RDB | RWANDA DEVELOPMENT BOARD

TRANSPORT & LOGISTICS/ STORAGE SKILLS SNAPSHOT

SKILLS RWANDA

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1. Overview

Transportation is a critical sector for the Rwanda economy, accounting for approximately 4.4% of the economy's GDP.[1] Transport in Rwanda primarily refers to three modes: (i) land (roads); (ii) air; and (iii) maritime (inland waterways).[2] Road transport is the predominant subsector in the country, while the aviation sector is also witnessing steady growth in line with the government's aim of transforming Kigali into an aviation hub. In terms of net employment, the transportation sector is currently low-skilled and labor-intensive. Transport has been designated a 'priority sector' under NST1, currently accounting for approximately 5% of the country's employment 182,777 workers.[3]

Rwanda has strategically identified the Transport and Logistics sector as one of the key drivers of economic growth, wealth and job creation and critical for within and cross-border trade. The transport sector is a key contributor to Strategic Pillar 1 (Economic Transformation) under (i) NST1 Priority Area 2 which aims at expanding Sustainable Urbanization from 17.3% (2014) to 35% by 2024; as well as (ii) NST1 Priority Area 4 that promotes industrialization and a structural shift in the export base to high-value goods and services to accelerate exports by 17% annually.

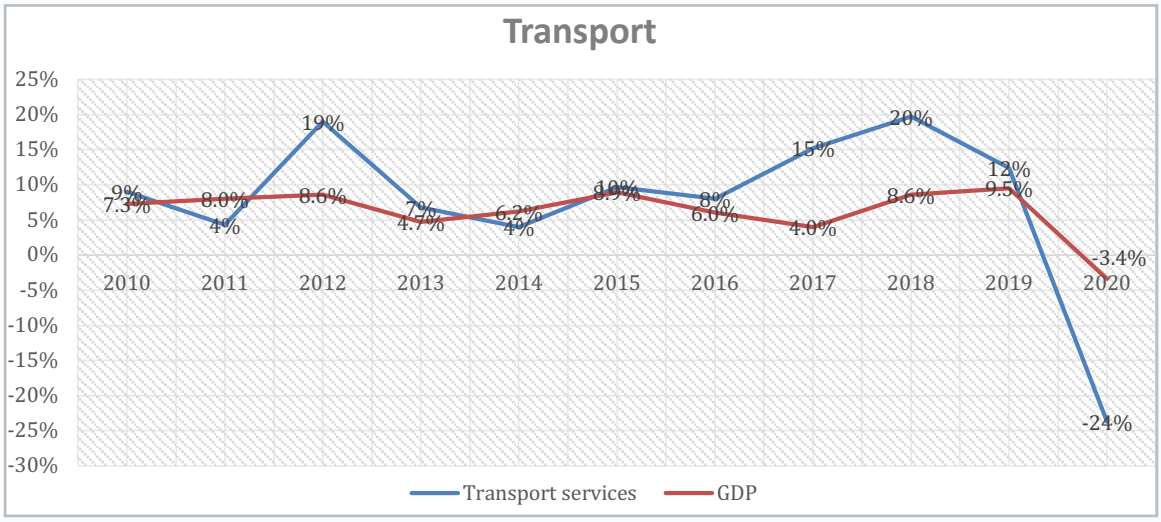
1. NISR National Account, 2019. Note that this refers to Transport Services (ISIC4 H).
2. Ministry of Infrastructure (MININFRA)
3. Labor Force Survey, Nov 2021. Note that LFS data refers to both Transport & Storage.

2. Sectoral performance and investment trends

Rwanda's economy has tremendously recovered over the last two decades. The country registered an average GDP growth of around 8 per cent per year over the last two decades, with a double-digit growth recorded in the last two quarters of 2019 (12% growth in the 2nd quarter, and 11.9% in the 3rd quarter). In 2020, the share of transport services in Rwanda's gross domestic product was 6 per cent. The sector was among the affected by the COVID-19 pandemic where it registered a 3.4 per cent decrease in 2020.

