

Article

Leveraging the Potential of the African Continental Free Trade Area: Logistics Challenges and Development Paths for Future Value Chains in Africa

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Abstract: *Background:* With a rapidly growing young population, the African continent provides a high but barely exploited economic potential. Creating an African free trade zone is one of the African Union's major initiatives to increase prosperity. Even though the AfCFTA has already come into force, its potential has not yet been fully exploited. This study investigates the logistics challenges associated with the AfCFTA and potential solutions and development paths for future value chains. *Methods:* The study builds upon a two-stage research process. First, applying the Nominal Group Technique with a group of 19 industry experts, current challenges and strategies to deal with them are conducted, and statements about potential development paths emerging from the AfCFTA are synthesized. Second, a questionnaire among additional industry experts is done to assess the results of the first stage. *Results:* The article sheds light on the barely untapped field of logistics challenges hindering the AfCFTA to leverage its potential. Strategy fields to address current challenges are explained, and the first indications of how the AfCFTA will shape supply chains in the mid-term are outlined. *Conclusions:* The article underlines the importance of logistics in the development of pan-African value chains and highlights potential development paths that may arise in the medium term. It also emphasizes the growing need for cooperation between politics, business, and research to overcome current logistics challenges and leverage the potential of the AfCFTA.

Keywords: free trade; Africa; international logistics networks; supply chains; trade agreements; regional value chains; intra-continental trade



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1. Introduction

The African Continental Free Trade Area (AfCFTA) is one of the world's most ambitious and promising trade agreements. While trade between African countries has long been possible only with major hurdles and, above all, costs, the agreement aims to create one of the largest free trade areas in the world [1]. If this succeeds, there will be great potential for the reorganization of value creation networks and the associated logistics networks. There are currently about 1.2 billion people living on the African continent. This number is expected to double by 2050, creating a very young population that will need jobs, prosperity, and political and economic stability. The AfCFTA can play an important role in helping to achieve this. Duty-free access to a huge market will encourage manufacturers and service providers in different industries to take advantage of economies of scale and will attract foreign investors to create regional value-creation structures [2–4].

Intracontinental trade is important to create a stable economic region and to stop being too dependent on exports from other regions. Currently, intra-African trade accounts for

about 15% of total trade. Comparing this figure with other economic regions, a large gap is noticeable. For example, intracontinental trade is 61% in Asia and 67% in Europe [5]. Suppose the project to generate an African free trade area succeeds. In that case, this can help Africa grow as a continent, connect Africa with the world, and integrate it more than currently into international value creation systems.

Previous studies on the AfCFTA have prominently focused on assessing and quantifying its future potential in intra-African trade, often taking a macroeconomic perspective [6–9]. And even though the role of logistics in intra-African trade and the development of regional value chains is undisputed, there are hardly any studies from a logistics point of view that outline the current logistics challenges of the AfCFTA that should be overcome for regional value chains to be formed.

The impact of logistics on the development of the African continent under the AfCFTA is huge, but there is little discussion on the different impacts of the AfCFTA on more and less developed member AfCFTA states, especially concerning the logistics and supply chain industry [10,11]. The logistics challenges, especially in sub-Saharan Africa, are immense [12–14] but often left out of the conversation when discussing the potential of the AfCFTA. The pure availability of a trade agreement does not necessarily result in regional or intra-African logistics and value-creation networks. Such an agreement has to be more understood as a basis for those developments, but additional barriers need to be removed to exploit the full potential. To address the dearth of research on the role of logistics in the AfCFTA, the study aims to examine current logistics challenges associated with the AfCFTA, including a discussion of the strategies to overcome these challenges. Finally, building on industry experts, statements about potential development paths for future supply chains emerging from the AfCFTA are summarized and assessed. Within this study, logistics challenges are understood as barriers that hinder companies from building regional or intra-African value chains despite the availability of the trade agreement. The study aims to contribute to the following research objectives (RO):

RO1: What are the current logistics challenges that hinder companies from leveraging the full potential of the AfCFTA?

RO2: What are the key strategies to overcome those challenges?

RO3: What potential development paths for future logistics networks emerge from the AfCFTA?

The remainder of the article is structured as follows: In the next section, the theoretical background of the AfCFTA and the role of logistics is outlined. Here, a brief history of the AfCFTA, in combination with recent literature in the field, is presented. In the next section, the research design is explained and how it contributes to the above-mentioned RO. Afterward, in Section 4, the logistics challenges (RO1) and associated strategies (RO2) to overcome them are outlined, based on a moderated group exercise applying the Nominal Group Technique (NGT) among 19 logistics and supply chain professionals. Moreover, in this section, a discussion of potential development paths emerging from the AfCFTA is presented (RO3), based on a questionnaire among 41 logistics and supply chain professionals to gather insights on emerging developments from a logistics point of view. In the following section, the implications of the results for industrial practice, governmental actors as well as researchers in this field are discussed. The article closes with Section 6 that points out the limitations of this research and proposes potential future research fields.

2. Theoretical Background

The AfCFTA, established by the African Union (AU), is a comprehensive legal pact designed to bolster continental economic integration and enhance intra-trade, aiming to improve African nations' socioeconomic development [15]. As a coalition, the AfCFTA endeavors to forge a unified African market and drive intra-African trade by dismantling trade barriers among member states [16]. This accord is anticipated to bolster deeper economic integration, promote competitiveness within domestic industries, streamline resource allocation, and enhance the region's attractiveness for foreign direct investment [17]. Additionally, it represents a strategic step forward in industrialization and overall economic advancement across Africa [18]. The AfCFTA is poised to simplify, align, and enhance

coordination among trade frameworks, mitigating challenges stemming from overlapping trade agreements across the continent [17]. The agreement establishes a single market by eliminating tariffs and non-tariff obstacles, thereby supporting industrial capacity development, creating continental value chains, promoting intra-African trade, and creating jobs [19]. The AfCFTA promotes economic progress and prosperity in Africa.

