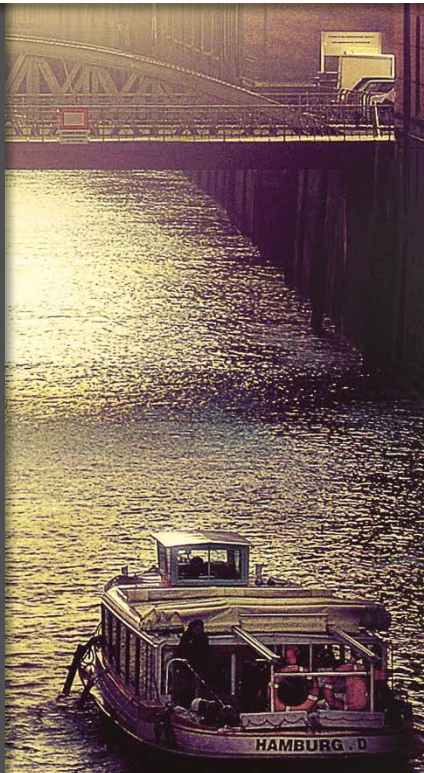


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Assessing and Improving Countries' Logistics Skills and Training

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Evidence is mounting to suggest that there is a global shortage of people with the right skills to meet the evolving needs of the logistics industry. Especially emerging regions are lagging behind, inhibiting economic growth. Thus, governments should systematically assess and address skills shortages in logistics. Commissioned by the World Bank, we devised a toolkit for assessing the availability of logistics skills within low- and middle-income countries. We built on the maturity model concept and embedded it into an assessment and policy recommendation process. An international panel of logistics training experts provided advice on the toolkit development. The toolkit allows government officials and staff from international organizations to gain a quick but comprehensive overview of the logistics skills and training situation in a particular country. A pilot study done in Togo demonstrated the toolkit's relevance and practicality. The toolkit is the first of its type to help governments undertake a systematic analysis of logistics skills and training at the macro level. Previous research in this area takes a micro-level perspective focusing on the logistics workforce of individual companies.

Keywords: logistics; skills shortage; competences; maturity model

1 Introduction

Logistics is a major growth sector in the world economy in term of the levels of activity and expenditure (Rushton et al. 2017). In addition to being an important sector in its own right, accounting for around 11% of the global gross domestic product (Shepherd 2011), logistics strongly influences the economic performance of other industries and the countries in which they are located (Arvis et al. 2016). Given its critical importance to economic development and social welfare, logistics must be adequately resourced – in a physical sense and regarding human resources. Despite decades of increasing automation and the current trend of digital transformation (Kersten et al. 2017), logistics intrinsically remains a people business (Rushton et al. 2017). On the operational, supervisory, and managerial levels, logistical activities are labor-intensive (McKinnon et al. 2017). This makes the logistics performance of companies and countries highly dependent on the quantity and quality of the workforce (Jhawar et al. 2014).

1.1 The Case for a Logistics Skills Assessment

Logistics employees need to possess a wide range of skills (Derwik et al. 2016). However, since logistics operates in a business environment characterized by constant technological and socio-economic change, relevant skill sets evolve (Fawcett & Rutner 2014; Kotzab & Wünsche 2015). This has been well-documented in the logistics literature for several decades (e.g. Murphy & Poist 1991; Gammelgaard & Larson 2001; Murphy & Poist 2006; Rahman & Yang 2012; Derwik et al. 2016). It has been argued that today's logistics managers should be regarded as “decathletes” (Hoberg et al. 2014). They must have a cross-functional comprehension of various business fields, strategic decision-making, communication, leadership and intercultural skills, and well-developed analytical and IT skills to manage the versatile tasks they face on a daily basis (Flöthmann & Hoberg 2017). In general, logistics employees on all levels need to acquire the ability to think and work on a process basis. They need to look beyond their own functional and occupational silos and understand how their jobs connect to the entire process (Trautrimis et al. 2016). Recently, research also began to analyze how the content of study and training programs in logistics match these skill demands (e.g. Lutz et al. 2013; Cronjé 2015). Most studies find that there is an imbalance between demand and supply – either regarding the number of suitable candidates or related to the content of study programs (e.g. Onar et al. 2013; Fawcett & Rutner 2014; Sinha et

