DRIVES

Development and Research on Innovative Vocational Education Skills

Skill needs and gap

Gaps between “demand” and “offer” Outcomes

Deliverable 2.8.2

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1 LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
3D	Three-dimensional
ADAS	Advanced Driver-Assistance Systems
AI	Artificial Intelligence
AVG	Average
BASE	Big Data, ADAS and After sales, Supply chain and Sharing, Electrification
BEV	Battery Electric Vehicle
CAD	Computer-Aided Design
CEO	Chief Executive Officer
CO2	Carbon Dioxide
CVET	Continuing Vocational Education and Training
D x.y	Deliverable x.y
DoC	Driver of Change
DRIVES	Development and Research on Innovative Vocational Educational Skills
EASCY	Electrified, Autonomous, Shared, Connected and Yearly updated
EPRS	European Parliamentary Research Service
EQF	European Qualifications Framework
ESCO	European Skills, Competences, qualifications and Occupations
EU	European Commission
EV	Electric Vehicle
HEV	Hybrid Electric Vehicle
HQ	Head Quarter
HR	Human Resource
IT	Information Technology
IVET	Initial Vocational Education and Training
KPI	key Performance Indicator
NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne
OEM	Original Equipment Manufacturer

ABBREVIATION	MEANING
R&D	Research & Development
R&D&I	Research & Development & Innovation
SME	Small Medium Enterprise
TVET	Technical and Vocational Education and Training
V2X	Vehicle to Everything
VET	Vocational Education and Training
WP	Work Package

Table 1 List of Abbreviations

2 EXECUTIVE BRIEF

This report is an extract of deliverable D2.8 Skill needs and gap Report of the Development and Research on Innovative Vocational Educational Skills project (DRIVES), the Blueprint for Sectoral Cooperation on Skills in the Automotive sector.

The main Deliverable has been divided into two new outcomes:

D2.8.1 Offer Skills need: a picture of the replies coming from the "Offer" survey

D2.8.2 Gaps analysis (this report): the information collected and analysed into Deliverable 2.7 Forecasting dissemination report (result from the "Demand" survey) are compared with the result from the "Offer" survey and evaluated gaps.

The current report is an extract of the main Deliverable D2.8 Skill Needs and Gaps where all the KPIs between "Demand" and "Offer" are compared and main gaps analysed.

The coverage of the European countries during the investigation was substantially adequate even if the redemption was not considered enough and the distribution between "Demand" and "Offer" is unbalanced.

For each Driver of Change, respondents were asked to comment on two key issues:

- **Importance**: The relative importance of each Driver of Change for the respondents' particular business using a ranking from 0 to 5
- **Urgency**: Respondents were asked to identify the relative importance of the impact of each specific Driver of Change over the periods up to 2020, 2025 and 2030

The relative importance attached to different Drivers of Change by respondents to both surveys (Demand & Offer) were quite similar with „STRUCTURAL CHANGES" identified as most important driver; in term of urgency, again "STRUCTURAL CHANGE" has been identified by both as very urgent (by 2020) even if, generally speaking, the real main difference between Demand and Offer is that respondents of the Offer survey are more likely to cite a longer term urgency (by 2025) for all specific Drivers of Change.

Comparing TOP 10 Demand (of skills) with the Offer, only 3 skills are matched; it is necessary to increase the range from TOP 10 to TOP 20 into the Offer list to find at least 5 similarity. The necessity of interaction regarding this topic is essential to build a common strategy for the future and this is underlined also in the best provision mechanism approach: both „Demand" and „Offer" replies highlight the importance of "TRAINING ON THE JOB" as the most effective VET approach, where all parties are involved together to build a common strategy and the same outcomes appers from another

section related to the best recruitment method where respondents from both the Offer and Demand surveys identify“COOPERATION BETWEEN THE INDUSTRY AND EDUCATION” as the most important method.

Regardign the Recognition and qualification frameworks issue, “ECQA” is the most frequently recognised by providers (respondents to the Offer survey) but the least recognised by respondents to the Demand survey. On the other hand, “VDA-QMC” is widely accepted (and “IATF”) by Demand survey respondents but recognition is negligible in relation to the Offer survey respondents. Also, of particular note is the importance attached to “NATIONAL” standards by VET stakeholders, ranked 3rd and it will be necessary to investigate if “national” means <<only valid / recognised in a specific country>>.

The information has been organised according to:

Chapter 3 “KPI INTRODUCTION” introduces the list of indicators used to analyse the outcomes of the “Offer” survey (Key Performance Indexes).

Chapter 4 “MAIN GOALS AND STRATEGY ADOPTED” outlines the overall research and intelligence work programme implemented throughout the DRIVES project, as context for consultation with VET stakeholders.

Chapter 5 “CURRENT VET IN EUROPE” offer a view of the European VET system in 7 countries, based on a desk-research activity made by DRIVES partners. This activity has been done to increase the accuracy of the Offer survey. Analysed country are:

- Czech Republic
- Germany
- Italy
- Slovakia
- Spain
- Sweden
- United Kingdom

In the same chapter is also available a brief description of the harmonisation process used to ensure clear and useable data for analysis of the Offer survey.

Chapter 6 “SURVEY AND DESK RESEARCH EXPLANATION” introduces the structure of the “offer” survey and its constituent parts.

Chapter 7 “RESULT OF THE SURVEY”, follows the structure of the survey in terms of sessions and questions and analyse the replies per KPIs and filtered by different point of view; all questions and

relevant KPIs (where possible) have been analysed by overall value and filtered by the following selected categories of stakeholder:

- VET: including VET schools, Colleges and Universities
- INSTITUTE: including Research institutes and Accreditation centres/qualification bodies
- PRIVATE: all private companies (excluding other categories above)
- UMBRELLA ORGANISATION: associations of institutions, who work together formally to coordinate activities or pool resources

All KPI are analysed and compared between Demand and Offer to evaluate the current gap.

3 KPI INTRODUCTION

The Questionnaire has been analysed with reference to a number of different KPIs as indicated in Table 2.

These are clustered into seven groups following the structure of the Questionnaire and are aligned with the KPIs used in both the "demand" survey and D2.7 Forecasting dissemination Report[1] in order to enable analysis of the differences between skills demand and skills provision serving the automotive sector. The KPIs are grouped under the following headings:

- Sample characterisation
- Drivers of Change
- Skills
- Job Roles
- VET provision mechanisms
- Recognition and qualification
- Recruitment and attractiveness

#	CATEGORY	KPI	INDICATOR TITLE	UOM
1	SAMPLE CHARACTERISATION	1.1	N° OF RESPONDENTS	N°
1	SAMPLE CHARACTERISATION	1.2	CATEGORY	%
1	SAMPLE CHARACTERISATION	1.3	CATEGORY BY TYPE	%
1	SAMPLE CHARACTERISATION	1.4	RESPONDENTS PER COUNTRY	%
1	SAMPLE CHARACTERISATION	1.5	RESPONDENTS JOB TITLE	%
1	SAMPLE CHARACTERISATION	1.6	COURSES PROVIDED	%
1	SAMPLE CHARACTERISATION	1.7	LANGUAGES PROVIDED	%
1	SAMPLE CHARACTERISATION	1.8	LEARNERS ATTEND	%
1	SAMPLE CHARACTERISATION	1.9	EQF OFFERED	%
2	DRIVERS OF CHANGE	2.1	IMPORTANCE OF DRIVERS OF CHANGE GROUPS	%
2	DRIVERS OF CHANGE	2.2	URGENCY OF DRIVERS OF CHANGE GROUPS	%
2	DRIVERS OF CHANGE	2.3	DoC NEW TECHNOLOGIES AND BUSINESS MODELS: IMPORTANCE	%
2	DRIVERS OF CHANGE	2.4	DoC NEW TECHNOLOGIES AND BUSINESS MODELS: URGENCY	%
2	DRIVERS OF CHANGE	2.5	DoC CLIMAT GOALS, ENVIRONNEMENTAL […]: IMPORTANCE	%
2	DRIVERS OF CHANGE	2.6	DoC CLIMATE GOALS, ENVIRONMENTAL […]: URGENCY	%
2	DRIVERS OF CHANGE	2.7	DoC SOCIETAL CHANGES AND […]: IMPORTANCE	%
2	DRIVERS OF CHANGE	2.8	DoC SOCIETAL CHANGES AND […]: URGENCY	%
2	DRIVERS OF CHANGE	2.9	DoC STRUCTURAL CHANGES: IMPORTANCE	%
2	DRIVERS OF CHANGE	2.10	DoC STRUCTURAL CHANGES: URGENCY	%

[1] *Deliverable D2.7 Forecasting dissemination Report, DRIVES Project, www.project-drives.eu*

#	CATEGORY	KPI	INDICATOR TITLE	UOM
2	DRIVERS OF CHANGE	2.11	DoC GLOBALISATION AND RISE OF NEW PLAYERS: IMPORTANCE	%
2	DRIVERS OF CHANGE	2.12	DoC GLOBALISATION AND RISE OF NEW PLAYERS: URGENCY	%
2	DRIVERS OF CHANGE	2.13	DRIVERS OF CHANGE PRIORITY INDEX	N°
3	SKILLS	3.1	SKILL INDEX	N°
3	SKILLS	3.2	SKILL MATRIX EQF / GRADUATES	MATRIX
4	JOB ROLES	4.1	JOB ROLE INDEX	N°
5	VET PROVISION MECHANISMS	5.1	TRAINING APPROACH	%
5	VET PROVISION MECHANISMS	5.6	APPRENTICESHIP EQF LEVELS	%
6	RECOGNITION AND QUALIFICATION	6.1	SKILLS RECOGNITION AND QUALIFICATION FRAMEWORKS	%
7	RECRUITMENT AND ATTRACTIVENESS	7.3	METHODS	%

Table 2: KPI groups

All the questions and relative KPIs (where available) have been analysed by overall value and filtered by the following selected categories of stakeholders:

- VET: including VET schools, Colleges and Universities
- INSTITUTE: including Research institute and Accreditation centre/qualification body
- PRIVATE: all private companies (excluding other categories above)
- UMBRELLA ORGANISATION: association of institutions, who work together formally to coordinate activities or pool resources

The result of this activity is shown in Table 3.