Furthermore, the AfCFTA, as a regional bloc, presents a distinct and fertile ground for impactful international business research, with its inception sparking a surge in scholarly studies examining its execution, results, advantages, and hurdles [16]. Encompassing a market of approximately 1.2 billion individuals and a Gross Domestic Product (GDP) of USD 3.4 trillion, the AfCFTA holds substantial potential to foster robust cooperation and trade ties among African nations [18]. The AfCFTA seeks to facilitate trade creation and diversification, potentially enhancing collaboration and commerce across the continent [17]. The agreement enhances Africa's long-term competitiveness with a focus on job generation, industrial growth, and investment promotion [16]. Foreseen to exert a significant influence across various sectors, including industrial and manufacturing expansion, intra-African collaboration, tourism, and broader economic growth, the AfCFTA stands as a transformative initiative [15].

Previous studies conducted by Fiorini et al. (2023) [20] indicate that the liberalization of service trade yields beneficial outcomes for both the manufacturing and service sectors. Similarly, research by [21] suggests that the agreement has the potential to uplift one million individuals from poverty and increase national incomes, albeit certain nations may encounter challenges related to food security. There is no doubt that the agreement will be accompanied by increased movement of people, goods, services, and capital, serving as an additional catalyst for growth in the region.

Effectively executing the AfCFTA policy requires significant improvement in logistics and supply chain infrastructure across the region [22]. It is also essential to establish a logistics framework tailored to Africa's socioeconomic landscape and cultural nuances to ensure the successful implementation of the AfCFTA policy [23]. For instance, it is reported that the establishment of efficient and dependable transportation systems encompassing roads, railways, and ports; robust and resilient supply chain networks with less cumbersome trade facilitation procedures is imperative for facilitating seamless movement of goods across African nations [22].

Despite the burgeoning academic interest in AfCFTA, studies remain quiet on examining its implication on logistics and supply chains. Existing studies have predominantly focused on potential economic benefits and challenges across various sectors, inadvertently overlooking the pivotal role of the logistics sector within the context of the AfCFTA [16]. There is a noticeable dearth of research dedicated explicitly to examining how the implementation of the AfCFTA agreement affects supply chain management and logistics operations [15]. This gap in the literature prompts inquiries into the intricate relationship between the AfCFTA and logistics frameworks within Africa's distinct socioeconomic and political context. Additionally, the current literature does not comprehensively explore how the AfCFTA can optimize its supply chain and logistics processes [15]. Again, scholarly works tend to be primarily conceptual and offer varied perspectives on the implications of the AfCFTA [24,25]. Even more worrying is the apparent quietness on the differential impact of AfCFTA on developed versus less developed member states, particularly concerning the supply chain and logistics sector [10,11]. Against this backdrop, this study attempts to address these gaps by investigating the logistical challenges associated with the AfCFTA and proposing potential solutions and developmental pathways for future supply chains.

Despite the potential benefits of the AfCFTA, various problems must be addressed, particularly in the logistics industry. The AfCFTA faces significant challenges in providing economic infrastructure to allow trade between member nations [26]. Moreover, AfCFTA faces significant hurdles, including language barriers, diverse currencies, porous borders, external interference, political instability, inadequate human development and infrastruc-

ture, and a state-centric approach to integration initiatives [27]. AfCFTA may consider developing efficient and reliable transportation networks encompassing roads, railways, and ports to facilitate seamless trade among African nations and reduce transportation expenses [22]. Additionally, AfCFTA could allocate resources towards establishing logistics infrastructure such as warehouses, distribution centers, and cold chains. Further, this initiative would help mitigate spoilage and enhance the quality of traded goods [23]. Moreover, as indicated by [28], AfCFTA should streamline and standardize border trade procedures to facilitate the seamless movement of goods across African nations, thereby reducing both the time and costs associated with customs formalities and paperwork. Furthermore, AfCFTA must actively encourage participation by businesses and civil society in the integration process [27]. Such engagement could foster the development of inclusive and responsive logistics infrastructure tailored to the needs of African populations. Moreover, according to [29], the AfCFTA can potentially encourage the uptake of digital technologies such as electronic data exchange and electronic customs management systems. This adoption could enhance logistical efficiency and reduce trade expenses.

The AfCFTA is a monumental step towards fostering economic integration and growth across the African continent. By providing a platform for increased trade and investment, the AfCFTA aims to leverage the principles of international trade to benefit member countries and promote sustainable development. However, to fully harness the potential of this agreement, addressing logistics challenges is crucial. Efficient transportation, modernized customs procedures, and improved infrastructure are essential for seamless trade facilitation and effective implementation of the AfCFTA. As the agreement continues to evolve and more African countries join the initiative, leveraging logistics will play a pivotal role in making the AfCFTA a catalyst for economic transformation and prosperity across the continent.

3. Methodology

The research design of this study is based on a multi-stage process that aims to systematically extract knowledge and perceptions of logistics and supply chain managers in a structured process and to assess the results afterward. More precisely, the research process is divided into an industry group exercise based on the Nominal Group Technique (NGT) and a post-workshop questionnaire. The research process is shown in Figure 1.

NGT group exercise: From a methodological point of view, group exercises in qualitative social research are divided into focus groups, Delphi groups, and nominal groups. While participants in Delphi panels do not meet in person and no interaction is foreseen [30], focus groups are in contrast to this. For focus groups, a bias could occur from the open discussions on set topics if less confident participants of the group do not contribute to the discussion to the same extent [31]. The NGT is positioned between both approaches and tries to simultaneously mitigate the shortcomings of Delphi and focus groups [32]. Due to the advantages of NGT over other group exercise methods, it is often used in qualitative logistics and supply chain research to systematically extract practitioner knowledge in an inductive bottom-up approach [33,34].

To set up an expert panel to discuss the current logistics challenges that hinder companies from leveraging the full potential of the AfCFTA, 19 experienced logistics and supply chain managers have been invited to an on-site meeting in Kigali, Rwanda, in September 2022. Managers participating in the panel were coming from different industrial backgrounds. This setup was designed intentionally to bring insights from different industries and views into the discussion about this vital but less-researched topic. To set a group of experienced managers that can contribute to the topic, we directly invited companies (and institutions) to propose people who have a good understanding of current AfCFTA developments, have at least two years of experience in the logistics and supply chain domain and—if coming from companies—are responsible for redesigning logistics networks in their companies under the new AfCFTA opportunities.