al. 2016). Thus, it comes as no surprise that there is a global shortage of people with the right competences and skills to meet the evolving needs of the logistics industry. Studies in countries such as China, India, the US, the UK, Vietnam, and Korea have reported that businesses are having difficulty recruiting staff with the required skills in logistics. These skills shortages range from a lack of truck drivers (e.g. Large et al. 2014; Costello & Suarez 2015) to problems in filling senior logistics positions (e.g. Cottrill 2010; Sinha et al. 2016).

A recent multinational study on logistics skills and training by McKinnon et al. (2017) emphasized that qualified logistics staff are in short supply at all occupational levels in both developed and developing countries. The prevailing view is that the logistics recruitment problem is likely to remain the same or worsen over the next five years. The problem is compounded by deficiencies in the skill levels of those currently employed in the logistics sector. This is impairing the productivity of logistics operations and the quality of logistics services (Capgemini & Langley 2017). McKinnon et al. (2017) highlight the need for a major expansion of logistics training and skills development. Emerging regions are lagging behind the developed countries in the resourcing and quality of training, course content, and the nature of the educational experience. Often, training is limited to short-term, on-the-job training – if at all – provided by colleagues during daily operations. Since logistics performance is considered a central driver of economic growth and competitiveness (Arvis et al. 2016) and studies show the positive relationship between logistics skills and logistics performance at a country level (e.g. Jhavar et al. 2014), low- and middle-income countries, in particular, should keep a close eye on the quality and availability of their logistics education. Further, the study describes the roles that the various stakeholder groups can play in the education, training, and development of logistics employees, individually and collectively, to upgrade their logistics skill levels (McKinnon et al. 2017). It is shown that different stakeholders such as companies, employees, professional associations, higher educational institutes, and external training agencies have a mutual interest in this effort. For governments aiming to improve their countries' logistics prospects, the case for supporting these efforts is particularly strong.

1.2 Requirements for a Logistics Skills Assessment Toolkit

To date, little research has been done on logistics skills development in low-income countries (Cronjé 2015). To help to rectify this situation, the World Bank commissioned the Kühne Logistics University to develop a ready-to-use logistics

skills toolkit for low- and middle-income countries. The toolkit is intended to assist governments in determining the logistics skills requirements of their economy and assessing to what extent they are being met by the current provision of training and education. If a skills shortage is found, governments should receive guidance on the measures that they can take to address this problem. It was decided that the toolkit should meet five requirements:

1. **Target group:** The toolkit should be designed for use by government officials from low- and middle-income countries and staff from development finance institutions.
2. **Complexity:** The toolkit should be easy to understand by users with limited experience in conducting such assessments.
3. **Time frame:** It should be possible to collect the necessary data for the toolkit within a period of 5-8 days.
4. **Data:** The toolkit should mainly rely on qualitative data obtained from interviews with different stakeholders. This could, however, be supplemented by quantitative data where possible.
5. **Results:** The use of the toolkit should lead to the production of a report outlining the nature and scale of skills shortage and recommendations for policy responses.

This paper provides insights into the toolkit's development and piloting. Thus, it sheds light on the research question "How can logistics skills and training be measured and improved by governments?" The remainder of the paper is structured as follows: First, we give an overview of the toolkit's development process. Then, we introduce three of the toolkit's major building blocks that are subsequently integrated into an overall assessment and policy recommendation process. The paper concludes with insights gained from a pilot study in the West African state of Togo and explores future research opportunities.

