TELECOMMUNICATIONS

SECTOR SKILLS HIGHLIGHTS

2021
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Tamkeen

مهارات البحرين
Skills Bahrain

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Bahrain's Telecommunications sector has been a pivotal enabler of the rapid economic growth in the country

Due to the Covid-19 pandemic, the telecommunications sector on a global level saw a sharp increase in demand effectively on remote working and home-based entertainment. Consumer demand for better digital services from operators accelerated digitalization plans. Telecommunications is an industry in transition as traditional operators move from telephony to technology. The rapid pace of change necessitates learning new skills, and the upgrading of old skills to move the sector forward. A convergence of job roles is leading to a focus on broader skill sets rather than narrow job descriptions.

DRIVERS OF CHANGE

◗ **Digital transformation of infrastructure** – 5G ability to support applications uncovers extensive possibilities across all industries allowing ultra-fast connectivity across Bahrain. 5G allows constant connectivity that will support emerging smart technology such as autonomous vehicles and Internet of Things (IOT) devices. Likewise, high speed fiber is now available across Bahrain providing national connectivity.

◗ **The increased use of Artificial Intelligence (AI) and Machine Learning (ML) –** AI and ML can be used for better network optimisation, predictive maintenance, fraud detection and robotic process automation to enhance efficiency in back-office operations and processes.

◗ **Using data to inform products –** Tailored products and services are based on consumer behavior identified through enhanced data analytics.

◗ **Improved customer experiences** – In response to consumer demands, particularly during the pandemic, digital channels are supporting customers with virtual assistance, chatbots and other tools to enhance the customer experience.

The Scope of the Telecommunications Sector Skills Study

The scope included all 23 active companies under the regulation of Bahrain Telecommunications Regulatory Authority (TRA). In addition, 8 of the vendor suppliers involved in supporting infrastructure were also included in the scope. The scope did not include the ICT sector.

Line Manager

"We do not know what the next five years will look like. The future is the next 18 months".

▶ **Growing mobile ecosystem and edge computing –** Powerful mobile devices running APPs are being enabled by cloud and edge computing. Edge computing stores and accesses data and performs high processing tasks closer to the network 'edge' or closer to end users which reduces network congestion and latency.

▶ **Sector convergence and innovation –** Operators moving into payments, FinTech and other technology services.

▶ **Increased interest internet 4.0 and the metaverse –** the development of Augmented Reality (AR) and Virtual Reality (VR) to be used as part of daily life and work is possible with a strong connectivity infrastructure.