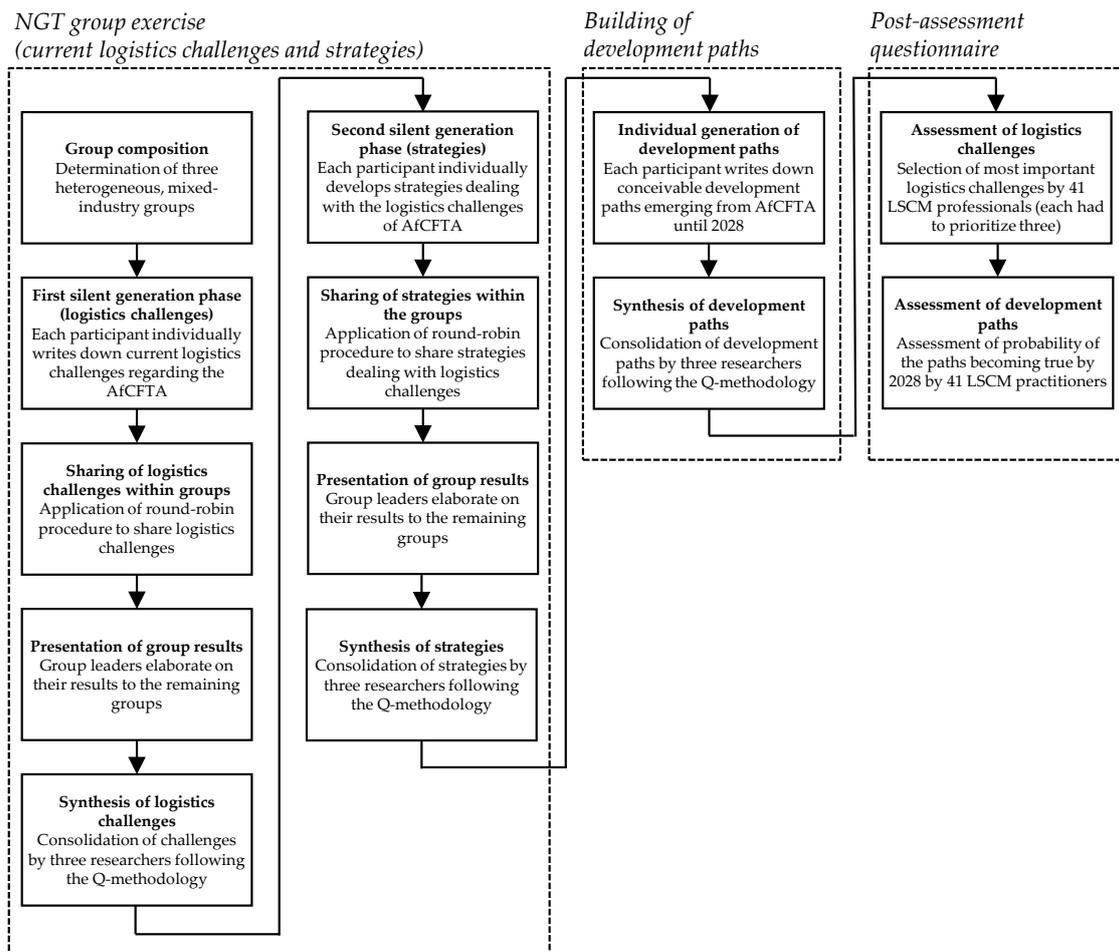


Figure 1. Research procedure (own illustration).

The sample demographics of the panel participants can be seen in Table 1.

Table 1. Sample demographics of NGT group exercise.

No.	Industry Type	Number of Employees	Annual Turnover	Participant Management Level	Years of Professional Experience
1	Manufacturing, machinery	Up to 50	prefer not to say	Team member	2
2	Manufacturing, consumer goods	Up to 50	50–250 m €	General manager	10
3	Logistics service provider	51–250	10–50 m €	Member of the board	20
4	Association	Up to 50	n/a	Department manager	5
5	Raw material industry	51–250	prefer not to say	Team member	2
6	Governmental organization	More than 10,000	n/a	Team leader	19
7	Manufacturing, textile	Up to 50	10–50 m €	General manager	2
8	Logistics service provider	Up to 50	50–250 m €	General manager	2
9	Raw material industry	251–500	50–250 m €	Department manager	3
10	Manufacturing, textile	51–250	Up to 10 m €	Department manager	5
11	Manufacturing, machinery	51–250	Up to 10 m €	General manager	7
12	Logistics service provider	Up to 50	50–250 m €	General manager	18
13	Logistics service provider	Up to 50	prefer not to say	Team member	20
14	Consulting	Up to 50	Up to 10 m €	Team leader	16
15	Logistics service provider	Up to 50	50–250 m €	Department manager	11
16	Governmental organization	Up to 50	n/a	Team member	2
17	Raw material industry	Up to 50	prefer not to say	General manager	8
18	Manufacturing, textile	Up to 50	50–250 m €	Department manager	5
19	Raw material industry	51–250	10–50 m €	Member of the board	22

The NGT process separates the problem identification and the problem solution into two separate discussion rounds. In the specific case of this study, in the first NGT round,

the current logistics challenges of the AfCFTA were derived from a structured process. Therefore, the whole group was separated into three sub-groups. Within each sub-group, an initial silent generation phase was conducted. Here, each group member individually had to think about current logistics challenges that hinder companies from leveraging the potential of the AfCFTA (RO1). Each individual challenge was written on one card. Afterwards, in the idea-sharing process, a round-robin procedure was applied. Therefore, each group member read out one of their challenges, explained it, and laid the card on the table. The next group member did the same one after another until each card was on the table [32]. Discussions were interrupted by neutral moderators who guided the process. Afterward, the cards of each group were collected. The synthesis process was done by three researchers applying the Q-methodology [35], leading to a condensed set of logistics challenges (RO1). To perform the Q-methodology, three researchers each had a set of all cards of the round and performed the Q-sort individually. In doing so, a researcher first read a card and placed it on a table. Then he read the second card, put it to the first if they had thematic overlap, or opened a new group if no thematic overlap was evident. He did this with all the cards one after the other until a grouping of cards was visible, to which he assigned names. Each researcher initially carried out this process individually. Then, they all presented their findings, identified differences, and reached a consensus through discussion. The final results were shown to the group, and feedback was gathered. Afterward, the same NGT process was also applied in a second NGT round (silent generation phase followed by idea sharing through round-robin) to identify strategies dealing with the logistics challenges of the AfCFTA (RO2). To summarize the strategies, Q-methodology was performed again. Subsequently, current logistics challenges and strategies dealing with them have been derived from the expert group through the unbiased NGT process.