2 Development Process

We developed the toolkit in multiple distinct steps (see Figure 1). First, we analyzed the literature to review existing methods and tools on the issue. We found no comparable conceptual work viewing the topic of logistics skills shortages from a

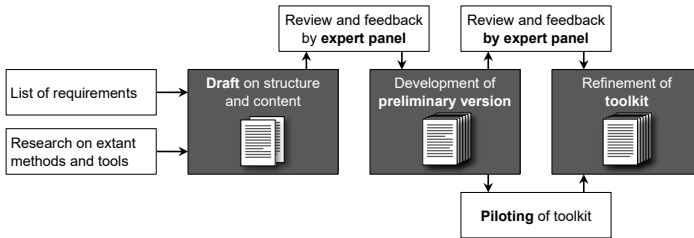


Figure 1: Development of Toolkit

country perspective. However, some literature provides guidance on the development of a logistics-related workforce from an organizational perspective (e.g. Bond & Wollaston 2015; McNelly 2013; Royal Academy of Engineering 2015). While the approaches they adopt are not directly applicable to national governments, they still provide a rich background for the development of the toolkit. Together with the list of requirements, the results of the literature review were the main input for constructing a 4-page draft document on the structure and the general content of the toolkit. To gain external advice on the development of the toolkit, we established an expert panel. It consisted of nine highly knowledgeable and respected individuals from the academic, business, and government domains. Figure 2 provides an overview of the panel. While the experts' common denominator is their engagement in logistics skills development, they also view the topic from different geographical, professional, and stakeholder perspectives. We sent the draft on the structure and content of the toolkit to the members of the expert panel for review and feedback. Most experts provided written comments. Some were also engaged in calls to discuss the issue in greater detail. All feedback was gathered, structured, and analyzed to provide a meaningful foundation for the subsequent development of the preliminary version of the toolkit. This 40-page document was also sent out for review by the expert panel. Further, a pilot study was conducted in Togo. Feedback from both the expert panel and the pilot study was analyzed and considered when preparing the final version of the toolkit.

#	Position	Organization	Country
1	Head of Training Academy	International Transport Organization	Switzerland
2	Executive Officer	International Logistics Organization	Belgium
3	Chief Executive	International Transport Development Organization	United Kingdom
4	Professor of Logistics	Higher Education Institution	Thailand
5	Executive Secretary	Transport Authority	Kenya
6	Supply Chain Workforce Development Specialist	International Health Organization	USA
7	Professor of Business Logistics	Higher Education Institution	Poland
8	Professional Development Project Director	National Logistics Association	United Kingdom
9	Professional Development Coordinator	International Logistics Association	United Kingdom

Figure 2: Composition of Expert Panel

3 Development of the Toolkit's Building Blocks

This section describes the structure and content of the toolkit. We start by explaining the three major building blocks and then integrate them into an overall assessment and policy recommendation process: (1) a differentiation of logistics employment levels, (2) the definition of twenty assessment areas around which to structure the analysis, and (3) a maturity model to qualitatively assess a country's status in each assessment area. We introduce the interconnected building blocks in the following sub-sections.

3.1 Logistics Employment Levels

Skills requirements in logistics are highly dependent on the job type and occupational level. Employee groups need, therefore, to be split into different categories to analyze their skill and training requirements separately. Many classifications

3 Development of the Toolkit's Building Blocks

Employment Level	Description	Examples
Operative logistics staff	This group includes all logistics employees who carry out basic operational tasks and do not have any staff responsibility.	Truck drivers, forklift drivers, warehouse pickers
Administrative logistics staff	Staff at this level perform information-processing tasks and have limited supervisory or managerial responsibilities.	Traffic planners, expeditors, warehouse clerks, customs clearance officers, customer service employees
Logistics supervisors	Supervisors have frontline responsibility, controlling logistics operations on the ground rather than in the office.	Shift leaders in warehouses, team leaders in traffic departments
Logistics managers	Logistics managers have higher-level decision-making responsibility ranging from junior management roles to board level responsibility for logistics and supply chain strategy.	Warehouse manager, head of logistics operations, chief supply chain officer

Figure 3: Levels of Logistics Employment (based on McKinnon et al. 2017)

of logistics jobs have been devised and are in use today. Most of them are highly specific and distinguish many logistics sub-domains and personnel qualification stages (e.g. CILT 2016; Skills for Logistics 2015). However, for this toolkit, we adopted a simpler and broader classification of logistics staff put forward by McKinnon et al. (2017). A broad classification ensures that toolkit users and interviewees can recognize the distinctions despite huge differences in sector maturity and individual job descriptions. The toolkit distinguishes four main levels of logistics employment as shown in Figure 3. Operative and administrative logistics staff carry out, respectively, manual and information-processing tasks. Logistics supervisors like shift or team leaders control logistics operations on the ground. Finally, logistics managers plan and oversee the logistics activities of a company.