Executive

"There is often a disconnect between employees, management and executive leadership when it comes to the value and strategic opportunity of new technology".
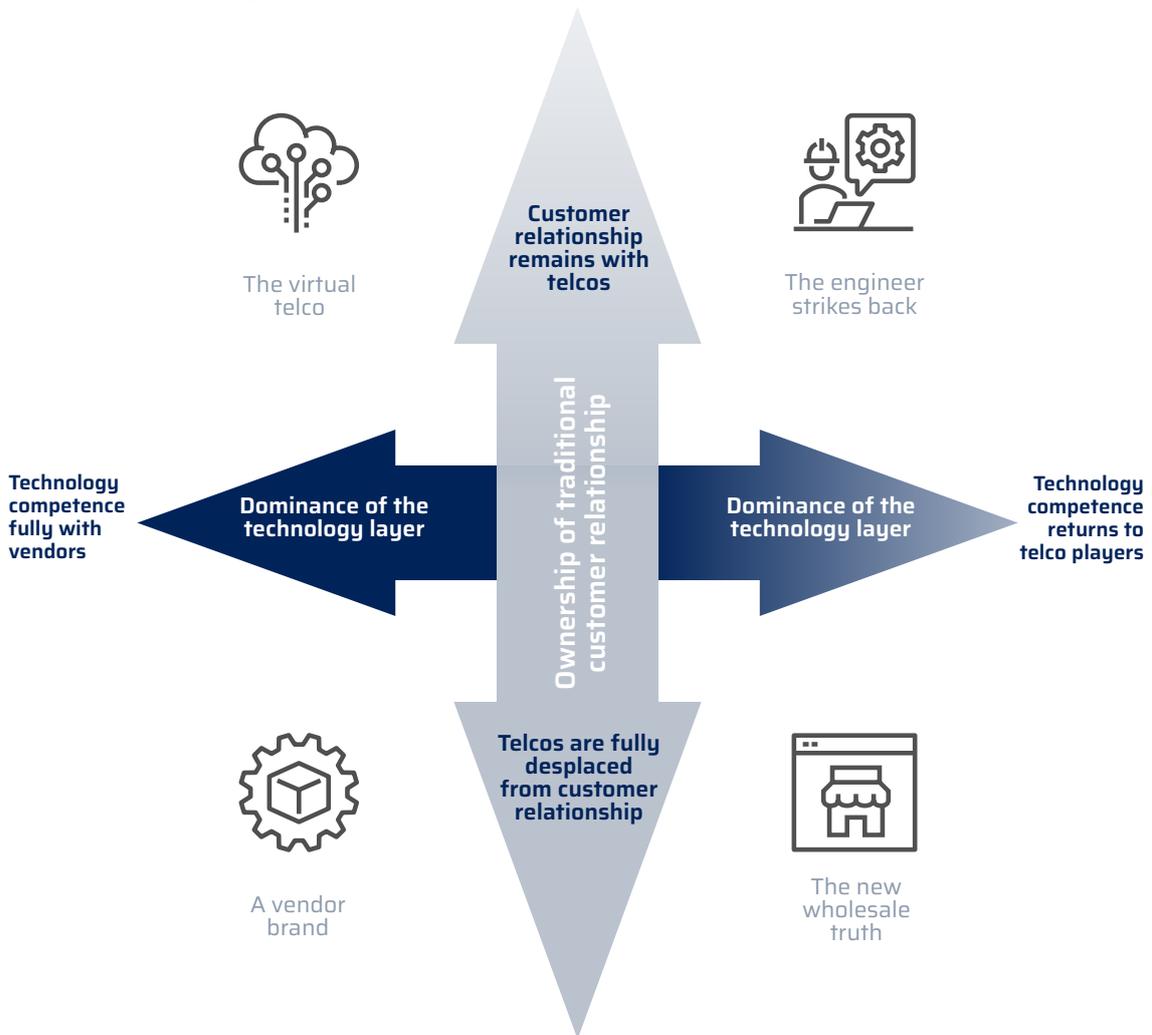

The virtual telco

Customer relationship remains with telcos

The engineer strikes back

Technology competence fully with vendors

Dominance of the technology layer

Ownership of traditional customer relationship

Dominance of the technology layer

Technology competence returns to telco players

A vendor brand

Telcos are fully desplaced from customer relationship

The new wholesale truth

Figure 1: Future Telecommunications Business Model5 (source: Telecommunications Business Models, Deloitte 2021)

The sector is experiencing significant disruption requiring new business models, new strategic direction and new talent and skill requirements.

FACTS

According to data from TRA, SIO and LMRA:

3,204
Employees are in the Telecommunications sector

62.6%
Bahrainization rate. The rates are highest in the operators and lowest in the supply vendors

33%
Female representation of employees in the sector

According to Skills Bahrain Survey:

61%
of the sector held a Bachelor Degree, 20% held a Masters Degree

40%
Of those with a Bachelor Degree have studied Business Administration, 35% have studied ICT, and 17% have studied Engineering.

75%
of Line Managers and 69% of HR Managers **said** that a **"lack of skills hinders business growth."**

Over 45%
of employees did not have a good understanding of the career opportunities in the Telecommunications sector before starting their first job in the sector.

CHANGING OCCUPATIONS

Outsourced Jobs in the Sector

As part of the sector value chain, a number of jobs in the sector are outsourced. These include **call centers** where Business Process Organizations (BPO) serve the operators with **customer service and sales services**. Additionally, a number of network related jobs are outsourced to suppliers which mainly provide network related services that use technical skills that are difficult to find. It is apparent that a number of highly technical jobs such as **Data Scientist** are 'outsourced' through relationships with vendors, rather than inhouse recruitment. This is slowly changing as local expertise is being built, however there is still a reliance on contractors for some of this niche technical work.

For details on specific job families and how they are changing in the sector, please see the Skills Bahrain publication 'Telecommunications Sector Career Pathway Maps'.