Building of development paths: Since the aim of this study was also to identify potential development paths for future logistics networks emerging from the AfCFTA (RO3), the group was subsequently used to survey statements about conceivable development paths via a brainwriting process. To this end, practitioners were asked to consider, in a silent generation phase, what development paths might emerge from the AfCFTA. Therefore, they had to think five years ahead and envision supply chains under the AfCFTA. The idea was to think freely, without restrictions. Each development path was written on a single card. The cards were collected and merged after the group exercise by three researchers using the Q-methodology. This resulted in 21 potential development paths, which were shown to participants from the group exercise to get feedback if their thoughts were included properly. As each member was free to think in different directions of potential developments, statements in different fields were conducted. The synthesized statements referred to developments of infrastructure, transportation and logistics networks, politics, trade, and other conceivable developments. The resulting statements and their likelihood of becoming true in five years were evaluated in more detail by a larger group of experts in the post-workshop questionnaire.

Post-workshop questionnaire: The following questionnaire was designed to evaluate the results of the industry group exercise by a larger sample of experts to derive clear managerial implications from the results. For this purpose, a total of 41 logistics and supply chain managers were surveyed online in March 2023. The sample demographics can be seen in Table 2. The participants came from different industries and expressed a broad range of opinions. First, the participants were asked to assess the importance of the logistics challenges identified in the NGT group exercise. More specifically, they were asked to choose the three most important challenges from the synthesized list of logistics challenges that hinder them as companies from leveraging the full potential of the AfCFTA. The idea was to derive clear prioritizations of importance from the limitation of choosing only three out of 14 logistics challenges that were identified in the first NGT round. Second, participants were asked to rate the likelihood of the 21 development paths to become a reality by 2028. This assessment was done using a 5-point Likert scale (1 = very

unlikely to 5 = very likely). Therefore, indications about potential development paths for future logistics networks in and with Africa should be derived based on the subjective expert assessment.

Table 2. Sample demographics of the questionnaire.

Industry Type	Number of Employees		Annual Turnover		Participants' Management Level		
Logistics Service Provider	14	Up to 50	15	Up to 10 m €	17	Team member	4
Textile industry	2	51–250	10	10–50 m €	10	Team leader	6
Food industry	8	251–500	5	50–250 m €	3	Department manager	22
Raw material industry	3	501–1000	4	250–500 m €	3	General manager	5
Pharmaceutical industry	2	1001–2500	1	500–1000 m €	1	Member of the board	4
Machinery industry	2	2501–5000	4	1 bn–5 bn €	0		
Electronics industry	1	5001–10,000	1	Above 5 bn €	3		
Construction industry	1	>10,000	1	Prefer not to say	4		
Retail	1						
Others	7						

4. Results

4.1. Logistics Challenges That Limit the Potential of the AfCFTA (ROI)

Based on the previously described research process, the first NGT round and subsequent Q-sort identified a total of 14 logistics challenges that prevent companies from leveraging the potential of the AfCFTA in building regional value chains. The challenges are shown in Figure 2. Africa's logistics challenges, which are also highlighted in other studies, are also evident in this investigation. In particular, high logistics costs coupled with long and volatile lead times in cross-country shipments represent a major barrier to trade. There are many reasons for this, but the quality and availability of adequate logistics infrastructure are in particular need of improvement and exacerbate the situation. It was also noted that, at the latest, when trying to transform more national logistics structures into transnational, pan-African logistics networks, greater use of digital technologies is essential. However, in many places, this use can still be expanded. It also became clear in the first NGT round that many logistics challenges are located at the cultural and political level and can, therefore, hardly be addressed by individual businesses or associations. On the cultural level, language barriers, in particular, were mentioned as a barrier to trade since regional value networks may seem conclusive on paper but can only be implemented if efficient communication can occur between the players involved. However, language barriers also prevent companies from expanding supply structures in regions. On the political level, it is noted that despite all efforts to create a unified Africa under the AfCFTA, political conflicts, and protectionism still prevail, and despite the potential elimination of customs duties, various non-tariff barriers still exist, or additional ones may arise. Uniform security standards for cross-border infrastructure and the financing of same were also identified as important challenges. The lack of problem-solving policies in the event of trade disputes was also mentioned. In addition, there are also knowledge-related barriers that prevent the establishment of regional value networks. On the one hand, developments and changing regulations and the resulting opportunities are so rapid that there is a lack of qualified personnel who can analyze the developments and derive implications. On the other hand, it was mentioned that more know-how about potential sourcing options or customer markets is needed to exploit the potential for the development of transnational logistics networks. Due to high logistics costs and customs clearance fees, sourcing from other African countries has often not been seen as an option in recent decades. This is why there is a lack of knowledge about the competencies that exist in different regions that can be built upon.

- Transport and Infrastructure**
 - High logistics cost
 - Long lead times (transport, waiting at ports etc.)
 - Infrastructure quality and availability (ports, roads, warehouses and IT infrastructure)
 - Missing quality standards (for services and goods)

- IT**
 - Lack of use of digital technologies / digital transformation

- Politics**
 - Political conflicts and protectionism
 - Provision of security on intra-continental transport routes (incl. corruption)
 - Non-tariff barriers (i.e. taxes within the countries)
 - Lack of common currency in Africa
 - Unclear financing of infrastructure (and security) between countries
 - Lack of problem-solving policies in case of trade conflicts

- Know-How**
 - Lack of knowledge of potential sourcing options in Africa as well as potential customer markets
 - Lack of qualified personnel to keep up with developments

- Culture**
 - Language barriers across Africa

Figure 2. Current logistics challenges of the AfCFTA (own illustration).

In the subsequent online survey, participants were asked to select three logistics challenges from the list that they felt were the ones that posed the greatest hurdle to realizing the potential of the AfCFTA. Figure 3 shows a clear prioritization. In addition to political conflicts, the infrastructure problems and high logistics costs described above are highlighted as the most important barriers.

