REPORT ON AHRI-RMIT RESEARCH STUDY

Fourth Industrial Revolution & the Future Workforce: Implications for HRM

Research Team

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EXECUTIVE SUMMARY

This study set out to determine how prepared Australian HRM professionals are for the impact of the Fourth Industrial Revolution (FIR) on organisations, workplaces, jobs and skills. To address this question surveys and focus groups were conducted with support from AHRI. Survey respondents numbered 250 in total and focus group members, 19. Respondents work in a range of sectors with most in Professional, Scientific & Technical then Public Administration and Safety. Nearly half the respondents were HR Managers followed by HR Directors and HR consultants. The majority of respondents work in large organisations (1,000 and over employees) followed by small organisations (100-499 employees) with only 8 percent of participants working in medium size organisations (500- 999 employees).

The findings indicate that the current adoption of AI/robotics technologies in HRM functions is limited and so was intention to employ in the future. Supervisory and technical support for such developments was also rated at relatively low levels. The most commonly-used current technologies are embedded IT systems (79.3%) and the least employed artificial intelligence (39.5%). Most respondents agreed, however, that AI would be useful for their organisations and would assist with accomplishing tasks more quickly, improving job performance, increasing productivity and making jobs easier for employees. This is interesting given the responses to a later question which asked about intention to use AI where responses indicated that the majority of respondents do not intend to use it. Marginal support was shown in relation to the potential contributions of FIR technologies to HR process enhancement and overall HR effectiveness along with a lack of support was indicated in terms of employee acceptance of such processes, indicating some resistance to change in AI adoption – a factor referred to by several focus group members.

Focus group findings supported the survey results which showed the majority of respondents were not impressed with the lack of government FIR strategies and policies. In summary, the findings indicate a lack of AI adoption both in terms of general usage and usage in relation to HR roles and processes. AHRI could be of assistance here providing resources, case studies and awareness raising as well as advising government in terms of how AI adoption could be supported more widely in relation to preparedness for the future of work in Australia.

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INTRODUCTION

This project was conducted by a research team which was funded and led by RMIT University. The team included collaborators from Curtin University, the University of Newcastle, Cardiff Metropolitan University and the Australian Institute of Business. It was conducted during 2018 as a national research study exploring the views of human resource management (HRM) professionals about the likely impacts of the Fourth Industrial Revolution (4IR) on their organisations, workplaces, jobs and skills changes, and especially on the profession as a whole. Ethics approval for the study was obtained from the RMIT Ethics Committee.

It was conducted in partnership with AHRI and supported by AHRI's Research Committee by permitting access to its membership database. The research was conducted in two sequential phases. First, with the assistance of AHRI personnel (Ms. Lyn Goodear, Ms. Dana Grgas & Ms. Liz Dunne) a series of focus groups was organised in Sydney, Newcastle, Melbourne, Perth and Adelaide in order to elicit key themes. Subsequently, a national survey of HRM professionals was conducted using the AHRI membership database.

RESEARCH DESIGN

The key research question was: how prepared are Australian HRM professionals for the impact of the Fourth Industrial Revolution (FIR) on organisations, workplaces, jobs and skills? The project received ethics approval from RMIT University and was conducted in two sequential stages – a series of focus groups in Sydney, Melbourne, Newcastle, Perth and Adelaide, to elicit relevant themes (see Appendix 1); and a subsequent survey (see Appendix 2) administered to the AHRI membership database. The underpinning theoretical models (Model 1a & Model 1b) were derived from the relevant literature, and respectively linked organisational strategic intent with AI/Robotics adoption on the one hand, and AI/Robotics adoption and HR effectiveness on the other.

Figure 1: Organisational Strategic Intent & AI/Robotics Adoption Model

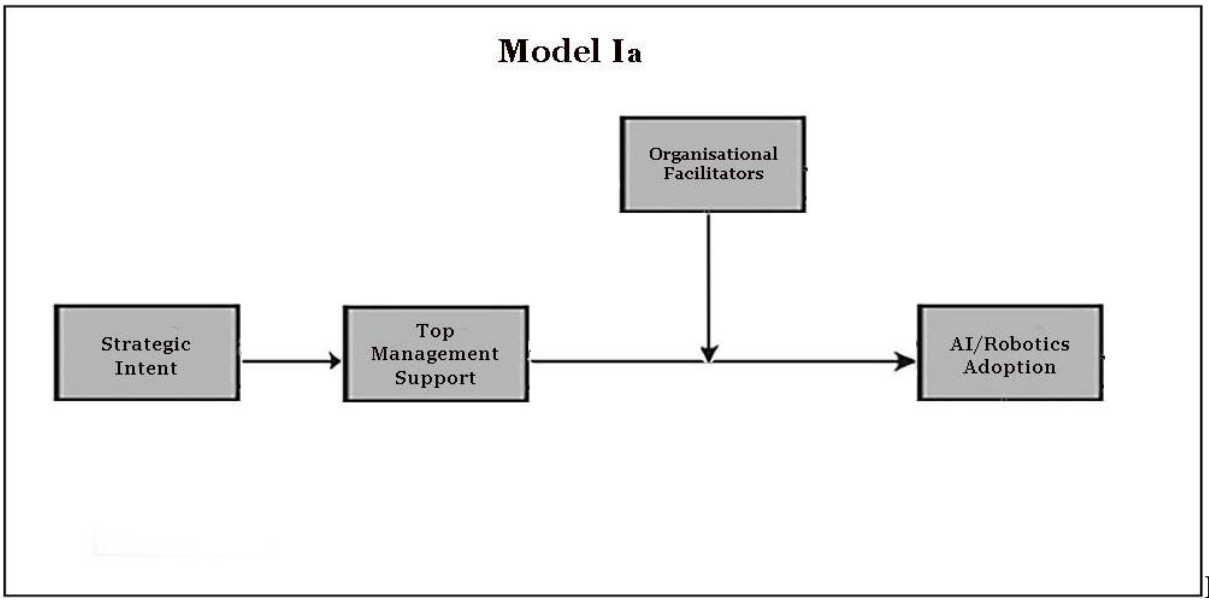

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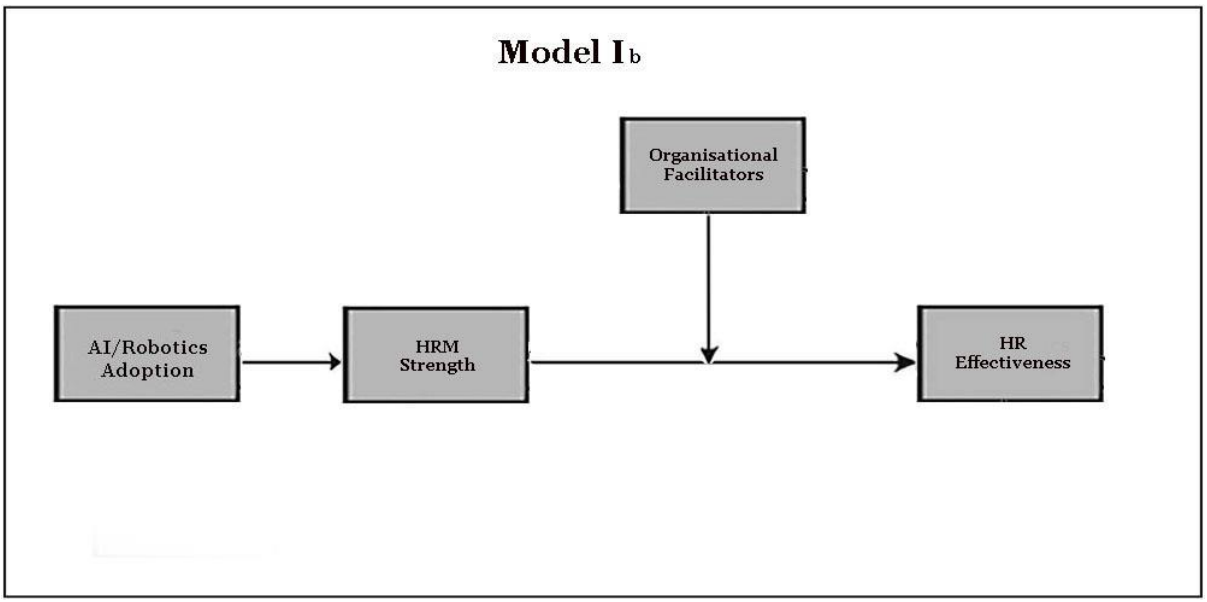
Figure 2: AI/Robotics Adoption & HR Effectiveness



