greening of TRs; assessment and certification; and training of trainers on green technologies such as renewable energy, efficient energy use and management, water and

wastewater treatment, waste management recovery and recycling and environmental consultancy and green ICT" (DOLE, 2020).

3. Likewise, there is a need to review/re-assess training programs and TRs to cope with the changing demands of the industry in relation to industry developments and green jobs.
   3.1. The higher demand for skills due to industry developments, such as technological advancement and workplace adjustments to the new normal over the next 1-5 years may require the re-assessment of the existing training programs. For instance, emerging skills associated with the industry developments such as digital/IT-related skills (IT-system, data security, automation, Artificial Intelligence, etc.) may be validated with the industry whether these may be embedded in the existing programs or if an entirely new program for the sector should be developed, particularly as some of the emerging skills are cross-sectoral in nature (e.g., Artificial Intelligence).
   3.2. In relation to green jobs, it may be necessary to review and amend the programs and TRs in view of the green competencies which are required/critical to the logistics sector. In doing so, the Implementing Guidelines for Greening the TVET System should be considered (TESDA Circular No. 058, s. 2018).
   3.3. Consequently, the survey identified the status of the facilities' core equipment in comparison with other Logistics facilities locally and abroad. The subsectors and facilities with up-to-date equipment and tools may be considered equipped with the necessary requirements to cope and support the advancing demands of the industry. It may be considered as a basis for identifying which specific subsectors should the Agency strengthen its engagement with, in response to enterprise-based training. Moreover, DTI may also provide support to the facilities in the sector.
   3.4. Likewise, the trainers and assessors must have the necessary knowledge and skills that can keep up with the industry practices. TESDA should strengthen its capacity for operationalizing the sector's emerging and green skills requirements.

4. Moreover, the socio-emotional and soft skills identified as critical in the sector should be more emphasized in the implementation of the training programs and regulations.
   4.1. Rather than the lack of advanced Logistics skills, the lack of soft skills and socio-emotional skills of the workers are the most common reasons why the employees are unable to perform their job. The cited soft and socio-emotional skills of the participating facilities were mapped with the 21st-century skills. All of the skills mentioned such as communication, negotiation, and accuracy were already covered and embedded in the TRs. Although the standards appear to be sufficient, the industry is still complaining about the lack of these skills in their workforce; highlighting the need to ensure proper delivery and implementation.

4.2. Critical thinking is a soft skill that is reaffirmed in this study, as it is also one of the skills mentioned as critical to the logistics industry during the consultation. Furthermore, there are other soft skills mentioned in this study, emphasizing the importance of developing workers' soft skills in addition to their technical skills. The full list of soft skills and socio-emotional skills found in this study is in Annex B of this paper.

5. Given that there are shortages of skills/jobs which already have existing TRs, it is necessary for TESDA to further enhance its TVET capacity and soft infrastructures. Dialogue with the industry regarding their perception of TVET programs may also be done.
   5.1. Truck drivers, forklift operators, and welders, for example, are among the most in-demand and these are already covered in existing TRs. Generally, there is a relatively high number of enrolled, graduates, assessed, and certified individuals among the logistics-related TRs. However, shortage of workers still exists and there is only a low percentage of TVET graduates and TVET certified employees in the participating facilities. Thus, further development of these capacities may be required to cope with the demands of the sector.
   5.2. TESDA may engage more women to participate in Logistics-related TRs in light of female-dominated sectors and a Supply Chain Management's plan to expand into hiring female warehouse personnel (e.g., Warehousing Services NC II, Warehousing Services NC III, Warehousing Services NC IV). This could be one of the focus areas of TESDA's Gender and Development initiative in the non-traditional trade (NTT) implementation in accordance with the Magna Carta of Women.