Growing and Emerging Jobs

- Cyber and Network Security Specialists
- Ai and Iot Professionals
- Product Development
- Robotic Process Automation (Rpa) Specialists
- Data Analysts
- 5G Network Engineers & Others
- Esg Specialist
- Cloud Computing Specialist
- Software and App Developers

Areas of the sector with jobs that will change or decline due to automation

- Customer service, sales and marketing
- Traditional infrastructure jobs
- Manual operations process jobs

Line Manager

"It is important to have graduates with the right attitude and professional character in the workplace".

Automation is reducing the number of people in a range of jobs internationally. However, there are also opportunities as new jobs become mainstream in the sector. **Job convergence** will see higher skill requirements of current jobs,

for example customer service agents may be required to have sales skills, more extensive product knowledge and data analytics to tailor specific products to customers.

TECHNICAL SKILLS TRENDS IN THE TELECOMMUNICATIONS SECTOR

Cloud Computing: Jobs are on the rise because more companies are switching from server infrastructures to cloud solutions. AI and ML services are also provided by cloud platforms. The most in-demand and highest paying skills in this group are Microsoft Azure, Docker DevOps, and Kubernetes for cybersecurity.

Cybersecurity: This skill has an approximately 30% annual growth rate. Nowadays, data loss risks are highly unexpected and savage, and include hackers, data theft, swarms and viruses which has promoted high demand for skills in this area. Highest demanded skills in cybersecurity are cybersecurity analysis (threat intelligence), network security and forensic skills.

AI and ML: Knowledge of TensorFlow, Python, Java, R and Natural Language Processing tops the list of the in-demand skills. Employees who can harness the power of AI and ML technologies and tools will help your organization deliver more relevant, personalised, and innovative products and services.

Virtual and Augmented Reality: Many industries, such as entertainment, education, healthcare, manufacturing, and advertising have already adopted VR and AR technologies. So, in the next few years technicians who have these skills are sure to be in high demand. According to a report by HIRED, it is estimated that '74% of software engineers predict that we will see the full impact of VR and AR technologies in the next five years'.

Blockchain: Blockchain is much more than just cryptocurrency. It enables peer-to-peer payments, crowdfunding file storage, identity management, and digital voting. Thus, developers who understand blockchain and smart contracts, and can build decentralised applications will be in a high demand as well.

Top 5 Skills in need of developing according to Line Managers (left to right)

SKILLS NEED DEVELOPING

Top 5 skills that can be developed in the employees of the sector:

Critical Thinking

Time Management

Commitment to task

Innovation & Creativity

Active Learning

The Top 5 technical skills identified by the sector (left to right)

TOP 5 TECHNICAL SKILLS IN THE SECTOR

The most important skills for the sector in the next 5 years are:

Data Analysis - Finding and Using — Cloud Computing — **Project Management** — **Cybersecurity** — Process Optimization