#	CATEGORY	KPI	INDICATOR TITLE	OVER ALL	VET	INSTITUTE	PRIVATE	UMBRELLA ORGANISATION
1	SAMPLE CHARACTERISATION	1.1	N° OF RESPONDENTS	X				
1	SAMPLE CHARACTERISATION	1.2	CATEGORY	X				
1	SAMPLE CHARACTERISATION	1.3	TYPE OF ORGANISATION	X				
1	SAMPLE CHARACTERISATION	1.4	RESPONDENTS PER COUNTRY	X	X	X	X	X
1	SAMPLE CHARACTERISATION	1.5	RESPONDENTS JOB TITLE	X				
1	SAMPLE CHARACTERISATION	1.6	COURSES PROVIDED	X				

#	CATEGORY	KPI	INDICATOR TITLE	OVER ALL	VET	INSTITUTE	PRIVATE	UMBRELLA ORGANISATION
1	SAMPLE CHARACTERISATION	1.7	LANGUAGES PROVIDED	X				
1	SAMPLE CHARACTERISATION	1.8	LEARNERS ATTEND	X				
1	SAMPLE CHARACTERISATION	1.9	EQF OFFERED	X				
2	DRIVERS OF CHANGE	2.1	IMPORTANCE OF DRIVERS OF CHANGE GROUPS	X	X	X	X	X
2	DRIVERS OF CHANGE	2.2	URGENCY OF DRIVERS OF CHANGE GROUPS	X	X	X	X	X
2	DRIVERS OF CHANGE	2.3	DoC NEW TECHNOLOGIES AND BUSINESS MODELS: IMPORTANCE	X	X	X	X	X
2	DRIVERS OF CHANGE	2.4	DoC NEW TECHNOLOGIES AND BUSINESS MODELS: URGENCY	X	X	X	X	X
2	DRIVERS OF CHANGE	2.5	DoC CLIMATE GOALS, ENVIRONMENTAL […]: IMPORTANCE	X	X	X	X	X
2	DRIVERS OF CHANGE	2.6	DoC CLIMATE GOALS, ENVIRONMENTAL […]: URGENCY	X	X	X	X	X
2	DRIVERS OF CHANGE	2.7	DoC SOCIETAL CHANGES AND […]: IMPORTANCE	X	X	X	X	X
2	DRIVERS OF CHANGE	2.8	DoC SOCIETAL CHANGES AND […]: URGENCY	X	X	X	X	X
2	DRIVERS OF CHANGE	2.9	DoC STRUCTURAL CHANGES: IMPORTANCE	X	X	X	X	X
2	DRIVERS OF CHANGE	2.10	DoC STRUCTURAL CHANGES: URGENCY	X	X	X	X	X
2	DRIVERS OF CHANGE	2.11	DoC GLOBALISATION AND RISE OF NEW PLAYERS: IMPORTANCE	X	X	X	X	X
2	DRIVERS OF CHANGE	2.12	DoC GLOBALISATION AND RISE OF NEW PLAYERS: URGENCY	X	X	X	X	X
2	DRIVERS OF CHANGE	2.13	DRIVERS OF CHANGE PRIORITY INDEX	X	X	X	X	X
3	SKILLS	3.1	SKILL OFFER INDEX	X	X	X	X	X
3	SKILLS	3.2	SKILL MATRIX EQF / GRADUATES	X	X	X	X	X
5	TRAINING PROVISION MECHANISMS	5.1	TRAINING APPROACH	X	X	X	X	X
5	VET PROVISION MECHANISMS	5.6	APPRENTICESHIP EQF LEVELS	X	X	X	X	X

#	CATEGORY	KPI	INDICATOR TITLE	OVER ALL	VET	INSTITUTE	PRIVATE	UMBRELLA ORGANISATION
7	RECOGNITION AND QUALIFICATION	6.1	SKILLS RECOGNITION AND QUALIFICATION FRAMEWORKS	X	X	X	X	X
8	RECRUITMENT AND ATTRACTIVENESS	7.3	METHODS	X	X	X	X	X

Table 3: Detailed KPI filters

4 MAIN GOALS AND STRATEGY ADOPTED

The Main Goals and Strategy section outlines the overall research and intelligence work programme adopted throughout the DRIVES project, as context for consultation with VET stakeholders.

Following the former survey focusing on industry demand, the DRIVES project implemented a second survey in the second semester of 2019, in order to gather relevant intelligence and underpin the development of a strategic roadmap for the sector.

The main aim of the this "offer" survey is to connect with the DRIVES project partners in order to gather crucial input for the automotive sector's VET offer program and to focus on the following tasks:

- To map and assess the current VET offer based on the current demand of the European automotive sector

- In the context of an understanding of current demand requirements, identify gaps in and improvements required to curricula and programmes in order to meet industry requirements

- To identify and recommend potential improvements to existing VET curricula and programmes, as well as propose and endorse new training programmes that should be developed in the future

- To develop and test a universal methodology for assessment of future developments in provision

- To closely monitor and report on demand developments in the industry on an annual basis that imply the need for enhanced provision

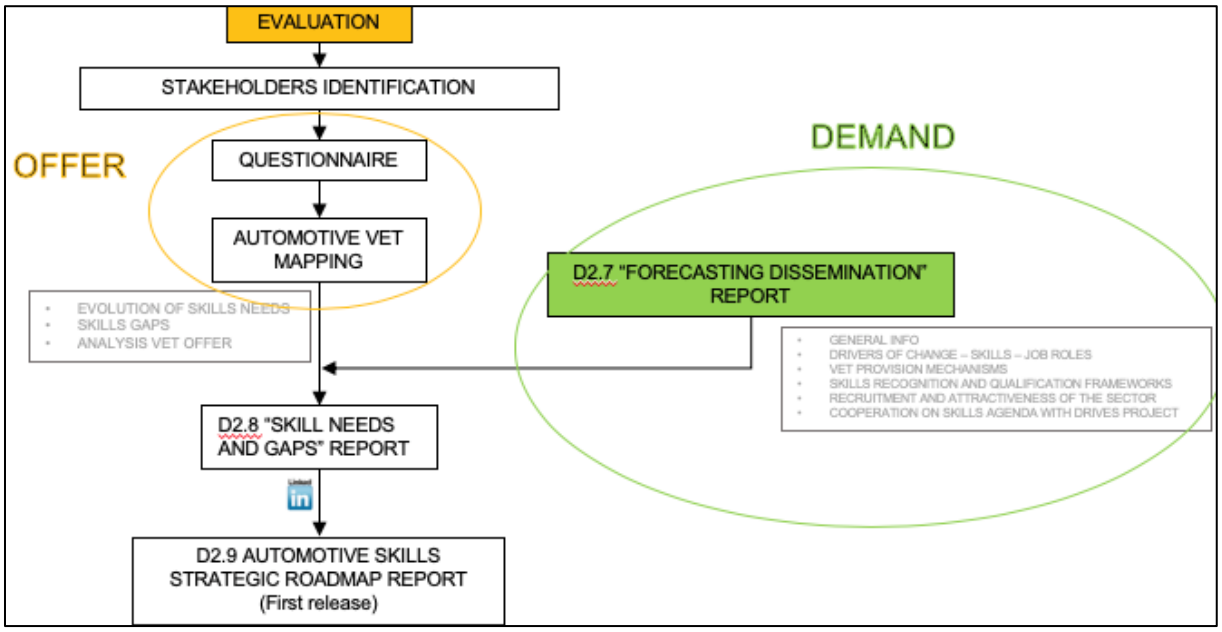


Figure 1: DRIVES project Work Package 2 Demand and Offer surveys structure and linkages

Figure 1 sets out a structured summary of key actions and activities undertaken through the "demand" and "offer" surveys and respective linkages.

The intelligence that has been assembled from external stakeholders as part of the former demand survey of the automotive sector provides an essential basis for determining skills and proficiencies critical for progress and development in the sector.

The second 'offer' survey has built on the results of the former 'demand' survey in order to assess the adequacy of the current VET offer and identify amendments to existing or new training programmes in order to meet current and future demand requirements.