6. Continuous training programs and learning and developmental activities must be in place to ensure and maintain the quality performance of the workforce.
   6.1. Training comes as one of the interventions for workers with potential to perform more demanding duties and those workers who are unable to perform their job. TESDA to assist through the Tulong Trabaho program or other scholarship programs.
   6.2. TESDA to allocate scholarship provisions for those which have not been recommended yet for the prioritization of scholarship allocation and were identified as needed especially for the next 1-5 years.

7. There must be a continued dialogue between TESDA, and other key players of the industry such as the academe, government agencies, and key private institutions, among others. This is to ensure that the programs and policies addressing the skills demands and mismatches, and the economic and labor opportunities are aligned. Moreover, a dialogue with the industry shall help ensure that the programs developed are utilized and recognized by the Logistics sector.

5.2 Recommendations on the Conduct of the Survey

1. The existence of a signed MOA between TESDA, DTI, and the LSPH associations had played a crucial role especially in producing a comprehensive list of facilities. However, communication with the concerned respondents still proved to be challenging. In this case, it is recommended to consider the communication and information flow as provided below:

Figure 3
Communication and Information Flow for SNA-WSS Concerns

As presented in the figure, concerns that need immediate action/assistance (e.g. unresponsiveness) regarding the respondent will be directed to the contact person assigned per association. The assigned contact person for the association will then be responsible for coordinating and communicating with the survey respondent. To better facilitate the survey, urgent matters will be prioritized while other concerns may form part of a weekly status feedback/report. The status report may be in the form of an email, call, or through other communication channels preferred by the association. It is important that key personnel/contact persons and the respective responsibilities be established prior to the survey dissemination.

2. Some respondents noted that there is not enough time to answer the questions, provided that the survey is also conducted in the latter part of the year. Additionally, the survey was implemented for only 10 weeks. Thus, considering other factors such as budget and personnel availability, a longer time for the survey implementation may be considered in the planning stage to accommodate more responses.

3. Some companies were unable to participate due to several reasons including pandemic-related problems, hectic schedules in the daily operations, prior commitments, updating of company systems and policies, and other business-related issues. Considering that there will be several constraints that will cause respondents to decline, replacements should be considered even at the survey conception.

4. Given that the survey methodology is highly dependent on the internet connection as affected by the COVID-19 pandemic, few respondents were unable to participate. It is recommended to consider other methods in cases where a respondent is willing to participate yet current infrastructure and resources serve as a constraint. The importance of selecting the appropriate survey methodology should be reiterated during the scoping meeting.

5. Future WSS surveys may consider other survey instruments aside from Jotform. Based on the experience of the survey proponents, Jotform may not be the best tool for a survey containing complex questions (i.e., questions related to each other or with multiple sub-questions). The users/respondents also experienced problems in using the tool such as submission errors.

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ANNEX A

Projected Distribution of the Skills Supply, Hard-to-fill Skills, and Skills Addressable by TVET Programs for the Next 5 years

Note:

* All entries/responses in C11.1 are NA (Not Applicable), resulting in an undefined value per Area of Skills/Job in C11.2 and C11.3

[a] Respondent answered C11.2 despite answering NA in C11.1 resulting in a C11.2 value higher than 100%

[b] Since the responses on C11.2 are dependent on C11.1, the difference between the Skill supply frequencies and Hard-to-fill frequencies had to be calculated; with some negative results.

Reason: Failure to validate responses (Respondent/s still answered the "Hard-to-fill" question even though they had initially indicated NA in C11.1.