3.2 Assessment Areas

The scope of the assessment is mapped out across 20 distinct assessment areas. This permits tailoring of the assessment to the different types of stakeholders to be interviewed as not all interviewees will be knowledgeable in every aspect of the assessment. Figure 4 provides an initial overview of the assessment areas. The ability of a country to meet the labor requirements of logistics can be

Demand	A1 Recruitment of operative logistics staff	A2 Skills level of existing operative logistics employees	A3 Recruitment of administrative logistics staff	A4 Skills level of existing administrative logistics employees
	A5 Recruitment of logistics supervisors	A6 Skills level of existing logistics supervisory employees	A7 Recruitment of logistics managers	A8 Skills level of logistics managers currently in post
Supply	A9 Availability of vocational education in logistics	A10 Quality of vocational education in logistics	A11 Availability of logistics education by private training providers	A12 Quality of logistics education by private training providers
	A13 Availability of logistics education by universities	A14 Quality of logistics education by universities	A15 Availability of in-house training	A16 Quality of in-house training
	A17 Certifications of logistics skills	A18 Role of associations	A19 Attractiveness of logistics industry	A20 Availability of recruitment services

Figure 4: Assessment Areas of the Toolkit

defined in terms of both demand and supply. This is reflected in the assessment matrix. Demand can be measured by the number of personnel required and their required skill levels. For supply, one can measure the number of people being trained and the skills they possess when entering the sector. If the supply does not satisfy the industry demand, a country might face a skills shortage. For demand, eight assessment areas are defined. They pertain to both recruitment of new employees and the skill levels of existing employees on the four levels of logistics employment. The supply section of the grid comprises twelve assessment areas. They are concerned with the availability and quality of different education providers and also cover certification of logistics skills, the role of professional associations in developing these skills, the relative attractiveness of employment in the logistics industry, and the availability of recruitment services.

	Level 1 Minimal Capability	Level 2 Marginal Capability	Level 3 Average Capability	Level 4 Advanced Capability	Level 5 Global Best Practice
A10 Quality of vocational education in logistics	Vocational education in logistics is not widely accepted in industry Programs are not aligned to industry needs Low skills level of graduates		Vocational education in logistics is accepted in industry Programs meet the basic needs of the industry		Vocational education in logistics is widely accepted in industry Close collaboration with industry results in up-to-date program content Certifications and degrees are established and widely known

Figure 5: Exemplary Illustration of Maturity Level Concept

3.3 Maturity Model

To be able to measure a country's capability in the assessment areas, we developed a maturity model. Maturity models have their origins in software development and quality management but are increasingly employed for measuring capabilities in logistics and supply chain management (e.g. Battista & Schiraldi 2013; Mehmman et al. 2015; Mendes Jr. et al. 2016). The basic idea of such models is the notion of evolution: an organization is considered to pass through distinct intermediate states on its way to maturity. Each of these states is described as typical behaviors the organization exhibits when it has reached a certain maturity level (Lahti et al. 2009). Figure 5 illustrates the maturity level concept for one of the 20 assessment areas. Maturity levels two and four deliberately contain no descriptions to keep the assessment simple and flexible.

4 Introduction to the Toolkit

The three building blocks introduced above were embedded into an overall assessment and policy recommendation process. Figure 6 gives an overview. We describe the three phases of the process in more detail in the following sections. Because of space limitations, only the key aspects of the assessment process will be summarized here.

