DS4AIR

DIGITAL SKILLS
FOR THE AI REVOLUTION

COURSE EVALUATION

SMART LEARNING

THE MALTA CHAMBER

B+P

SERC INTERNATIONAL

Cámara Valencia

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Project Brief

The global workforce is today facing a critical period of jobs and skills instability. With a big portion of today's jobs set to disappear or become displaced by AI, robotics and automation, the world today requires a human workforce which possesses proficient digital skills. Pursuant to such predictions, the WEF has recently launched the 'Reskilling Revolution', aimed at providing better education, new skills and better work to a billion people by the year 2030. The DS4AIR project supports innovation through the design, development and evaluation of an online training course on Digital Skills in view of the Artificial Intelligence (AI) Revolution. This is aimed at improving and extending the reskilling of vulnerable adults in the workforce who possess a lower level of knowledge and digital competencies. Consequently, this will future-proof their careers vis-à-vis the anticipated shift and demands in digital skills.

In line with the WEF's initiative and as a proactive (rather than a reactive) measure, the project's objectives are:

- to establish the current state of affairs in the business industry in terms of AI readiness
- to identify the gaps between the required new digital skills and competencies and the demands of the labour market, in view of the Artificial Intelligence Revolution
- to create a learner persona defining the course's target audience
- to design and develop an online self-paced training course on digital skills for the Artificial Intelligence Revolution
- to reskill vulnerable adults whose jobs are threatened by the new technologies, hence ensuring their survival and prosperity in the job market
- to analyse the quality and impact (including the degree of satisfaction) of the course through a summative evaluation of the content and instructional design, vis-à-vis the expected learning outcomes
- to write a short recommendations document on digital skills for corporate training in the Artificial Intelligence Revolution

In terms of the project's expected impact, it is envisaged that the results will yield a high-quality digital learning environment, based on the needs and requirements of vulnerable adults in today's workforce. It is also expected that the digital competence of participating adults, will be enhanced, thus improving their careers prospects. Participating businesses will be equipped in terms of skilled labour to embrace the disruption brought about by emerging technologies and better placed to understand, assess and act upon the reskilling requirements posed by the foreseeable skills mismatch brought about by the Artificial Intelligence Revolution. In terms of the potential longer-term benefits, the online training course will become a valuable open education resource for re/upskilling for businesses and interested individuals around the world. Furthermore, the resulting recommendations document on digital skills for corporate training in the Artificial Intelligence Revolution will complement the Pan-European policy efforts in the popularisation of digital competencies, by providing evidence-based practice for future guidelines.

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1. Introduction

Following on from the initial stage of the project which included the design, development and piloting phase of the developed course at https://www.digitalskills.ai, evaluation surveys with key stakeholders including employers and employees have been conducted. Feedback from these surveys will directly impact future continuous improvement in programme design and further roll out. A range of both qualitative and quantitative data was collected from a range of sources including registration forms, end of chapter data and user data, along with interviews from both employers and employees. Each data set will be analysed in the below report.

2. Registration Forms

A total of 1270 individual registrations forms were completed with most candidates employed in Spain (46%) and Malta (47%). In total 29 different countries were represented in the survey data from across the globe, including Great Britain, Denmark, Italy, Germany, France, United States, Mexico and Pakistan.

2.1 Gender Profile

Registered candidates were predominantly male at 60% and female at 39% with 1% who preferred not to say. In relation to roles, 76% of those candidates who were registered as employers were male with 24% female, those who were registered as employees were 52% male, 47% female with 1% preferring not to say. Candidates who registered as having a role within learning and development were 75% male, 21% female and 4% who preferred not to say.

Figure 1 – Gender Split and Roles

2.2 Age Profile

Most participants fell within the 26-35 age category closely followed by 36-45 age category, 55% of participants were between 26-45. The table below highlights the percentage split regarding role at each age range. This may be notable regarding targeting strategies to encourage further engagement in the roll out of the programme. While the 16-25 age range represented only 20% of total registered candidates 46% of that age range was employed in a learning and development role. Similarly, employers represented a total of 12% of total registered candidates of which 26% of employees fell within the age range of 16-25 and 29% fell within the age range of 36-45. This may highlight the growth of young innovative firms engaging with AI for future growth.