In order to stimulate and encourage a high response rate for the survey, it was designed taking into account the following considerations:

- INTERACTIVITY: The survey's sleek and modern design has been constructed in an interactive manner to allow for clear understanding and ease of completion by all participating third-parties of the DRIVES project

- ONLINE ACCESSIBILITY: The survey has been electronically connected to the network, to allow for flexibility in its completion though the most popular website browsers currently operating in the European area.
- PAUSABILITY: Due to the length of the survey, estimated to require approximately 20 to 25 minutes for completion, a function allowing the respondent to skip sections has been included, together with the option of saving all input for completion upon a later occasion.
- CLEAR GUIDELINES: In order to facilitate a better understanding of the survey, ensure accuracy from respondents and to enable further analysis, a dedicated webinar was conducted. This allowed direct communication with participating third parties and provided the opportunity for a detailed presentation and commentary to ensure accurate input throughout all sections of the survey.

In practice, the following stakeholder groups were encouraged to participate in the DRIVES project's "offer" questionnaire and report on provision, ranging from EQF3 to EQF8 levels, as follows:

- VET schools
- Colleges
- Universities
- Research institutes as well as research centres
- Accreditation, certification or qualification bodies
- Private companies (excluding other categories above) and involved into EQF3 to EQF8 "activities"
- Umbrella organisations

The comprehensive list of stakeholders targeted in relation to the "demand" survey, together with the VET "offer" survey is outlined in the figure 2 below.

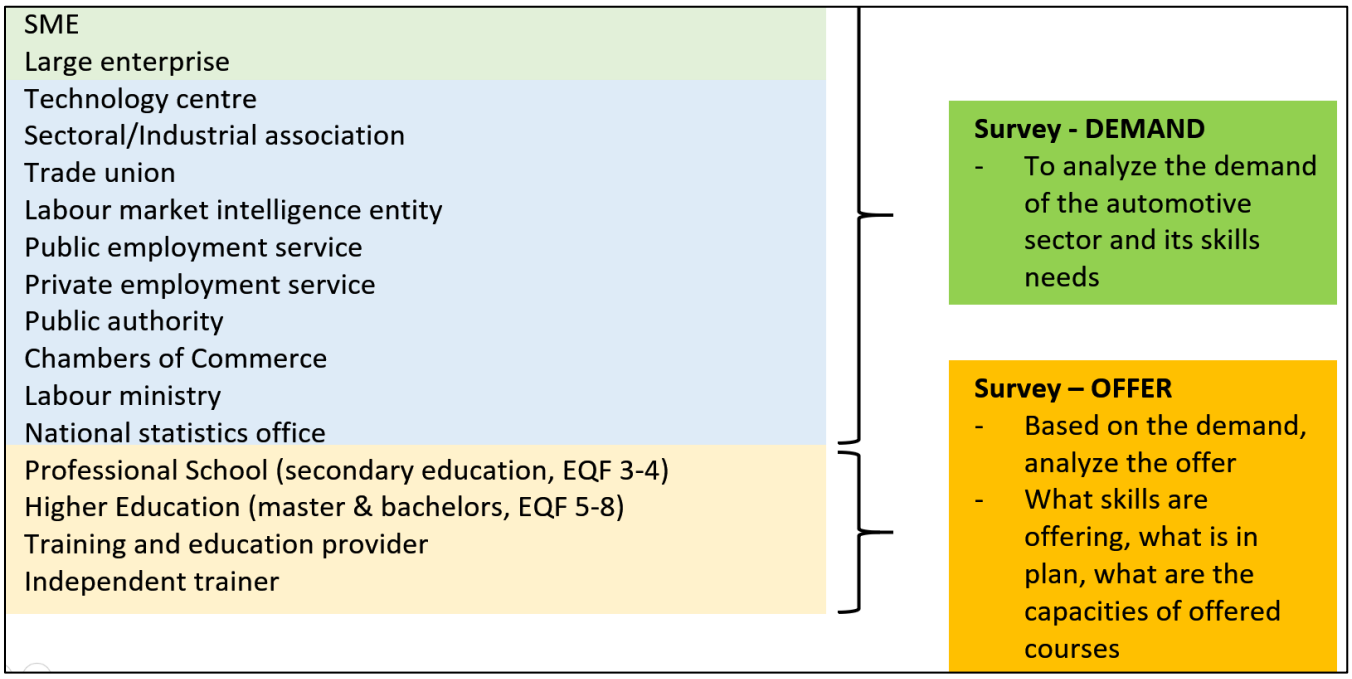


Figure 2 List of stakeholders engaged in the Work Package 2 questionnaires

5 ANALYSIS OF THE DIFFERENCE

Where possible each KPI into the “offer” questionnaire has been compared with the relevant KPI in the “demand” questionnaire set out in the box <<Difference between demand and offer>>. The responses and detailed analysis from the perspective of “demand” are available in the Deliverable 2.7 “Forecasting dissemination” report[2].

All questions and relevant KPIs (where possible) have been analysed by overall value and filtered by the following selected categories of stakeholder:

- VET: including VET schools, Colleges and Universities
- INSTITUTE: including Research institutes and Accreditation centres/qualification bodies
- PRIVATE: all private companies (excluding other categories above)
- UMBRELLA ORGANISATION: associations of institutions, who work together formally to coordinate activities or pool resources

5.1 SAMPLE CHARACTERISATION: DIFFERENCE BETWEEN DEMAND AND OFFER

The coverage of the European countries during the investigation was substantially adequate even if the redemption was not considered enough. As shown in Figure 3, some countries responded more actively than others and the distribution between "Demand" and "Offer" is unbalanced. In the next project activities, a strong involvement and dissemination actions must be put in place to allow greater redemption and uniformity of responses between countries for the stakeholders of the "Demand" and the "Offer".

[2] https://www.project-drives.eu/en/publications

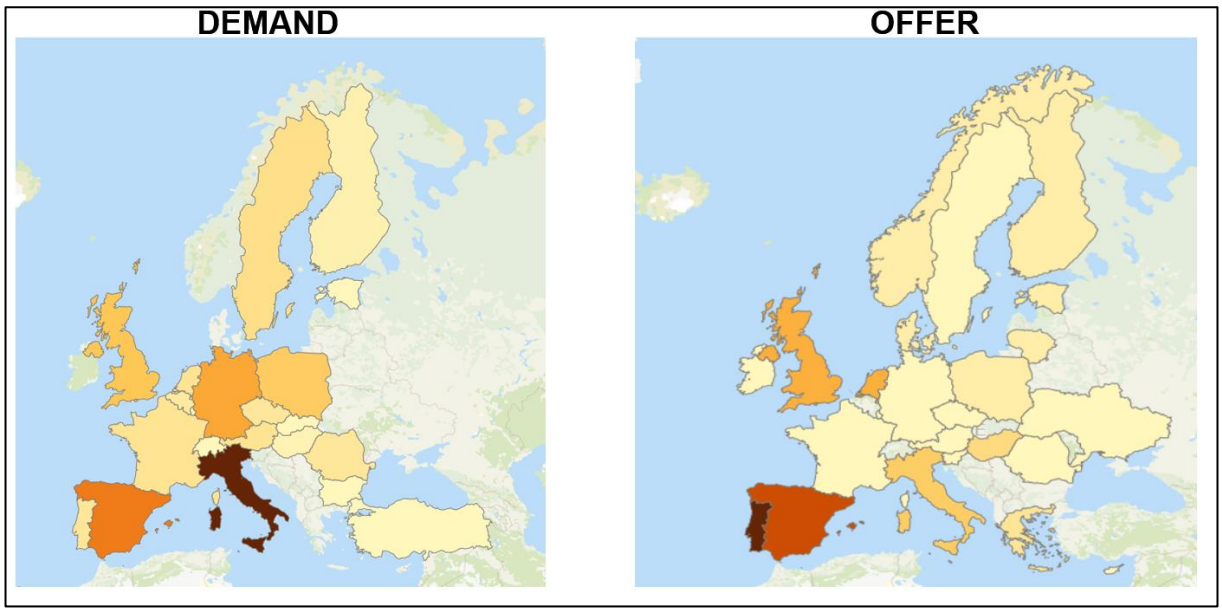


Figure 3: Geographical distribution in EU between engaged stakeholders into the 2 surveys

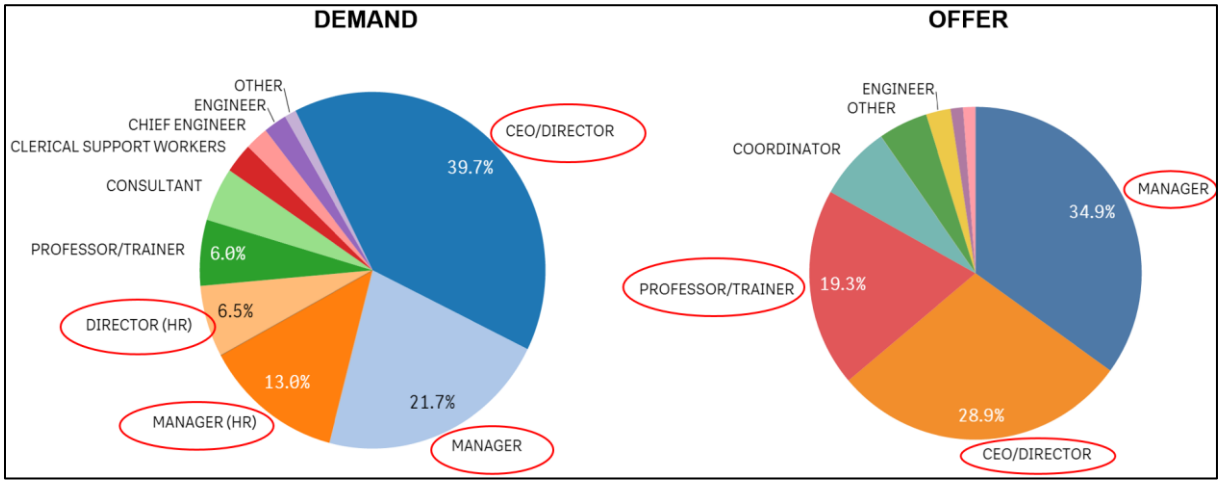


Figure 4: stakeholders job roles

In Figure 4 is possible to see that the main decision maker in both Demand and Offer survey are predominant in replies. In further stakeholders interactions it is important to maintain an high percentage of respondents according to this picture.