The focus groups (see Appendix 3) comprised varying numbers of participants, ranging from two to five participants in the five cities referred to earlier, which in total amounted to nineteen respondents. The survey was distributed by AHRI with responses submitted to an anonymous

website accessed only by the researchers. The sample size for the survey amounted to 250 responses, but due to incompleteness of some responses the average number for some questions is around 150. The data from the focus groups were analysed using NVivo, and the survey by employing SPSS, regression analysis and ANOVA software. The latter findings are not included in this report. The quantitative survey findings are presented first, followed by a thematic 'snapshot' of the qualitative focus group findings.

The limitations of the study include the modest sample size (both overall and for certain questions) and the inability to include participants from Tasmania and Queensland.

RESEARCH FINDINGS – Key Survey Results

1. Participant Demographics & Organisational Characteristics

The total number of survey **respondents** was 250. Table 1 presents a summary of these respondents' demographic characteristics including gender, age, and educational level. Approximately 67 percent of respondents in the overall sample were female and the most common age group was between 36 and 50 (52 percent), followed by those aged between 51 and 65 (36 percent). The majority of respondents have a postgraduate qualification (68 percent), 22.7 percent a bachelor's degree and 9.6 percent have Vocational Education and Training (VET) qualifications.

Table 1: Demographic Characteristics of Respondents

Variable	Freq.	Percent	Cum.
Gender			
Male	82	32.8	32.8
Female	167	66.8	99.6
Prefer not to say	1	0.4	100
Age group			
Between 18 and 35	24	9.6	9.6
Between 36 and 50	130	52	61.6
Between 51 and 65	89	35.6	97.2
Over 65 years old	7	2.8	100
Level of education			
Vocational Education and Training (VET)	24	9.6	9.6
Bachelor's degree	57	22.8	32.4
Postgraduate Qualification	169	67.6	100
Total	250	100	

Table 2 presents a summary of the organisations represented by the respondents. Overall, the organisations are distributed evenly by industry sector. The highest number of respondents is recorded in the Professional, Scientific & Technical sector (17.2 percent), followed by Public Administration and Safety (11.6 percent) and Education and Training (9.6 percent). Only a few participants reported working in Transport, Postal & Warehousing and Arts and Recreation Services at 1.2 percent. Regarding their position in company, nearly half of the respondents were HR Managers (42.8 percent), followed by HR Directors (20.8 percent) and HR consultants (15.6%). Other positions, such as HR supervisor and HR administrator were represented by very low numbers of respondents in the sample.

Table 2: Industry Sector

Variable	Freq.	Percent	Cum.
Industry sector			
Agriculture, Forestry & Fishing	4	1.6	1.6
Mining	9	3.6	5.2
Manufacturing	14	5.6	10.8
Electricity, Gas, Water & Waste Service	5	2	12.8
Construction	8	3.2	16
Wholesale Trade	4	1.6	17.6
Retail Trade	6	2.4	20
Accommodation & Food Services	6	2.4	22.4
Transport, Postal & Warehousing	3	1.2	23.6
Information Media and Telecommunication	5	2	25.6
Financial & Insurance Services	18	7.2	32.8
Professional, Scientific & Technical	43	17.2	50
Administrative & Support Services	6	2.4	52.4
Public Administration and Safety	29	11.6	64
Education and Training	24	9.6	73.6
Health Care & Social Assistance	35	14	87.6
Arts and Recreation Services	3	1.2	88.8
Other Services	28	11.2	100
Position			
HR administrator (staff)	3	1.2	1.2
HR supervisor	2	0.8	2
HR manager	107	42.8	44.8
HR director	52	20.8	65.6
HR Advisory or Consultant	39	15.6	81.2
Other	46	18.4	99.6
Missing	1	0.4	100
Total	250	100	

As Table 3 illustrates, the majority of organisations represented are located in Victoria and New South Wales (26 percent), with a relatively high number from Queensland (13.6%) and Western Australia (13.2%). The remainder are distributed equally across the other states. Tasmania and Northern Territory have the lowest number of participants in the analysis with 1.2 percent and 2 percent, respectively. Categorised by organisation type, 49.2 percent of the respondents are working in private companies, with 29.6 percent in the public sector, while government-owned enterprises represent only 4.8 percent of the sample.

Table 3 also shows that 40.8 percent of respondents are working in large organisations (1,000 and over employees), small organisations (100-499 employees) comprised 27 percent of the sample, while only 8 percent of participants are working in medium size organisations (500-999 employees).

Table 3: Location, Organisation Type & Size, Technological Stage

Variable	Freq.	Percent	Cum.
Company location			
ACT	17	6.8	6.8
NSW	65	26	32.8
NT	5	2	34.8
QLD	34	13.6	48.4
SA	22	8.8	57.2
TAS	3	1.2	58.4
VIC	65	26	84.4
WA	33	13.2	97.6
Missing	6	2.4	100
Organization type			
Public	74	29.6	29.6
Private	123	49.2	78.8
Not for profit	40	16	94.8
Government business enterprise	12	4.8	99.6
Missing	1	0.4	100
Number of employees			
Between 1 and 99	61	24.4	24.4
Between 100 and 499	67	26.8	51.2
Between 500 and 999	20	8	59.2
1000 and over	102	40.8	100
Status of industry			
1st Mechanisation	10	4	4
2nd Mass Production	32	12.8	16.8
3rd Computer and automation	162	64.8	81.6
4th Cyber Physical systems	30	12	93.6
other	15	6	99.6
Missing	1	0.4	100
Total	250	100	

Finally, the majority of respondents reported that their organisations are either in the third stage of automation (Computer & Automation - 64.8 percent) or the second stage (Mass

Production - 12.8 percent). Only 12 percent felt that their organisation had achieved Fourth Industrial Revolution status (Cyber-Physical systems).

2. Smart Organisations & Smart Systems

As Table 4 shows, most organisations use centrally-located information technology (IT) functions (66.13%), whilst 22.18 percent use outsourced IT functions and only a small number employ department-based or function-based IT services.