Table 1 – Role Percentage Split

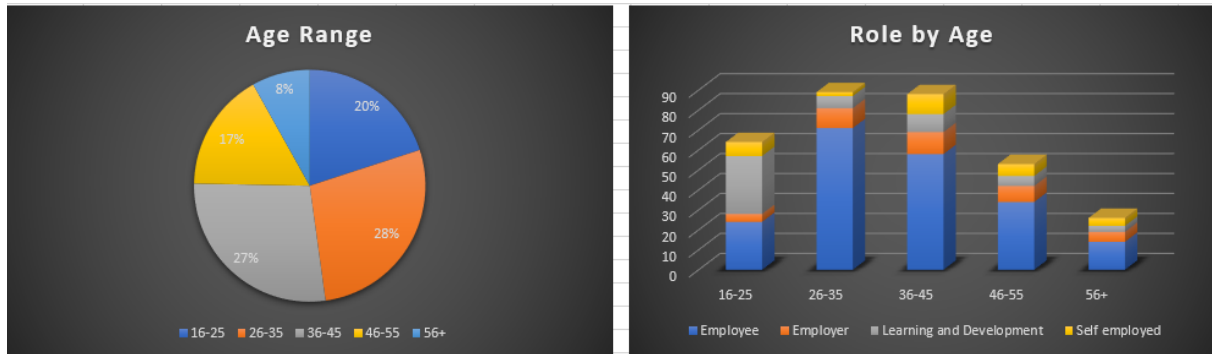| Age Range	Employee	Employer	Learning and Development	Self employed
16-25	39%	6%	46%	9%
26-35	80%	11%	8%	1%
36-45	80%	11%	8%	1%
46-55	64%	15%	9%	12%
56+	54%	19%	12%	15%

Figure 2 – Age Range and Roles

2.3 Sector Profile

Most candidates registered worked within the professional, scientific and technical sector (39%), with the information and communication sector following a close second at 24% and the admin and support services representing 22% of total candidate registrations. Those employed in the Manufacturing sector represented only 5% of total registrations.
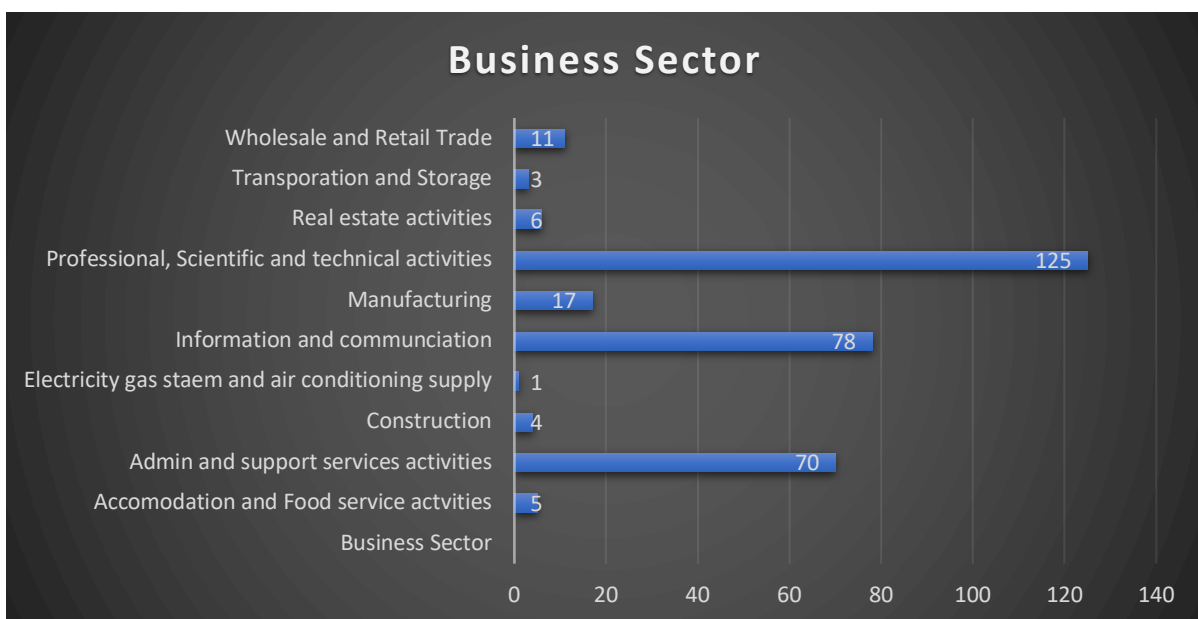