5.2 DRIVERS OF CHANGE: DIFFERENCE BETWEEN DEMAND AND OFFER

For each Driver of Change, respondents were asked to comment on two key issues:

- **Importance**: The relative importance of each Driver of Change for the respondents' particular business using a ranking from 0 to 5

- 0 = not applicable
- 1 = not important
- 2 = slightly important
- 3 = moderately Important
- 4 = important
- 5 = very important

- **Urgency**: Respondents were asked to identify the relative importance of the impact of each specific Driver of Change over the periods up to 2020, 2025 and 2030
  - by 2020: 5 = very urgent
  - by 2025, 3 = urgent
  - by 2030 and later, 1 = not urgent

5.2.1 DIFFERENCE BETWEEN DEMAND AND OFFER (IMPORTANCE)

To map the gap the analysis is presented with a comparison of the main view of the five macro Drivers of Change with reference to the IMPORTANCE and URGENCY, using also the PRIORITY INDEX[3]

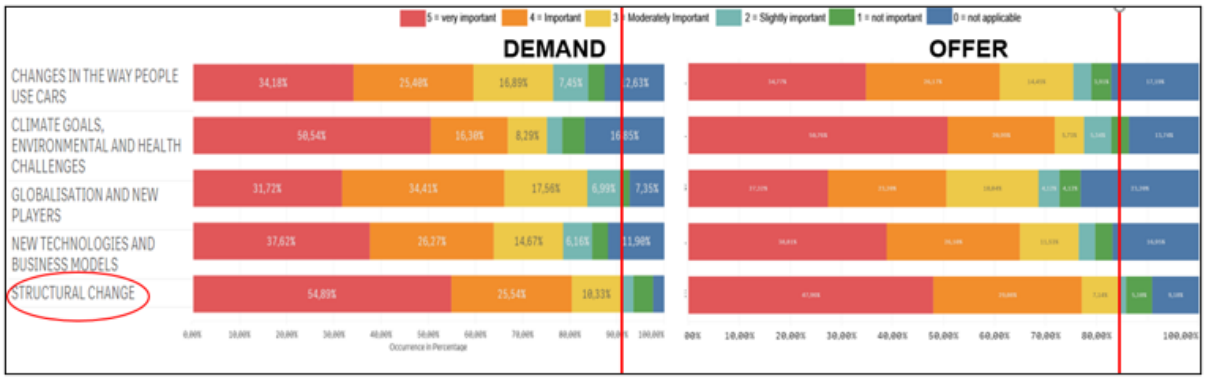


Figure 5: DoC IMPORTANCE comparison between the 2 surveys

The relative importance attached to different Drivers of Change by respondents to both surveys (demand & offer) were quite similar in many respects in Figure 5. However, "STRUCTURAL CHANGES" (55% citing this as very important, with "ACQUISITION OF NEW SKILLS" and "CONTINUOUS TRAINING" as most important drivers) was ranked first in the demand survey based on the overall sample, while

[3] *The DoC PRIORITY INDEX is stated as:* ***Priority*** *(1 to 5)* ***x Timeframe*** *(2020=5, 2025=3, 2030 and further=1). More details are available into DRIVES Deliverable D2.8*

with respect to overall responses to the offer survey "CLIMATE GOALS, ENVIRONMENTAL AND HEALTH CHALLENGES" (51%) was ranked first on this basis. Comparison of the two sets of responses with respect to "STRUCTURAL CHANGE" (restructuring, acquisition of new skills, continuous training) points to a difference of 7% between overall demand and offer survey responses identified as very important.

5.2.2 DIFFERENCE BETWEEN DEMAND AND OFFER (URGENCY)

Figure 6: DoC URGENCY comparison between the 2 surveys

Even if the ranking between Demand and Offer is similar in terms of position in Figure 6, with "STRUCTURAL CHANGE" identified by both as very urgent (by 2020), the real main difference between Demand and Offer is that respondents of the Offer survey are more likely to cite a longer term urgency (by 2025) for all specific Drivers of Change.

5.2.3 NEW TECHNOLOGIES AND BUSINESS MODELS (IMPORTANCE): DIFFERENCE BETWEEN DEMAND AND OFFER

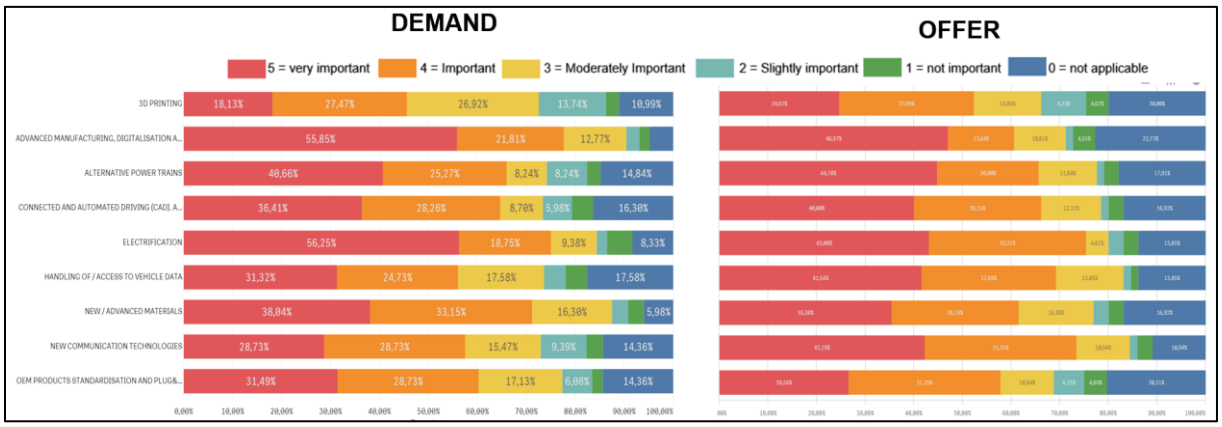


Figure 7: NEW TECHNOLOGIES AND BUSINESS MODELS - IMPORTANCE - comparison between the 2 surveys

In the Demand analysis "ADVANCED MANUFACTURING, DIGITALISATION AND ROBOTIZATION OF THE MANUFACTURING PROCESS", "ELECTRIFICATION" and "NEW ADVANCED MATERIALS" have been ranked as the TOP3 in relation to importance (Combining scores 4 and 5). This compares with "ELECTRIFICATION", "NEW COMMUNICATION TECHNOLOGIES", and "HANDLING OF / ACCESS TO VEHICLE DATA" from the perspective of the offer survey respondents , with "NEW ADVANCED MATERIALS" ranked as the third lowest and "3D PRINTING" as the lowest importance on this basis. The analysis points to a convergence of priorities in relation to "ELECTRIFICATION" in terms of perspectives from both Demand and the provision Offer, and "ADVANCED MANUFACTURING, DIGITALISATION AND ROBOTIZATION OF THE MANUFACTURING PROCESS" could be supported; while the importance attached to "NEW ADVANCED MATERIALS" and "3D PRINTING" from an 'Offer' perspective is currently low. Although, with respect to the offer survey, different stakeholders attached somewhat different levels of importance to each driver of change, nevertheless, a clear trend highlighting the importance of ICT skills is evident.

5.2.4 NEW TECHNOLOGIES AND BUSINESS MODELS (URGENCY): DIFFERENCE BETWEEN DEMAND AND OFFER

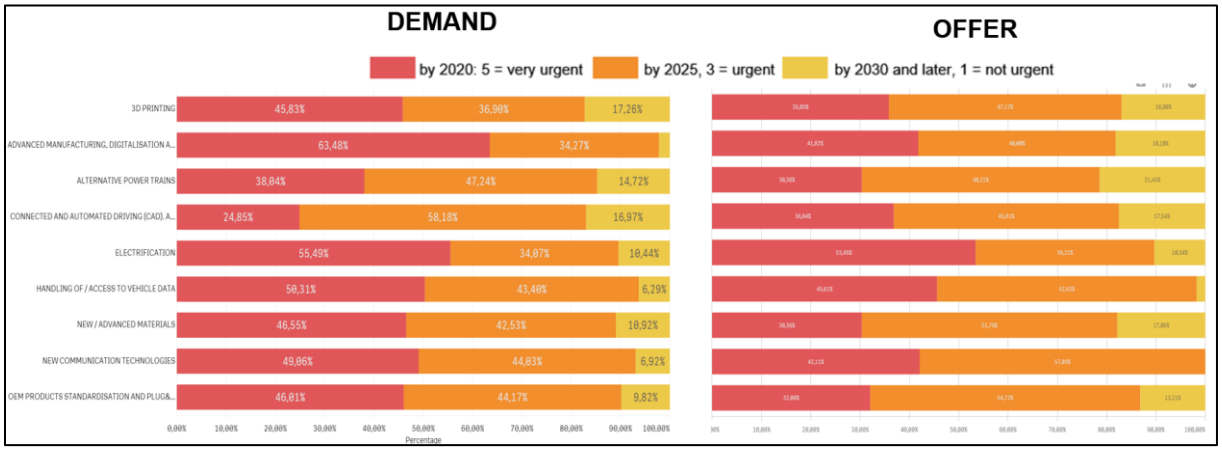


Figure 8: NEW TECHNOLOGIES AND BUSINESS MODELS - URGENCY - comparison between the 2 surveys