Table 4: Organisation of IT functions

Variable	Freq.	Percent	Cum.
Central IT department	164	66.13	66.13
No in-house department/Contracted out	55	22.18	88.31
IT experts attached to each department	3	1.21	89.52
Local IT departments in each functional	9	3.63	93.15
Other	17	6.85	100
Total	248	100	

Three other variables of smart organisations and smart systems were explored in the survey. Specifically the use of IT security solutions, integrated cross-departmental information-sharing, and current employee skills levels in various aspects of automated systems. Using a five-point Likert Scale (very low-very high), most responses to all three variables recorded means between 3 (moderate) and 4 (high). As examples, IT security solutions received an overall mean of 3.7689 (medium-high), and sub-variables, such as security in internal data storage, received a mean of 3.86. Security of data through cloud services (3.79), security of communications for in-house data exchange (3.72) and security of communications for data exchange with business partners received a mean of (3.71). Integrated cross-departmental information-sharing received an overall mean of 3.1855, with some variation between specific departments – human resources had the highest mean (3.43) of all departments; followed closely by finance and accounting (3.31), general administration (3.29) and customer service (3.28). However sales and marketing (3.09) and transportation and logistics departments (2.93) recorded lower means. Finally, the overall current skills of employees received only a moderate mean (3.0437), with similar significant variations in the means of specific AI technologies – data/communications security (3.35), IT infrastructure (3.30), data analytics

(3.08), systems thinking and process understanding (2.94), collaboration software (2.90), development and application of assistance systems (2.85).

3. Artificial Intelligence Technology & Human Resource Management

Table 5 shows the most common artificial intelligence (AI) software/applications used in HR departments. It is surprising that some widely used applications such as Kronos and BambooHR are not well represented (3% and 1% respectively). The most popular software in this sample is SAP SuccessFactors used by 18.81 percent of total respondents. The most unanticipated findings here are the high levels of 'other', 'none' and unsure' responses.

Table 5: HRM software applications

Variable	Freq.	Percent	Cum.
BambooHR	2	0.99	0.99
Deputy	1	0.5	1.49
AGE Business Cloud People	4	1.98	3.47
Kronos workforce ready	6	2.97	6.44
SAP SuccessFactors	38	18.81	25.25
Cezanne HR	1	0.5	25.74
Unsure	26	12.87	38.61
None	62	30.69	69.31
Other	62	30.69	100
Total	202	100	

The three most common HRM uses for these software applications, in order of perceived importance, are training and development (2.66), performance management (2.65) and compensation and reward systems (2.60). However, the overall mean was only 2.5046, that is less than 'moderate' on the scale, with all HRM functions rated between 'low' and 'moderate' in their usage. Specifically this resulted in: HR audits and surveys (2.39), employee benefits (2.49), health and safety (2.52), HR planning and career development (2.31), staffing (2.55) and employee/industrial relations (2.28).

(A) Current HRM AI software usage, supervisory, training and technical support

The current adoption of AI/robotics technologies in HRM functions appears limited, with a mean score of only 2.8485 (low-medium) which supports the above findings with respect to specific applications. Supervisory and technical support for such developments was also rated relatively low (means were 2.7682 and 2.8945 respectively), but training support received a

higher mean rating at (3.4061 – moderate-high). The inconsistency here might be explained by some confusion about the levels of broader training support in respondents' organisations (ie. general versus more specific training assistance).

(B) Current and Future Implementation Strategies of AI/Robotics Technologies, & Top Management Support

As above, the strategic intent to employ AI/robotics technologies in the companies represented by the survey respondents received only low-moderate support (mean – 2.7500). Specific technologies currently (or most likely) to be used in future are detailed in Tables 6 and 7 below. Apart from the disproportionately large number of non-responders in all categories, the table shows considerable divergence amongst the techniques in both stages. The most commonly-used current technologies are embedded IT systems (79.3%), real-time location systems (60.2%), machine-to-machine communications (50.6%), mobile technology real-time location systems (49.6%) and radio frequency identification - RFID (45.5%). The least employed are artificial intelligence (39.5%), machine learning (28.8%), big data (22%), 3D printing (20.6%) cloud (10.8%) and sensor technologies (9.6%). However, these data need to be treated with caution due to the distortion due to the large number of incomplete responses. Although a glossary of technical terms (see Appendix 3) was provided to the participants with the survey, it appears that either the respondents did not understand the terminology or they did not feel comfortable in their applications in relation to HRM functions. In either case, in itself this may be a significant finding from the survey. This is also the case for 'probable future use' responses. The key future technologies cited included 3D printing (79.4%), machine learning (69.9%), artificial intelligence (59.3%), RFID (51.5%) and machine-to-machine communication (45.7%); less popular technologies include real-time location systems (36.6%), embedded IT systems (16.2%), sensor technology (15.6%), big data (15.2%), cloud technology (10.8%), and mobile technology real-time location systems (4.8%). Whilst some of these latter responses can be attributed to the fact that they are already employed, there are also some surprising discrepancies – notably with respect to big data, cloud and sensor technologies which might be considered crucial to HRM strategies, systems and functions.

Table 6: Summary of most used technologies

Variable	Freq.	Percent	Cum.
Mobile technology			
Current Use	125	83.33	83.33
Probable Future use	12	8	91.33
Both current and future use	13	8.67	100
Total	150	100	
Cloud technology			
Current Use	113	74.83	74.83
Probable Future use	27	17.88	92.72
Both current and future use	11	7.28	100
Total	151	100	
Embedded IT systems			
Current Use	88	79.28	79.28
Probable Future use	18	16.22	95.5
Both current and future use	5	4.5	100
Total	111	100	

Table 7: New AI/Robotics Technologies – Details by Technology Type

Current Use = 1 Probable future use = 2 Both = 1,2 No answer = 0

Sensor technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	182	72.8	72.8	72.8
	1	24	**9.6**	**9.6**	82.4
	1,2	5	2.0	2.0	84.4
	2	39	**15.6**	**15.6**	100.0
	Total	250	100.0	100.0	

Mobile technologies Real-time location systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	101	40.4	40.4	40.4
	1	124	**49.6**	**49.6**	90.0
	1,2	13	5.2	5.2	95.2
	2	12	**4.8**	**4.8**	100.0
	Total	250	100.0	100.0	

Radio-frequency identification (RFID)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	30	12.0	**45.5**	45.5
	1,2	2	.8	3.0	48.5
	2.	34	**13.6**	**51.5**	100.0
	Total	66	26.4	100.0	
	0	184	73.6		
Total		250	100.0		

Real-time location systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	56	**22.4**	**60.2**	60.2
	1,2	3	1.2	3.2	63.4
	2	34	**13.6**	**36.6**	100.0
	Total	93	37.2	100.0	
M	0	157	62.8		
Total		250	100.0		

Big data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	151	**60.4**	60.4	60.4
	1	55	**22.0**	**22.0**	82.4
	1,2	6	2.4	2.4	84.8
	2	38	**15.2**	**15.2**	100.0
	Total	250	100.0	100.0	

Cloud technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	100	40.0	40.0	40.0
	1	112	**44.8**	**44.8**	84.8
	1,2	11	4.4	4.4	89.2
	2	27	**10.8**	**10.8**	100.0
	Total	250	100.0	100.0	

Embedded IT systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	88	**35.2**	**79.3**	79.3
	1,2	5	2.0	4.5	83.8
	2	18	**7.2**	**16.2**	100.0
	Total	111	44.4	100.0	
	0	139	**55.6**		
Total		250	100.0		

Machine to Machine Communications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	41	**16.4**	**50.6**	50.6
	1,2	3	1.2	3.7	54.3
	2	37	**14.8**	**45.7**	100.0
	Total	81	32.4	100.0	
Missing	0	169	67.6		
Total		250	100.0		

3D-printing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	**5.2**	**20.6**	20.6
	2	50	20.0	79.4	100.0
	Total	63	**25.2**	100.0	
Missing	0	187	74.8		
Total		250	100.0		

Machine learning

		Frequency	Percent	Valid Percent	Cumulative Percent
	1	21	**8.4**	**28.8**	28.8
	1,2	1	.4	1.4	30.1
	2	51	**20.4**	**69.9**	100.0
	Total	73	29.2	100.0	

Missing	0	177	70.8		
Total		250	100.0		

Artificial intelligence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	32	**12.8**	**39.5**	39.5
	1,2	1	.4	1.2	40.7
	2	48	**19.2**	**59.3**	100.0
	Total	81	32.4	100.0	
Missing	0	169	**67.6**		
Total		250	100.0		

Table 8 below shows respondents' perceptions of top management support for the implementation of AI applications in HRM departments and functions. The dimensions of 'top management support' include their 'enthusiastic support', 'allocation of adequate support', 'awareness of the benefits' and 'active encouragement' of HRM AI initiatives. Note that incomplete responses have been removed from this table. The responses to this question are generally in the low-moderate range, both overall and in response to each dimension – whilst there appears to be a reasonable degree of enthusiasm and awareness of the benefits, respondents rated resourcing and active encouragement from top organisational managers relatively low. These data relate to Model 1a (Figure 1) shown in the Introduction to this report.