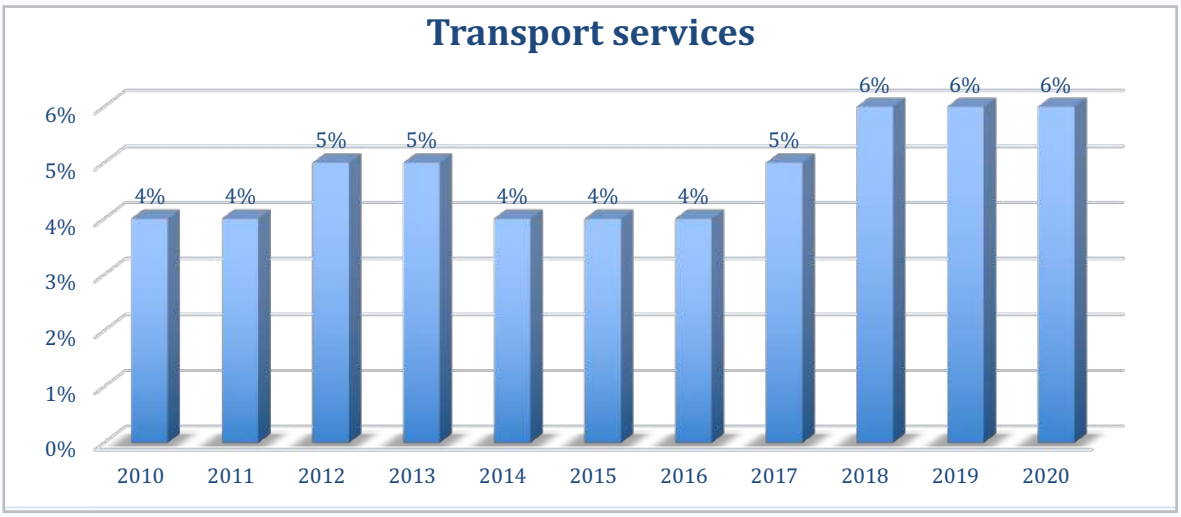
FDI inflows in the transportation sector also increased from 0.9% of total FDI inflows in 2017 to 2.3% in 2018. In addition, the transport sector ranks among the more profitable sectors concerning the return on equity (ROE) on FDI, with a higher ROE than the country's average of 13.2%.[4]

Figure 2.1: Growth and contribution of the transport sector to Rwanda's GDP



Source: NISR

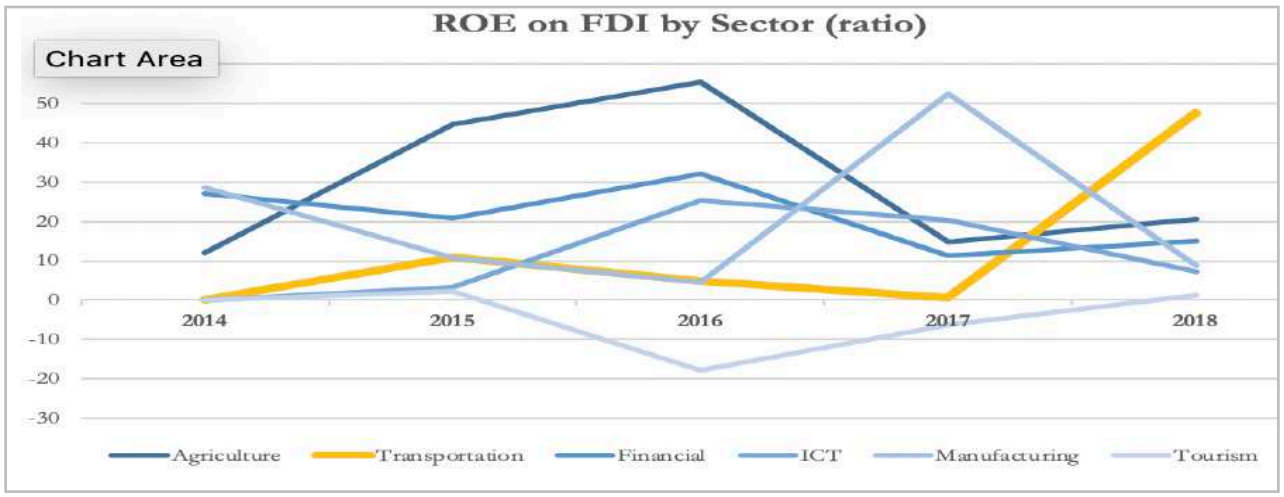
Figure 2.2: Share of transport in total GDP (current prices)