From a Demand perspective "ADVANCED MANUFACTURING, DIGITALISATION AND ROBOTIZATION OF THE MANUFACTURING PROCESS", "HANDLING OF / ACCESS TO VEHICLE DATA" and "NEW COMMUNICATION TECHNOLOGIES" are the TOP3 ranked drivers in relation to urgency. This compares with the offer perspective where "NEW COMMUNICATION TECHNOLOGIES", "HANDLING OF / ACCESS TO VEHICLE DATA" and "ELECTRIFICATION" are ranked as the TOP3 with "ADVANCED MANUFACTURING, DIGITALISATION AND ROBOTIZATION OF THE MANUFACTURING PROCESS" ranked as last but one important in terms of levels of urgency. No significant differences in these patterns are

evident when the scores for 'very urgent' (score of 5) and 'urgent' (score of 4) are combined. Tackling the impacts of all Drivers of Change have been identified as urgent over the next 5 years by both the Demand and Offer surveys, with only priorities on how to tackle these impacts differing.

5.2.5 CLIMATE GOALS, ENVIRONMENTAL AND HEALTH CHALLENGES (IMPORTANCE): DIFFERENCE BETWEEN DEMAND AND OFFER

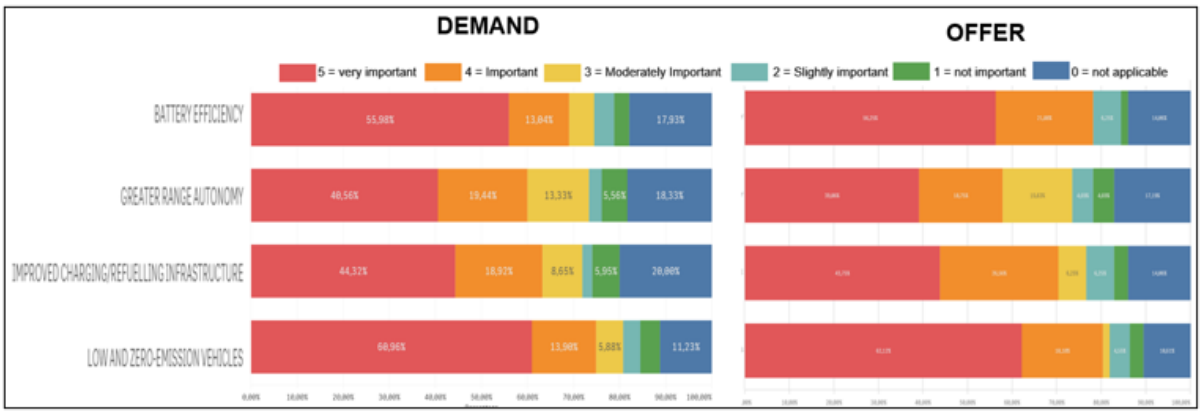


Figure 9: CLIMATE GOALS, ENVIRONMENTAL AND HEALTH CHALLENGES – IMPORTANCE - comparison between the 2 surveys

There are very slight differences in response patterns when the demand and offer surveys are compared. Almost the same percentages of responses for each Driver of Change are evident, with the biggest difference being in relation to "BATTERY EFFICIENCY", which is considered slightly more important from an offer perspective, but only if scores of 3 and above are taken into account.

5.2.6 CLIMATE GOALS, ENVIRONMENTAL AND HEALTH CHALLENGES (URGENCY): DIFFERENCE BETWEEN DEMAND AND OFFER

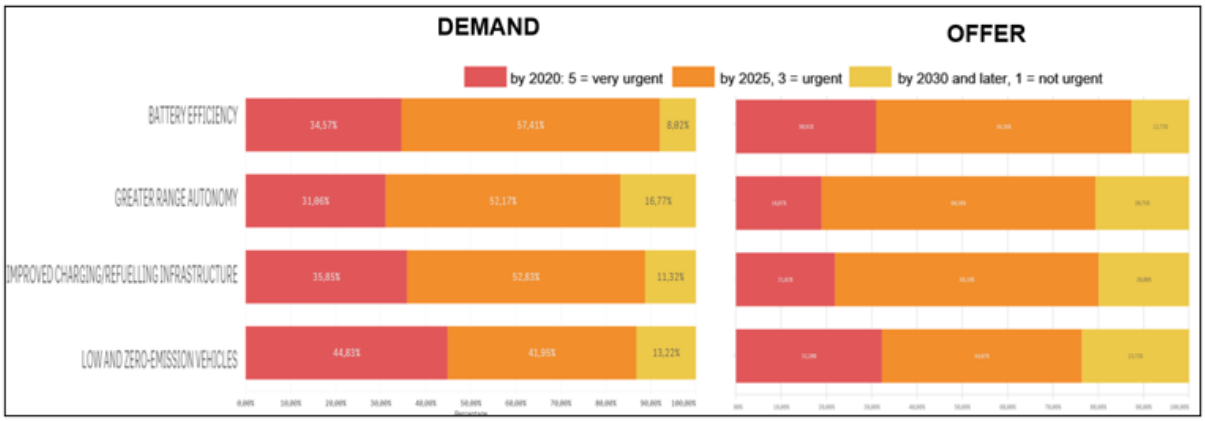


Figure 10: CLIMATE GOALS, ENVIRONMENTAL AND HEALTH CHALLENGES - URGENCY - comparison between the 2 surveys

Although from both a Demand and Offer perspective, most Drivers have a predominant focus on a mid-term urgency time horizon (by 2025), from a demand perspective a short-term time horizon (very urgent) is more likely to be assigned in the case of all the Drivers, with a higher likelihood of a longer term time horizon in terms of urgency being assigned from an offer perspective. In most of cases, a difference of 10 percentage points between the urgency score from a Demand and Offer perspective is evident. This is probably linked to a greater concern from a Demand perspective of environmental issues and less familiarity with the technical, industrial and economic feasibility of tackling the impact of each Driver of Change.

5.2.7 SOCIETAL CHANGES AND CHANGE IN THE WAY THAT CONSUMER ACCESS, PURCHASE AND USE THE CARS (IMPORTANCE): DIFFERENCE BETWEEN DEMAND AND OFFER

Figure 11: SOCIETAL CHANGES AND CHANGE IN THE WAY THAT CONSUMER ACCESS, PURCHASE AND USE THE CARS - IMPORTANCE - comparison between the 2 surveys

Comparing the importance given to the different Drivers of Change for "SOCIETAL CHANGES AND CHANGE IN THE WAY THAT CONSUMER ACCESS, PURCHASE AND USE THE CARS" from both a Demand and Offer perspective, the following can be noted: "CYBERSECURITY" is considered in general slightly more important from an offer perspective (51% consider this very important) than a Demand perspective (49%). The difference in the perception of importance is slightly larger when those considering this Driver at least moderately important are analysed (76% from a Demand perspective and 79% from an Offer perspective). The opposite is true for "DATA ACCESS", with 32% of demand side respondents indicating this Driver of Change as very important, whilst this was the case for only 30% from the Offer perspective. When looking at the Driver of Change considered as at least moderately important, the biggest difference in perceptions relate to "INCREASED CONNECTIVITY / INFRASTRUCTURE (V2X)" and "MOBILITY AS A SERVICE", which are considered more important from a Demand perspective compared with respondents to the Offer survey, with a difference of 3 and 2

percentage points respectively. However, it is interesting to note that both from a Demand and Offer perspective the same level of importance (5 points) for "INCREASED CONNECTIVITY / INFRASTRUCTURE (V2X)" is evident, whilst in relation to "MOBILITY AS A SERVICE" being considered as "very important" this is more likely from the Offer rather than Demand perspective.