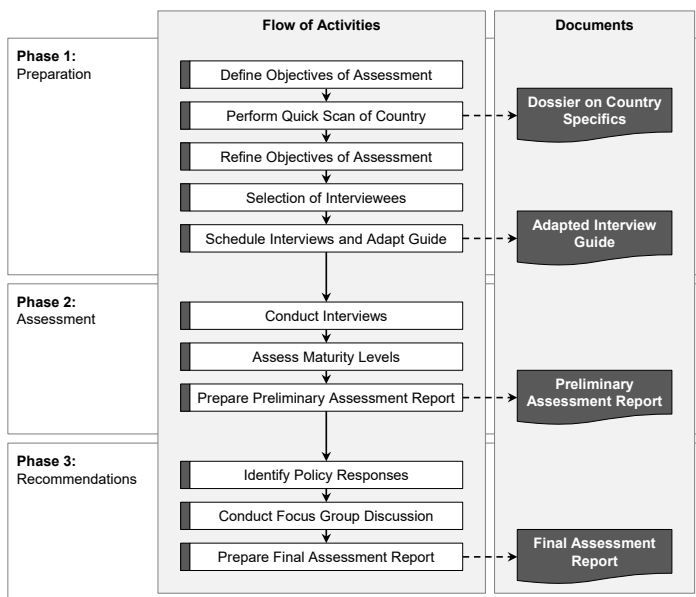


Figure 6: Flowchart of Assessment Process

4.1 Phase 1: Preparation

The first phase enables the toolkit user to gain an initial overview of the country under investigation through a quick scan, tailor the scope of the assessment to the country, and plan the data collection phase by identifying experts for interview. This phase is likely to be based on data available online and so could be completed prior to any fieldwork in the country.

4.1.1 Define Objectives of Assessment

Before starting the assessment process, it is of high importance to prepare a clear statement of the objectives of the assessment. However, they can be refined after the toolkit user has become familiar with the specific situation in the country.

4.1.2 Perform Quick Scan of Country

The quick scan is a desk-based research activity intended to familiarize the toolkit user with country specifics. Information relevant to the assessment should be collected from published reports or internet searches. Two kinds of information are to be collected. First, general information about the demographics, economy, and educational system of the country is needed. Second, the quick scan should produce contact information for suitable interviewees for the second phase of the assessment. For this purpose, the toolkit provides the user with examples and sources of relevant data. It is assumed that a thorough quick scan takes about two weeks of the toolkit user's time.

4.1.3 Refine Objectives of the Assessment

Based on the results from the quick scan, the objectives of the assessment might have to be revised. For example, it will need to reflect the country's level of economic development and the relative importance of different transport modes and logistics services. The toolkit user might also choose to limit the focus to specific sectors, particular regions, or levels of logistics employment.

4.1.4 Selection of Interviewees

Given the assessment's limited timeframe of 5-8 days in the country and the breadth of issues to be covered, the choice of interviewees is critical to the success of the assessment (see Figure 7 for an overview of potential interviewees). Visiting the interviewee's premises may involve significant travel time, limiting the number of interviews that can be carried out per day. Comparable assessments have shown that one person – depending on the distances that have to be traveled – can conduct two to three interviews at different organizations per day (The World Bank 2010). It might be difficult therefore to exceed 15-20 interviews during

Stakeholder Group	Category	Examples of Appropriate Interviewees
Government & administration	Ministries	Experts on logistics or education
	Statistics and employment agencies	
Logistics service providers	Local companies (e.g. airport operators, port operators, freight forwarders)	HR-personnel, logistics executives
	Multinational companies (e.g. UPS, DB Schenker, Maersk, DHL, Kühne + Nagel)	
Shippers	Local companies (e.g. mining companies, fruit exporters, agricultural cooperatives)	
	Multinational companies (e.g. Coca-Cola, P&G, Unilever, Samsung)	
Universities & colleges		Logistics and management professors
Training providers	Vocational institutions	Logistics teachers
	Private training providers	CEOs / senior executives
Professional associations	Local associations	Head of professional development
	International associations	Chairs of local branches
Business organizations	Trade bodies	Director generals / CEOs
	Labor unions	General secretaries
Recruitment agencies	General agencies	HR-personnel focused on logistics
	Logistics-specific agencies	

Figure 7: Overview of Potential Interviewees by Stakeholder Group

the 5-8 days of the assessment. This size of interview sample cannot generate statistically reliable data on logistics skills but it can yield differing perspectives and provides a broad overview of the issue.

