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Priority setting in international trade – application of multiple criteria decision analysis for Australian-Indonesia trade in the health sector

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WORKING PAPER

The extended abstract of this paper has been peer-reviewed and published in ANZMAC 2023 Conference Proceedings¹.

Abstract

We demonstrate a use case of Multiple Criteria Decision Analysis (MCDA) in collaboration with industry stakeholders in forums as a way in which governments can undertake a 'soft' industry policy in international trade given the complex and changing global environment, and facilitate, rather than steer, the prioritisation of sector-specific facilitation. International trade is increasingly a balancing act with multiple competing objectives including security with open competition, economic growth with inclusion, and social and environmental protection. Post-pandemic, government efforts to stimulate export-led recovery and refine trade priorities within the rule bound by members of the World Trade Organisation are set to ramp up. To assist governments, guide their limited resources we advocate for the use of MCDA to assist with greater trade policy transparency and enable strategic decision making between multiple stakeholders. While MCDA is often used in areas such as healthcare and environmental resourcing, it is not widely used in international trade. We demonstrate the use of MCDA to determine potential trade priorities in the healthcare sector under the Indonesia-Australia Comprehensive Economic Partnership Agreement. MCDA was applied in real-time during online workshops hosted by Australia's Department of Foreign Affairs and Trade with 38 industry stakeholders. The pilot determined clear priorities for trade promotion in a transparent process. These are discussed along with the potential to further develop and apply MCDA and the limitations of the analysis for effective use in international trade.

Keywords: multiple criteria decision analysis, international trade, Australia, Indonesia, healthcare

JEL codes: F13; F55; D70; I18

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1. Introduction

International trade plays a vital role in the economic performance of a nation. Economic theory suggests that under most circumstances, lower trade barriers can lead to more trade and deliver mutual benefits to trading nations². Historically, trade openness and the expansion of multilateral trading systems brought increased productivity, competition, lower prices, and higher living standards to many internationalising nations^{3,4}. International trade has resulted in net benefits despite a number of critiques and challenges in recent years; the international trade system is continually evolving to address these challenges. Multiple studies have demonstrated that international trade and economic integration agreements, such as free trade agreements (FTAs), can have positive effects on the living standards of the trading nations⁵⁻⁷. FTAs, in particular, have been effective in facilitating trade between participating countries, although the estimates of their impacts vary from minor⁸ to the doubling bilateral trade over 10 years⁹.

At the same time, the extent to which trade has a positive impact on the economy depends on supporting policies and country characteristics, including the quality of institutions^{10,11}, production diversification³ coupled with existing connections and trading relationships¹². Some researchers and organisations also highlighted the potential adverse impacts of free trade on societies and the environment^{13,14}. There are concerns that trade agreements coupled with rapid technological change could negatively impact social equality, inclusion, and job security^{3,14,15}. Consequently, setting trade promotion priorities can be a complex balancing act for decision-makers, with a need to account for multiple criteria. Increasingly, potential economic benefits must be weighed against social and environmental factors, industry engagement, cost of doing business and other considerations.

The current trade environment is complex and challenging the traditional role of governments^{16,17}. From the 'weaponisation of trade' to the pandemic-disrupted supply chains and border restrictions, there have been greater calls for protectionism, national self-sufficiency, 'vaccine nationalism,' restrictions on the export of vital medical components and equipment, and on- or near-shoring of supply chains¹⁸. Today's trade reality sees recognition of a need for a more proactive approach in the facilitation and promotion of international trade to assist certain industries in the light of geopolitical shifts while still 'playing by the rules' of international trade and market competition^{12,19}. This is particularly apparent for the Indo-Pacific region²⁰. In 2017 Australia launched a new trade agenda in its Foreign Policy White Paper²⁰. This paper signalled a redirection in Australia's strategic efforts in trade, foreign investment, and defence in what then Foreign Minister described as 'a contested and competitive world'. The White Paper sought to better engage Australia in the fast-growing Indo-Pacific region and defend Australia's values and industry while still supporting anti-protectionist trade policies.

In the post-pandemic recovery period, many governments are looking to export and industry policies to proactively drive national economic growth within an altered global marketplace. Even before the pandemic, however, organisations like OECD had noted a shift in many countries towards 'industrial policy' and national actions that provide strategic support for targeted areas of economic transformation. This shift included boosting priority areas such as advanced manufacturing capability, cluster-building, and creating knowledge-intensive and green industries [1]. Selective industry support comes with recognised dangers, however, such as misaligned investment (not picking winners or wasting investments on futile actions) and the possibility that actions may be used for protectionist goals or to prop-up inefficient sectors with declining markets.