5.2.8 SOCIETAL CHANGES AND CHANGE IN THE WAY THAT CONSUMER ACCESS, PURCHASE AND USE THE CARS (URGENCY): DIFFERENCE BETWEEN DEMAND AND OFFER

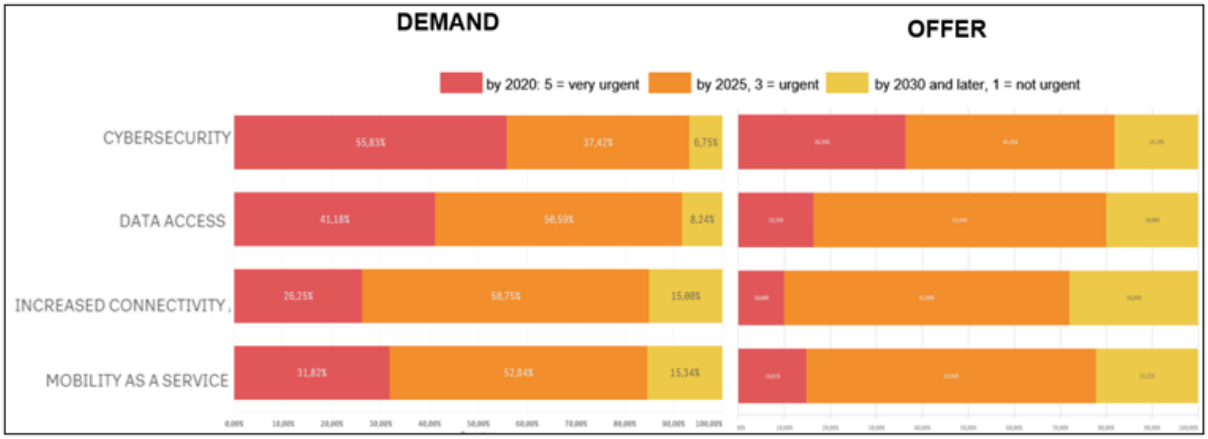


Figure 12: SOCIETAL CHANGES AND CHANGE IN THE WAY THAT CONSUMER ACCESS, PURCHASE AND USE THE CARS – URGENCY - comparison between the 2 surveys

There is a clear mismatch between perceptions of the urgency of these Drivers of Change from the perspective of Demand and the Offer. In general, the perception of urgency is much stronger from a Demand perspective than an Offer perspective for all Drivers of Change. The biggest difference (25 percentage points) relates to "DATA ACCESS", which is ranked the second most urgent issue from a Demand perspective (41% identify this as very urgent). By comparison, only 16% of respondents from the Offer survey considered this very urgent. "CYBERSECURITY" is the most urgent issue from both a Demand and Offer perspective. However, this is much more likely to be perceived as very urgent from a Demand perspective than from an Offer perspective (56% vs 36%). Similar differences in perception are evident with respect to the two remaining drivers: "INCREASED CONNECTIVITY / INFRASTRUCTURE (V2X)" was considered as very urgent by only 10% of respondents from the Offer survey, compared with 26% on the Demand side. "MOBILITY AS A SERVICE" was considered as very urgent by only 15% on the Offer side, whilst this was the case for 32% of the respondents from the Demand survey.

5.2.9 STRUCTURAL CHANGES (IMPORTANCE): DIFFERENCE BETWEEN DEMAND AND OFFER

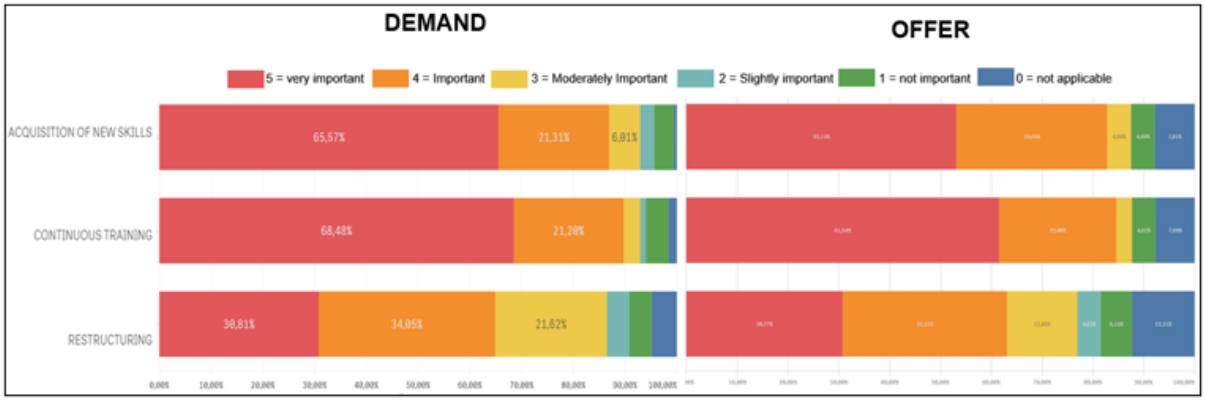


Figure 13: STRUCTURAL CHANGES - IMPORTANCE - comparison between the 2 surveys

Comparison of responses from both a Demand and Offer perspective indicates that the relative importance (based on the combined scores of very important and important) of both “CONTINUOUS TRAINING” and “ACQUISITION OF NEW SKILLS” is very similar. Differences are only apparent if the respective weightings in terms of those assigning a very important score are examined in detail. On this basis it is evident that “CONTINUOUS TRAINING” is ranked more important than “ACQUISITION OF NEW SKILLS” by the educational, research and accreditation organisations.

5.2.10 STRUCTURAL CHANGES (URGENCY): DIFFERENCE BETWEEN DEMAND AND OFFER

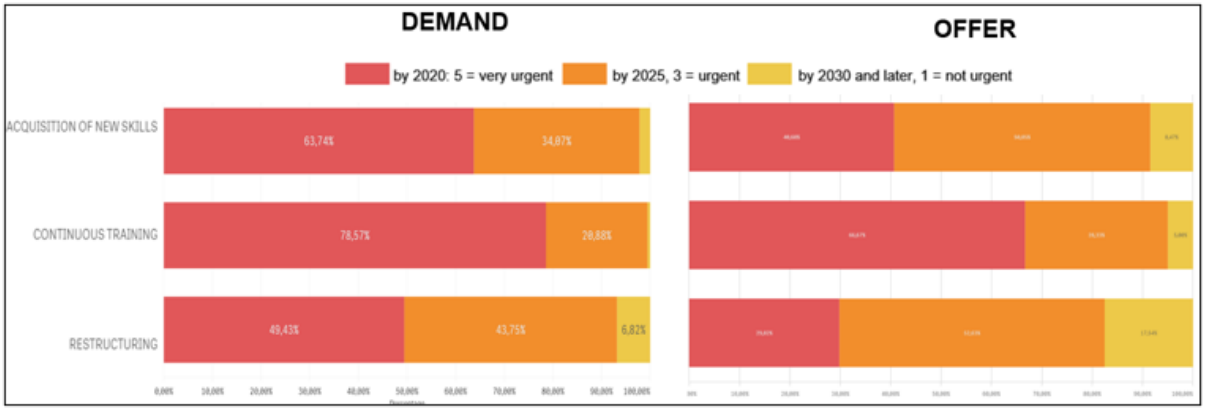


Figure 14: STRUCTURAL CHANGES - URGENCY - comparison between the 2 surveys

The biggest difference between the responses from a Demand and Offer perspective is the somewhat higher urgency attached to tackling the impact of these drivers by automotive companies. This is evident with respect to all drivers when ‘very urgent’ (by 2020) responses are analysed.

5.2.11 GLOBALISATION AND RISE OF NEW (IMPORTANCE): DIFFERENCE BETWEEN DEMAND AND OFFER

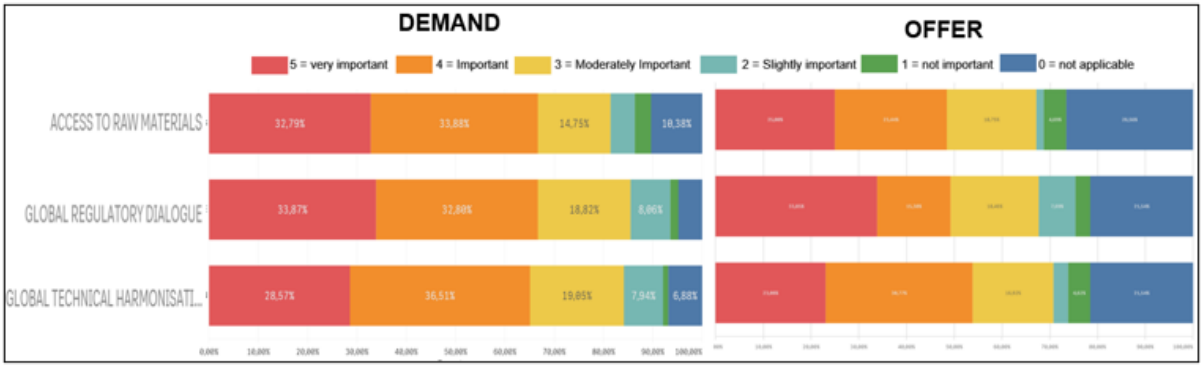


Figure 15: GLOBALISATION AND RISE OF NEW PLAYERS – IMPORTANCE - comparison between the 2 surveys

The main difference when the Demand and Offer surveys are compared, is the larger percentage of "Not applicable" answers with respect to most drivers in the case of offer survey respondents.

In relation to the three individual Drivers of Change, "GLOBAL REGULATORY DIALOGUE" is ranked first by the whole sample in both cases (Demand and Offer), and "ACCESS TO RAW MATERIALS", ranked second, although the importance attached from a demand perspective is somewhat higher than is the case from the Offer perspective.