Table 8: Top Management Support for AI in HRM

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Descriptive Statistics

	N	Mean	Std. Deviation
Top Management Support	161	3.0031	.91676

Descriptive Statistics

	N	Mean	Std. Deviation
Enthusiastic management support	161	3.29	1.021
Adequate resources	160	2.72	1.021
Aware of the benefits	159	3.18	1.047
Actively encourages HRM-AI applications	157	2.85	1.110

(C) Perceptions of AI usefulness, ease of use and enhancement of HRM functions

As Table 9 below shows, most respondents agree (but not 'strongly agree') that AI and robotics technologies will be useful for their organisations in accomplishing tasks more quickly, improving job performance, increasing productivity and making jobs easier for employees. Table 10 demonstrates that most respondents are supportive in relation to the ease of use for employees associated with implementing these new technologies.

Table 9: Usefulness of AI/Software/Applications in your organisation

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Perceived usefulness of AI/Robotics	158	2.0854	.84451

Mean Score of Each

Descriptive Statistics

	N	Mean	Std. Deviation
Accomplish tasks more quickly	156	2.03	.894

Improve job performance	158	2.18	.895
Increase productivity	157	2.04	.901
Easier for employees	157	2.06	.904

Table 10: Ease of use of AI/Software/Applications in your organisation.

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Perceived ease of use of AI/Robotics	160	2.8156	.82249

Mean Score of Each

Descriptive Statistics

	N	Mean	Std. Deviation
Easy to learn	160	2.87	.905
Easy to obtain	160	2.76	.865
Easy employee interaction	160	2.81	.892
	160	2.82	.903

The following tables (Table 11 & Table 12) represent the perspectives of respondents towards the contributions of FIR technologies to HR process enhancement and overall HR effectiveness. Again, the means shown reflect only marginal agreement with both aspects, with less support for the enhancement of HR processes, especially with respect to employee acceptance of such processes and the contribution to HR process consistency across organisations.

Table 11: Use of AI/Software/Applications to enhance HR processes in your organisation

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
HRM Strength	160	2.0938	.75431

Mean Score of Each

Descriptive Statistics

	N	Mean	Std. Deviation
Assist employee knowledge of HR processes	160	2.15	.848
Help employees understand HR processes	160	2.27	.895
Help employees accept HR processes	159	1.99	.775
Assist HR process consistency across the organisation	160	1.94	.826

Table 12: Impact of AI/Software/Applications on HR effectiveness in your organisation

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
HR Effectiveness	160	2.0641	.82818

Mean Score of Each

Descriptive Statistics

	N	Mean	Std. Deviation
Help HR perform better	160	2.04	.947

Improve HR responsiveness	160	2.05	.896
Improve HR communication/information	160	2.05	.923
Help HR to enhance organisation's competitiveness	158	2.06	.908
Help to add HR value-added contributions	155	2.10	.891

These data are associated with Model 1b (Figure 2) shown in the Introduction.

(D) Impacts of AI on organisational performance indicators

The following tables (Tables 13 & 14) report the perceptions of respondents on a range of broad performance indicators – namely, innovation, customer satisfaction, management control, business supplier/partner relationships, internal process efficiency, customer intelligence and overall organisational performance. The means displayed are remarkably similar (at the moderate end of the scale) across all indicators, with perhaps less support for the impact on internal process efficiency.

Table 13: Organisational Impacts of AI/Software

Innovation

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Innovation	142	2.5986	.91139

Customer satisfaction

Strongly	Agree (2)	Undecided	Disagree (4)	Strongly

agree (1)	(3)	disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Customer satisfaction	142	2.3286	.78599

Management control

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Management control	143	2.1399	.72017

Business supplier/partner relations

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Business supplier/partner relation benefits	142	2.3697	.69873

Internal process efficiency

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation

Internal process efficiency benefits	144	2.0451	.62554

Customer intelligence

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Customer intelligence benefits	144	2.5833	.75055

Overall organisational performance.

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Organisation performance	144	2.4525	.75620

Table 14: Mean score of technology acceptance, business process performance & organisation performance

Variable	Obs	Mean	Std. Dev.	Min	Max
Task productivity	145	2.018	0.726	1	5
Innovation	143	2.612	0.922	1	5
Customer satisfaction	143	2.333	0.785	1	5
Management control	144	2.141	0.718	1	5
Business supplier/partner relation benefits	143	2.374	0.698	1	5
Internal process efficiency benefits	145	2.047	0.624	1	5
Customer intelligence benefits	145	2.586	0.749	1	5
Organisation performance	145	2.453	0.754	1	5

(E) Employee Attitudes, Job Satisfaction & Job Insecurity

The following table (Table 15) shows respondent views about the likely effects of the implementation of AI technologies on employee attitudes to their work, job satisfaction and feelings of job insecurity. As might be expected, there is a broader range of negative views in their responses to these sensitive organisational issues.

Table 15: AI & Employee Attitudes, Job Satisfaction and Job Insecurity

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Employee attitude	140	1.9190	.66411

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Job satisfaction	140	2.7643	.65761

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Job insecurity	140	2.7714	.51896

(F) To use or not to use AI?

This question elicited the greatest divergence between respondents, as might be expected. The overall mean is quite positive, but there is considerable variation between the three options – 'intend to use', 'do not intend to use' and 'expect to use frequently', which is also reflected in the focus group responses included later in this report.

Table 16: Intention to use AI software in the HR department

Strongly agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly disagree (5)

Total Mean Score

Descriptive Statistics

	N	Mean	Std. Deviation
Intention to use	139	2.4988	.53594

Mean Score of Each

Descriptive Statistics

	N	Mean	Std. Deviation
Intend to use AI in HR department	139	1.92	.743
Do not intend to use	139	3.63	1.168
Expect to use frequently	138	1.93	.737

(G) Government Strategy & Policy on FIR

The final question in the survey asked respondents to rate federal and state governments on their FIR strategies and policies. As the table shows, a large majority were either 'not impressed', 'not impressed at all' (51.8%) or 'undecided' (42.4%). Only 4.3% were 'impressed' and 1.4% 'very impressed'. In the absence of a dedicated strategy at either level of government, this finding may not be surprising.

	Frequency	Percent	Valid Percent	Cumulative Percent
Not impressed at all	22	8.8	**15.8**	15.8
Not impressed	50	20.0	**36.0**	51.8

Undecided	59	23.6	**42.4**	94.2
Impressed	6	2.4	4.3	98.6
Very impressed	2	.8	1.4	100.0
Total	139	55.6	100.0	

RESEARCH FINDINGS – FOCUS GROUP COMMENTS (Selected)

This section includes some comments from selected focus groups conducted with AHRI members in five cities to illustrate a range of key points raised.