Source: NISR

4 FPC Census 2019

Figure 2.3: Return on Equity on FDI by economic sector in Rwanda



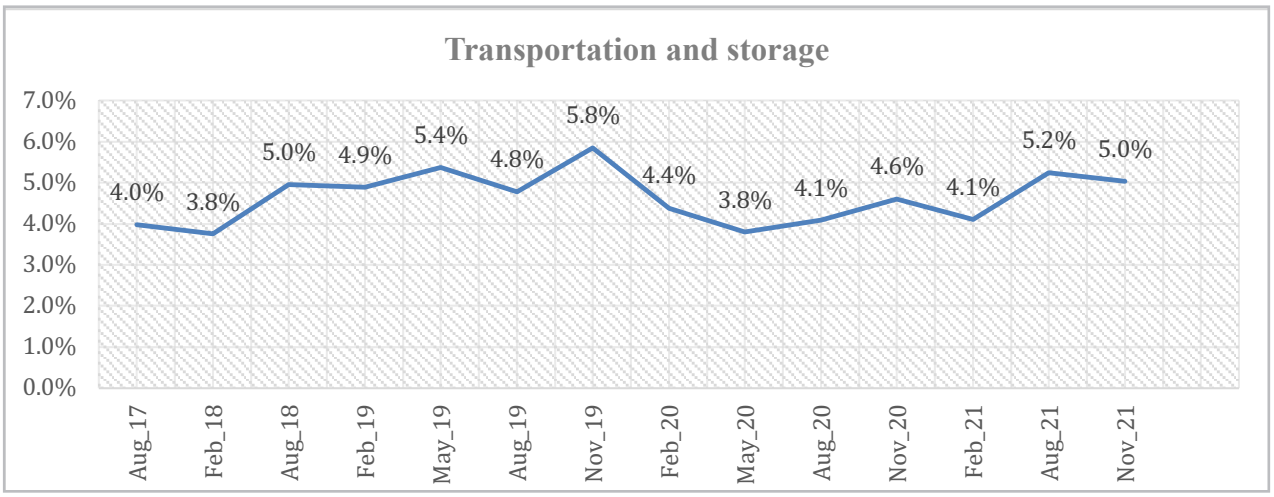
Source: Foreign private capital in Rwanda 2019, BNR

3. Labor Market Dynamics[5]

3.1. Share of transport and storage in total employment

In 2020, the transport and storage sector was among the economic activities (ISIC 4) with the largest number of employees. The statistics show that in 2021, the number of people employed in transport and storage varied between 4 and 5 per cent. At the end of the year 2019, transport and storage registered a high percentage of 5.8%, which contributed a lot to the increase (in absolute terms) in the number of jobs created in 2019, with at least 30,574 additional jobs corresponding to a 21.8 per cent annual increase registered in transport and storage.[6]

Figure 3.1: Share of transport and storage in total employment

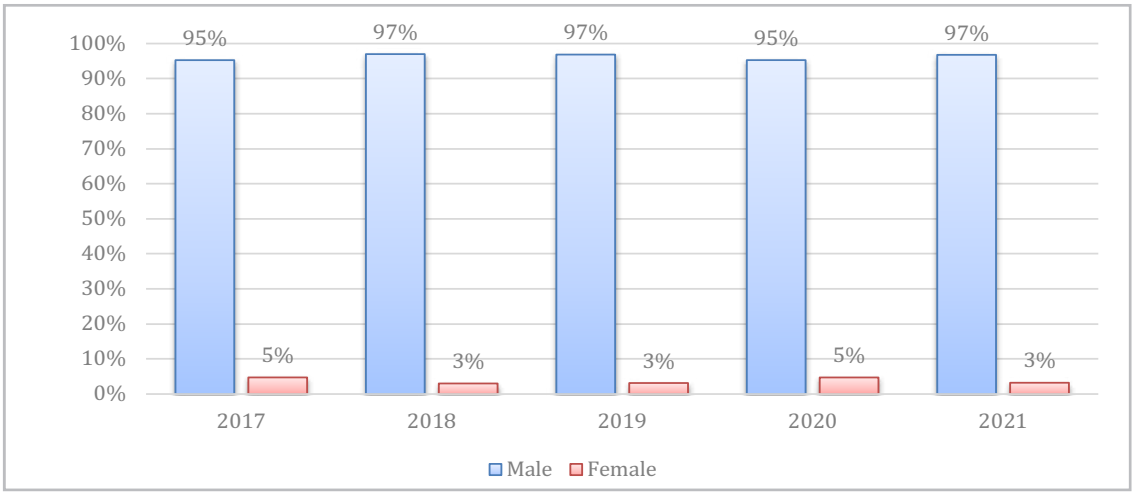


Source: Rounds of LFS 2017-2021, NISR

3.2. Employment by Gender

There is a huge gender disparity in employment in the transport sector. According to the results of the labour force survey rounds, the number of females employed in the sector is less than 5%, compared to more than 90% of the males employed in the sector.