5.2.12 GLOBALISATION AND RISE OF NEW (URGENCY): DIFFERENCE BETWEEN DEMAND AND OFFER

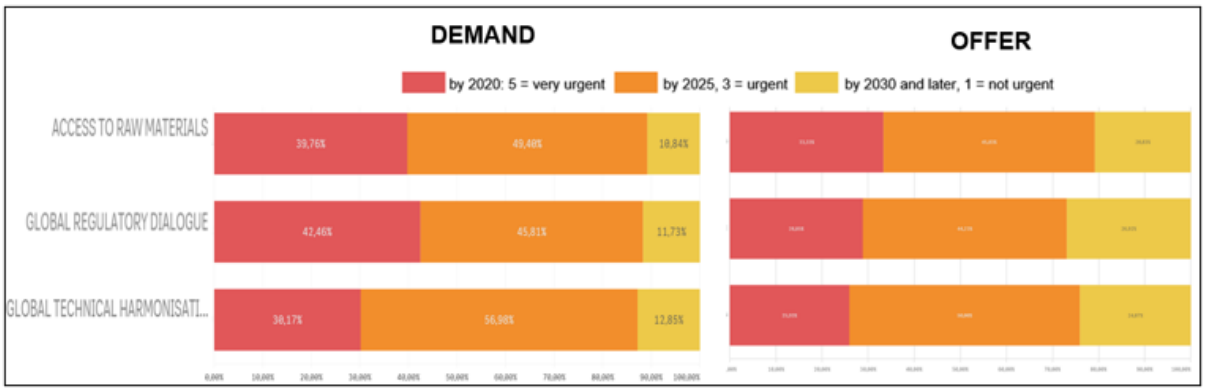


Figure 16: GLOBALISATION AND RISE OF NEW PLAYERS - URGENCY - comparison between the 2 surveys

There is a clear difference in the level of urgency assigned to the Drivers of Change related to regulatory and technical harmonisation, globalisation and access to raw materials by Demand and Offer stakeholders. As a group, around 90% of respondents to the demand survey assign high and medium urgency levels ("by 2020" and "by 2025" respectively), whereas with respect to the offer survey respondents, high and medium urgency levels represent around 75% of all responses, with a clear

difference between the public offer (VET, institutes, umbrella organisations) and the private companies involved in VET delivery. The responses of the latter are more similar to the Demand results.

5.2.13 DRIVER OF CHANGE PRIORITY INDEX

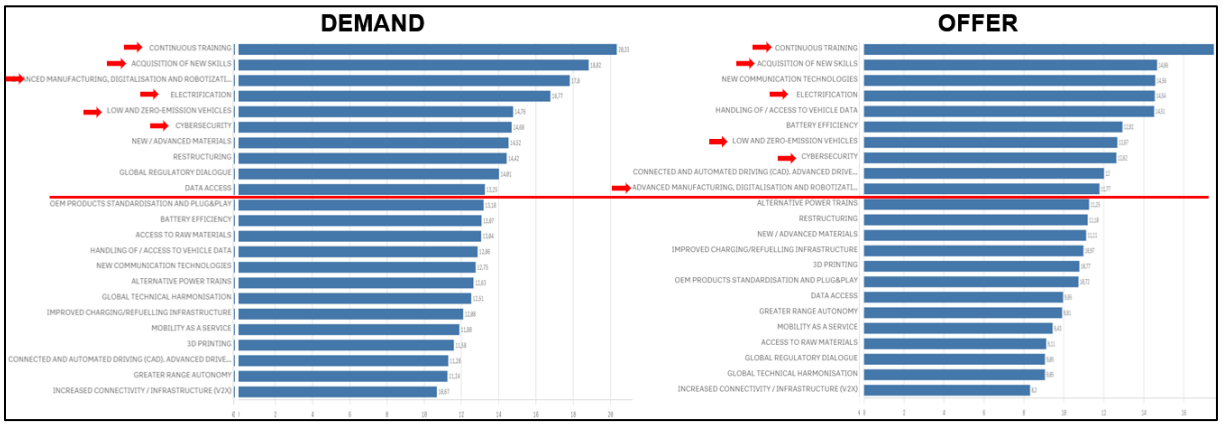
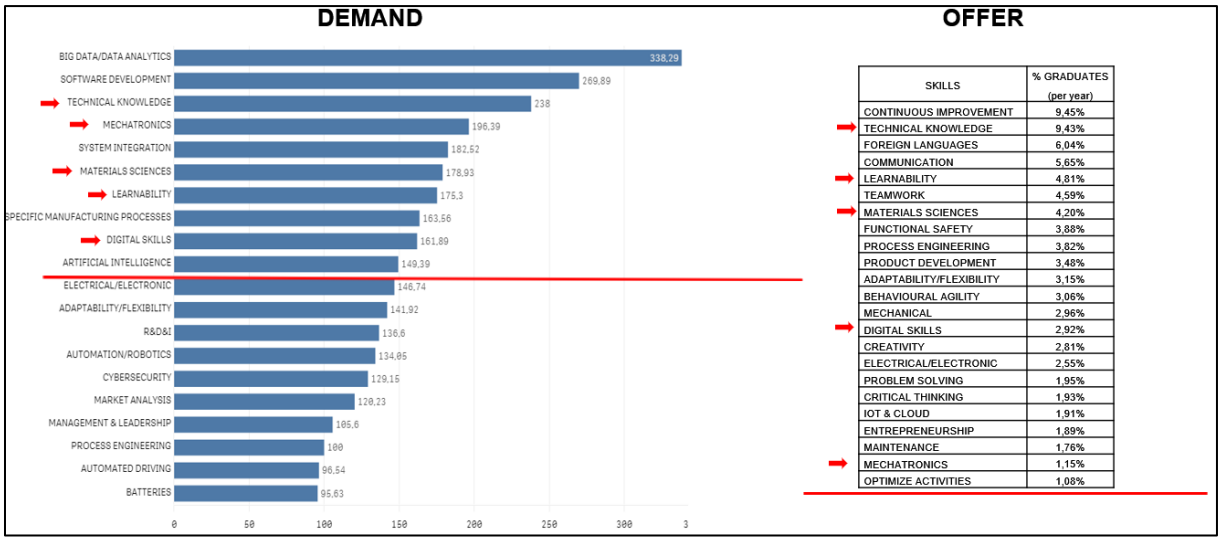


Figure 17: DoC Priority Index comparison at TOP 10 between the 2 surveys

Figure 17 shows a comparison of the overall Offer and Demand shows that “CONTINUOUS TRAINING” and “ACQUISITION OF NEW SKILLS” are ranked as the first two priority Drivers of Change for both point of view. This result is particularly important for the DRIVES project as the necessity for upskilling and reskilling is a priority for the sector, but also a central objective of the DRIVES project itself. Looking at the TOP 10, both from the perspective of the Offer and Demand, these coincide in a total of 6 DoCs, in addition to the “ADVANCED MANUFACTURING, DIGITALIZATION AND ROBOTIZATION OF THE MANUFACTURING PROCESS“, „LOW AND ZERO-EMISSION VEHICLES“ and „CYBERSECURITY“ . Focussing still on the TOP 10, from the perspective of Demand a higher priority is assigned to “NEW / ADVANCED MATERIALS”, “RESTRUCTURING” “GLOBAL REGULATORY DIALOGUE” and “DATA ACCESS”. From the perspective of the Offer the TOP 10 attaches greater importance to “BATTERY EFFICIENCY”, “NEW COMMUNICATION TECHNOLOGY” and “HANDLING OF/ ACCESS TO VEHICLE DATA”.

5.3 SKILLS: DIFFERENCE BETWEEN DEMAND AND OFFER



SKILLS	% GRADUATES (per year)
CONTINUOUS IMPROVEMENT	9,45%
TECHNICAL KNOWLEDGE	9,43%
FOREIGN LANGUAGES	6,04%
COMMUNICATION	5,65%
LEARNABILITY	4,81%
TEAMWORK	4,59%
MATERIALS SCIENCES	4,20%
FUNCTIONAL SAFETY	3,88%
PROCESS ENGINEERING	3,82%
PRODUCT DEVELOPMENT	3,48%
ADAPTABILITY/FLEXIBILITY	3,15%
BEHAVIOURAL AGILITY	3,06%
MECHANICAL	2,96%
DIGITAL SKILLS	2,92%
CREATIVITY	2,81%
ELECTRICAL/ELECTRONIC	2,55%
PROBLEM SOLVING	1,95%
CRITICAL THINKING	1,93%
IOT & CLOUD	1,91%
ENTREPRENEURSHIP	1,89%
MAINTENANCE	1,76%
MECHATRONICS	1,15%
OPTIMIZE ACTIVITIES	1,08%

Figure 18: Skills comparison between the 2 surveys

Comparing TOP 10 Demand (of skills) with the Offer as per Figure 18, it is now necessary to increase the range from TOP 10 to TOP 20 into the Offer list to find at least 5 similarity.

"TECHNICAL KNOWLEDGE" (3rd in Demand and 2nd in Offer), "MATERIAL SCIENCES" (6th in Demand and 7th in Offer) and "LEARNABILITY" (7th in Demand and 5th in Offer) are comparable. "MECHATRONICS" (4th in Demand and 19th in Offer) and "DIGITAL SKILLS" (9th in Demand and 14th in Offer) are relative not aligned. More than before, now the difference between Demand and Offer is evident and it is important to better evaluate this situation (The "SOFT SKILLS" missing into the Demand list is due to a "take for granted" issue or there is a low interest in these skills?)

