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# Effectiveness of technical vocational education and training and apprenticeship systems: a qualitative analysis in Benin's labour market

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## Abstract

**Background** In Benin, Technical Vocational Education and Training (TVET) and Apprenticeship Programs play a prominent role in the education system. The national unemployment rate was as low as 1.7% in 2022, suggesting that these forms of training contribute to aligning education outcomes with labour market needs.

**Objective** This research analyses the effectiveness of Benin employees focusing on the contribution of TVET at school and apprenticeship to the business sector.

**Methodology** To conduct this research, we gathered data by using literature and 45 semi-structured interviews. Respondents were selected from department of secondary education and TVET, agency for continuing education and apprenticeship, Swisscontact personnel, staff of the business sector and scholars in Parakou and Cotonou, Benin Republic.

**Findings** First, although TVET in secondary school offered several career opportunities to the students, 79 percent of the participants claim that TVET does not promote employment. The reforms of apprenticeship led to two formal apprenticeship programs: a dual training track and a renovated traditional apprenticeship. Second, 44.4 percent of participants found that the TVET programs as well as the two apprenticeship programs, do not meet the needs of the Beninese market. Though, 83 percent argued that people in Benin have preference for long-term education. It appears that those who achieve more education, are able to earn. Third, the research concludes that neither TVET nor formal apprenticeships, is effective to promote suitable employment and earning.

**Practical implication** Reforming technical education by matching the skills learning to the needs can lead to decent work.

**Keywords** Technical vocational education and training, Apprenticeship, Labour market challenges, Benin (West Africa)



## 1 Introduction

Technical Vocational Education and Training (TVET) has evolved a type of education that provides students with the theoretical and practical skills necessary for successful entry into the workforce. It is essentially offered to secondary school students through various vocational pathways, with the aim of preparing them for the labour market. Apprenticeships are an age-old way of transferring occupational skills between generations. In several developing states, the apprenticeship training remains a traditional way of learning skills. It takes place in crafts people's workshops and production units. Building on the strong historical roots stretching back centuries, 'Apprenticeship has survived as a meaningful vehicle for the development and transference of occupational skills, knowledge and understanding' [1]. That said, the apprenticeship model remains a reliable way of transferring skills. Its practical aspects and real links to labour market structures make it a reliable training model throughout society. In developing countries, such as those in the Sub-Saharan African (SSA) region, apprenticeships remain a traditional form of youth training in many areas, including crafts, farming and commerce. Despite the factors that stimulate the efficiency of apprenticeships, some authors [2] argued that they are subject to many challenges, including deficiencies in the skilled workforce, cost structures, lack of capital, the inability of small firms to generate self-investment and the absence of multiskilling in the informal sector, which remains dominant in SSA.

The Republic of Benin is a West African country with a resident population of around 14.5 million in 2024 [16]. The Beninese education system is structured into three main levels: kindergarten and primary school; and secondary and tertiary education. Basic education corresponds to grade 10, including primary and lower secondary education. Before 2005, when apprenticeships were accredited in Benin, they were essentially considered to be a form of informal learning. Today, apprenticeships are available in around 311 craft occupations [3]. These occupations fall into eight categories: (i) agri-food, food services and catering; (ii) mining, quarrying, construction and building trades; (iii) metals, metal structures, mechanics, electromechanics, electronics, electricity and small-scale transport services; (iv) wood and related trades, furniture and furnishing; (v) textiles, clothing, leather and hides; (vi) audiovisual and communication; (vii) hygiene and personal care; and (viii) artisanal crafts and decoration. Moreover, many studies [4, 5] have shown that it is mainly young people with no prior education and school dropouts who participate in this traditional method of learning skills. For example, [6] a study identified that around 800,000 young people participate in apprenticeships in Benin. This demonstrates the broad scope of traditional apprenticeships in Benin.

The skills acquired through traditional apprenticeships are not based on any accredited pedagogy, but are learned through practical experience. This study [7] identified three main processes of informal learning in SSA: learning occupational tools, learning through practice, and performing tasks independently. Throughout these processes, evidence shows that apprentices are trained in the context of the skills gap between their master craftsmen and advanced learners. At the end of the training, recipients receive a non-accredited diploma in a release ceremony. Therefore, the government's reform of apprenticeships is a well-founded policy aimed at improving and formalising apprenticeship training, restructuring occupational skills learning, and strengthening professional capacity. The unemployment rate is low i.e. 1.7% [8] which suggests that Benin's education is at high level to fulfil of the needs of businesses. However, to what extent have

TVET and apprenticeship training been effective within Benin's employment system? In response to this question, we hypothesise that the effectiveness of TVET and apprenticeship training in Benin's employment system is limited by a persistent mismatch between the competencies and the needs of Benin's labour market.

Despite the existence literature on traditional apprenticeships, there is limited evidence regarding the effectiveness of formal TVET and reformed apprenticeship programmes, in aligning training outcomes with labour market needs in Benin. This research addresses this gap by examining the persistent skills mismatch and its implications for employment outcomes, earnings, and labour market integration for graduate.

This article uses a conceptual framework based on the skill mismatch approach to analyse the labour market challenges faced by the TVET and apprenticeships in the Beninese education system. Firstly, we examine the historical development of occupational skills training in SSA to illustrate how reforms have been implemented in the Beninese apprenticeship system. Secondly, we provide an outline of education in Benin, including the reforms to TVET and apprenticeships. Thirdly, we compare the effectiveness of the TVET programmes offered at school with that of the apprenticeship programmes.

## **2 Historical perspectives on skills development in West Africa: a review of the literature**

Historically, skills learning in Africa relied on moral education and the perpetuation of occupational skills within family clans during the pre-colonial period. Two types of education were identified in the literature: moral education provided by indigenous people, and skilled workforce education.