Figure 3.2 Employment by gender



Source: Annual LFS 2017-2021, NISR

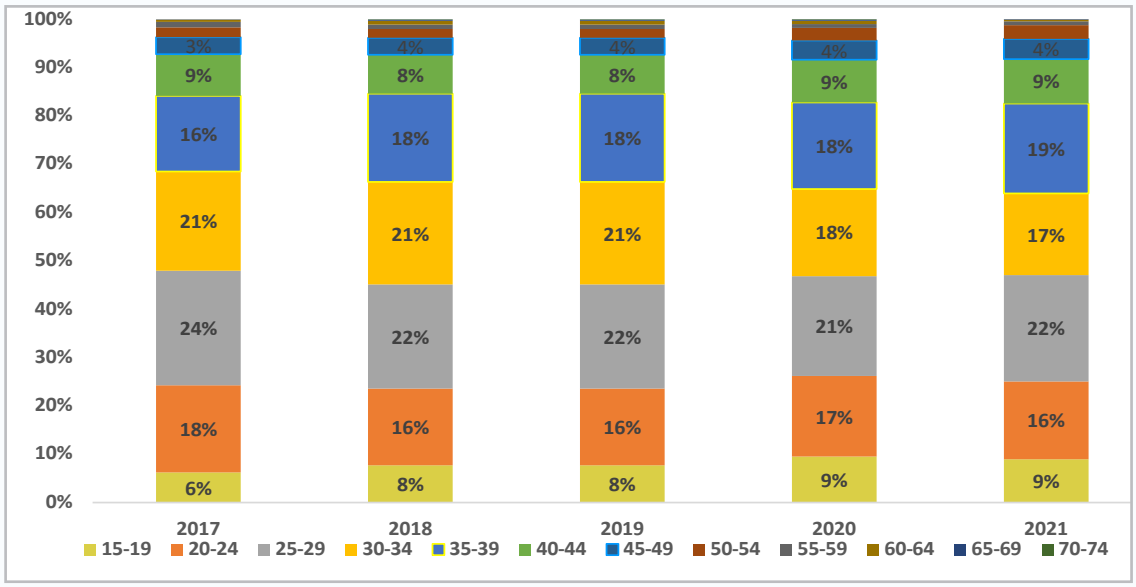
5. The data in this section uses mid-year data for 2016 and 2017 (August 2016 and August 2017).

6. LFS 2019. Important note:
This sub-section relies on employment data with respect to the transportation and storage sector, based on LFS data.

3.3. Employment by age group

The transport sector appears to be youth-employing. The results in Figure 3.3 below show nearly half of the people employed in the transport sector are aged less than 30 years, while the proportion of those aged less than 40 years represents more than 80 per cent of the total people employed in the sector. As people age, the number of employed people in the transport sector decreases.

Figure 3.3 Employment by age group

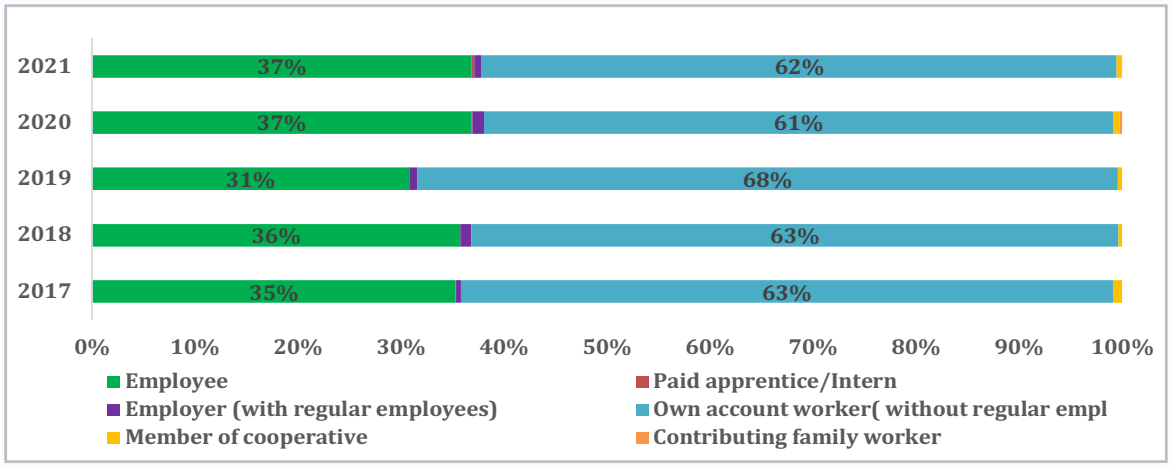


Source: Rounds of LFS 2017-2021, NISR

3.4. Status in employment

Figure 3.4: Status in employment

A large proportion of jobs in transport and storage are vulnerable. The results in Figure 3.4 below illustrate the shares of people employed in the transport and storage sectors according to the status of employment. From the figure, it is observed that the majority of people employed in the sector are own-account workers (more than 60 per cent), followed by the category of employees (more than 30 per cent).