Data Scientist

"If someone doesn't have critical thinking then teaching them data analytics won't help"
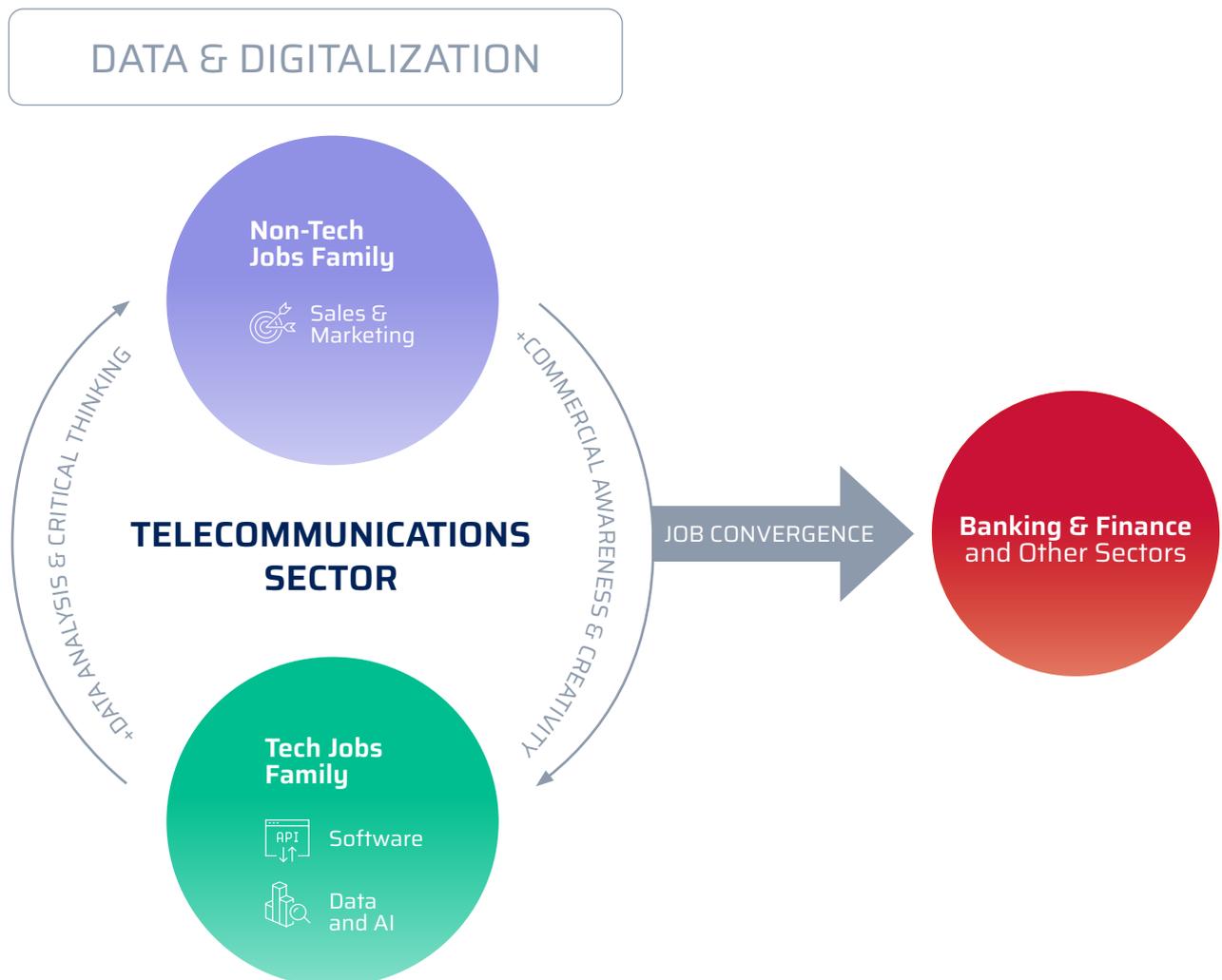
As the sector is changing, so are the skills needed. The number one key change is that data analytics is now a core skill required. In addition, there is growing demand for highly techncial data science skills.

For the use of data to be effective in the organizations, there is the need for high levels of core skills such as critical thinnking and commercial awareness to apply the findings from data to add value in a commercial context.

The increasing use

of data and rapid digitalization are two overarching trends affecting all Job Families (and consequently all job roles) in the Telecommunications sector. The sector is also expanding into adjacent sectors, including finance and healthcare as it looks for new growth areas. The most common prior work experience for existing employees was in ICT, Financial Services and Retail.

DATA & DIGITALIZATION

Non-Tech Jobs Family

Sales & Marketing

+DATA ANALYSIS & CRITICAL THINKING

+COMMERCIAL AWARENESS & CREATIVITY

TELECOMMUNICATIONS SECTOR

JOB CONVERGENCE

Banking & Finance and Other Sectors

Tech Jobs Family

Software

Data and AI

FACTS
FROM THE SURVEY

41% of Line Managers indicated that their employees 'seldom or 'sometimes' see the bigger picture when making decisions indicating a potential weakness in strategic thinking.

24% of employees demonstrate a strong ability to review and analyse information and apply this knowledge to their job role and tasks as required.

38% of employees demonstrate limited tendency to apply creative solution to problems.

86% of employees conduct themselves with integrity in the workplace.

38% of employees rarely show an interest in learning about emerging technologies.

60% of Line Managers clarified that employees look for ways to improve efficiencies in their job .

48% of Line Managers said employees do not demonstrate an understanding of commercial principles on the job.

81% of employees 'always' or 'often' demonstrate collaboration in the workplace.