Figure 3 – Business Sector Profile

Sector gender and age profiles can be seen below, with 39% of males being employed in the professional, scientific and technical sector closely followed by the information and communication sector at 25%. Similarly, 39% of females were employed within the professional, scientific and technical sector, closely followed by 29% of females employed in the admin and support services sector. Those who preferred not to say were employed in the professional, scientific, and technical sector at 75% and 25% were employed in the accommodation and food service sector.

In relation to age by sector, 40% of those aged between 16-25 were employed in the Professional sector, followed by the information and communication sector at 23%. In total, 41% of those aged between 26-35 were similarly employed in the professional sector, followed closely by the information and communication sector at 26% and 25% employed within the admin sector. Overall, 42% of those aged between 36-45 were employed in the professional sector, followed closely by the information and communications sector at 22% and the admin and support sector at 21%. Those who registered who were aged between 46-55 worked mainly in the professional and information sectors at 30% each equally and most of those aged 56+ worked in the professional sector representing 38%.

Figure 4 – Business Sector Gender and Age Profiles

2.4 Candidate Role

Candidates were mostly employees at 63% with employers representing 12% of total participants. Learning and development and self-employed were also represented in the registrations with 16% and 9% respectively. Most employers were from the professional sector at 34%, followed closely by the information sector representing 21% of those registered. Employees were mainly employed at 38% in the professional sector, followed by 22% who were employed in the information sector. Those employed in learning development were predominately from the professional sector at 44%, again followed closely by the information sector at 37%. Self-employed registrations came mainly from the professional sector at 45%.
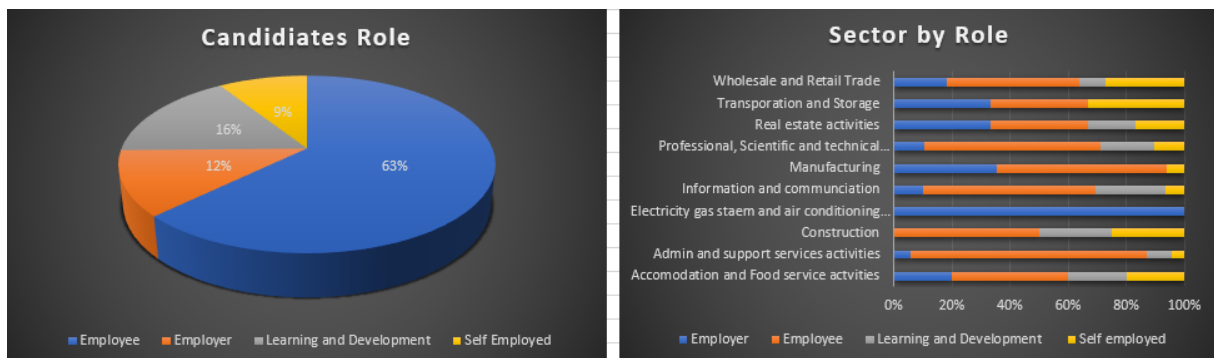

Figure 5 – Candidate Roles and Sectors

3. Course Evaluation: Quantitative

Candidates completed an end of chapter survey which aimed to capture their feedback on completion of each chapter, it is intended this information will relate to any future improvements or considerations for future planning. These insights will provide a direct correlation between user perceptions and programme development moving forward. A set of 13 questions were asked to all candidates at the end of each chapter, these were:

- The chapter content was relevant to my needs

- The chapter content was interesting and engaging

- The exercises helped to check my learning

- The chapter structure was logical

- The chapter content was easy to follow and understand

- The media used (videos/images) helped to increase my understanding of AI

- Completing the chapter has increased my knowledge of AI in general

- The chapter helped to improve my understanding of AI in the workplace

- After completing the chapter, I am ready to embrace the changes AI will bring

- I am satisfied with the chapter

- I would recommend this chapter to others

- How would you rate the chapter overall?