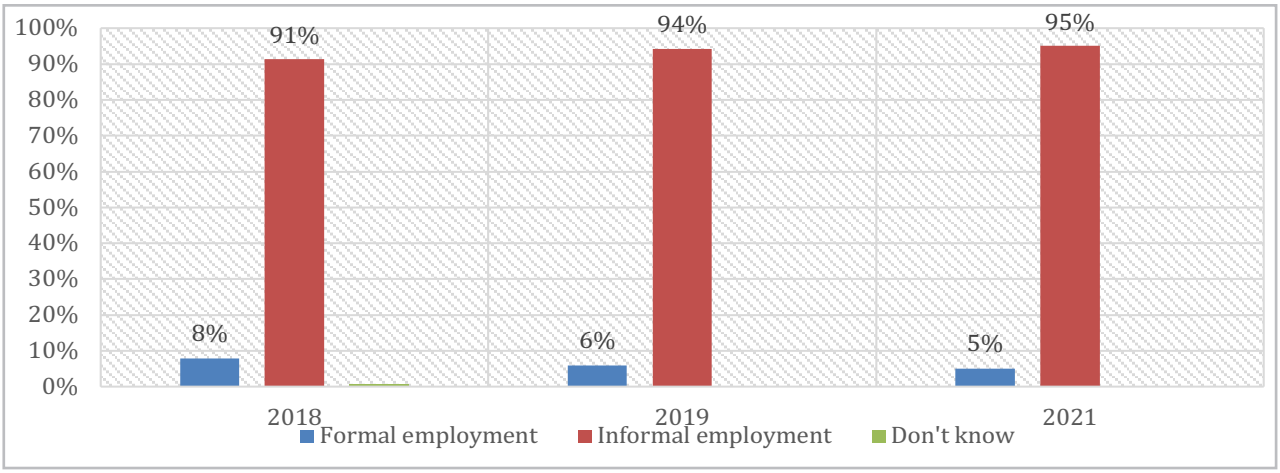


Source: Annual LFS 2017-2021, NISR

3.5 Employment status

Figure 3.5 Nature of employment

Figure 3.5 below represents the nature of employment for people employed in the transport sector. The vast majority of people working in the sector (more than 90%) are employed informally. Put differently, the vast majority of them do not have a formal contract or they are not entitled to medical insurance or annual or incidental leave.

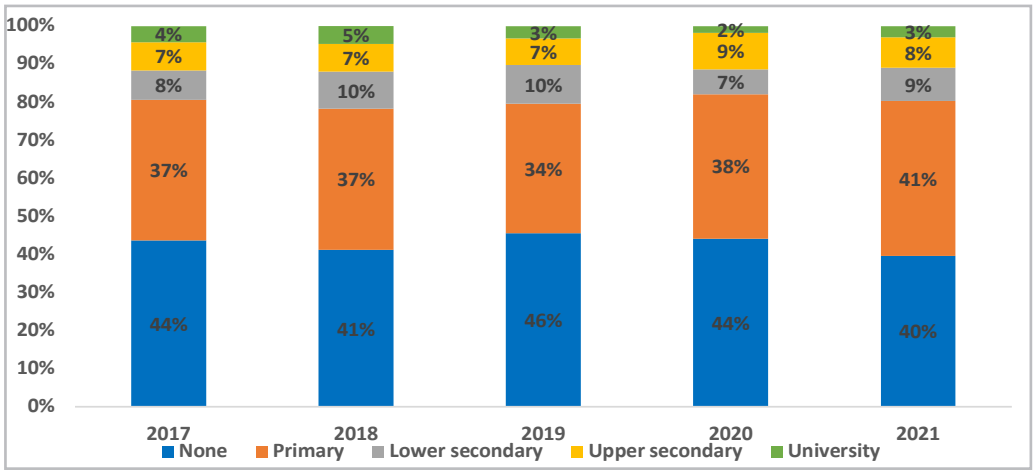


4. Skills in the transport and storage sector

4.1. Level of education

The transport sector largely employs low-skilled people. Figure 4.1 below shows that workers in transport and storage are dominated by people with no level of education, representing more than 40 per cent, and those with only primary level education, representing nearly 40 per cent. Both categories account for 80 per cent of the sector's workforce. It is therefore evident that this sector needs tailor-made interventions to upskill the low-skilled workers who make up the majority of the people employed in the transport sector.