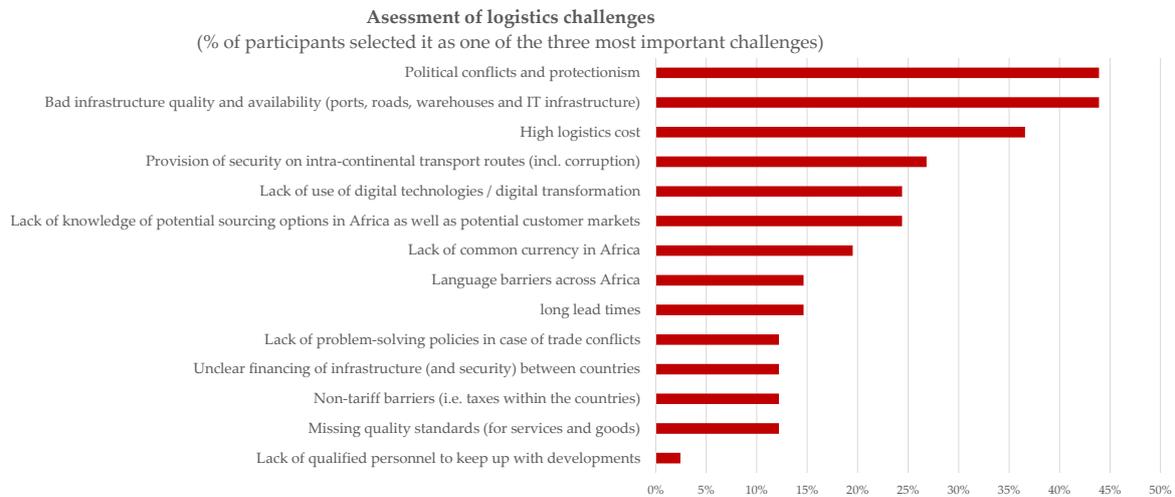


Figure 3. Assessment of the logistics challenges in terms of their significance when exploiting the AfCFTA potential (own illustration).

4.2. Strategies to Deal with Logistics Challenges of the AfCFTA (RO2)

In the second round of NGT, participants were asked to work together to develop strategies that would mitigate the previously identified challenges and support to leverage the potential of the AfCFTA (RO2). Figure 4 shows the summary of the proposed actions. It should be noted that the strategies presented originate from the NGT process between the participants of the NGT group exercise followed by a Q-sort done by researchers as explained in the Section 3. This being said, the resulting strategies do not have to conclusively solve all logistics challenges in the context of the AfCFTA. However, to ensure a broad view of the topic and to show a wide range of potential strategies, a deliberately heterogeneous group was included in the research process. The group results were also brought together using the Q-methodology to reduce bias in the synthesis process.

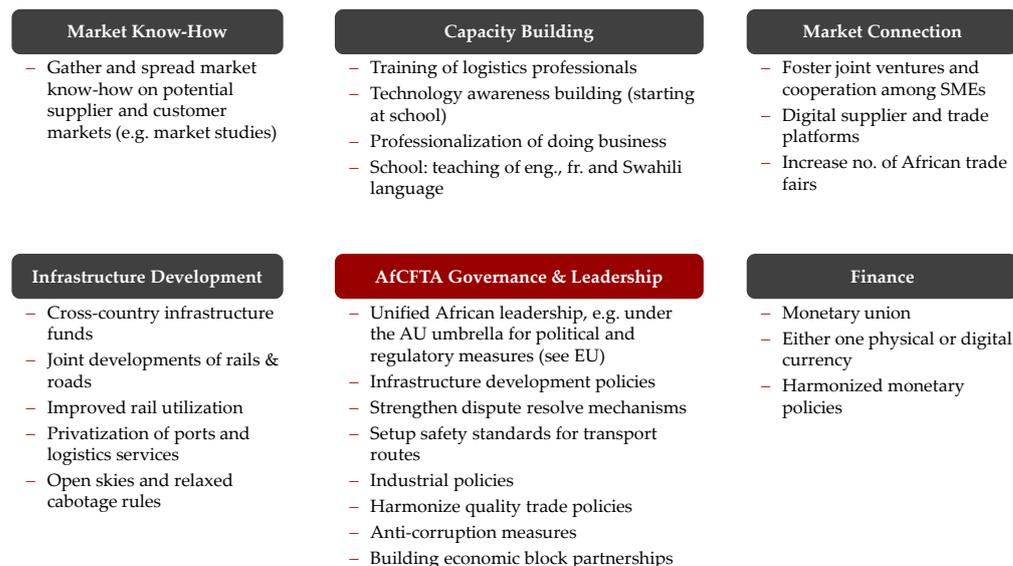


Figure 4. Strategies to leverage the potential of the AfCFTA (own illustration).

It can be seen that a whole range of measures is conceivable and necessary to fully exploit the potential of the agreement. Some of the measures mentioned can be addressed by companies or business associations, especially if improved market knowledge about potential suppliers and customer markets needs to be built up or if better market connections are to be established, e.g., through digital supplier and trade platforms, business cooperation, pan-African trade fairs and more. Internal or cross-company capacity-building measures were also proposed to close the gap in the education of logistics professionals. This would include training on business ethics, professionalization of doing business, and technology awareness training. However, it was also noted in the discussion that the topic of language skills needs to be addressed at an early stage in primary school education, as companies would intervene too late here.

In addition, several measures were proposed that are more likely to be implemented at the government level and must be solved jointly by the African countries. One of the most important points that was emphasized again and again is that not only a trade agreement is needed, but also a unified AfCFTA governance and leadership. The European Union is often cited as an example that has created structures to enforce common policies and regulations across countries. While the AU was mentioned as the most important instrument in this context, other aspects need to be discussed to exploit the potential of the agreement. Unified AfCFTA governance and leadership also includes infrastructural development policies, common safety standards for transport routes, common industrial policies, anti-corruption policies, and the establishment of economic block partnerships. In the opinion of the workshop participants, this unified governance structure will also make it easier to initiate infrastructure-related measures. These include transnational infrastructure funds and the joint development of roads and rail networks. However, the participants also felt that more efficient use of rail for cross-border transport can only succeed if individual interests are eliminated. The privatization of existing ports and national logistics service providers was also discussed as a way of achieving efficiency gains.