### **2.1 Reproduction of traditional education in Africa**

A study [9] illustrated how people in Africa had approached education before the colonial period. According to the author, education in Africa was integrated into a socialisation process comprising the social, cultural, artistic, religious and recreational realities of the clan. It involved the transfer of cultural norms and values from elders to the younger generation through verbal communication and practices. The family level was the first step in this education process, followed by the community level. Education is provided by adults who can serve as mentors for the younger generation in society [10].

According to [11], pre-colonial education had three main functions within the family, clan and society. Firstly, it aimed to encourage the younger generation to commit to their personal development. Second, pre-colonial education aimed to enable young people to contribute economically to society. Thirdly, it involved instilling sense of a spiritual responsibility in learners within the local community. However, this education was gender-specific. The education of males differs from that of females [9]. Many young people live with either their biological parents or other members of the local community who act as reference figures in society. In Getahun's view, advanced African education stems from the Egyptian and Ethiopian civilisations, which has consisted to develop symbols, complex symbolic systems, building skills and religious rituals [9]. The author highlights the example of Mali in West Africa, where Islamic universities played an important role in spreading Islam across the continent.

A brief historical account of apprenticeship in Ghana was recently presented in a publication [7]. It is stated that apprenticeships have long served as a traditional mechanism

for transferring skills and developing human capital in Ghana. Before and shortly after independence in 1957, it played a central role in preparing young people for productive work and meeting the diverse needs of society. The situation in the Republic of Togo is similar to that in Benin, as described above. Apprenticeship has long been a socially valued way of acquiring skills in Togo, predating the country's independence in 1960. Traditional apprenticeships are deeply embedded in Togolese society, where master craftspeople transform their workshops into training centres and accept apprentices through written or oral contracts, often with fees paid by parents or tutors [12]. Likewise, apprenticeship in Ibadan has deep historical roots, functioning as a vital means of transmitting skills and socialising young people. Traditionally, apprenticeships were integral to sustaining occupational lineages, with skills such as tailoring, blacksmithing, woodworking and leatherworking being passed down through the generations. Masters, often referred to as '*babas*' or '*ogas*' in the Yoruba language, played a dual role in training apprentices in technical skills and instilling moral discipline and communal values. This made apprenticeship a process of both economic and cultural reproduction [13]. During the colonial and early postcolonial periods, Ibadan emerged as a major urban centre where informal apprenticeship flourished, partly due to limited access to formal technical schools and the demand for cheap labour. These apprenticeships offered poor, less-educated young people the opportunity to acquire valuable skills, ensuring their social integration and economic survival.

Overall, traditional apprenticeships in West African countries played an important role in transferring skills to generations and animating the traditional community-based economy, the strength of which lies in its social and cultural background. The most common limitations were the poor quality of learning and the low level of regulation.

## 2.2 Apprenticeship as the formal traditional education in the earlier African society

Apprenticeship is an early form of formal education in Africa. the study of [8] suggests that informal and formal education can be distinguished within early African education. Informal education consisted of the lifelong knowledge and skills. The so-called "formal indigenous education" included the process of the initiation rites to mark the transition to an advanced stage of life. According to the author, the most common rite of passage in the early African education is a ceremony held to mark the completion of a traditional apprenticeship. This ceremony provides social legitimacy for completing the apprenticeship, leading young people to seek employment [14]. Hereby, Graduates can use this opportunity to showcase their occupational skills and contribute to the local community.

That said, it is understandable that the skills learnt in SSA can be traced to the pre-colonial period. The study by [15] shows that in West Africa (within the Yoruba clan), learning skills consisted of passing on traditional skills in occupations such as hunting, drumming and divining across lineage groups. The development of apprenticeships in a wide variety of occupations emerged during colonisation, driven by the colonial administration's desire to exploit raw materials. Consequently, according to [16] the skill learning are learnt has changed from clan or family-based learning to 'community-based learning'. Then, the demand for skills training grew in line with the needs of the labour force and the identification of contemporary jobs or occupations in the business sector.

However, prior to this, the colonial administration had established modern education through instructional and professional competencies at school. The following subsection outlines a conceptual framework for analysing the TVET and apprenticeship workforce.

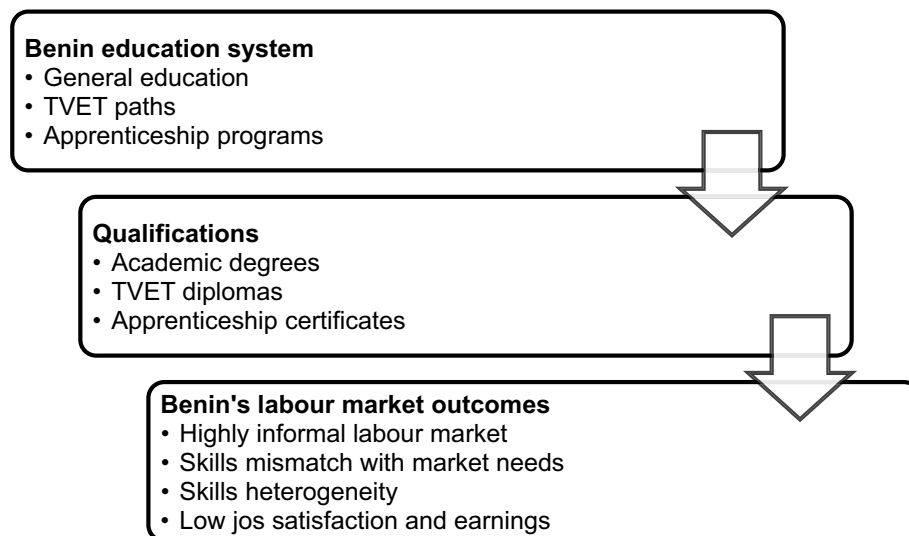
### 3 A conceptual framework to skills mismatch

To assess the effectiveness of formal TVET and apprenticeship programs in Benin's labour market, this study adopts a conceptual framework grounded in the skills mismatch theory. An author [17] defines skills mismatch as *“the fact that levels or kinds of skills of individuals are inadequate in view of particular job requirements”* (p. 1026). Building on this, a study [18] conceptualises skills as the qualifications individuals acquire to participate in the job market, and argues that mismatches in terms of skills or qualifications often result from heterogeneity among workers.