- Do you have any suggestions to improve this

Candidate rating suggests a strong agreement with the overall content and design of the course with all chapters being rated at 4 stars in the majority. In fact, on average, 73% of participants rated the chapters 4 stars or more (out of 5). There were very few candidates rating chapters at 2 or 1 stars which is encouraging. Chapter 2 received the highest 5-star rating (35%) with chapter 7 receiving the highest rating at 4 star (53%). Feedback for each chapter can be found in the below sections.

3.1 Chapter 1

The majority (52%) of candidates rated chapter 1 as 4 stars with 28% rating it as 5 stars, which is promising. Comments regarding any improvements related to the length of the chapter and the volume of content which was included making it more difficult to digest the information. Candidates referred to section 4 being too long and suggested splitting this section into two parts comments were made in relation to the chapter being overly theoretical with insufficient interactive content.

3.2 Chapter 2

The majority (46%) of candidates rated chapter 2 as 4 stars, with 35% rating it as 5 star and 18% as 3 stars. Candidate comments referred to the length of time it took to complete the chapter, with one candidate citing it took them 90 minutes to complete opposed to the 15 minutes planned completion time (which was not the case as all chapters required on average 90 minutes to complete). Comments were made in relation to the amount of information to digest for someone with no background knowledge of AI.

3.3 Chapter 3

Most candidates rated chapter 3 at 4 stars (46%), followed by 24% at 5 stars and 18% at 3 stars. Comments referred to the chapter being too theoretical with a lack of videos and specific examples of AI by sectors.

3.4 Chapter 4

Most of the candidates (42%) rated chapter 4 as 4 stars, with 28% rating the chapter as 5 and 3 stars equally. Comments included referred to the need for more examples in the section relating to AI and the Cloud to better explain concepts under discussion.

3.5 Chapter 5

Candidates rated chapter 5 as mainly 4 star (39%), followed by 3-star at 32% and then 5 stars at 27%. Candidates made comments in relation to the CRM aspect of the chapter and suggested further examples of application could be included in the content. One candidate felt the chapter would be relevant for those who had little or no knowledge of AI and digitisation.

3.6 Chapter 6

Most of the candidates (46%) rated chapter 6 as 4 stars, with 27% rating it as 3 stars followed by 24% who considered the chapter to be 5 stars. One candidate commented that the 15 minutes videos contained much information which was difficult to assimilate and that the same information could not be found in the main body of the text.

3.7 Chapter 7

Most of the candidates (53%) completing chapter 7 rated the chapter as 4 stars followed by 31% who rated it as 5 stars and 11% who considered it to be 3 stars. Candidate comments included reference to the timing of the assessment, one candidate suggested that instead of completing the assessment immediately after that a duration of time should be afforded to allow for reflection. In another comment a candidate remarked on how it may be good to include the structural design of algorithms to bring about more understanding.