It should also be noted that many African countries have major problems establishing a stable currency that can be used in international trade. Many countries have difficulty accessing foreign currency, often due to an imbalance of trade. The creation of a monetary union, of uniform monetary policies from which a uniform physical or digital currency can also emerge, was discussed and at least identified as a potential lever for exploiting the potential of the AfCFTA. However, participants were sure that currency-related measures would only be realizable in the long term.

4.3. Development Paths of Future Supply Chains Emerging from the AfCFTA (RO3)

Through the expert panel, 21 potential development scenarios for future supply chains emerging from the AfCFTA have been developed and assessed through the post-workshop questionnaire to contribute to the discussion about potential future developments in this field (RO3). The 21 development paths are synthesized statements from the brainstorming process done with practitioners of the group exercise. Participants in the post-workshop survey were then asked to rate, on a scale of 1 (low likelihood) to 5 (high likelihood), how realistic it is that this statement will become true within the next five years, i.e., by 2028. The evaluation of the results is shown in Figures 5–9. The statements are divided into five categories to present the developments in the following five areas in an easily accessible way: (1) infrastructure, (2) transport and logistics networks, (3) trade, (4) politics, and (5) others. However, this categorization is only to present the statements and assessment of development paths in a structured manner. Those categories were not given to the participants when crafting their statements. For each category, a figure is displayed that shows the synthesized statements on potential developments on the left and the distribution of answers (low likelihood to high likelihood of becoming true until 2028) of 41 participants on the right side of the figure.

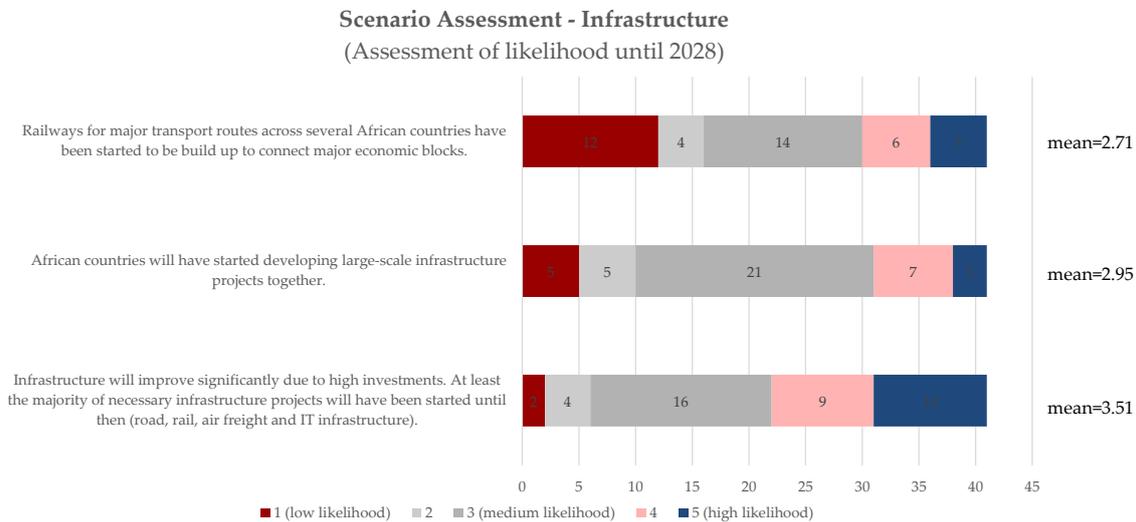


Figure 5. Scenario assessment of development paths for infrastructure development emerging from the AfCFTA until 2028 (own illustration).

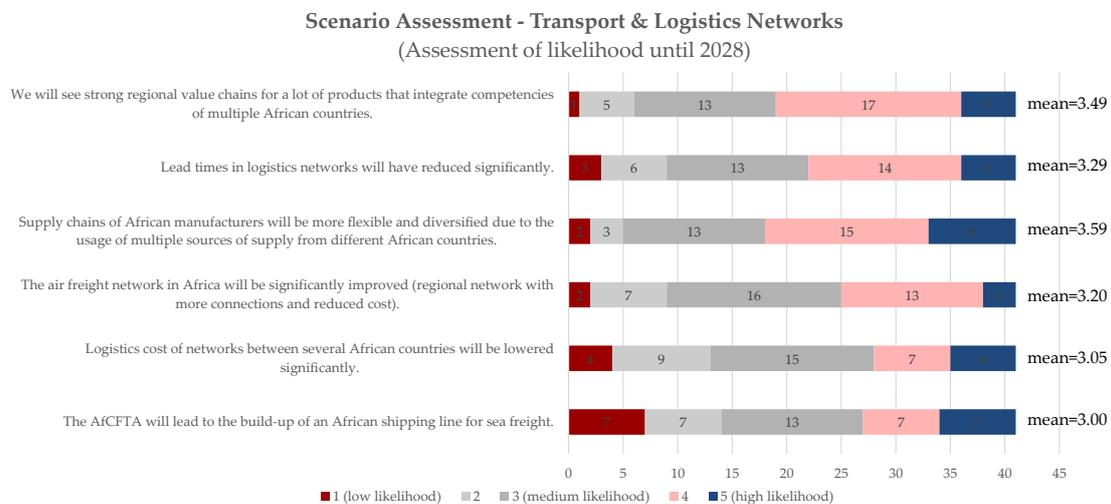


Figure 6. Scenario assessment of development paths of transport and logistics networks emerging from the AfCFTA until 2028 (own illustration).

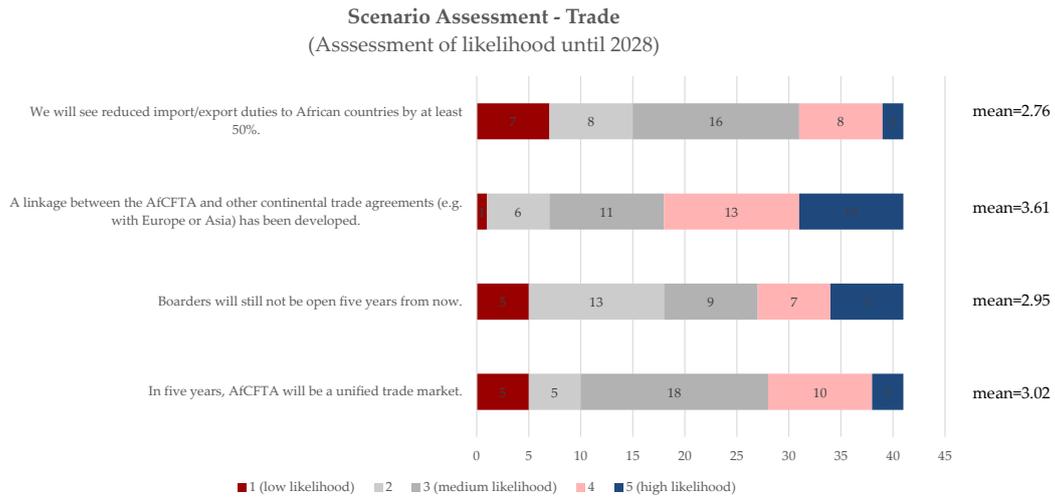


Figure 7. Scenario assessment of development paths for trade emerging from the AfCFTA until 2028 (own illustration).