In the context of this research, we examine how this heterogeneity manifests in Benin's education and training pathways. Workers may hold credentials acquired through multiple pathways: academic tracks, formal TVET programs, and apprenticeships. The purpose of this study is to generate empirical evidence on the extent to which graduates of TVET and apprenticeship programs face skills mismatches when seeking employment. While all graduates compete for positions in both public and private sectors, those trained through apprenticeships may face additional challenges in what a study [19] describes as “labour market competition”.

The study [14] further highlights that skills mismatch can also be understood as a skills deficit relative to job requirements by an individual and those required by specific jobs. This situation can result in skill underutilization—where overqualified graduates are hired for jobs below their skill level—or in skill gaps, where underqualified graduates must perform beyond their current level of competence. In both cases, earnings may fail to accurately reflect either the worker's acquired skills or their formal qualifications (Fig. 1).

Through this figure, this research presents the Benin TVET and apprenticeship system emphasising the employment opportunities that it offers. Then, to apprehend their



**Fig. 1** Conceptual framework of the research.

Source: Own illustration, 2022

efficiency using a qualitative approach, the conceptual framework highlights how workers contribute to the economy through their employment. An interpretation of the job satisfaction and earning situation of workers contribute to the understanding of TVET and apprenticeships effectiveness.

## 4 Research methodology

### 4.1 Delimitation of research area

This research was conducted in the Republic of Benin, a West African country located on the coast between Nigeria and Togo. The population of Benin was estimated at 10 million of people in 2013, and is expected reach 14.5 million by 2024 [3, 20]. The country is divided into twelve departments and seventy-seven municipalities. Apart from Porto-Novo, the capital of Benin, the two biggest cities are Cotonou and Parakou. Cotonou, the largest city in the south, is considered the economic capital due to the commercial activities surrounding the Port of Cotonou and the development of administrative units. Parakou is considered the most important city in central and northern Benin. Its economy is growing with collaboration with many countries, including Burkina Faso, Nigeria, Togo and Niger. For this research, we focused on Cotonou and Parakou due to their growth in economic activities in areas such as industry, telecommunications, commerce, crafts and transportation. By conducting the field research in Cotonou and Parakou, we aimed to enrich the findings to across the country.

### 4.2 Methods of data collection and analysis

To conduct this research, we adopted a qualitative approach, using two main methods: a literature review and semi-structured interviews. Literature was developed via desk research using Google Scholar, Cairn.info and Open Edition Journals... The research focused on topics such as early education in Africa, the informal sector in sub-Saharan Africa, colonial and post-colonial education in West Africa, and the Benin education system. The information gathered was very helpful in understanding of skills learning in Africa and in Benin.

Additional data was collected from officials of public institutions and donor agencies, professional associations, and TVET researchers through individual interviews. Our respondents were selected using a purposive sampling technique based on TVET institutions in Benin. A total of 45 experts were interviewed (Table 1). We used content analysis to review the verbatim reports from our respondents.

Table 1 shows how the interviewees are distributed. The study primarily included participants from both public and private institutions. The largest groups of respondents came from professional associations and the public sector, two key stakeholders in the governance and reform of TVET and apprenticeship systems in Benin. Their

**Table 1** Distribution of interviewees by stakeholder category.

**Source:** Own illustration, 2022

Category of interviewees	Cotonou	Parakou	Total by category
Official of public institutions	08	03	11
Head of vocational training centres	03	03	06
Official from donors' agencies	06	00	06
Professional associations	11	03	14
TVET researchers	04	04	08
Total	32	13	45

participation was crucial in gaining an in-depth understanding of their views on the effectiveness of these systems. In addition, the study included heads of training centres, representing the pedagogical staff directly involved in the delivering training. The participation of TVET researchers and donors was also important, due to their significant contributions to the reform process. Researchers often provide technical expertise, while donors contribute financial support for the implementation of the reforms.

However, a research gap remains due to the lack of representation of the general population among the participants. A quantitative approach in future research, including could provide insights into public perceptions of the effectiveness of TVET and apprenticeship systems in Benin.

## 5 Results and discussion

### 5.1 Overview of Benin education and economic structure

#### 5.1.1 Benin education system

As mentioned earlier in this chapter, the Beninese education system comprises three levels: kindergarten and primary education; lower and upper secondary education; and tertiary education. Table 2 provides insight into the scope of education in Benin.

This table provides additional information to help you understand the structure of education in Benin. It shows the different educational paths and the length of each programme, as well as how they are linked to the International Standard Classification of Education (ISCED) [21] and the level of attainment they lead to.