5.4 TRAINING PROVISION MECHANISMS APPROACH: DIFFERENCE BETWEEN DEMAND AND OFFER

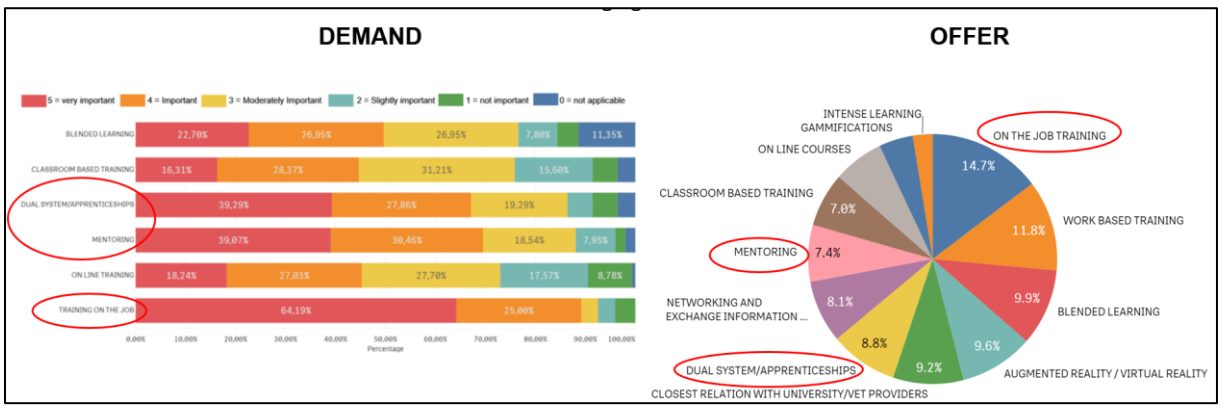


Figure 19: stakeholders preferences in relation to the most appropriate VET mechanisms to meet changing needs

As per Figure 19, the Demand and Offer both highlight the importance of "TRAINING ON THE JOB" as the most effective VET approach. Even if in both vision "MENTORING" and "DUAL SYSTEM/APPRENTICESHIPS" are present, there is a big difference and the high importance from the Demand side is opposed to a low rated in the Offer side.

5.5 RECOGNITION AND QUALIFICATION FRAMEWORKS: DIFFERENCE BETWEEN DEMAND AND OFFER

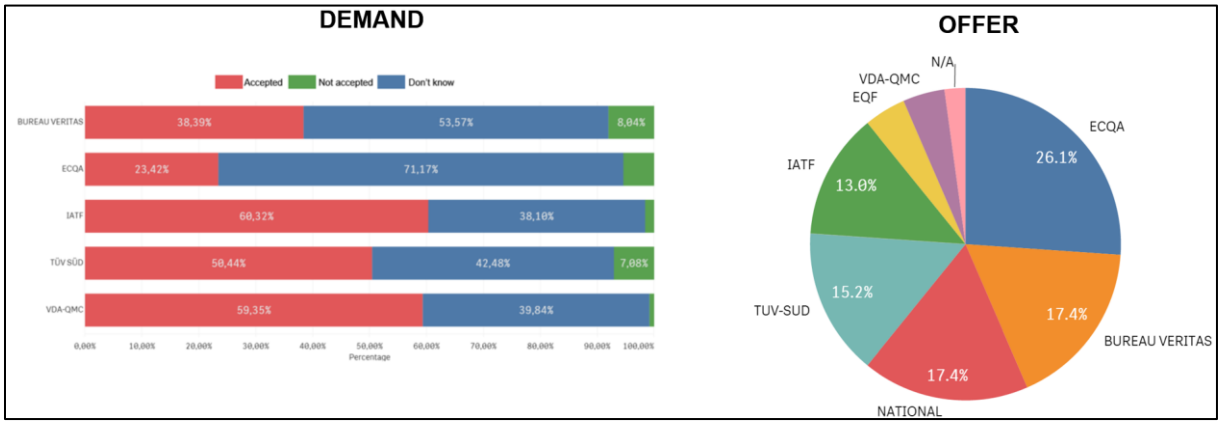


Figure 20: most important skills recognition and qualification standards accepted

In Figure 20 clear differences are evident in relation to the results of the Demand and Offer surveys. These differences are most striking in relation to the following: "ECQA" is most frequently recognised by providers (respondents to the Offer survey) but the least recognised by respondents to the Demand survey. On the other hand, "VDA-QMC" is widely accepted (and "IATF") by Demand survey respondents but recognition is negligible in relation to the Offer survey respondents. Also, of particular note is the importance attached to "NATIONAL" standards by VET stakeholders, ranked 3rd: to better investigate if "national" means <<only valid / recognised in a specific country>> .

5.6 RECRUITMENT FOR THE AUTOMOTIVE SECTOR METHODS: DIFFERENCE BETWEEN DEMAND AND OFFER

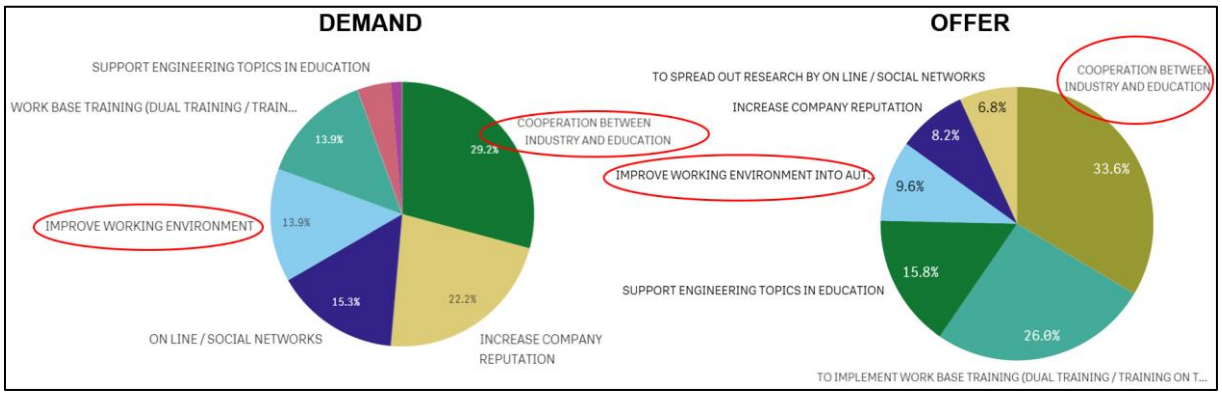


Figure 21: best recruiting method to attract new and talented (young) workforce

Respondents from both the Offer and Demand surveys identify in Figure 21 "COOPERATION BETWEEN THE INDUSTRY AND EDUCATION" as the most important method, but other priorities differ significantly between these two different sets of stakeholders. The differences are most obvious with respect to a visible in "ONLINE/SOCIAL NETWORK", with respondents to the Offer survey consistently placing these methods as the least important, while respondents to the Demand survey place a somewhat higher level of importance on these methods (A combined total of 15.3%). Company Reputation ("INCREASE COMPANY REPUTATION" as a means of attracting workers into the sector) is also perceived as more important on the Demand side, ranked second at 22.2%, while respondents to the Offer survey placed it between 4.3% and 10.3%. While support for engineering topics is seen as very important from the perspective of respondents to the Offer survey, Demand side respondents – interestingly - rank this as the least important.

5.7 APPRENTICESHIP METHODS: DIFFERENCE BETWEEN DEMAND AND OFFER

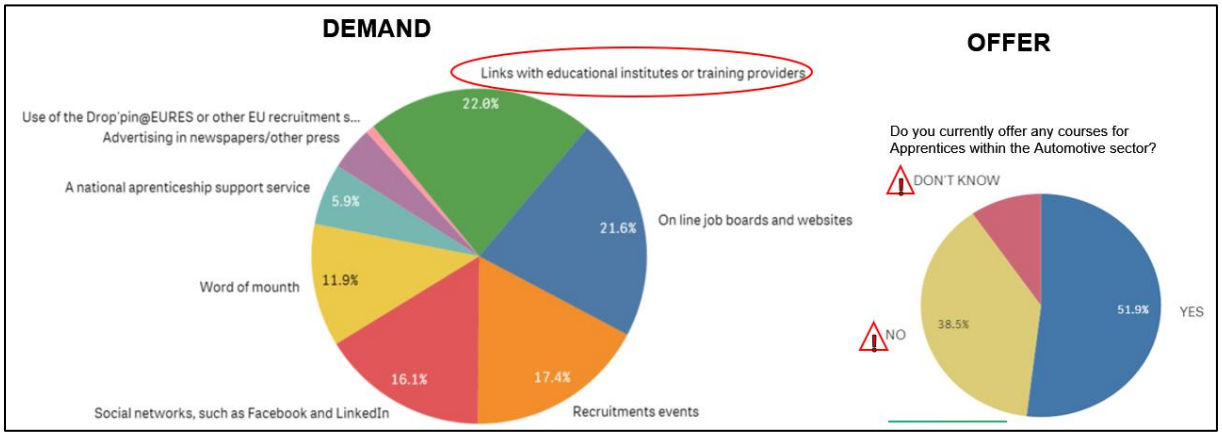


Figure 22: the main methods used to recruit apprentices

Even if it is not possible to assess the difference between overall Demand and the provision 'Offer' with respect to Apprenticeships directly from the survey, it is clear that a "LINK WITH EDUCATIONAL INSTITUTES OR TRAINING PROVIDERS" is essential from Demand point of view as the main methods used to recruit apprentices as per Figure 22; from Offer point of view, only 52% of interviewed offers courses for Apprentices. It also true that the increasingly globalised nature of the automotive sector contrasts with apprenticeships that tend to be focussed nationally, which poses particular challenges for employers when choosing whether to participate in the apprenticeship systems of those countries they operate in and for the mobility of apprentices seeking employment across national boundaries.