3.8 Chapter 8

Chapter 8 was ranked mostly 4 stars (38%) by candidates followed very closely by 5 stars (34%) with 25% of candidates rating the chapter as 3 stars. No comments were made about improvements for this chapter.
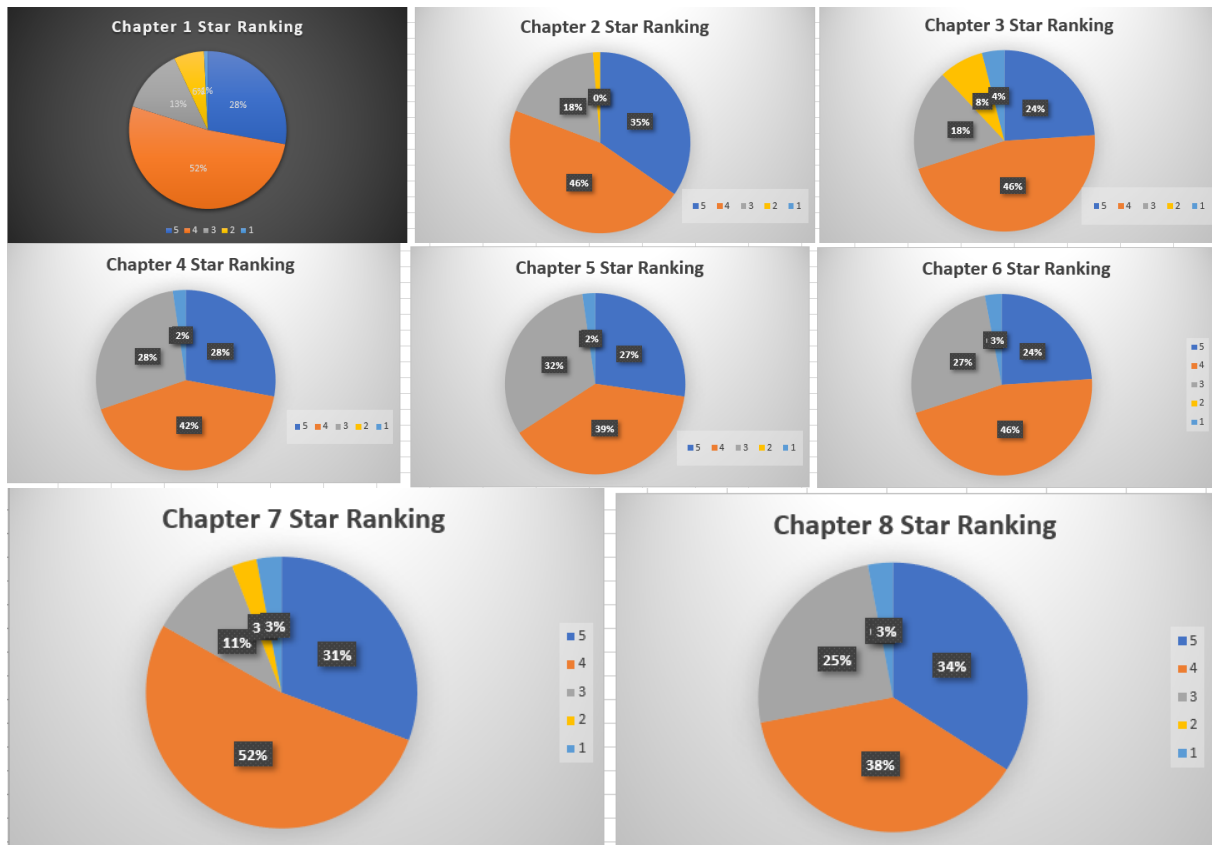
Figure 5 – Chapter Ratings

3.9 User Data

User data was collected in relation to the quizzes completed and rate of passing, along with time used to complete each chapter. On average, the pass rate for the different chapter quizzes was 74%. Quiz results for each chapter are noted below, chapter 1 had the highest percentage of pass rate at 78%, followed by chapter 5 at 76%. Chapter 2 had the highest failure percentage at 35%, followed closely by chapter 8 at 34%. Overall, this has resulted in more than 1000 certifications issued for chapter and course completions.