However, the table highlights two key points: first, there is no ISCED level that can be linked to the Beninese apprenticeship system. There are, however, two formal apprenticeship programmes which have been accredited in Benin since 2005. The first programme is a dual apprenticeship training scheme combining on-the-job training with a competence-based instructional approach in accredited vocational training centres. Participants in the programme must be at least 15 years old and have completed grades 5 or 6. Moreover, they must pass the entrance test with an average score of 10 out of 20 to be eligible for a scholarship from a public institution on one of 13 dual training schemes. The second programme is an upgraded traditional apprenticeship for those with no prior education, which involves taking a national exam after completing on-the-job training. Both programmes lead to formal certificates: a Certificate of Professional

**Table 2** Formal education pathways, durations, credentials, and ISCED mapping (Benin).

Source: Own illustration, 2022

Edu- ca- tion level	Programs involved	Duration	Correspond- ing ISCED levels	Graduation
Level 1	Kindergarten	1–2 years	ISCED level 0	No degree
	Primary education	6 years	ISCED level 1	Certificate of primary education
Level 2	Lower general secondary education	4 years	ISCED level 2	O-Level
	Lower technical secondary education (TVET cycle 1)	3–4 years	ISCED level 2	Certificate of Professional Aptitude and equivalents
	Upper general secondary education	3 years	ISCED level 3	Baccalaureate
	Upper technical secondary education (TVET cycle 2)	3–4 years	ISCED level 3	Professional baccalaureate and equivalents
Level 3	Bachelor	3 years	ISCED level 6	Bachelor's degree
	Master	2 years	ISCED level 7	Master's degree
	Doctorate	3–5 years	ISCED level 8	Doctorate degree



Qualification (*Certificat de Qualification Professionnelle*—CQP) for those participating in dual training, and a Certificate of Occupational Qualification (*Certificat de Qualification aux Métiers*—CQM) for the other group. However, there is a lack of the corresponding ISCED level, even though the CQP programme is sometimes linked to grade 8 and the CQM programme is not linked to any grade.

In Benin, work-based learning encompasses apprenticeships and many non-formal training schemes offered by public and private institutions. Apprentices are trained according to the workshop's production needs. On the other hand, there are many professional development programmes and capacity-building training schemes, which can sometimes lead to formal, accredited qualifications. Examples include the INSAE professional development programme and the Centre for Continuing Education and Training for Employees (*Centre de Perfectionnement du Personnel des Entreprises*—CPPE). Participants in the public sector can earn further qualifications and gain prestige in their jobs. This can lead to a higher wage or salary than those who do not participate.

### 5.1.2 Benin's economic structure and labour market situation

The Benin Republic is a middle-income country whose economic system is dominated by subsistence farming and trade with neighbouring countries such as Nigeria, Burkina Faso, Niger and Mali, primarily via the port of Cotonou. There has also been an increase in small and medium-sized enterprises, most of which operate in the informal economy [22]. Basically, its economic structure depends on producing cotton and cashew nuts. The country's GDP is estimated at 6.4 for 2023, driven by the primary, secondary and tertiary sectors [23]. According to the same source, Benin's economy remains vulnerable to external risks, such as unfavourable variations in global cotton and oil prices, the negative effects of climate change and the economic situation in neighbouring Nigeria.

The Beninese economy is characterised by informality. It is estimated that 94% of workers are in the non-agricultural field, and 32% of people of working age (15–24 years) were employed in 2022 [24]. A study [6] revealed a mismatch between the skills of the labour force and the needs of the economy. This situation is due to the poor quality of education, which results in workers having inadequate skills for the labour market.

## 5.2 Reforms of TVET and apprenticeships in Benin

### 5.2.1 TVET reform in Benin

The Technical and Vocational Education and Training (TVET) landscape in Benin has historically followed the policy orientations of successive governments. Across administrations, TVET has consistently been perceived as a key driver of economic development and a mechanism for promoting youth employment. However, the government in office since 2016 has elevated TVET to a top priority within the national education agenda.

The first major reform under this government was the development of the National TVET Strategy 2019–2025, which is structured around three main components:

1. restructuring the geographical distribution of TVET schools to improve access, quality, equity, and equality in line with developments in the professional world. This component also calls for the execution of a quality assurance system aligned with TVET norms and standards;



2. enhancing the governance framework of TVET by modernizing Benin's economic information system through data integration and evidence-based policymaking, and professionalizing the governance and management structures of TVET;
3. promoting public–private partnerships (PPPs) to strengthen the role of the private sector and professional associations at all levels of TVET governance and to establish a sustainable financing mechanism for the system. To operationalize these measures, the government developed an emergency plan for the period September 2019 to August 2020.

In 2021, the government introduced an important institutional innovation through the creation of the national agency for TVET development (*Agence de Développement de l'Enseignement Technique*—ADET). This agency is tasked with coordinating, implementing, and monitoring all initiatives related to the national TVET strategy. Additional commitments include the construction of new TVET schools, the provision of modern equipment, and the recruitment of well-trained teachers.

To provide a stronger legal foundation for these reforms, the Benin parliament passed a law in 2022 aimed at increasing the involvement of both public and private stakeholders in the co-production of TVET programs that meet the needs of the business sector. Furthermore, after nearly three decades of administrative integration, the government formally separated TVET from general secondary education in 2023 in order to grant it greater visibility and prioritization in policy actions.

Despite these significant reforms, interviews with government officials and heads of public TVET schools revealed persistent challenges. Students continue to face limited access to TVET programs due to the unequal geographical distribution of schools and programs, as well as the high cost of enrolment. For instance, annual fees for TVET range between XOF 120,000 and 200,000, compared with only XOF 12,000 for general secondary education for boys and free access for girls. As a result, even though TVET remains attractive to many young people, financial barriers significantly hinder participation. Respondents emphasised the need for targeted measures to improve equity and inclusion, ensuring that TVET can truly serve as a lever for youth empowerment and helping them to enter the labour market.