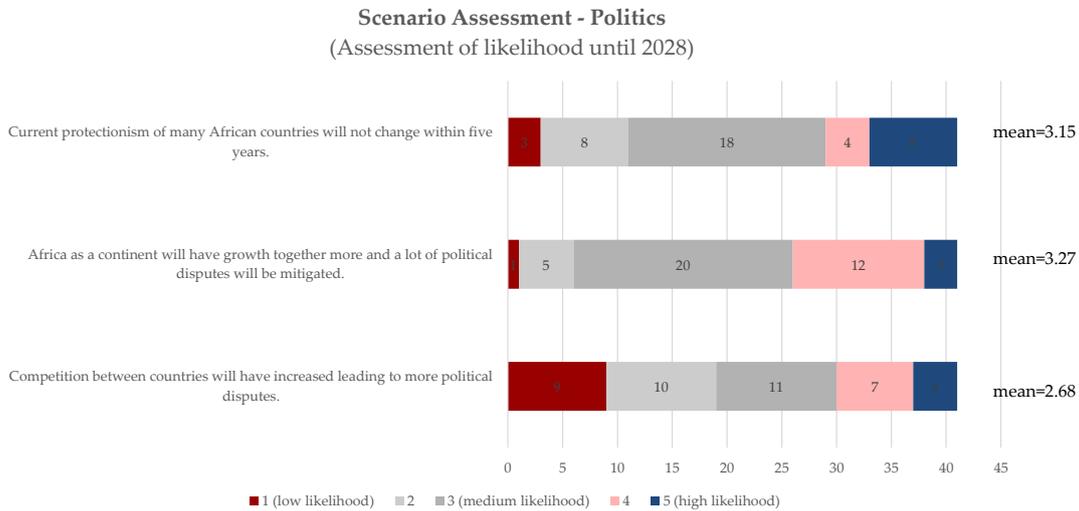


Figure 8. Scenario assessment of development paths for politics emerging from the AfCFTA until 2028 (own illustration).

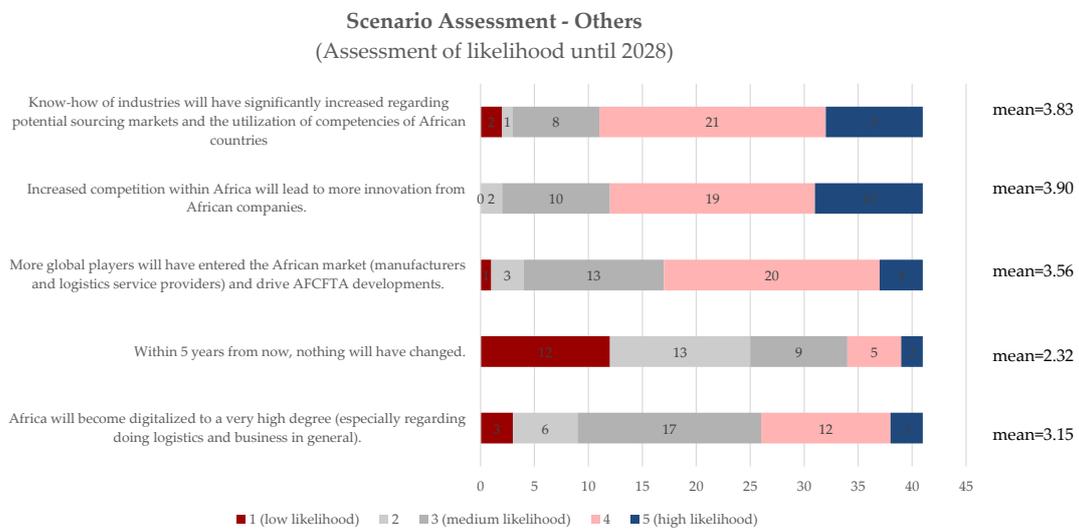


Figure 9. Scenario assessment of other development paths emerging from the AfCFTA until 2028 (own illustration).

The vast majority of participants see a comparatively high likelihood that important infrastructure projects will have been initiated by 2028, including road, rail, air freight, and IT infrastructure (see Figure 5). However, it is considered comparatively less realistic that railways for major transport routes across African countries will have been built to connect major economic blocks by then.

Regarding the development of transport and logistics networks, it can be seen that over 85% of participants see a medium to high likelihood that logistics networks will not only be regionalized (e.g., include more suppliers from neighboring countries) by 2028 as a result of the AfCFTA, but will also have diversified, identified as multiple sources of supply in the region, and utilize them.

Regarding international trade developments in the context of the AfCFTA, it can be shown that the survey participants expect a link between the AfCFTA and other continental trade agreements (e.g., with Europe or Asia) to be established by 2028. Nevertheless, the assessments of the statements in the area of trade developments also show that there is an ambivalent picture of the evaluation of developments. It is also evident that quite a few participants assume that the borders will not be completely open in five years and that a completely unified trade market will not have been created by then. The uncertainty is certainly due to the complexity of developments in international trade relations, which is why the results here should also be treated with caution.

The ambivalent picture of future developments also becomes clear when analyzing the assessment of development paths in the area of politics. On the one hand, 85% see at least a medium likelihood that Africa will grow together as a continent due to AfCFTA until 2028. On the other hand, the majority of participants also see a medium to high likelihood that the protectionism of many African countries will not have changed in five years. In addition to the high uncertainty of such future estimates, this can certainly be attributed to the fact that it is difficult to make general statements about 54 African countries and that the continent as such is too diverse in different regions.