Line Manager

"Problem solving skills are needed. Challenges will arise in every job you have".
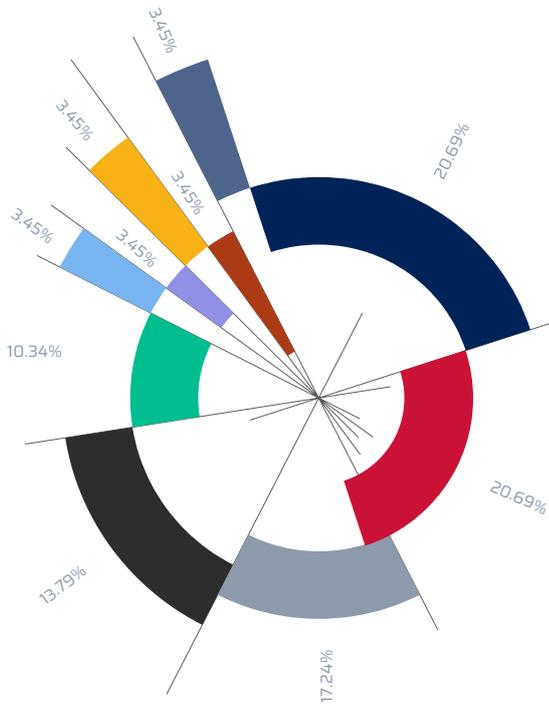
Line Manager

"Telecommunications are at the forefront of digital disruption. The focus should be on understanding the impact of new technology and using that knowledge to develop new business models and become more competitive".
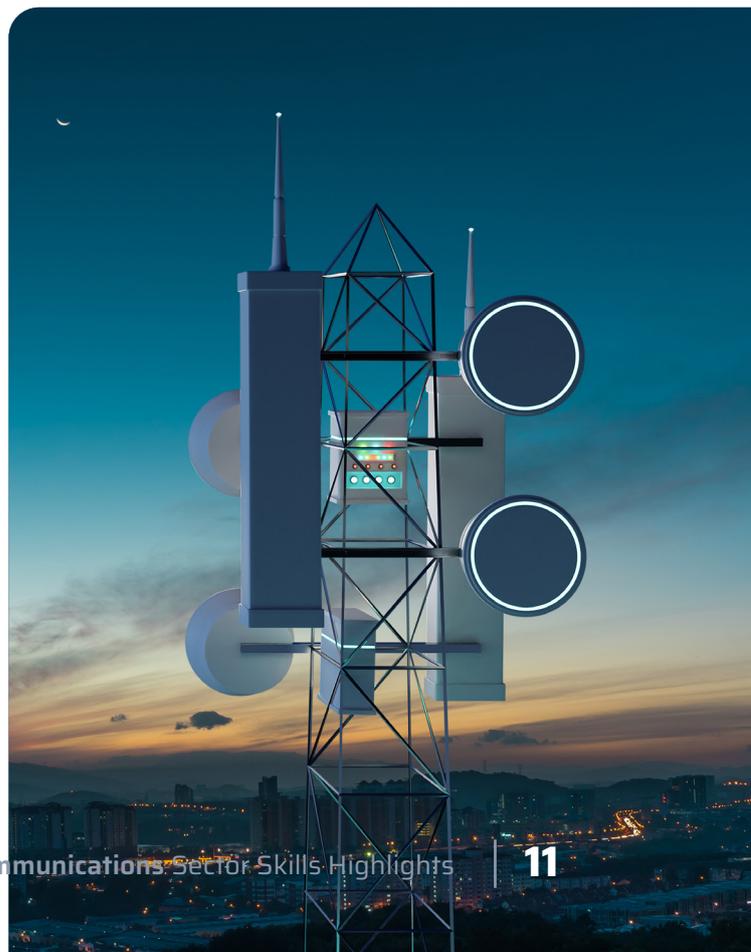
Reasons for Recruitment

Factors behind recruitment into new positions in the sector?