Fourth Industrial Revolution & HRM

Focus group participants were asked two questions in relation to this topic:

- What does the Fourth Industrial Revolution (Industry 4.0) mean to you?
- What do you perceive to be the role(s) of HRM in workplace innovation and the introduction and use of artificial intelligence, robotics and machine learning?

"I see the US and the UK way far ahead to where we are, way far ahead. That's mindset, that's actually putting the technology inhouse and it's already launching, and we're so far behind that, for me, I find that's frustrating…Why are we not there yet" ?

"So, the nature of the company is that for us to do our – be effective in our roles and to have an effective, you know, company culture and HR strategy and HR department, we have to leverage technology, so you know, if we don't jump on board and embrace it, we're probably going to get caught behind". (Sydney)

"I think we're all sort of distracted and the art is not to get distracted by the technology, to use it as something that frees you up that focuses your skills and your knowledge". (Melbourne)

"I think the main theme that consistently appears would be on value creation and I think the Fourth Industrial Revolution can mean many things to different people, but I think at the end of the day what different organisations look at is how you want to take pieces of technology that work for you and how you align in with your business strategy and how you create value for your customers". (Melbourne)

"The divide that can emerge between those organisations that can afford technology and those that can't. The power that big organisations have is that they can have a technology roadmap, but as a not for profit organisation would, even if they have one, it's hard to implement". (Melbourne)

"We do a lot of training and capability development and virtual and augmented reality… but, you know, say in the oil and gas industry, instead of training people onsite at a rig which, you know, can be dangerous, you know, they'll do virtual reality things…you know, they're building submarines for military purposes and they've already got a virtual reality model so they can train people before it's built". (Perth)

"Have deliberately come into the business to create a HR digital transformation of the HR function. We did that for a reason and that's because we're a small team, so it'll be – make sure that we had enough technology around us to be able to do our jobs effectively" (Adelaide)

"So…… for us to date artificial intelligence has had zero impact and for the foreseeable future it won't have any practical impact". (Newcastle)

"Probably sounds massive and crazy when we're talking about Industry 4.0, but to me we have – it is the golden era". (Newcastle)

"I think a lot of organisations aren't even in this space at the moment, you know, the vast majority of them; so, they understand it's coming but they don't realise it's here, just not in these organisations. It's a big step from technology to artificial intelligence and machine learning and Internet of Things and there is not really an appetite at the moment". (Perth)

Current & anticipated impacts

In relation to the current and anticipated impacts of AI focus group participants were asked:

- What do you think are the key technologies (for example, artificial intelligence, robotics, machine learning) that are most likely to be adopted by your organisation/industry sector in the next 5-10 years?
- What observations can you provide regarding the current impacts of 4IR in your industries/organisations?
- How do you expect these technologies to affect (a) your organisation, (b) your workforce and (c) your workplaces in the foreseeable future?
- More specifically, how might they affect (a) the various levels of jobs in your organisations and (b) knowledge, competencies and skills requirements?
- Might employees experience (a) changes in work practices, (b) job design and (c) employment conditions due to the 4IR?

"But when you talk about the HR technology itself, look, yes, obviously there's a whole range of records management, there's a whole range of ways employees now can access their own information and to some extent self-serve and have the system do a lot of the stuff automatically as well so I see a huge disruption in terms of the operation aspects of HR, you know, you won't – so it needs a new – a complete new skillset in terms of moving forward from a HR perspective". (Perth)

"I think all HR practices will be affected as we are talking about databases which are more efficient, more effective and more connected than they were before so it's a different way of thinking, it's a different approach and it's definitely a different pace which will probably wipe out many other parts of existing organisations as well and people – HR people are scared about it because they love it how it is at the moment, they love the template and the work and they start at 8 and finish at 5 and every little change is scary and involves risk". (Perth)

"The major implications are a lot of the work that HR performs now won't exist in the future and that'll mean the profession will really need to redefine the value that it adds to organisations so, which I don't think's a bad thing. I definitely agree many people are very comfortable with that and they don't want it to change because, you know, their career rests on that kind of thing but I think eventually, you know, it'll change to being, you know, HR will be a much more strategic role in an organisation because it won't need to worry too much about transactional kind of work". (Melbourne)

"I think a lot of planning's required when you are going on a on a journey for automation, you absolutely need to think about jobs for the future and how do you, where do you see your team". (Melbourne)

"There's a lot of perception that the robots are going to take our jobs and some of that mindset is coming from that angst about what does that mean for them, but where our job is to change that mindset". (Sydney)

"So, having people who have diverse skill sets and thinking styles is really important. So, having people who can flick things on and off in their brain and focus on one thing at a time is actually really important. I keep scratching my head and going why are people doing accounting degrees, like, seriously? Do you not know by the time you've finished degree that job is not going to be there"? (Newcastle)

"For other organisations I see that there is an increased level of automation and their intention is to have further increases in automation. That's not likely to happen for us. (Newcastle)

But I think with all new technologies, you reach a point where – at the start – it's sort of a bit gimmicky, expensive, not worthwhile doing it and then, it reaches the point where you're like okay, now, it's affordable and totally worth doing". (Adelaide)

"There'll be winners and losers no doubt but, you know, and something I read recently talked about the thing – the jobs in the future that will prevail will more be centred around quality of life and I think that's wonderful, that's a fantastic thing and that includes health care, you know, services, retail or not retail, hospitality, sports, all these kind of things". (Perth)

HRM implications

In relation to the HRM implications focus group participants were asked the following:

- How do you expect these challenges to affect your own role, competencies & skills?

- How might they affect HRM policies and practices – for example, HR planning, job design, talent attraction and retention, learning and development, rewards and benefits, career planning?
- How prepared are HRM professionals to balance the adverse and positive effects of 4IR on their workforces and specific occupations?
- What do you think you will need to do to better prepare yourself/employees and your organisation?
- Are you aware of any examples of innovative case studies in different industry sectors which illustrate effective principles and practices for HR professionals to develop in addressing 4IR?

"First, what will this do to the HR profession and the role and function of the HR profession itself, so some of those standardised functions, you know, and even the traditional ones such as, you know, employee records and, you know, HR services delivered, you know, processing and all that kind of stuff, the administrative stuff, so that'll obviously reform a lot of that kind of stuff; but then it's also HR has a role in what it does to help the business and I think that is something that HR will fundamentally change in what it does". (Perth)

"HR's role is not so much to automate everything other than within its own realm but it's to assist the rest of the organisation, the subject matter experts in look at what automation, robotics technology will do for them and how they might manage the change, you know, particularly to do with their people and things like that". (Perth)

"I feel from a HR perspective, though, my role is to get the workforce ready and to be part of that change, what it means for them in terms of their mindset but also how their job's going to change, so it's almost like I feel like I can't see it yet but I know it's just there. In my role now for four years, so being part of that journey and one of our values, actually, is about innovation and creativity. We've really made it a part of everybody's role". (Sydney)

"I think for a lot of industries, people are probably going to be quite fearful of this and wary of it and I guess it's about getting them on board, getting the buy-in and getting the mindset that this brings opportunity and positivity and to think about, you know, what suitable training and development these employees might need to get up to speed. And just, I guess, supporting them to not feel like they're being left behind and not able to keep up with the technological revolution". (Sydney)

"Our organisation is looking at making sure technology is part of the solution we offer to clients so that's anything from cultural surveys, you know, leadership review processes that feed data into bigger data sets and start to get some machine learning going into, you know, okay, what does that mean and how does that relate to what we understand

of psychology, you know, what are some of those indicators that people are doing"? (Perth)