Areas of Skills/Jobs	Skill Supply (C11.1)				Hard-to-Fill (C11.2)		Addressable by TVET programs (C11.3)	
	Shortage	No change	Surplus	NA	Yes [a]	No [b]	Yes	No
Administrative Clerk	5.56	83.33	11.11	0	22.22	77.78	35.71	64.29
Airline Staff	0	0	0	100	*	*	*	*
Automotive Chassis Specialist	11.11	16.67	5.55	66.67	100.00	0.00	87.50	12.50
Automotive Painter	0	16.67	0	83.33	100.00	0.00	66.67	33.33
Bus Driver	0	11.11	0	88.89	200.00	-100.00	80.00	20.00
Cargo Handling	5.56	50	5.56	38.88	0.00	100.00	33.33	66.67

Areas of Skills/Jobs	Skill Supply (C11.1)				Hard-to-Fill (C11.2)		Addressable by TVET programs (C11.3)	
	Shortage	No change	Surplus	NA	Yes [a]	No [b]	Yes	No
Chassis Repair Personnel	5.56	27.78	0	66.66	66.67	33.33	83.33	16.67
Commercial troubleshooter (cloud-based planning)	5.56	5.56	0	88.88	300.00	-200.00	33.33	66.67
Conductor	5.56	5.56	0	88.88	200.00	-100.00	50.00	50.00
Container checker	0	38.88	5.56	55.56	25.00	75.00	33.33	66.67
Courier	0	22.22	0	77.78	50.00	50.00	20.00	80.00
Customer satisfaction director (works with analytics and automation in logistics fulfillment centers)	0	5.56	0	94.44	200.00	-100.00	0.00	100.00
Customer Service Representative/Associate	11.11	55.56	0	33.33	16.67	83.33	54.55	45.45
Customization master	0	5.56	0	94.44	300.00	-200.00	66.67	33.33
Dangerous Goods Handling	5.56	16.67	0	77.77	50.00	50.00	50.00	50.00
Dangerous Goods Handling for Sea Transport	5.56	16.67	0	77.77	50.00	50.00	50.00	50.00
Dangerous Goods Regulation	11.11	16.67	0	72.22	33.33	66.67	42.86	57.14
Delivery Associate	0	22.22	0	77.78	50.00	50.00	40.00	60.00
Delivery Specialist	5.56	16.66	0	77.78	0.00	100.00	25.00	75.00

Areas of Skills/Jobs	Skill Supply (C11.1)				Hard-to-Fill (C11.2)		Addressable by TVET programs (C11.3)	
	Shortage	No change	Surplus	NA	Yes [a]	No [b]	Yes	No
Digital Engineer	10	0	0	90	200.00	-100.00	0.00	100.00
Dispatcher	5.56	61.11	0	33.33	33.33	66.67	20.00	80.00
Distribution Centre Manager	5.56	5.56	5.55	83.33	150.00	-50.00	60.00	40.00
Documentation Clerk	0	61.11	5.56	33.33	50.00	50.00	30.00	70.00
Electrician	16.67	27.77	5.56	50	100.00	0.00	100.00	0.00
Estimator	0	0	0	100	*	*	*	*
Export Brokerage Clerk	5.56	11.11	0	83.33	100.00	0.00	80.00	20.00
Express Operators and Integrators	0	0	0	100	*	*	*	*
Forklift Driver	16.67	22.22	0	61.11	100.00	0.00	87.50	12.50
Forklift Operator	22.22	27.78	5.56	44.44	80.00	20.00	77.78	22.22
Freight forwarders	5.56	11.11	5.56	77.77	100.00	0.00	0.00	100.00
Ground Handler	0	11.11	0	88.89	0.00	100.00	25.00	75.00
Heavy Equipment Operator	16.67	0	0	83.33	150.00	-50.00	75.00	25.00
Helper	0	38.89	5.56	55.55	0.00	100.00	0.00	100.00