### **5.2.2 Earlier reforms of the traditional apprenticeship by professional associations**

In this section, we explore the reforms introduced to improve the quality of the labour force through traditional apprenticeships. In sub-Saharan Africa, TVET reforms emerged at the beginning of the 1990s. A study of [25] indicate that these reforms consisted of the widespread development of national qualification frameworks, quality assurance, policy coherence and employer involvement, including public and private providers. Other authors have also argued the same as [26, 27]. A study [20], emphasizing the case of Benin and Togo, which have renovated their apprenticeship systems. However, our research revealed that professional associations had introduced innovations in the Benin crafts sector before public institutions undertook apprenticeship reforms. Our research findings show, on the one hand, how professional associations have contributed to the reform of traditional apprenticeships, and, on the other hand, how the Beninese government has introduced these reforms.

The earlier reforms to traditional apprenticeships within professional associations can be traced back to two periods: 1950–1990 and 1990–2005. Based on an additional study

[28], these two periods mark an increase in the number of professional associations in the crafts sector. The first period corresponds to the period before the adoption of a democratic political system. It marks the pre-institutionalisation of professional associations within the Beninese crafts sector. A small number of professional associations were created among photographers, hairdressers and sewing in Cotonou [23]. It is reported that professional associations are aiming to create a global framework to address common occupational issues in the workplace. Earlier apprenticeship reforms focused on developing strategies to identify and tackle fake practices within occupational schemes. Among photographers, a rate card has been designed for goods and services offered to the community. In the sewing industry, professional associations have introduced credit or loan plans to support their members. It is clear that these reforms did not incorporate occupational skills or the learning process in traditional apprenticeships.

As the second period falls at the beginning of the democratic era, there was a growth in professional associations, which were fully institutionalised by [24]. Professional associations were formed at district and national levels. In 1993, the National Federation of Craftsmen (*Fédération Nationale des Artisans du Bénin*—FENAB) was established. During this period, the German Agency for International Cooperation provided support to professional associations. The Hanns Seidel Foundation introduced a dual training pilot scheme in collaboration with Togo. This pilot scheme was conducted in Abomey (in southern Benin) and covered four craft occupations: car mechanics, motorcycle mechanics, construction mechanics and wood carpentry. It combined workshop training with supplementary instruction and practical training at a technical secondary school (*Lycée Houffon* in Abomey). Professional associations played a major role in defining the occupational qualification standards and participating in training at *Lycée Houffon* in Abomey. An evaluation study of this experience produced positive outcomes. As the largest trade union of professional associations, FENAB led the creation of the National Crafts Chambers (*Union des Chambres Interdépartementales des Métiers du Bénin*—UCIMB) in 2003, with strong support from the Swiss Department for Development and Cooperation. The main goal is to protect the rights of craftsmen and women and improve their living standards by promoting craft occupations in Benin. They were marginalised and forced to work in the informal economy, despite local administrations receiving taxes from them.

### 5.2.3 Accreditation of Benin's apprenticeships

As mentioned at the beginning of this chapter, there were no accredited apprenticeships in Benin until 2005. Our interviews with officials from public institutions and donor agencies suggest that the positive outcomes of the Abomey pilot dual training scheme have incentivised professional associations and public institutions. To introduce this dual training more widely in Benin's apprenticeship system, the government sought donors to establish a legal framework for accreditation. In 2001, Swisscontact was selected to support the Beninese government in implementing a dual apprenticeship training system. Many other donors have provided technical and financial support for this dual system, including: These include the Danish Development Agency, the Swiss Development Corporation, the French Development Agency and the World Bank. Swisscontact developed a chart of competencies and training guidelines for this dual training in 13 craft occupations. These occupations are: hairstyling (*coiffure*); metallic construction (*soudure*);

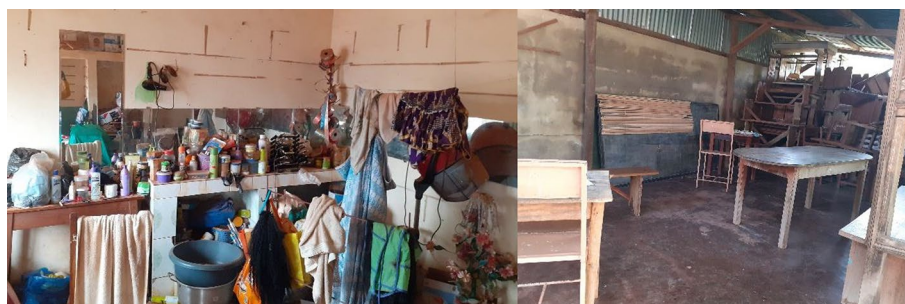
sewing (*couture*); electricity (*électricité*); cold and air conditioning (*froid et climatisation*); masonry (*maçonnerie*); car mechanic (*mécanique auto*); motorcycle mechanic (*mécanique deux roues*); wood carpentry (*menuiserie bois*); photography (*photographie*); plumbing (*plomberie*); coating (*revêtement*) and weaving (*tissage*) [29]. The pilot phase took place from 2003 to 2005. In 2005, the government accredited apprenticeships through Decree No. 117/2005, which was consolidated by Decree No. 641/2010. According to these acts, two apprenticeship programmes were created within the Benin TVET system: dual training, which leads to the award of a Certificate of Professional Qualification (*Certificat de Qualification Professionnelle*—CQP), and an upgraded traditional apprenticeship, which leads to the award of a Certificate of Occupational Qualification (*Certificat de Qualification aux Métiers*—CQM). The CQP exam is taken after apprentices have completed three years of dual training [30]. The CQM exam is organised twice a year for apprentices who have completed their training schemes in master workshops [31]. Public institutions under the Ministry of Secondary Education and TVET issue both certificates to graduates after the final exam. Since then, the Benin crafts sector has received particular attention from donors and public institutions, who have conducted national CQP and CQM programmes as formal apprenticeships. However, research [32] shows that the CQP programme does not adhere to the executory framework.