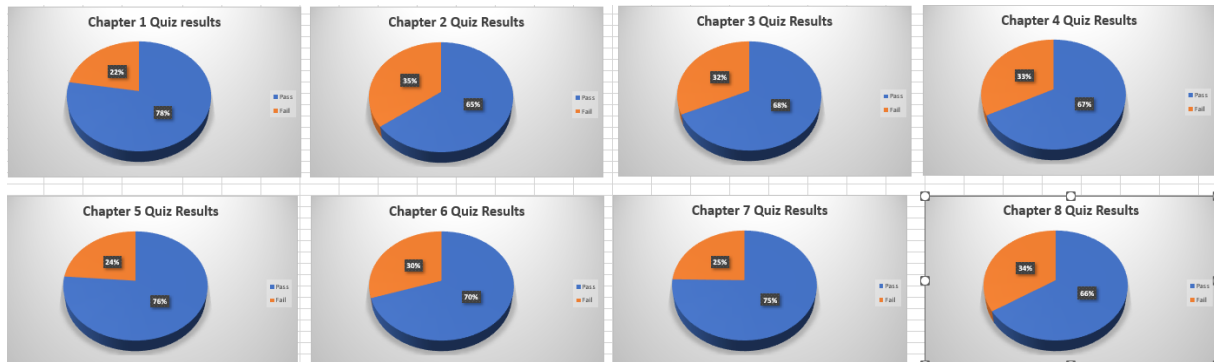| Chapter	Pass	Fail
Chapter 1	78%	22%
Chapter 2	65%	35%
Chapter 3	68%	32%
Chapter 4	67%	33%
Chapter 5	76%	24%
Chapter 6	70%	30%
Chapter 7	75%	25%
Chapter 8	66%	34%

Figure 6 – Chapters Quizzes Results

4. Course Evaluation: Qualitative

The partner organisations completed interviews with 10 employers and 11 employees, in order to complement the quantitative data from the platform. They were selected primarily based on their current roles and the sectors within which they are employed. All interviewees were required to have completed at least three of the chapters of the programme to be considered eligible regarding interview.

4.1 Employer and Employee Interviews

All interviewees were asked the same set of questions which are listed below, and responses are summarised under each question.

What is the business sector that your organisation currently operates in?
- A wide range of both public and private business sectors were represented in the two samples, including Energy; Health; Education; Consultancy, Law, Construction, Aviation & Manufacturing

What is your role within your organisation?
- Most of the employer interviewees were in senior management positions within their organisations; two were business owners
- The employee interviewees were from a range of lower managerial, administrative, and professional occupations, and routine occupations
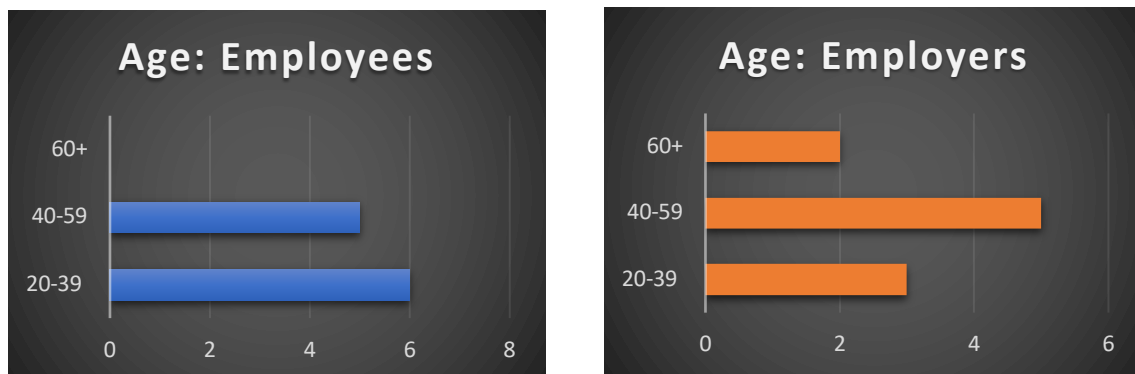
How old are you?

Figure 7 – Interviewees Age

The complete sample presents a generally equitable balance between employees and employers between the ages of 20 and 59. There were no employee respondents aged 60+.

How long have you been working in this role?

- Most of the employer interviewees had held their role for between 5-10 years or more and were experienced senior managers.

- The employee interviewees were from lower managerial, administrative, and professional occupations or routine occupations holding roles ranging from 1- 10 years, but most prominently less than 5 years.

What do you understand by the term 'Artificial Intelligence' (AI)? Can you give examples?