Areas of Skills/Jobs	Skill Supply (C11.1)				Hard-to-Fill (C11.2)		Addressable by TVET programs (C11.3)	
	Shortage	No change	Surplus	NA	Yes [a]	No [b]	Yes	No
Import Processors, consolidators assistant	0	27.78	5.56	66.66	100.00	0.00	50.00	50.00
Import-Export Inspection Specialists	5.56	22.22	0	72.22	100.00	0.00	60.00	40.00
Inventory Clerk	0	33.33	5.56	61.11	50.00	50.00	28.57	71.43
Inventory System	0	16.67	5.56	77.77	50.00	50.00	40.00	60.00
Logistics Support Clerk	5.56	16.66	5.56	72.22	33.33	66.67	20.00	80.00
Machine Operator	5.56	11.11	0	83.33	150.00	-50.00	100.00	0.00
Master Mechanic	27.78	22.22	0	50	80.00	20.00	100.00	0.00
Mechanic	16.67	16.67	5.56	61.1	100.00	0.00	100.00	0.00
Motorcycle Driver	0	11.11	5.56	83.33	50.00	50.00	50.00	50.00
Multimodal Transport Operator	0	5.56	5.56	88.88	100.00	0.00	100.00	0.00
Operations Manager	16.67	16.67	5.56	61.1	125.00	-25.00	60.00	40.00
Order Tracker/Coordinator	0	5.56	5.56	88.88	100.00	0.00	80.00	20.00
Parts Pricing	5.56	5.56	0	88.88	100.00	0.00	25.00	75.00
Perishable Cargo Handling	5.56	0	5.56	88.88	100.00	0.00	75.00	25.00

Areas of Skills/Jobs	Skill Supply (C11.1)				Hard-to-Fill (C11.2)		Addressable by TVET programs (C11.3)	
	Shortage	No change	Surplus	NA	Yes [a]	No [b]	Yes	No
Procurement Manager	22.22	22.22	5.56	50	60.00	40.00	55.56	44.44
Refrigeration Mechanic	5.88	0	0	94.12	100.00	0.00	100.00	0.00
Refrigeration Technician	5.56	11.11	5.56	77.77	100.00	0.00	75.00	25.00
Resource Czar (works with machine learning in optimal resource consumption)	0	0	0	100	*	*	*	*
Route Planner	0	22.22	5.56	72.22	66.67	33.33	60.00	40.00
Shipping Line Personnel	5.56	11.11	0	83.33	100.00	0.00	20.00	80.00
Shipping, Receiving, and Traffic Clerks	5.56	22.22	0	72.22	66.67	33.33	40.00	60.00
Slingman	0	11.11	5.56	83.33	50.00	50.00	60.00	40.00
Stock Clerks and Order Fillers	0	11.11	0	88.89	100.00	0.00	50.00	50.00
Terminal and Warehouse Personnel	0	11.11	0	88.89	0.00	100.00	40.00	60.00
Ticket Teller	11.11	11.11	5.56	72.22	66.67	33.33	60.00	40.00
Ticketing Issuing/Travel Clerk	0	0	0	100	*	*	*	*

Areas of Skills/Jobs	Skill Supply (C11.1)				Hard-to-Fill (C11.2)		Addressable by TVET programs (C11.3)	
	Shortage	No change	Surplus	NA	Yes [a]	No [b]	Yes	No
Trainers, Explainers, And Sustainers (AI-driver jobs)	0	10	10	80	50.00	50.00	75.00	25.00
Transport Network Vehicle Service (TNVS) Driver /Taxi Driver	0	0	0	100	*	*	*	*
Transport Scheduler	5.56	0	5.56	88.88	100.00	0.00	80.00	20.00
Truck Driver	22.22	5.56	5.56	66.66	100.00	0.00	100.00	0.00
Warehouse Personnel	0	11.11	0	88.89	100.00	0.00	50.00	50.00
Waterside workers	5.56	16.67	11.11	66.66	66.67	33.33	66.67	33.33
Welder	22.22	22.22	5.56	50	40.00	60.00	66.67	33.33

ANNEX B
Additional Skills Requirements Identified

Note.