#### **5.2.4 Period from 2016 to date: new apprenticeship reform**

The year 2016 marked a significant turning point in Benin's political landscape over the last two decades. A new political transition was ushered in, accompanied by renewed ambitions for Technical and Vocational Education and Training (TVET), particularly targeting young people. As part of these ambitions, the government conducted an institutional and organisational audit, which revealed that the management of apprenticeship resources was not meeting expectations [25]. In response, the new administration developed a national TVET strategy in 2019 and introduced a renovated dual training system to improve the quality and relevance of vocational training.

However, the reform also resulted in major structural changes. Two occupations that have historically had high enrolment rates in the informal sector, namely sewing and hairstyling, were withdrawn from the list of dual training programmes. As these trades are predominantly female-dominated, concerns have been raised about gender inequity in accessing this dual training system. The removal of these occupations risk excluding a large group of women who rely on them for economic empowerment and market access. New occupations such as solar panel installation, floor covering installation, and IT repair services were introduced in their place. These new occupations are male-dominated, which may act as a barrier for women accessing the dual training system.

Moreover, the government promoted public TVET schools as the main providers of the renovated dual training programme, reducing the participation of private vocational training centres, which had initially dominated the programme. This decision disappointed many heads of private centres because they had maximised their profits from this dual training. On the other hand, craftspeople who had invested in setting up training centres were left out of pocket. Many were forced to close their facilities (see photo) without recouping their investment, which generated frustration and a sense of exclusion among private training providers who had been crucial partners in the programme's earlier stages (Fig. 2).



**Fig. 2** Photographs of two private training centres in Parakou after closure.  
Source: Own illustration, 2023

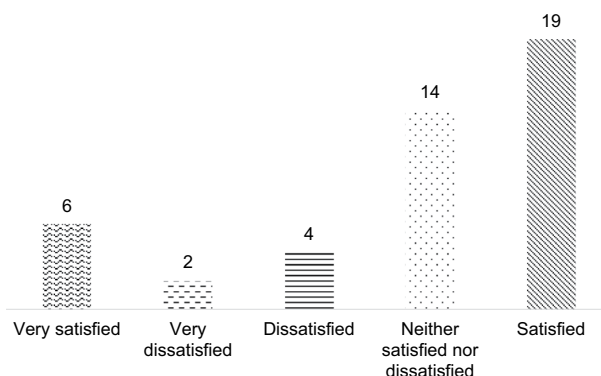
These photographs show that many private training centres have been unable to continue offering training activities following their closure. This proves that the artisans' involvement in the initial implementation of the dual training programme largely motivated the establishment of the training centres. As training provided by artisans is generally considered to be more practical than that delivered in public TVET schools, excluding these private centres from delivering the renovated dual training programme could have a negative impact on the practical quality and relevance of the training offered to learners.

### 5.3 Skills heterogeneity in the Benin's labour market

#### 5.3.1 Skills mismatch as the main labour challenge in Benin

A recent publication [33], reports on the Benin TVET system in broad scope, particularly the TVET programmes offered at lower and upper secondary level. According to the research, Benin's secondary education system offers TVET programmes in seven subject areas: (i) administrative management science and technology; (ii) industry science and technology; (iii) agricultural science and technology; (iv) health assistant education and social science; (v) hotel management and tourism studies; (vi) family and social studies and (vii) science and technology for art crafts [28]. Students spend some of their time in enterprises for internships and most of their time in the classroom. Each TVET subject offers students a variety of career paths. Despite the many training opportunities offered by this TVET structure, a skills shortage continues to challenge employment in Benin.

A diagnosis of institutions and organisations carried out by the ministry in charge of TVET [34], revealed that there is no monitoring and evaluation plan to assess graduates' transition into employment. It was found that many TVET programmes are no longer relevant to the Beninese business sector. In other programmes, the training content is outdated and unable to provide graduates with jobs. Legally, the content of TVET programmes must be developed in collaboration with all professional associations (subsection 50, Sect. 4, chapter 4 of the Benin TVET Act) [35]. While the Act does not specify the timeframe for revising curricula, it states that revisions may be carried out every five years to align with labour market requirements. However, interviews with the head of the *Lycée Technique Agricole de Kika*, an agricultural TVET school situated in a rural area about 20 kms from Parakou, and with two teachers (from the *Lycée Technique Professionnel de Kpondéhou* and the *Lycée Technique Professionnel Coulibaly*), both in Cotonou, revealed that the content of the ongoing programmes had been reviewed since



**Fig. 3** Satisfaction measurement of the craftsmen service supply.

Source: Own illustration, 2022

2010. According to a reported study [28], it was found that graduates of agricultural science and technology, administrative management science and technology, and industrial science and technology found it difficult to enter the employment system, with estimated employment rates of 54.7%, 47.7%, and 47.5% respectively in 2009. Those who have studied hotel management and tourism, health assistance or social sciences have better access to employment, with an employment rate of 90.5% and 83.3%, respectively. Therefore, although the primary goal of TVET is to prepare young people for job market, some TVET programmes facilitate smoother entry than others. This result shows that TVET graduates face significant challenges in accessing employment. In over hand, workers are highly criticised for lacking the necessary skills within the Beninese labour market. For example, the Benin government still uses external labour to carry out activities that are considered very important, such as civil engineering construction, electrical engineering and designing public development programmes. Many administrative offices and road construction projects in Benin are implemented by Chinese civil engineering construction companies. Experts in electrical engineering from Germany are sought for electrical engineering activities... Therefore, the TVET offered at secondary level in Benin does not meet the employment demands.