3.45%

3.45%

3.45%

3.45%

3.45%

10.34%

13.79%

17.24%

20.69%

20.69%

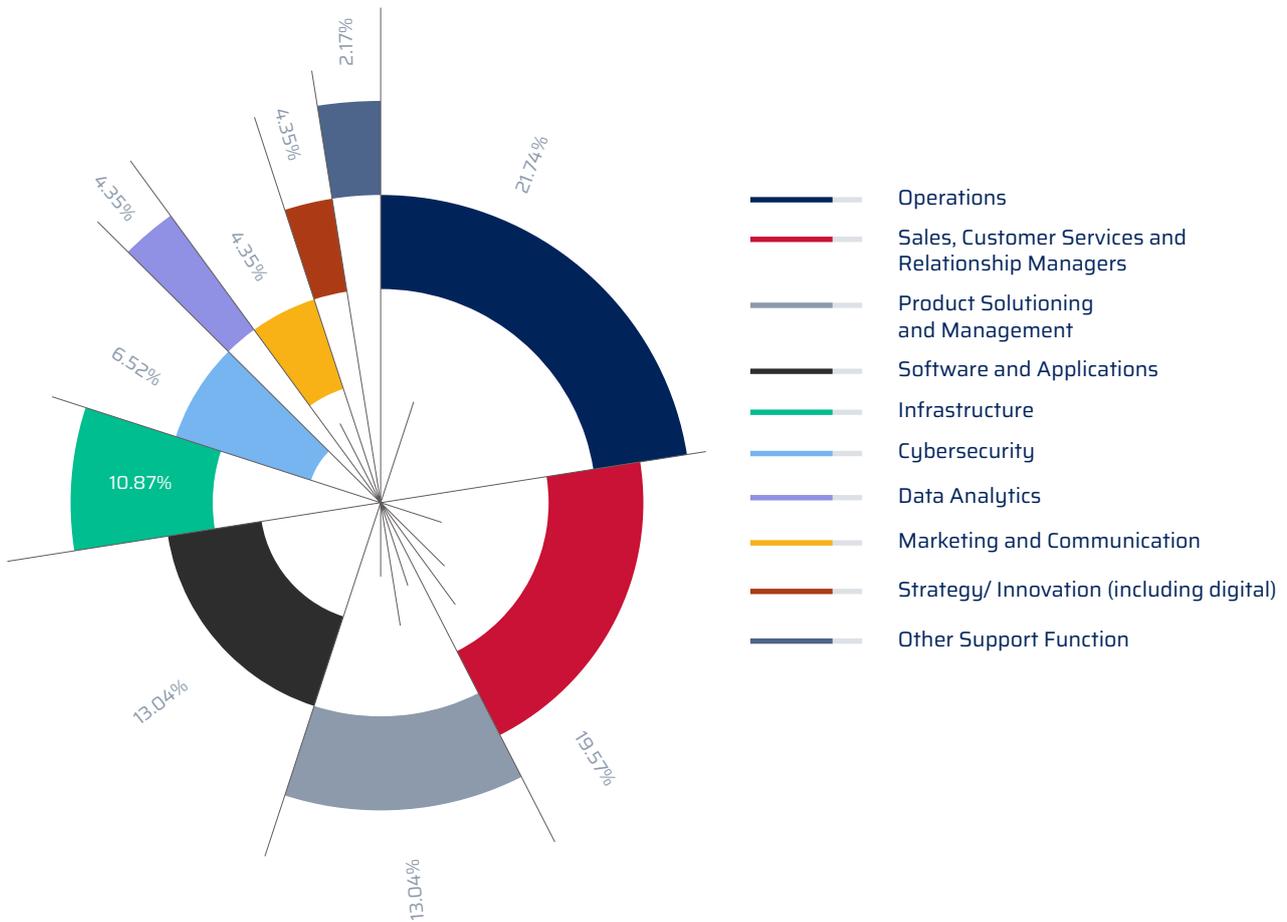|	
▬	Implementation of digital strategy
▬	Launch of new products
▬	Increase in customers demand for products and/ or services
▬	New branch or department
▬	Process automation
▬	Expansion to other countries/ regions
▬	Few staff have resigned.
▬	Its Neither increased or decreased. Business has not stop…
▬	New company
▬	Relocation of activities from other countries/ regions