** Requires higher education*

*** included/subjected to the initial consultation which are not in Annex A of this paper*

Category	Jobs/Skills
Skills/Jobs Addressable by TVET Programs	○ Commercial troubleshooter (cloud-based planning)* ○ Customization master* ○ Delivery Specialist ○ Distribution Centre Manager* ○ Documentation Clerk ○ Operations Manager* ○ Procurement Manager* ○ Route Planner ○ Stock Clerks and Order Fillers ○ Trainers, Explainers, And Sustainers (AI-driver jobs)* ○ Transport Scheduler ○ Warehouse Personnel ○ Waterside workers ○ Shipping, Receiving, and Traffic Clerks ○ Internal Auditor*
Other skills/jobs identified by the facilities to have fast turnover and/or will be difficult to replace within three months	○ Driver ○ Operator ○ Accounting Clerk ○ Carpenter ○ Compliance ○ Quality Management ○ General Manager* ○ Encoder (especially those who are software proficient) ○ Truck Mechanic ○ Automotive Mechanics ○ BDO ○ Sales ○ Operations ○ Managerial Positions* ○ IT Positions ○ Supervisor* ○ Quality Assurance
Others - Specialized Logistics Skills	○ Troubleshooting
Emerging Skills associated to Industry Developments	○ 3D Printing/additive manufacturing ○ Active learning with a growth mindset ○ Advanced Robotics

- Analytics
- Autonomous systems
- Autonomous Vehicles (AV)
- Artificial Intelligence**
- Augmented Reality**
- Blockchain
- CCTV operation
- Chat bot
- Cloud Computing
- Customs import and export systems analysts/ specialists*
- Customs valuation system specialists*
- Data Analytics**
- Data security
- Digital Supply Chain (e.g. Additive Manufacturing, Logistics Visibility, Smart Warehousing, Efficient space parts management, Prescriptive Supply Chain Analytics, etc.)
- E-Commerce and Social Media Specialists**
- End-to-end supply chain
- Enhanced GPS
- Ethical hacker
- Flexibility and adaptability
- Fuel sensor (in trucks)
- Industrial and Production Engineers*
- Information Security Analysts
- Internet of Things (IoT)
- IT system (Digital)
- Mechatronics
- Online tariff classification practitioner*
- Portals and drop off boxes for documents
- Product Managers*
- Programmer*
- QR coding
- Radio-Frequency Identification (RFID)
- Real time warehouse inventory system
- Route mapping
- Sales and Marketing Professionals*
- Service and Solutions Designers*
- Software and Applications Developers and Analysts*
- Software development
- Supply chain
- Telecommuting
- Telematics
- Technical skills for equipment/tools (i.e. machine operation)**
- Transport Network Vehicle Service (TNVS) Vehicle

	Sharing Service** ○ Trucking Advanced Booking System (TABS) ○ UAVs/Drones ○ Virtual assistance ○ Warehousing ○ WMS
Emerging Green Skills/Jobs	○ A.P. Moller - Maersk Decarbonisation program ○ Automation ○ Industrial Waste Handling Specialist* ○ Industrial Waste Management ○ Pollution Control Officer* ○ Proper Permits Documentation ○ Proper tire and Battery disposal ○ Real-time end-to-end Supply Chain ○ Reuse and Recycle ○ Solar Panel Installers ○ Strategic Planning ○ Strict waste segregation management ○ Sustainability Manager* ○ Tree Planting ○ Used oil filtration ○ Utility Workers ○ Waste Disposal Professional*
Soft Skills and Socio-emotional Skills	○ Great Interpersonal Skills ○ Customer Service ○ Negotiation ○ Accuracy ○ Active learning with a growth mindset ○ Active listening ○ Analytical thinking and innovation ○ Crisis management ○ Critical thinking ○ Decision-making skills ○ Digital skills ○ Flexibility and adaptability ○ Learning strategies ○ People management ○ Self Control ○ Strong work ethic ○ People person ○ Public Speaking Skills ○ Tech-savvy

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Planning Office - Policy Research and Evaluation Division

TESDA Complex, East Service Road, South Superhighway,
Taguig City, 1630
www.tesda.gov.ph
(02) 8817-2675