"I actually see it as freeing people from routines, processes, really old fashioned structures that have had people very unhappy in work and I think the automation is going to allow more meaningful work and people to discover what their real purpose is, instead of being bogged down in stuff that we can easily automate and we could have automated 10/15 years to actually be more human in the workplace, so we can have more time to have meaningful conversations with people and to focus on building culture, building teams, building, you know, great places to come to work". (Melbourne)

"It's going to go from basically more from transactional to transformational, automation absolutely should get rid of all those basic transactions and help us focus, value add and do some more transformational in the HR space. So, that's all that we can do that's so advanced and we are getting there, I guess, in terms of Australian somewhere, doing better than others. What's happening is it's just paper pushing every day transaction, not actually giving the staff what we should. So, I think this one, with a bit more automation, will free up individuals' time to think beyond just every day transactions that they currently do for their staff, there's some better stuff there". (Melbourne)

"We actually do have quite a few focus groups looking at the ways that we can provide more automation and what those projects might look like, but also we're really having that mindset again purely shifting on the customer experience and then also for us, it's a point of differentiation and market, so we're trying to get ahead quicker than the rest of the market so that it's a point of differentiation for people with customers to seek us out". (Sydney)

"If artificial intelligence can actually talk through HR issues with people in the future and assess the pulse of the person in the meeting and say, "Oh, they're about to resign because they've looked too much at these sites," and things like that, you know". (Perth)

"So, from a HR point of view, it's about managing change, it's about managing expectations, or certainly fears around what this might mean, but also putting into context historically as well, is that we tend to go through phases of fearing that this is going to destroy jobs, destroy lives etc, but in fact we haven't necessarily seen that". (Melbourne)

"I mean that's always been one of the main issues from an HR point of view, is that we've done the employee relations side, what we've not done is use analytics. We've not done the HR metrics, we've not got an understanding as to how active our workforce is or we act, anecdotal issues that come up and then find ourselves fighting. We're not good at being on the front foot, in terms of having those conversations and being able to bring predictors or to help the business look forward". (Melbourne)

"Getting people to think more collaborative than competitive, you know, or isolation so, and I think that's another issue too". (Perth)

"The Fourth Industrial Revolution can mean many things to different people, but I think at the end of the day what different organisations look at is how you want to take pieces of technology that work for you and how you align in with your business strategy and how you create value for your customers". (Sydney)

"I guess it's about getting them on board, getting the buy-in and getting the mindset that this brings opportunity and positivity and to think about, you know, what suitable training and development these employees might need to get up to speed. And just, I guess, supporting them to not feel like they're being left behind and not able to keep up with the technological revolution. I guess, yeah, so training and development, I think you know, with the greater connectivity and combination of technologies working together, I think privacy as well". (Adelaide)

Strategies & Policies – Government & AHRI

Finally, the focus group participants were asked:

- What strategic policy interventions are you aware of at (a) government and (b) industry levels to address the likely impacts of 4IR?
- What interventions do you think they should be undertaking?
- How do you think (a) AHRI, (b) industry associations, and (c) educational institutions could assist HR practitioners and others in preparing for the changes that are likely to occur due to the impacts of 4IR?

"Government's role is to stimulate groups of people coming together to share and cross pollinate ideas and lead them into the future, I think that's what it does for innovation but it also has on the other side of it some agenda, is how does it regulate so that it's not a race to the bottom, that externalities are being factored into this, if you cut jobs you – maybe you should pay a levy to, you know, some research or even some welfare so that these people can still be valid members – valued members of society et cetera and things like that and that it's very difficult for government to balance those two, kind of, things without constricting innovation and things like that". (Perth)

"So, the government has been helping facilitate or certainly provide that service, which small not for profits wouldn't ordinarily get access to or could necessarily afford their own. So, that's only one example that I can think of right now, but it actually brought that whole sector together and has actually inspired a number of the smaller not for profits, that are very proud of who they are, maintaining their brand, they want to retain their brand, but are starting to collaborate across that area. So, I take my hat off to the State Government". (Melbourne)

"Well, I think AHRI should or could be more progressive when it comes to innovation and information, I mean, I'm AHRI member and on the council and I love AHRI, but they are playing the ball very safe, very low. But to see what's on the screen, what's possible and maybe there are some benefits and maybe there are things which we can

learn from mistakes ours did in the past. So before reinventing the wheel have a look how others do it or did it and what they learnt". (Perth)

DISCUSSION & RECOMMENDATIONS

The findings indicate that the current adoption of AI/robotics technologies in HRM functions is limited and so was intention to employ in the future. Supervisory and technical support for such developments was also rated at relatively low levels. There will always be 'leaders and laggers' in relation to AI adoption indicated by some of the key themes arising from the surveys and focus groups being the need for organisational leaders to take an active role in AI adoption. This seems to be imperative given the indications that Australia workplaces are lagging when it comes to AI adoption when compared to other developed countries. A recent report on the Automation Readiness Index showed Australia ranked at number 10 behind South Korea, Germany, Singapore, Japan, Canada, Estonia, France, the UK and the US (Economist Intelligence Unit, 2018, p.10).

A focus group member indicated that HR needs to consider how "they can be a business partner. HR needs to roll up their sleeves and be more of an internal consultant." According to focus group members this may be related to lack of technical ability either in certain sub-sets of the workforce or HR itself. However, the indication by some focus groups that technology is going to move away from traditional systems and reference to the gig economy is going to impact on HR and result in a need for changes in the Australian legal system to include these features.

Change management and the need for a shift in mindsets was indicated with focus group members reporting that as they have people blocking change it is a good time for HR to take on a partnership role and work with employees to bring about innovation in this space together. Agility and resilience was referred to as of key importance for people who can 'learn how to learn' and who are comfortable with change and therefore are more likely to embrace new technology. This is important given there will be a number of jobs that are likely to disappear - those most likely to be automated – such as basic processing roles. However, new jobs were also considered to be likely to be created and there will be a need for changing skill sets as a result.

Recommendations

Overall, focus group members were positive about the future indicating that, while there were some great opportunities and potential in relation to AI adoption in their workplaces, they were unsure how to tap into them. The consistent theme of the need for leadership was evident – in their organisations; in AHRI and in government. A key recommendation is for AHRI to consider how they may be able to assist their members in this regard. AHRI could be of assistance here providing resources, case studies and awareness raising as well as advising government in terms of how AI adoption could be supported more widely in relation to preparedness for the future of work in Australia. Otherwise, we may find that Australia does not move up the ranking index for automation readiness anytime soon.

Reference

McCauley, D. (2018) The Automation Readiness Index: Who is Ready for the Coming Wave of Automation? *The Economist Intelligence Unit Limited* (2108)

APPENDICES

Appendix 1 – Focus Group Framework

A. PARTICIPANT DETAILS

1. Can you outline your experiences in the industry sector(s) where you work?
2. What are your current position(s)?

B. FOURTH INDUSTRIAL REVOLUTION

3. What does the Fourth Industrial Revolution (Industry 4.0) mean to you?
4. What do you perceive to be the role(s) of management in workplace innovation and the introduction and use of artificial intelligence, robotics and machine learning?

C. CURRENT & ANTICIPATED IMPACTS OF INDUSTRY 4.0

5. What do you think are the key technologies (for example, artificial intelligence, robotics, machine learning) that are most likely to be adopted by your organisation/industry sector in the next 5-10 years?
6. What observations can you provide regarding the *current* impacts of 4IR in your industries/organisations?
7. How do you expect these technologies to affect (a) your organisation, (b) your workforce and (c) your workplaces in the foreseeable future?
8. More specifically, how might they affect (a) the various levels of jobs in your organisations and (b) knowledge, competencies and skills requirements?
9. Might employees experience (a) changes in work practices, (b) job design and (c) employment conditions due to the 4IR?