Figure 4.1 Level of education

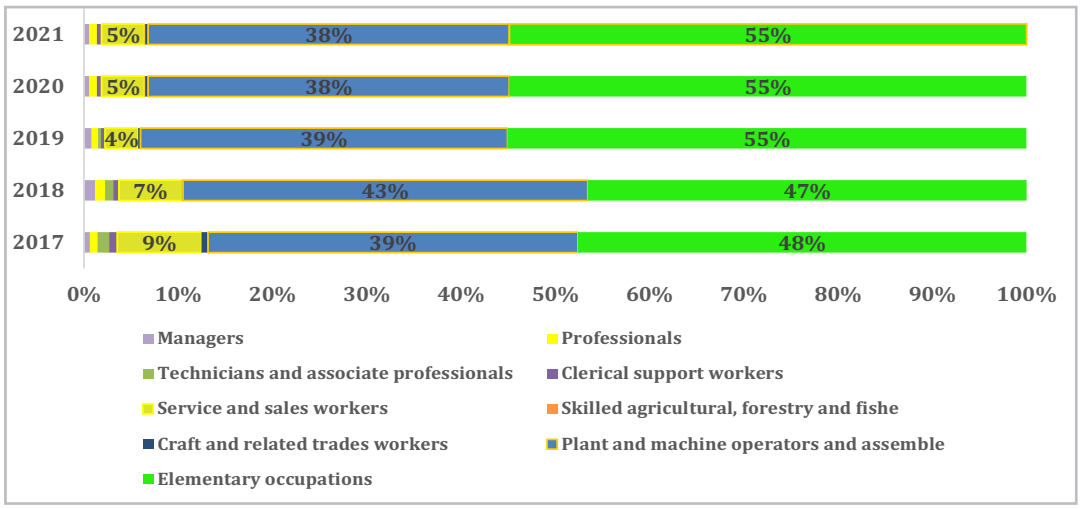


Source: Annual LFS 2017-2021, NISR

4.2. Occupations and skills level in the transport and storage sector

The International Classification of Occupations (ISCO-08) links all occupations with broad skills levels that are required to perform the activities involved in any occupation. The majority of people employed in the transport and storage sector are involved in low-skilled occupations. According to Figure 4.2 below, the two major categories of occupations that dominate are elementary workers classified as elementary occupations and plant and machine operators and assemblers. Both occupations are referred to as low-level skilled occupations, and they employ a large proportion of the people employed in the sector.

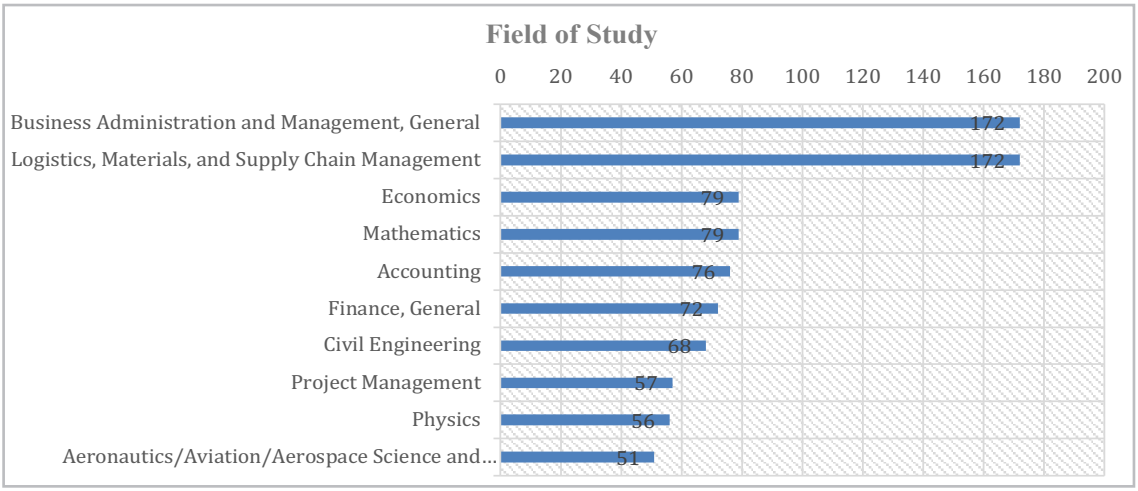
Figure 4.2 Occupations and skills levels in the transport and storage sector



4.3. Transport & Logistics sector – available middle to high-level Skill Sets and Education levels

The majority of the talent pool in the transport and logistics sector with middle to high-level skill sets has a background in business (172), logistics (172), and then economics (79). In terms of the level of education, 51.5% of professionals had Masters degrees, 46.6% had bachelor's degrees and 1.9% held Doctorate Degrees.[7]

Figure 4.3. Available middle to high-level Skill Sets and Education levels



RDB Talent insight report, 2020

4.4. Top 10 skills among professionals in transport and logistics

The most common skills among professionals in this talent pool are Logistic Management (694) Aviation (347) and Supply Chain Management (329). Other interesting top skills related are Aerospace (96), Commercial aviation (91), Systems engineering (55) & Aeronautics (36).[8]