Stakeholders will often have a limited knowledge of the topic, and so only a specific subset of the 20 assessment areas are likely to be covered in any given interview. The user of the toolkit must judge which of the assessment areas are most appropriate for particular interviewees. At the same time, the toolkit user has to ensure that every assessment area is covered with a minimum number of interview responses. To facilitate the process of selecting interviewees and assigning assessment areas, the toolkit provides a match-making matrix. It includes advice on (1) which assessment areas should be the focus of the interview and discussed with all interviewees and (2) which assessment areas can be included

Stakeholders	Assessment Areas																			
	Demand								Supply											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Government & administration	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus
Logistics employers	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Universities & colleges	Focus	Focus	Focus	Optional	Optional	Optional	Optional	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus
Training providers	Focus	Optional	Optional	Optional	Optional	Optional	Optional	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Optional
Professional associations	Optional	Optional	Optional	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Focus
Business organizations	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Recruitment agencies	Focus	Focus	Focus	Focus	Focus	Focus	Focus	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional

Focus of assessment
 Optional assessment
 Not to be covered

Figure 8: Matching Stakeholder Groups and Assessment Areas

optionally depending on local circumstances and the interviewee’s expertise. Figure 8 provides an abbreviated version of this match-making matrix.

4.1.5 Schedule Interviews and Adapt Interview Guide

After a suitable sample of interviewees has been selected, individual meetings have to be scheduled and the interview guides customized accordingly. To facilitate the data collection, the toolkit provides examples of interview questions for every assessment area. The interviewee still has some discretion over the tailoring of questions to the type of interviewee.

4.2 Phase 2: Assessment

The second phase of the assessment outlines the process of collecting data from interviews and offers advice on data analysis. The toolkit user is also provided with methodological recommendations and templates that can be used for data collection and analysis.

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A4: Skills Level of Existing Administrative Logistics Employees

Examples of Interview Questions	Maturity Level				
	Level 1 Minimal Capability	Level 2 Marginal Capability	Level 3 Average Capability	Level 4 Advanced Capability	Level 5 Global Best Practice
<ul style="list-style-type: none"> Do administrative logistics staff possess the right skills for their job? If not, what are the main skills they lack? What are the consequences of administrative logistics staff lacking the right skills? What share of administrative logistics staff needs to receive top-up training in their first months of employment? What share of logistics administrators are promoted to managerial logistics positions within 5 years (period might not apply to small companies)? 	Administrative logistics personnel does not possess the necessary skills for their job Incidents caused by a lack of skills happen frequently New employees have to receive introductory training to close skills gaps		Administrative logistics personnel possesses the necessary skills for their job They only seldom have to receive introductory training		Administrative logistics personnel exceeds skills requirements They often participate in advanced training to improve their logistics skills Logistics supervisors are recruited from highly skilled administrative personnel
Evidence for Maturity Assessment: 					
Maturity Score (1-5):					

Figure 9: Example of Template for Data Collection

4.2.1 Conduct Interviews

The toolkit offers a range of recommendations for conducting the interviews. For example, the toolkit user might request the presence of two or three complementary interviewees: in the case of a company, it might be useful to interview HR-personnel together with a logistics executive to get the full picture of recruiting and retaining logistics staff. To facilitate the data collection and maturity assessment, the toolkit provides templates for each assessment area. Figure 9 gives an example. Each template consists of exemplary questions, the maturity levels defined, and a blank space for writing down evidence for the maturity assessment. Also, the toolkit user should indicate his/her assessment score on a 1-5 Likert scale at the bottom of the page. The descriptions that are provided for maturity levels one, three, and five should be considered as generic descriptions and necessarily related to the specific situation in the country. The templates are designed to be used during the interviews. Some questions will be common to all templates and should always be asked to ensure consistency. Others will