D. MANAGEMENT IMPLICATIONS

10. How do you expect these challenges to affect your own role, competencies & skills?
11. How might they affect policies and practices – for example, HR planning, job design, talent attraction and retention, learning and development, rewards and benefits, career planning?
12. How prepared are management to balance the adverse and positive effects of 4IR on their workforces and specific occupations?
13. What do you think you will need to do to better prepare yourself/employees and your organisation?

14. Are you aware of any examples of innovative case studies in different industry sectors which illustrate effective principles and practices for managers to develop in addressing 4IR?

E. 4IR POLICY INTERVENTIONS

14. What strategic policy interventions are you aware of at (a) *government* and (b) *industry* levels to address the likely impacts of 4IR?

15. What interventions do you think they *should* be undertaking?

16. How do you think industry associations and educational institutions could assist managers and others in preparing for the changes that are likely to occur due to the impacts of 4IR?

Appendix 2: Questionnaire

AHRI SURVEY INSTRUMENT

The Fourth Industrial Revolution & the Future Workforce: Implications for HRM

The aim of this questionnaire is to examine the anticipated workforce and specific occupational impacts of artificial, robotic and machine learning technologies on different Australian industry sectors over the next decade. Specifically, we seek to determine how prepared HRM professionals are in relation their own workforces/specific occupations and Artificial Intelligence/HR software. You are invited to participate. It is estimated that the questionnaire will take approximately 15-20 minutes of your time to complete. Please put a cross (X) against the box which best describes your response. All responses are **strictly confidential**. We thank you in advance for your cooperation.

SECTION 1: ORGANISATION DETAILS (OD)

OD 1: Industry sector:

1) Agriculture, Forestry & Fishing ☐ 2) Mining ☐ 3) Manufacturing ☐
4) Electricity, Gas, Water & Waste Services ☐ 5) Construction ☐ 6) Wholesale Trade ☐
7) Retail Trade ☐ 8) Accommodation & Food Services ☐ 9) Transport, Postal & Warehousing ☐
10) Information Media and Telecommunications ☐ 11) Financial & Insurance Services ☐ 12) Rental, Hiring & Real Estate Services ☐
13) Professional, Scientific & Technical Services ☐ 14) Administrative & Support Services ☐ 15) Public Administration and Safety ☐
16) Education and Training ☐ 17) Health Care & Social Assistance ☐ 18) Arts and Recreation Services ☐
19) Other Services (please specify):

OD 2: What is your position in the organisation:

HR administrator (staff) ☐ HR supervisor ☐ HR manager ☐
HR director ☐ HR Advisor or Consultant Other (Please specify):

OD 3: Where is your organisation located?

ACT ☐
NSW ☐
NT ☐
QLD ☐
SA ☐
TAS ☐
VIC ☐
WA ☐

OD 4: What is your organisation type?

Public ☐
Private ☐
Not for profit ☐
Government business enterprise ☐

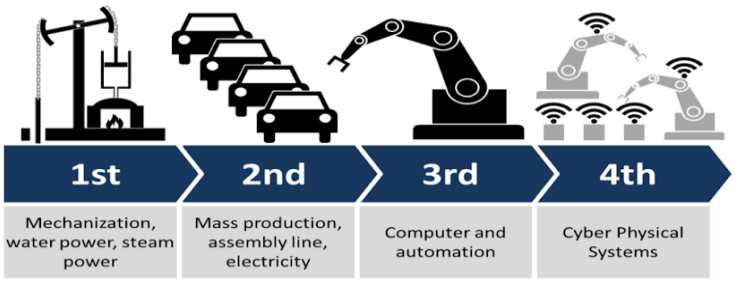
Please mark an "X" against the item which best describes your organisation

OD 5: How many people work in this organisation? (Include both full-time and part-time staff, but excluding subcontracted and self-employed staff)?

☐ Between 1 and 99	☐ Between 100 and 499	☐ Between 500 and 999
☐ 1000 and over		

OD 6 : At what technological stage is your organisation currently? Please select one option

☐ 1st Mechanisation ☐ 2nd Mass Production ☐ 3rd Computer and automation ☐ 4th Cyber Physical systems ☐ Other



SECTION 2: RESPONDENT DEMOGRAPHICS (RD)

Please mark an "X" on the item which best describes you.

RD 1: To which gender identity do you most identify?

☐ Female	☐ Male
☐ Non-binary	☐ Prefer not to say

RD 2: Please indicate your age category

☐ Between 18 and 35	☐ Between 36 and 50
☐ Between 51 and 65	☐ Over 65 years old

RD 3: What is the highest level of education that you achieved?

☐ High School or Lower	☐ TAFE Qualification or college
☐ Bachelor Degree	☐ Postgraduate Qualification

RD4: What is your position level in the organisation?

☐ Staff	☐ Supervisor	☐ Manager
☐ Director	☐ Other (please specify)	

SECTION 4: TECHNOLOGY ADOPTION FOR the HR DEPARTMENT (TAHD)

TAHD 4: Please respond to the following statements with respect to **expertise** in dealing with AI/HR software/applications in your HR department.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
All human resources personnel are computer-literate	☐	☐	☐	☐	☐
There is at least one computer expert in the human resources department	☐	☐	☐	☐	☐
Human resources personnel have a good understanding of computers compared with other organisations in the industry	☐	☐	☐	☐	☐

TAHD 5: Please respond to the following statements with respect to the **usage** of AI/HR software/applications in your role.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I use AI/HR Software/Applications installed in my organisation intensively to support my work	☐	☐	☐	☐	☐
I use AI/HR Software/Applications in my organisation frequently to support my work	☐	☐	☐	☐	☐
Overall, I use AI/HR Software/Applications a lot	☐	☐	☐	☐	☐

TAHD 6: Please respond to the following statements with respect to **supervisor support for** AI/HR software/applications in your role.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I am continuously encouraged by my immediate supervisor to use AI/HR Software/Applications in my job	☐	☐	☐	☐	☐
My immediate supervisor explicitly supports my using AI/HR Software/Applications	☐	☐	☐	☐	☐
My immediate supervisor truly believes in the benefits of AI/HR Software/Applications	☐	☐	☐	☐	☐

TAHD 7: Please respond to the following statements with respect to **training support provided for** AI/HR Software/Applications in your role.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
My organisation has extensively trained me in the use of AI/HR Software/Applications	☐	☐	☐	☐	☐
My organisation provided me with complete instructions and practice in using AI/HR Software/Applications	☐	☐	☐	☐	☐
I am getting the training I need to be able to use our AI/HR Software/Applications effectively	☐	☐	☐	☐	☐

TAHD 8: Please respond to the following statements with respect to **technical support provided for** AI/HR Software/Applications in your role.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I know where to turn to when I need any assistance with the use of AI/HR Software/Applications	☐	☐	☐	☐	☐
In my organisation, we get good technical support for the use of AI/HR Software/Applications in our department	☐	☐	☐	☐	☐
We have extensive support to help with problems related to the use of AI/HR Software/Applications	☐	☐	☐	☐	☐

SECTION 5: STRATEGY, SUPPORT, STRENGTH, PROCESS & EFFECTIVENESS (S3PE)

S3PE 1: The following section concerns the **strategic intentions/alignment** of your organisation in the context of the usage/implementation of AI/HR Software/Applications. Please mark an "X" against the item which best describes your opinion.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Our IT strategies support and match our business strategies	☐	☐	☐	☐	☐
We adapt and align our IT strategy to business strategic change	☐	☐	☐	☐	☐
We adapt our IT goals and objectives to our business goals and objectives	☐	☐	☐	☐	☐
We identify the fit between our IT- related strategic opportunities and our business's strategic direction	☐	☐	☐	☐	☐
Our IT strategies and business strategies correspond to each other	☐	☐	☐	☐	☐

S3PE 3: Evaluate the degree of **top management support** for the use/implementation of AI/Software/Applications in your organisation.