In addition, other statements were also evaluated, the assessment of which provides an interesting picture of expectations regarding future developments. Over 90% rate the probability as medium to high that AfCFTA will lead to more innovations by African companies. However, the entry of more global players into the African market is also very likely. In addition, significant capacity building for potential procurement markets is expected by 2028. The evaluation of the development paths shows that the AfCFTA has a lot of potential for developing future logistics networks. Even though estimating the future is always difficult, the evaluation shows many interesting developments that are suitable for future investigations. However, due to the comparatively small number of participants in the survey, the results should mainly be seen as initial indications and as a contribution to the discussion of potential development paths for the AfCFTA. An attempt was made to provide a broad picture of the manufacturing and logistics service provider industry, but further large-scale surveys are still necessary to be able to make more detailed statements.

5. Implications and Discussion

The AfCFTA has great potential to change the design of logistics networks in and with African countries in the long term. Regional supply networks could diversify and expand if the competencies and capabilities of African countries are integrated into complex logistics networks in a targeted manner. Existing studies have predominantly focused on potential economic benefits and challenges across various sectors [3–6]. There is still a noticeable dearth of research dedicated explicitly to examining how the implementation of the AfCFTA agreement is affected by associated logistics processes and vice versa. This study seeks to add an equally important perspective to the predominantly macro-economic focus of existing AfCFTA research by integrating the view and expectations of companies that seek to build up intra-African value chains under the AfCFTA. Those insights into current logistics challenges that hinder companies from leveraging the potential of the AfCFTA are important to understand why current developments are quite slow, and companies

operating in African countries are still hesitant to redesign their supply chains. By adding the logistics perspective to the discussion, several implications arise from this research that can be categorized into managerial implications, implications for governmental institutions, and implications for future research.

For logistics and supply chain managers, this study proposes several measures that companies can take, either individually or as a group, to better exploit the potential of the AfCFTA in the medium and long term. At the level of individual businesses, it was shown that many companies do not yet have the necessary market knowledge to redesign their supply chains accordingly into intra-African logistics networks. Due to previous major trade barriers, the related supply chains tended to be established with partners outside of Africa. Knowledge about potential partners within Africa is often not available, as this has not been an option so far. Companies must quickly build up market know-how about short and medium-term potential suppliers and customers to position themselves accordingly. In addition, corporate cooperations in the logistics and supply chain sector are becoming increasingly relevant so that various small and medium-sized companies can leverage the AfCFTA potential together. Furthermore, companies must jointly address the requirements of different industries directly to policymakers. To do this, the organization of companies in African business associations is important and is currently being strongly promoted. Only when companies jointly express their logistics requirements can efficient logistics corridors be created across countries, which are currently also the focus of cross-border infrastructure investments.

From the perspective of governmental institutions, the results of the study have various implications that are in line with current developments, which are currently being strongly promoted by the AU and others. Participating companies in this study have once again emphasized that a great deal of support is needed from governments to be able to exploit the potential of African free trade. Clear AfCFTA governance is needed, and it affects various levels. It is important for governmental institutions at the national and, above all, continental levels to understand that the requirements of the industry must be regularly included in the decision-making process so that actions initiated on the governmental level do not bypass the reality of companies operating between African countries. Among other things, this is important for the development of intra-African logistics corridors, which are currently being strongly promoted [36,37]. Only when this issue is addressed with the help of an integrative approach from politics and industry, and with the support of research institutions, will the right infrastructure investments be made, which can then also provide the missing boost for the AfCFTA.

There are also various options for future research in this area. Although the study was able to take a first look at the industry's requirements for more regional logistics networks, it was not possible to contextualize them due to the limited sample size. Further in-depth analyses are needed to better assess industry-specific effects, for example. Furthermore, the view of the logistics industry supports the current developments towards more research in the area of establishing logistics corridors. Here, further research can make an important contribution to making the right decisions in the development of these corridors.

6. Conclusions and Final Remarks

While there is the potential for Africa to grow closer together as a continent and become an important economic region due to the agreement, there are still many logistics challenges that need to be overcome to fully realize the potential. The objective of this study was to identify these challenges and propose solutions to deal with them. In addition, development paths resulting from the AfCFTA were evaluated to gain insights into how logistics networks could change in the medium term as a result of the agreement. High logistics costs, as well as infrastructure deficits, are currently among the most pressing logistics challenges that prevent companies from leveraging the full AfCFTA potential. More market know-how on potential supplier and customer markets is necessary to boost developments in the short term. Even though the logistics industry can be the main beneficiary, most of the

challenges and related solutions have to be initiated at the government level, so they cannot be addressed by the industry alone. Therefore, efficient AfCFTA governance and leadership that reflects and integrates the views of industry, politics, and academia is necessary in the medium term. Several developments might emerge from the AfCFTA within the next five years, and these have been assessed by 41 logistics and supply chain experts. From this subjective assessment, it is expected that logistics infrastructure development is about to receive a considerable boost, and the majority of important infrastructure projects will have to start by 2028. Moreover, experts assume that supply chains of African manufacturers will become more regional, flexible, and diversified. Also, industry experts expect AfCFTA to be linked to other important trade agreements outside Africa. Moreover, AfCFTA will spark innovation coming from African manufacturers that will compete with more global players entering the market. Although the agreement could contribute to solving political disputes and help Africa grow as a continent, protectionism is still an issue, and it is still unclear if countries are putting protectionism aside.

Although the study has clear implications for industry developments and attempts to guide future research topics in the field, it is not without limitations. First, the NGT group exercise was conducted with a very heterogeneous set of experts from different industries. This was done to include different perspectives from different industries, but differences between them cannot yet be identified. Second, the sample size of the post-workshop questionnaire is very small, with 41 participants from different industries, and does not allow for further contextualization. The survey is suitable for the first indications of developments, but further research in the field is needed to derive clearer implications for practice. For future large-scale evaluations in this field, further control measures need to be included to ensure statistically valid results. Currently, with the given sample size, more in-depth analysis is hardly possible. Nevertheless, the study is an important first step in highlighting the role of logistics in achieving the AfCFTA goals. It spotlighted the issues that need to be addressed so that the industry can use the agreement as intended by its developers and, thereby, create sustainable economic growth and jobs in Africa.

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