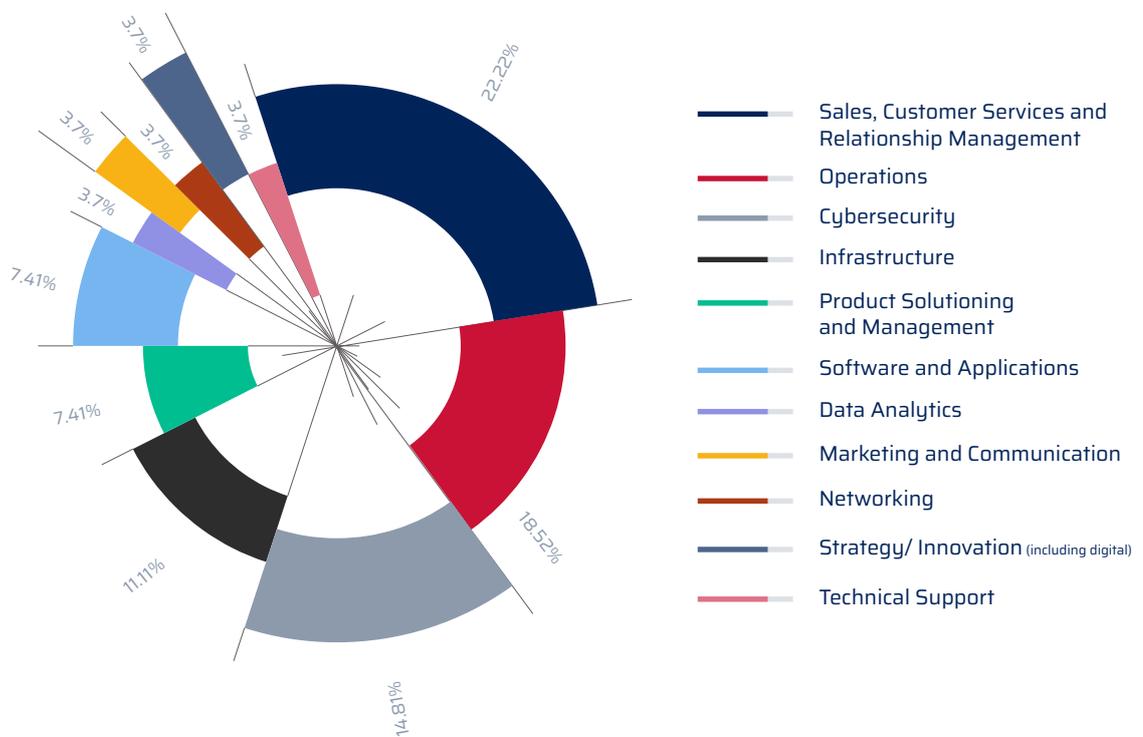**Business Areas with the highest recruitment**

Areas with most recruitment

2.17%
4.35%
4.35%
4.35%
21.74%
6.52%
10.87%
13.04%
13.04%
19.57%

Operations

Sales, Customer Services and Relationship Managers

Product Solutioning and Management

Software and Applications

Infrastructure

Cybersecurity

Data Analytics

Marketing and Communication

Strategy/ Innovation (including digital)

Other Support Function

Hard to fill vacancies can be an indicator of a skills gap in an economy. The following are the areas of the business the HR in the sector experienced difficulty in filling with suitable candidates.

Business Areas with the most hard to fill vacancies

Hard to fill vacancies

- 22.22%
- 3.7%
- 3.7%
- 3.7%
- 3.7%
- 3.7%
- 3.7%
- 7.41%
- 7.41%
- 11.11%
- 14.81%
- 18.52%

Legend:
- Sales, Customer Services and Relationship Management
- Operations
- Cybersecurity
- Infrastructure
- Product Solutioning and Management
- Software and Applications
- Data Analytics
- Marketing and Communication
- Networking
- Strategy/ Innovation (including digital)
- Technical Support

EDUCATION

Over 65%

of respondents indicated that their Higher Education did not prepare them well for the workplace.

Line Manager

"We must ensure that the right fundamental skills and characteristics are developed from an early age. From school, home and then work".

Nano Learning and Micro Learning

- **58**% of employees survey respondents hadtaken some form of nano learning over the past 12 months.

- **68**% that nano learning was formally recognized by their companies. This is in contrast to HR Managers, with only 31% stating that their companies have formalized micro and nano learning strategies within their organizations.

- **9**% Of the employees who had completed nano learning, said they took this type of learning on their organizations Learning Management System (LMS) while another 49% completed theirs on LinkedIn Learning.

- **83**% confirmed that it was an effective way to learn and 77% said they have applied their learning to their job.