	Very Low	Low	Moderate	High	Very high
Top management enthusiastically supports the adoption of AI/Software/Applications in different departments	☐	☐	☐	☐	☐
Top management has allocated adequate resources for the adoption of AI/Software/Applications in different departments	☐	☐	☐	☐	☐
Top management is aware of the benefits of implementing AI/Software/Applications in different departments	☐	☐	☐	☐	☐
Top management actively encourages human resource personnel to use AI/Software/Applications in their daily tasks	☐	☐	☐	☐	☐

S3PE 4: Please evaluate the following statements with respect to the **usefulness** of AI/Software/Applications in your organisation.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Using AI/Software/Applications in jobs would enable employees to accomplish tasks more quickly	☐	☐	☐	☐	☐
Using AI/Software/Applications would improve employees' job performance	☐	☐	☐	☐	☐

Using AI/Software/Applications in jobs would increase employees' productivity	☐	☐	☐	☐	☐
Using AI/Software/Applications would enhance employees' effectiveness on the job	☐	☐	☐	☐	☐
Using AI/Software/Applications would make it easier for employees to do their job	☐	☐	☐	☐	☐
Employees will find AI AI/Software/Applications useful in their jobs	☐	☐	☐	☐	☐

S3PE 5: Please evaluate the following statements with respect to the **ease of use** of AI/Software/Applications in your organisation.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Learning to operate AI/Software/Applications would be easy for employees	☐	☐	☐	☐	☐
Employees would find it easy to get AI/Software/Applications to do what they want them to do	☐	☐	☐	☐	☐
Employee interaction with AI/Software/Applications would be clear and understandable.	☐	☐	☐	☐	☐
Employees would find AI/Software/Applications to be flexible to interact with	☐	☐	☐	☐	☐
Employees will find AI/Software/Applications easy to use	☐	☐	☐	☐	☐

S3PE 6: Please evaluate the following statements with respect to the use of AI/Software/Applications to **enhance HR processes** in your organisation.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Using AI/Software/Applications will help employees to know the HR processes and practices across the organisation	☐	☐	☐	☐	☐
Using AI/Software/Applications will help employees to understand the HR processes and practices across the organisation	☐	☐	☐	☐	☐
Using AI/Software/Applications will help employees accept HR processes and practices in the organisation	☐	☐	☐	☐	☐
Using AI/Software/Applications will help HR personnel and executive managers follow the same guidelines across the organisation for implementing HR practices and processes	☐	☐	☐	☐	☐
Using AI/Software/Applications will help in effective	☐	☐	☐	☐	☐

administration of different departments with the help of HR practices					
Using AI/Software/Applications will help to achieve consistent HR processes and practices across different departments	☐	☐	☐	☐	☐
Using AI/Software/Applications will help the HR department to invest heavily in the full implementation of HR practices	☐	☐	☐	☐	☐

S3PE 7: Please indicate the likely impact of AI/Software/Applications on **HR effectiveness** in your organisation.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
AI/Software/Applications help the HR department to perform its job in the way it would like to perform it	☐	☐	☐	☐	☐
AI/Software/Applications help the HR department to be responsive to line managers' and employees' needs	☐	☐	☐	☐	☐
AI/Software/Applications help the HR department to provide useful and timely information to different departments and employees concerning HR issues	☐	☐	☐	☐	☐
AI/Software/Applications have helped the HR department to enhance the firm's competitive position	☐	☐	☐	☐	☐
AI/Software/Applications help the HR department to provide value-added contributions to the organisation's bottom line	☐	☐	☐	☐	☐
AI/Software/Applications help the HR department to contribute to building the organisation's human capital as a source of competitive advantage	☐	☐	☐	☐	☐
AI/Software/Applications help HR policies, practices, and procedures to assist line managers and employees perform their jobs better	☐	☐	☐	☐	☐
AI/Software/Applications help the HR department to frame policies, practices, and procedures that support the organisation's business plan	☐	☐	☐	☐	☐

SECTION 7: ATTITUDE(ATT)

AJSI 1: Please evaluate the following statements with respect to **the use of the AI/Software/Applications in your organisation's HR department.**

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Using AI/Software/Applications in the HRM department is a good idea	☐	☐	☐	☐	☐
Using AI/Software/Applications in the HRM department is beneficial for the organisation	☐	☐	☐	☐	☐

Using the latest AI/Software/Applications is always enjoyable	☐	☐	☐	☐	☐

SECTION 8: BEHAVIOUR INTENTION, CONTROL & NORMS (BICN)

BICN 1: Please evaluate the following statements with respect to **your intention** of using AI/Software/Applications in your department.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I intend to use AI/Software/Applications for the HR department as often as needed	☐	☐	☐	☐	☐
Whenever possible, I intend not to use AI/Software/Applications for the HR department	☐	☐	☐	☐	☐
To the extent possible, I would use AI/Software/Applications for HR department frequently	☐	☐	☐	☐	☐

BICN 2: Please evaluate the following statements with respect to **the capacity** to uses AI/Software/Applications in your department.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I would have the ability to use AI/Software/Applications in performing my HR functions	☐	☐	☐	☐	☐
Using AI/Software/Applications in my HR functions would be entirely within my control	☐	☐	☐	☐	☐
I do not have the knowledge to make use of AI/Software/Applications in performing my HR functions	☐	☐	☐	☐	☐
I would have the resources (including training) to make use of AI/Software/Applications in performing my HR functions	☐	☐	☐	☐	☐

BICN 2: Please evaluate the following statements with respect to **the attitude of others in** using AI/Software/Applications in your department.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
People who influence my behaviour in the HR department think that I should use AI/Software/Applications in different HR functions	☐	☐	☐	☐	☐

People who influence my behavior in the HR department think that I should not use AI/Software/Applications in different HR functions	☐	☐	☐	☐	☐
Management think that I should not use AI/Software/Applications in different HR functions	☐	☐	☐	☐	☐

THANK YOU FOR YOUR CONTRIBUTION

Appendix 3 – Glossary of terms

Artificial intelligence (AI) is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans and other animals.
Machine learning (ML) is a field of artificial intelligence that uses statistical techniques to give computer systems the ability to "learn" from data, without being explicitly programmed.
Robotics deals with the design, construction, operation, and use of robots, as well as computer systems for their control, sensory feedback, and information processing.
Automation or automatic control is the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat-treating ovens, steering and stabilization of ships, aircraft and other applications and vehicles with minimal or reduced human intervention.
Sensor is a device, module, or subsystem whose purpose is to detect events or changes in its environment and send the information to other electronics, frequently a computer processor.
Mobile technology is the technology used for cellular communication.
Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags (which contain electronically stored information) attached to objects.
Real-time location systems are used to automatically identify and track the location of objects or people in real time, usually within a building or other contained area.
Big data is a term used to refer to data sets that are too large or complex for traditional data-processing application software to adequately deal with.
Cloud computing is shared pools of configurable computer system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet. Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a public utility.
3D-printing is any of various processes in which material is joined or solidified under computer control to create a three-dimensional object, with material being added together (such as liquid molecules or powder grains being fused together).