be tailored to particular stakeholders, but again should be considered compulsory. Interviewers can supplement these questions with others that they wish to include to probe more deeply in particular areas. These can be added during the course of the survey in the light of issues that arise in the early interviews. It will also be helpful to obtain the interviewees' views on the reasons for potential skills shortages and possible ways of correcting the problem. For this reason, the toolkit provides some 'diagnostic' and 'remedial' questions, which can be asked towards the end of the interview to broaden the discussion and generate data for the recommendation section of the study. It is assumed that a typical interview lasts around one hour.

4.2.2 Assess Maturity Levels

Based on the findings from all interviews (all individual maturity assessments), the toolkit user then has to determine the overall maturity level of each assessment area. In some cases, it might be sufficient to calculate the average of the individual scores awarded for each assessments area. In others, the interviewee may wish to adjust this numerical score in the light of the overall impression they gained during the course of the interviews. In this context, it is important to keep in mind that the maturity assessment is subjective and not expected to provide a statistically reliable measure.

4.2.3 Prepare Preliminary Assessment Report

The second phase of the assessment will culminate in a report that uses the empirical data to judge the supply and demand of logistics skills as well as the nature and scale of possible skills shortages. First of all, the report should contain the full list of interviewees along with details on the organization they are associated with. It should also be made clear which assessment areas were discussed with each interviewee. Then, the findings for each assessment area should be discussed in detail. The maturity assessment should be supported by evidence gathered during the interviews. If additional quantitative data became available, it should also be used to make a case for the assessment. To make the findings more manageable, the toolkit user should highlight the assessment areas in which the need for public policy intervention is greatest and which offer the most promising potential for 'quick wins.' These will be the main focus of the subsequent recommendations. It is anticipated that the main audience for the report will be

policy makers within the country. However, it should be written in a style that is also accessible to other stakeholder groups and contain enough background information about the country to allow readers elsewhere, e.g. in international organizations, to understand the arguments.

4.3 Phase 3: Recommendations

The third phase of the assessment formulates a series of recommendations to governments and other stakeholders on how to deal with the identified skills shortage in logistics.

4.3.1 Identify Policy Responses

Policy recommendations can come from three sources. First, the toolkit provides a list of actions that could be taken by different stakeholders. Figure 10 gives examples of possible actions. The recommendations are relatively generic and, thus, have to be adapted to the specific situation in the country under investigation. They are intended to function as a starting point for the discussion. Second, the interviews will have yielded some useful ideas on how to tackle specific skills and training issues. Third, the description of the global best practice maturity level of each assessment area provides input for making recommendations. However, toolkit users should be aware that the best practice scenario might not be a realistic goal for most low- and middle-income countries.

4.3.2 Conduct Focus Group Discussion

The development and subsequent endorsement of policy recommendations can be assisted by a focus group discussion (Sanchez Rodrigues et al. 2010). The focus group would comprise 8-10 key participants with a strong interest and expertise in logistics skills/HR issues and represent the main stakeholders. It is likely that many of them will already have been interviewed. The group will participate in a discussion typically lasting a half-day and professionally facilitated. They will be given a summary of the results of the skills assessment (including the prioritization of assessment areas) and then invited to discuss a range of issues, including (1) their reactions to the skills assessment (2) reasons for the observed skills shortages, (3) what can be done to reduce these shortages and (4)

Stakeholders	Examples of Actions					
Government & administration	Supplement infrastructure investments with logistics capability investments	Use regulation to improve working conditions in the logistics sector	Facilitate multi-stakeholder collaboration	Enhance the image of logistics within the country	Raise skill level in state-owned logistics businesses	...
Logistics employers	Implement regular in-house training by internal experts	Design standardized training programs with external support	Consider further development of soft and leadership skills	Devise career paths for logisticians	Implement regular performance reviews of employees	...
Educational institutions	Collaborate with institutions specializing in logistics abroad	Leverage logistics associations and public-private-partnerships	Design logistics student exchange programs	Set up joint logistics programs with universities abroad	Facilitate collaboration with local companies	...
Associations & organizations	Offer training at local (or even discounted) rates	Consult governments	Provide train-the-trainer education	Collaborate closely with industry to keep the training up-to-date	Adopt recognized skill certification programs for logistics and transport	...