According to a recent census [36] contacted in 2023, 45.6% of economic units invest in Benin's craft occupations. Working in this sector means that professionals provide outputs to meet community needs. Our research shows that, although craftspeople provide daily services to the community, the quality of the workforce remains unsatisfactory. We measured the satisfaction of participants with the service or product provision by craft artisans using a five-point Likert scale (Fig. 3).

Overall, respondents expressed moderate satisfaction with the service provided by craftspeople in Parakou. However, a significant proportion (14 out of 45, or 31.1%) reported being neither satisfied nor dissatisfied. Only six respondents (13.3%) said they were highly satisfied with the services offered by artisans. This figure suggests that the performance of the service supply chain among apprenticeship graduates is mixed. Two main factors appear to explain this limited satisfaction. Firstly, several respondents noted that some artisans lack the technical expertise required to produce clean, high-quality work. This deficiency is often attributed to outdated training curricula, limited access to modern equipment, and the insufficient continuing education and training. The predominance of traditional, particularly the unstructured skills learning further



constrains artisans' capacity to innovate or align their practices with evolving market and technological demands. Consequently, some artisans' products and services offered by do meet clients' and employers' expectations, thereby undermining confidence in the apprenticeship system.

Secondly, low satisfaction levels are often associated with the limited educational background of artisans. Many young people entering apprenticeship are school dropouts (see references [4, 5]). This educational deficit limits for their ability to acquire and apply technical knowledge effectively, adapt to structured learning environments, or engage with the theoretical components of TVET programmes. The following quotations illustrate these concerns:

*"Artisans are trained to be more practical in their occupations than those trained in TVET schools. This is why people often perceive artisans as right professionals. However, there are several weaknesses developed among them. For example, they often lack the skills needed to prepare budgets for their services. I think that if artisans had a higher level of education, they would perform their work much better"* (Mr. A. A., 64 years old, curriculum design expert, Cotonou, 2023).

*"Sometimes artisans take money for a service but use it inappropriately, which results in poor-quality work. This negatively affects their reputation"* (Mr. A. M., 45 years old, official, Ministry in charge of TVET, Cotonou, 2023).

The first quotation suggests that, due to their more practice-oriented training, artisans can be competitive in the labour market compared to TVET school graduates. However, the mentioned weaknesses suggest that apprentices still need to develop additional skills, such as budget preparation. The second quotation highlights negative behaviour that can affect artisans' work experience and professional reputation adversely.

### **5.3.2 Determinants of the skills mismatch in the Benin's labour market**

Based on interviews and a review of the literature, several reasons for the lack of skills in the Beninese economic system can be identified: (i) a mismatch between learning content and business needs; (ii) a lack of updated materials and equipment; (iii) low-quality instructors or trainers; (iv) low student enrolment in TVET schools; and (v) a lack of financial resources.

- The mismatch between learning content and employment needs is a major issue in TVET programmes at secondary school level. It is reported that students find it difficult to integrate into the labour market after graduation, despite participating in TVET programmes. In apprenticeships, updating the learning content is required as community needs are also changing.
- It has been demonstrated that TVET schools have outdated materials and equipment for the practical training sessions. For example, most of the materials and equipment used at the *Lycée Technique Coulibaly* in Cotonou (southern Benin), were provided by the early postcolonial administration. In the crafts sector, most of craftspeople still use with outdated materials as they work in small workshops with very limited resources.
- In Benin, TVET school instructors and trainers are required to update their knowledge and skills through continuing professional development organised by public institutions. However, these training sessions are not offered regularly.



Furthermore, there is no effective monitoring or evaluation plan in place to ensure the quality of the available instructors and trainers. In apprenticeships, master craftsmen are the most competent members of the workforce and train apprentices according to the skills they have acquired during their training. Consequently, they help young people to fill their skills gap.

- In both lower and upper secondary schools, TVET is expensive for parents. In Benin, students pay tuition fees through their parents. The same applies to the apprenticeship system. Due to the high cost of TVET programmes, many young people enrol in general secondary education instead. According to a source [18] around 80 per cent of students enrolled in secondary education complete the lower general secondary education programmes.
- The financing mechanism for TVET programmes offered in secondary schools is insufficient to boost the external efficiency of TVET graduates. A study showed that financing apprenticeships in vocational education is strongly supported by donor agencies (Danish Development Agency, Swiss Development Corporation, French Development Agency, World Bank, etc.). Therefore, the Beninese government needs to increase public operating expenditure on TVET.

In addition to the factors contributing to the skills gap in the Beninese labour market, the research attempted to examine the earning situation of workers.

### 5.3.3 TVET and earnings in Benin

A study [37] states that earnings are influenced by what students learn, rather than by the number of years of schooling. In Benin, as in many other French-speaking countries in West Africa, there is no evidence of this in formal employment with regard to the institutional framework for wage structures. The more schooling people complete, the higher their earnings. For example, average monthly earnings in Benin were estimated at XOF 340,000 (USD 580) in 2020, with a minimum wage of XOF 40,000 (USD 64) [24]. This suggests that many people in Benin have a high propensity for long-term schooling and graduate from tertiary education.

As this is a qualitative study, we did not estimate or calculate workers' earnings. Instead, we present respondents' perceptions of the earnings of Beninese workers, particularly regarding those who have graduated from TVET and apprenticeship programmes. Eighty-one (81) percent of respondents believe that individuals with a higher TVET qualification are likely to earn better salaries. Although TVET is regarded as an important means of helping young people find job, this finding suggests that graduates are motivated to pursue further education to improve their income prospects. This runs counter to the government's intention of positioning TVET as a final pathway leading directly to employment for young people.