7. This data only represents professionals with active LinkedIn accounts. This number does not, in reality represent the total education levels or fields of study.
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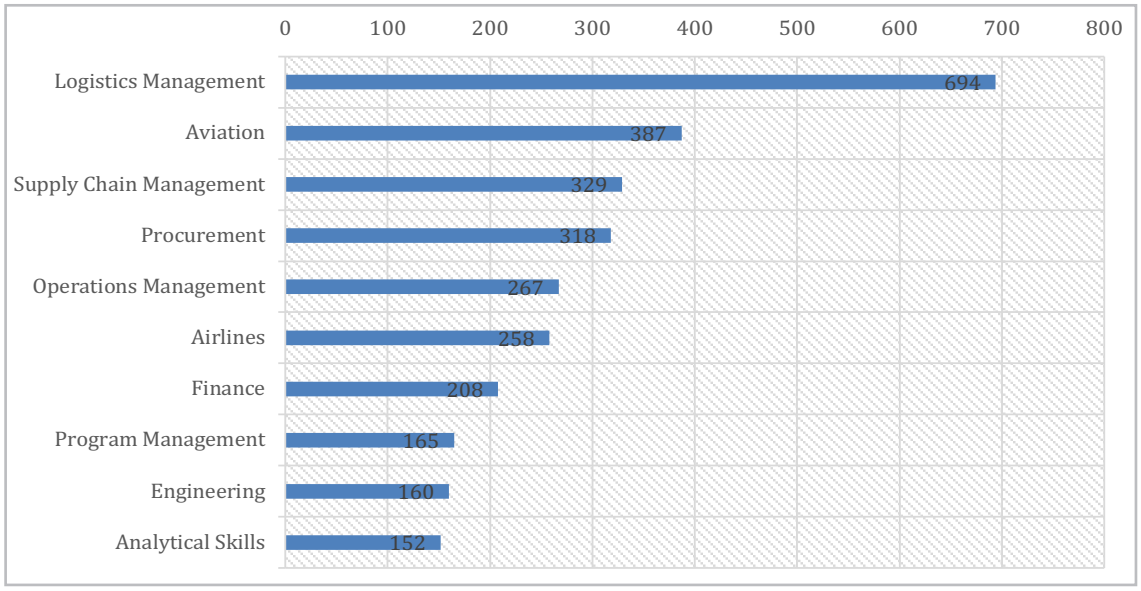
Figure 4.4 Top skills among professionals in transport and logistics



RDB Talent insight report, 2020

4.5. Education and experience profile for major occupations in the Transport sector

EDUCATION LEVEL	EXPERIENCE LEVEL	OCCUPATION TYPES
Graduate/Degree in Transport Management	Over 5 years	MDs
		Transport Managers
		Business Development/Project Managers
		Site Managers
		HR/Inventory/Finance
Masters in Engineering/ Degree in Transport Management, Economics	3-5 years	Site Engineers
		Transport Engineers
		Electrical Engineers
		Civil/Mechanical Engineers
		Transport Economist
Diploma in Engineering	2-4 years	Transport Engineering Technicians
		Electrical Engineering Technicians
		Loading Supervisors
		Civil Engineering Technicians, Mechanics, Machine operators
Skilled Artisanal Training		Truck Drivers
		Trained Laborers / Helpers

4.6 Courses offered in universities related to the transport sector

COLLEGE	COURSES
College of Science and Technology (CST-UR)	MSc in Transport Engineering and Economics (TEE)
	MSc in Highway Engineering (HEM)
College of Business and Economics (CBE)	Bachelor of Business Administration (BBA) in Procurement Management
	MSc in Procurement Management for Sustainable Development

The expected contribution of the transport and logistics sector to job creation

The expected contribution of the transport and logistics sector to job creation is estimated using multiple linear regression (MLR), also known as multiple regression. This is a statistical technique that predicts the outcome of a response variable using several explanatory variables. Multiple linear regression attempts to model the linear relationship between explanatory (independent) and response (dependent) variables. Multiple regression is essentially an extension of ordinary least-squares (OLS) regression in that it involves more than one explanatory variable.

Linear regression equation

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots \ldots + \beta_n X_n$$

β_0 is the intercept, are coefficients, and Xs are predictor variables. The dependent variable used is the number of people employed in different economic sectors, while different predictors used in the model include dummy variables to capture the contribution of different economic sectors to job creation, and trend variables to capture the effect of time on job creation in various economic sectors.

As the results of multiple regression in the table below show, all the economic activities are statistically significant and the R-squared is 0.974, which means that the variables used in the model can explain 97 per cent of the variation.