Figure 10: Example of Actions to be taken by Different Stakeholders

what should be the roles of the various stakeholders. A focus group discussion is expected to better inform the policy process and also to secure support for subsequent action from the various stakeholder groups.

4.3.3 Prepare Final Assessment Report

Phase 3 again culminates in a report, this time summarizing the recommendations for policy responses. If possible, the recommendations should be defined in a SMART way as they should be specific, measurable, assignable, realistic and time-related (Doran 1981): they should target a particular area for improvement (specific), should quantify or at least suggest an indicator of progress (measurable), should identify the responsible stakeholder (assignable), should state what results can actually be achieved given available resources (realistic) and should indicate when the result can be achieved (time-related). Also, the recommendations should be limited to a manageable number of effective actions that could truly improve logistics skills and training in the country.

5 Piloting the Toolkit

To test and further refine the toolkit, a pilot study of the first two phases was performed. Togo was chosen as a suitable pilot country. Togo is a small, sub-Saharan economy located between Benin and Ghana. It has a population of around 7.8 million with nearly 60% of the people being younger than 25 years (CIA 2017). Since Togo exports significant amounts of phosphates, cocoa, coffee, and cotton, logistics is key to economic prosperity. Togo ranks 92nd in the World Bank's 2016 Logistics Performance Index (LPI) with a score of 2.62 (Arvis et al. 2016). Taking into account the 2014 results (139th, LPI score of 2.32), the country improved substantially and is now considered being among the top-performing low-income countries. In summary, Togo seemed to be a good fit for a pilot study.

The assessment was carried out in January 2017 within a span of 10 days and encompassed 24 in-depth interviews with local logistics stakeholders. The interviewees were selected so as to cover all stakeholder groups identified in the toolkit. Interviews were carried out with logistics service providers, shippers, private training providers, national ministries dealing with transport and professional training, recruitment agencies, logistics industry associations, and the Chamber of Commerce. The interviews covered a wide range of assessment areas. The main results were:

- At the administrative and managerial levels, most logistics staff possess the necessary skills for their job. At the operative and supervisory levels, however, only about half of staff were deemed to be sufficiently qualified.
- Staff shortages were reported at varying degrees at all four employment levels.
- No clear career paths exist for logistics employees.
- None of the universities based in Togo offers specialized courses in logistics.
- Views on the quality of private training providers in logistics varied widely.
- Vocational training in logistics is not widely offered.
- Very few employees have specialist qualifications/certifications in logistics.

- Specialized recruitment agencies, if at all, are mostly used for employment levels 3 and 4.

A more detailed analysis of the interviews is currently being prepared. The results of the pilot study will inform a Technical Assistance activity carried out by the World Bank that focuses on enhancing the competitiveness of logistics services in Togo. The activity will entail financial support to train freight forwarders including curriculum development and a train-the-trainer scheme. The creation of youth employment and retraining of older workers displaced by reforms will be two of the main objectives.

6 Conclusion and Outlook

This paper introduces a toolkit to measure logistics skills shortages in developing countries and defining adequate policy responses. It is mainly aimed at national governments in low- and middle-income countries and provides a broad overview based on qualitative data. The paper explains how the toolkit was developed, what it contains, and how we piloted it. Future research opportunities will include (1) use of more pilot studies to show how the toolkit can be calibrated to countries at different levels of economic development and logistics maturity (i.e. refining scales and adapting questions) and (2) upgrading the toolkit to include the collection of quantitative data and, thus, give the assessment a higher degree of objectivity. Dissemination of the toolkit should help to monitor and facilitate the development of logistics skills worldwide.

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