However, this does not apply to apprenticeship graduates. Respondents emphasised that the earnings of apprenticeship certificate holders largely depend on the quality of the products or services they provide, rather than the certification itself. Although TVET continues to gain attention from policymakers and stakeholders, a major challenge remains: ensuring that participation in TVET and apprenticeships leads to equitable and sustainable economic returns for all graduates.

In light of the discussion in this section, it is clear that Benin's TVET system and apprenticeship programmes offer a variety of career paths and job prospects for young

people. As mentioned in the brief overview of Benin's education system, students who complete a TVET programme can obtain a lower-secondary or an upper-secondary diploma. Similarly, apprenticeship graduates may receive an informal learning diploma from traditional apprenticeships or a formal apprenticeship certificate issued by public institutions.

The variety of educational pathways leads to skills heterogeneity in the labour market, with workers holding different types and levels of qualifications. The results further suggest that apprenticeship graduates tend to receive more practical training than TVET school graduates. In this context, some workers are considered well-qualified and aligned with the business needs, while others may be “under-qualified” or “over-qualified,” as described by an author [14]. The coexistence of this diversity of competencies in the world of work highlights the range of skills that each worker uses to enhance their employment status. Consequently, earnings in Benin are likely to depend not only on formal qualifications, but also on individuals' practical skills. The findings of this research reinforce this observation, particularly in terms of respondents' views on income disparities between TVET and apprenticeship graduates.

## 6 Conclusion

To sum up, this qualitative research was conducted to analyse the quality of the workforce emphasise the effectiveness of Technical vocational education and training (TVET) in secondary schools, and apprenticeship in Benin. The research first illustrated how TVET and apprenticeship were developed from early education before the colonial administration. It has been developed in response to the need for a competent workforce for the colonial administration. Secondly, although TVET has been integrated into the formal education system at lower and upper secondary level, skills learnt through traditional apprenticeships have been developed through the strong involvement of professional associations, donor agencies and government. Despite the many career opportunities that TVET offers young people in Benin, the findings suggest that TVET does not meet employment demands due to graduates lacking the necessary competencies. Thirdly, apprenticeship reforms in Benin have improved traditional skills training by accrediting dual training with a professional qualification certificate (*Certificat de Qualification Professionnelle*—CQP) and upgrading traditional apprenticeships to include an occupational qualification certificate (*Certificat de Qualification aux Métiers*—CQM). The research revealed that neither the TVET programmes offered in secondary education nor the accredited apprenticeship programmes benefit from public policies designed to help Beninese people earn a satisfactory income. The findings also highlighted five factors contributing to the shortage of skills in the labour market: poor alignment of skills with the needs; the use of obsolete materials and equipment used by firms; instructor and trainer quality assurance; low TVET school enrolment; low enrolment in TVET schools; and a lack of financial support for public TVET schools.

This research reveals that TVET and apprenticeships in Benin, along with their recent reforms, have not effectively promoted social inclusion. There are two key reasons for this outcome. On the one hand, the exclusion of certain occupations, particularly those in sewing and hairstyling which are predominantly female-dominated, has limited women's access to training opportunities, thereby reinforcing gender inequities. On the other, the marginalisation of private vocational training centres, which were initially

instrumental in delivering dual training, has reduced the diversity and accessibility of training provision. Building on the conceptual framework of skills mismatch, the study shows that graduates from TVET programmes and apprenticeships often lack the competencies needed to integrate successfully into the labour market. This undermines the primary goal of these programmes. Evidence suggests that these graduates require additional practical and transferable skills to meet market demands. Overall, the findings suggest that the TVET and apprenticeship systems in Benin are failing to achieve their objective of fostering inclusive and equitable employment opportunities, despite the reforms.

Reimagining TVET and apprenticeships by linking requisite competencies to the economic structure could be more profitable. Further research could be undertaken to estimate earnings with TVET and apprenticeships.

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#### Author contribution

G.S.N. and A.R.B. wrote the manuscript text of this research, which was carried out as part of the LELAM TVET4Income project in Benin. The aim of this project is to study the conditions under which TVET can improve the income of youth in four countries: Benin, Chile, Costa Rica and Nepal. This research project involved the University of Abomey-Calavi and the University of Parakou, Benin; the University of Chile; the University of Costa Rica; the Kathmandu University School of Education, Nepal; and two research units, Chair of Education System and Development Economics, ETH Zurich, Switzerland. Throughout the research project, G.S.N. and A.R.B. were responsible for conducting the qualitative research, focusing on the institutional analysis of the reforms. As the Principal Investigator (PI) of the Benin team, E.G. is responsible for the research supervision activities. He participated in data collection through many research meetings with staff from public and private organizations. In addition, he reviewed the manuscript.

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#### Data availability

All data generated or analysed during this study are included in this published article.

#### Declarations

##### Ethics approval and consent to participate

This paper is based on a research proposal that received formal approval from the Scientific Advisory Board of the Literature, Arts and Humanities Series at the University of Parakou (*Comité Scientifique de la Série Lettres, Arts et Sciences Humaines de l'Université de Parakou*). Approval was granted in accordance with the CAMES Code of Ethics and Professional Standards, prior to the commencement of fieldwork. All participants provided written informed consent prior to taking part in the interviews. To further ensure confidentiality and voluntary participation, respondents were also asked to confirm their involvement through anonymous authentication procedures.

##### Consent for publication

The authors affirm that all human research participants provided informed consent for the publication of the data presented in this article.

##### Competing interests

The authors declare no competing interests.

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