The performance of all economic activities is compared to that of the transport sector, which was taken as a reference category. The contribution of the transport and storage sector is expected to be higher compared to sectors such as mining and quarrying, ICT, accommodation and food services, and education. Sectors that are expected to employ more people than the transport and storage sectors include sectors such as agriculture, forest and fishing, wholesale and retail trade, repair of motor vehicles, motorcycles, construction and manufacturing. However, though the transport and storage sector is expected to perform better than some sectors, evidence shows the majority of people employed are low-skilled and are doing vulnerable jobs.

Another important factor that appears to have a major impact on job creation in various economic sectors is time. The latter captures the effects of different periods or seasons on job creation.

EMPLOYED	COEF.	ST.ERR.	T-VALUE	P-VALUE	[95% CONF	INTERVAL]	SIG
Agriculture Forestry and fishing	1,175,582.10	16,384.38	71.75	0.00	1,143,352.90	1,207,811.30	***
Mining and quarrying	(87,388.16)	16,384.14	(5.33)	0.00	(119,616.93)	(55,159.40)	***
Manufacturing	40,726.97	16,383.94	2.49	0.01	8,498.61	72,955.34	**
Electricity, gas, steam and air conditioning supply	(135,264.52)	16,383.77	(8.26)	0.00	(167,492.56)	(103,036.48)	***
Water supply, sewerage and waste management	(135,726.92)	16,383.64	(8.28)	0.00	(167,954.70)	(103,499.14)	***
Construction	195,340.25	16,383.55	11.92	0.00	163,112.65	227,567.86	***
Wholesale, retail trade, repair of motor vehicles, motorcycles	298,620.97	16,383.50	18.23	0.00	266,393.48	330,848.47	***
Accommodation and food service activities	(67,414.11)	16,383.50	(4.11)	0.00	(99,641.60)	(35,186.61)	***
Information and communication	(131,966.06)	16,383.55	(8.05)	0.00	(164,193.66)	(99,738.45)	***
Financial and insurance activities	(112,948.96)	16,383.64	(6.89)	0.00	(145,176.75)	(80,721.18)	***
Real estate activities	(140,069.81)	16,383.77	(8.55)	0.00	(172,297.85)	(107,841.77)	***
Professional, scientific and technical activities	(121,710.53)	16,383.94	(7.43)	0.00	(153,938.89)	(89,482.16)	***
Administrative and support service activities	(87,429.23)	16,384.14	(5.34)	0.00	(119,657.99)	(55,200.46)	***
Public administration and defense	(78,952.47)	16,384.38	(4.82)	0.00	(111,181.71)	(46,723.24)	***
Education	(35,257.09)	16,384.66	(2.15)	0.03	(67,486.87)	(3,027.31)	**
Human health and social work activities	(93,583.66)	16,384.97	(5.71)	0.00	(125,814.05)	(61,353.27)	***
Arts, entertainment and recreation	(135,201.49)	16,385.32	(8.25)	0.00	(167,432.57)	(102,970.40)	***

EMPLOYED	COEF.	ST.ERR.	T-VALUE	P-VALUE	[95% CONF	INTERVAL]	SIG
Other service activities	(66,721.91)	16,385.71	(4.07)	0.00	(98,953.76)	(34,490.07)	***
Activities of households as employers	36,102.72	16,386.13	2.20	0.03	3,870.04	68,335.39	**
Activities of extraterritorial organizations and bodies	(133,056.57)	16,386.59	(8.12)	0.00	(165,290.15)	(100,822.99)	***
t	66.48	24.57	2.71	0.01	18.15	114.82	***
Constant	131,431.11	12,365.81	10.63	0.00	107,106.68	155,755.54	***

Mean dependent var	152,078.10	SD dependent var	287,620.33
R-squared	0.97	Number of obs	357.00
F-test	598.71	Prob > F	0.00
Akaike crit. (AIC)	8,727.10	Bayesian crit. (BIC)	8,812.41

5. Recommendations

To increase the number of qualified workforces available for the transport and logistics sector, the following recommendations are proposed:

- Conduct a skill needs assessment to guide skill development interventions for unskilled and low-skilled workers in the transportation and storage sector;
- Undertake massive awareness campaigns to sensitize females to pursue career paths related to transport and storage;
- Increase the number of trainees pursuing transport and logistics-related short term courses;
- Undertake an in-depth analysis of key issues highlighted to establish the root causes, and the impact it has on concerned groups and proposes remedial measures.
- Strengthen industry-academic linkage for the effective implementation of internships and apprenticeships in the transport and logistics sector.

SKILLS RWANDA

Contact us:
Chief Skills Office
Rwanda Development Board
KN 5 Rd, KG 9 Ave
Tel: 1415 (International): (+250) 727 775 170
Email: skills@rdb.rw Website: https://rdb.rw/skills/

@SkillsRwanda SkillsRwanda