- Overall, the employers demonstrated a robust understanding of what AI is, along with some knowledge of its application. Several interviewees knew that AI was driven by large quantities of data. Examples cited included ChatGPT, YouTube Transcriber, Blackbox and Copilot.

- The employees demonstrated a good understanding of AI as a concept, but less so in terms of specifics and applications. References were made to Chatbots, Alexa, Siri, reducing & simplifying task completion/processes, and aiding problem solving.

Is your organisation currently utilising AI? If yes, how? If no, in which ways could it possibly utilise such technology?

- For both sample sets, there is limited level of use of AI applications currently however some employers had knowledge of its use within their sectors citing examples such as property valuations, cyber security, advanced screening for maps, for education, and to create code for software development. One employee respondent noted that there is potential for use within his organisation for CRM and Marketing purposes.

- Of note are comments from 3 of the employees:
  - *Yes, I didn't know that but once I did this course, I realized that we do use AI*
  - *Primarily I use AI as a teaching assistant. It is a quick way to generate assignments and questions for different subject areas.*
  - *Yes, Google every day*

What are the challenges and opportunities that AI has brought/can bring to your organisation?

- **Opportunities**
  - Opportunities cited and conferred by both data sets include improvements that might be achieved in terms of costs, time, decision-making, competitiveness and productivity efficiency, and enhancements in relation to the level of detail and specifics that can be extracted. It should be noted that the employers' viewpoints were from a more strategic perspective whereas the employees' perspectives focussed on activities at an operational level. There is a clear awareness that the application of AI is fast-growing and that there are opportunities for all sectors. Examples were cited by the employers in relation medicine, academic research, and education.

- **Challenges**
  - ***Loss of jobs***: The most prominent challenge identified by the employees was the loss of jobs. This was also cited by the employers though not to the same extent who see AI as more of an opportunity: '*it is a threat not to have it*'.

- o *Loss of human element*: Some from both data sets voiced apprehensions about the loss of the human element and the need for human and/or professional judgement in decision-making. These concerns were voiced and exemplified from the sectors relating to finance, medicine and social care.
- o *Ethics*: Ethics was also an area of concern stated by an employee from the FE sector in relation to decision-making in student pastoral care processes. Furthermore, an employer raised a noteworthy point about the sustainability aspect of AI citing the massive CO_2 consumption yielded by servers in the movement of data.

To what extent do you feel that the online course has enabled to better understand the challenges and opportunities brought by AI?

- Both employers and employees agreed that the course provides a good overall introduction to the topic and its applications. It has presented them with greater awareness & understanding of it uses and benefits.

Would it help your colleagues (or workforce) to complete this online course to better prepare and understand and embrace AI in the workforce?

- Employees mostly agreed that it would help their colleagues in order to prepare themselves for the future, but a couple did note that the level of the content might be a challenge for some.
- The employers overwhelmingly stated 'yes' as their people need to know about, embrace and understand AI. It was also noted that it would go some way to lessening the fear factor associated with the application of AI.

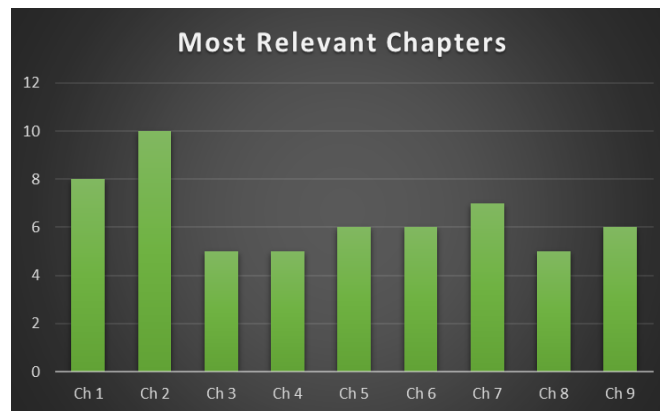**Which chapters were most relevant to your needs?**

Figure 8 – Most Relevant Chapters for Interviewees

Respondents were not limited to selecting only one chapter and some identified more than one. 3 employees and 2 employers indicated that all chapters were relevant to their needs. Chapter 1 Introduction to AI and Chapter 2 Applications of AI were the most prominent. It should be noted that 4 respondents (2 employee; 2 employer) did not present data for this question.