- Over **73**% of nano/micro learning were in technical areas such as Data Analytics, IOT, AI, Blockchain and Robotics.

The findings here indicate that nano/ micro learning has been well utilised as a development tool for upskilling in technical skills.

This indicates the potential for a more formal use of online nano/micro learning as part of formal technical learning and development on the job for the sector.

HR Manager

"We get far more data now that we use our LMS extensively".
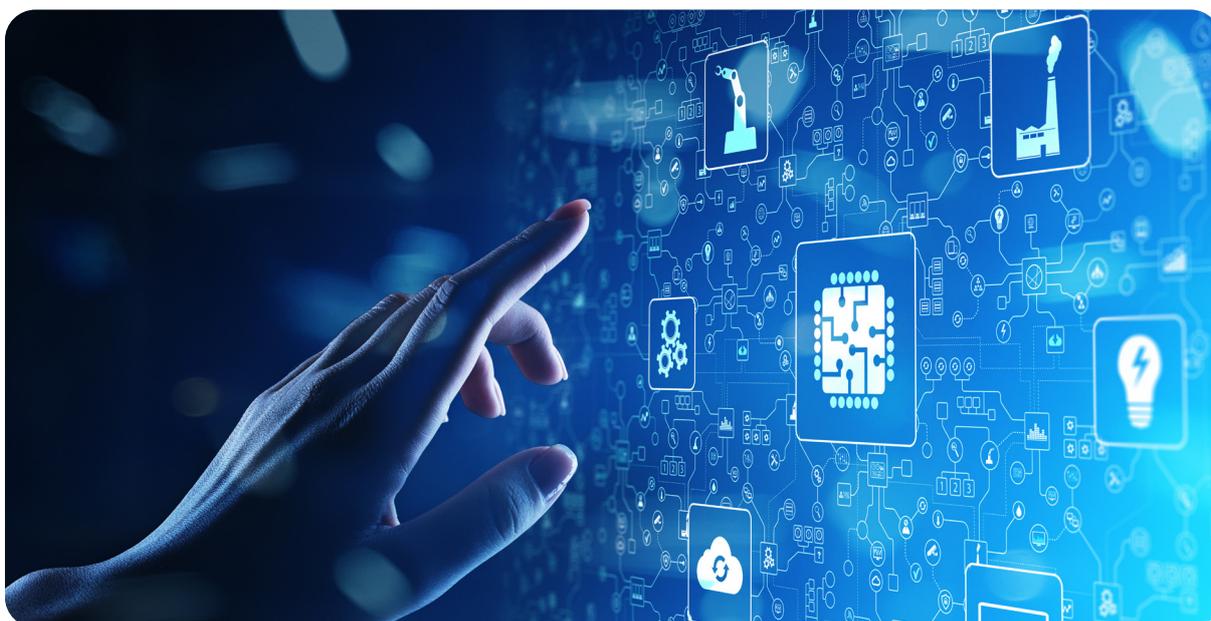
The new world of learning is in the workplace

Currently international professional certification is used as a benchmark of standards, but as Skills Bahrain works with the sector to develop National Occupational Standards (NOS), these will form the benchmark of the required skills needed for jobs in the sector.

The sector agreed core and technical standards should form the foundation of all learning, development and assessment in the sector to allow impact of skill development to be evidenced and measured.

With over 60% of those entering the sector coming directly from Higher Education, there is more that could be done to address the sector's core skills and behaviors into Higher Education programs

> The new world of learning
> 'Learning in the flow of work' is a new ideology that believes learning should be part of a broader work-based learning journey that is directly aligned to business outcomes.

The sector needs to move from a job-based approach to a skills-based approach to also facilitate the agile nature of projects in the sector as it evolves.

Skills need to be defined and the attainment of proficiency clearly outlined for upskilling and reskilling to be effective.

Training providers need to support work based learning with 'learning and assessment coaches' who go into the workplace and support the Line Managers in developing and assessing skills on the job.

Internationally, apprenticeships have been used to help align education and the skills needed in the workplace. The feasibility of all levels of apprenticeship, including degree in the Telecommunications sector needs to be explored.

> Employees stated their preferred method of training is 'on the job guidance and training such as mentoring', **meaning employees prefer more job-related training.**

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