- Comments of note:
    - *'All. Progresses nicely from origins'*
    - *'Videos were useful as a precursor to the reading. In general, it is very well structured, and you understand everything very well.'*
    - *'All relevant to some extent for overall K&U'*

On a scale of 1-5 (5 being highly likely), how likely would you be to recommend the online course at www.digitalskills.ai to others?
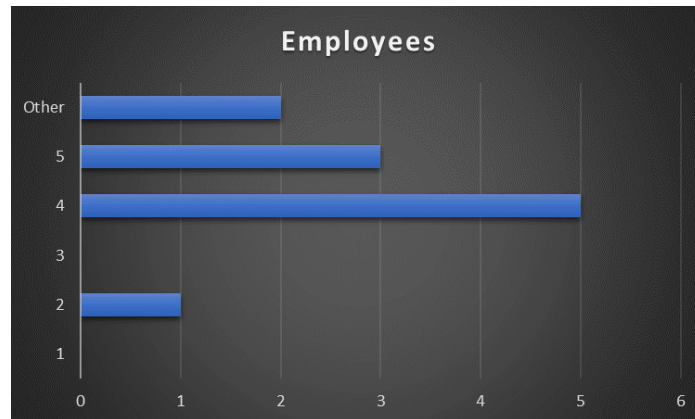

Figure 9 – Recommendation Scale for Interviewees (Employees)

- 8 of the 11 employee respondents gave a score of 4 or higher.
- **Other**:
  - *'1 or 2 for first two chapters; 4 for remainder'*
  - *'4 when it is time; otherwise 2-3'*
- Comments of note:
  - *'A 7, I'm telling you honestly, I really liked the course, because of its format, because you can adapt to your everyday life.*
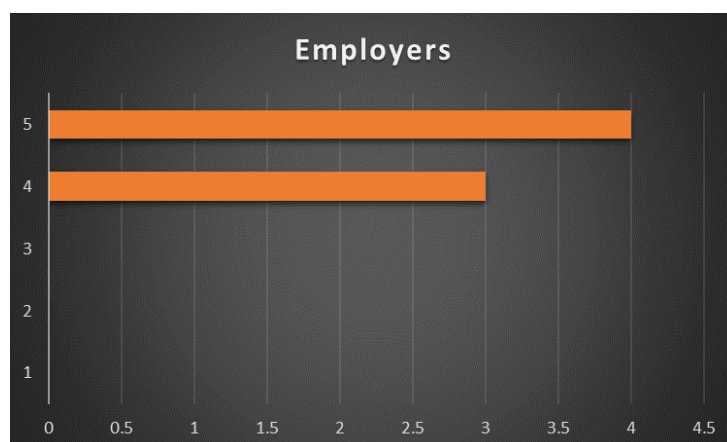 - *'Don't think there is another one like it.'*

Figure 10 – Recommendation Scale for Interviewees (Employers)

It should be noted that 3 of the employer respondents were not asked to provide a score as part of their interview.

- All employer respondents gave a score of 4 or higher.
- Of note:
  - *'Yes. 5, 5, 5, 5, 100 per cent. I've been looking at more similar courses and it's difficult to find a course similar to this one…..I think it's very complete.'*

Recommendations

The recommendations provided by the respondents were varied however there were some clear commonalities between the 2 data sets. These can be summarised as:

- Less text & reading, and more visual aids & videos, particularly given the context of the course
- Examples, tools or practical cases, preferably with sector specific context
- How to manuals/guides for using AI, e.g. How to…..
  - access and/or use an AI
  - generate a picture
  - analyse data from an image

Other potentially notable recommendations for consideration include:

- Better user instructions
- More repetition to aid recall
- More consistent length of chapters
- More practical and/or more varied assignments rather than tests