In balancing this complex environment and identifying priority sectors for targeted support, Warwick (2013)²¹ suggests governments adopt a 'soft' form of industry policy, one focussed on facilitation and collaboration:

'The goal of 'soft' industrial policy is to develop ways for government and industry to work together to set strategic priorities, deal with co-ordination problems, allow for experimentation, avoid capture by vested interests and improve productivity.' p. 48 ²¹

We suggest using Multiple Criteria Decision Analysis (MCDA) in collaboration with industry stakeholders in forums is a way in which governments can undertake this 'soft' industry policy in international trade given the complex and changing global environment, and facilitate, rather than steer, the prioritisation of sector-specific support. In economics, MCDA is often applied to tackle complex decision problems with multiple conflicting objectives. MCDA is one of the most familiar and well-regarded analytical tools developed to aid decision-makers to evaluate complex decisions with multiple, often conflicting, objectives and stakeholders, and compare and prioritise actions ^{22,23}. It considers and incorporates both qualitative and quantitative data. MCDA is often applied to problems that require rationalisation, ranking, structuring and transparency of the decision problem and decision processes ^{22,24,25}.

In the health care sector decision-makers need to make multi-factorial decisions with high levels of transparency for the prioritisation of patients on surgery waiting lists, health technology assessments, health investment options, and advanced healthcare interventions ²⁶⁻²⁹. Some studies in this field have specifically focused on developing countries, including case studies of Indonesia ^{24,30,31}, where efficient allocation of budget resources is critically important for healthcare system operations ³². More recently, several studies applied MCDA to COVID-19-related decisions, including the prioritisation of patients for hospital admissions ³³. National governments and international organisations have published guidelines on the use of MCDA in health applications underlining the tool's effectiveness for decision support in the field ³⁴⁻³⁶. Other industries where the effective application of MCDA has been reported include energy, environmental resource management ³⁷⁻⁴¹, manufacturing ⁴², agriculture ⁴³, ICT ⁴⁴, construction and engineering ^{45,46}, and finance ⁴⁷, among others.

The use of MCDA in determining priority industry sectors for trade and export assistance is yet emerging. MCDA has previously been used to assess trade routes against industry preferences ⁴⁸, evaluate emerging export markets for Italian furniture manufacturers ⁴⁹ and to prioritise the destination of recycled plastics (exported or recycled domestically) ⁵⁰. There is also widespread application of MCDA to inform domestic and international supply chain configuration and prioritisation decisions ⁵¹⁻⁵³. And MCDA was used in the assessment of sovereign risk to evaluate overseas investment priorities and strategies ⁵⁴. But to our knowledge there are few published examples of MCDA being applied with direct input from a range of stakeholders to determine and prioritise a range of sectors or actions to be supported with government export assistance. The objective of this study is to demonstrate an effective application of MCDA in the international trade through a case study.

This paper contributes to the literature by developing an MCDA model for determining the industrial specialties most suited for priority trade assistance within the framework of a trade agreement. We seek to demonstrate the application of an MCDA model in determining priorities with a group of 38 industry stakeholders impacted by the trade partnership. The case study is a real-life decision problem faced by Australian and Indonesian decision-makers following the implementation of the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA); an agreement that came into force in July 2020 ⁵⁵.

The case study includes two workshops with a combined total of 38 participants held in October - December 2020 and resulted in a list of priorities for future trade in the post-COVID-19 recovery period. The developed MCDA model was applied in real-time via an online workshop and facilitated discussion. This case study demonstrates how MCDA may be applied in deciding trade priority settings and opens the discussion as to how this method can be further refined for effective use in trade and other sectors. It also presents the risks and

limitations of the methodology and supplies valuable insights into how MCDA may be applied more broadly to facilitate stakeholder discussions in real-time.

The rest of the paper is organised into five sections. The following section (2) provides the context for the study in terms of international trade agreements dynamics and the background of the Australia-Indonesia case study. Section 3 describes the methodology and explains the step-by-step practical implementation of MCDA to the focus case study. Section 4 discusses the MCDA results and the limitations of the approach while section 5 concludes the study and outlines some future research directions and wider applications.

2. International trade context for the Australia - Indonesian case study

The number of regional trade agreements (RTAs) has been rising globally since the 1980s. As of March 2021, the World Trade Organization recognised 342 international trade agreements as 'in force.' The acceleration in the number of RTAs has slowed since the Global Financial Crisis in 2008, however, the cumulative number of trade agreements since 2008 has continued the climb (see Figure 1). At the time of this research (2021), Australia had 16 FTAs in force ⁵⁶.

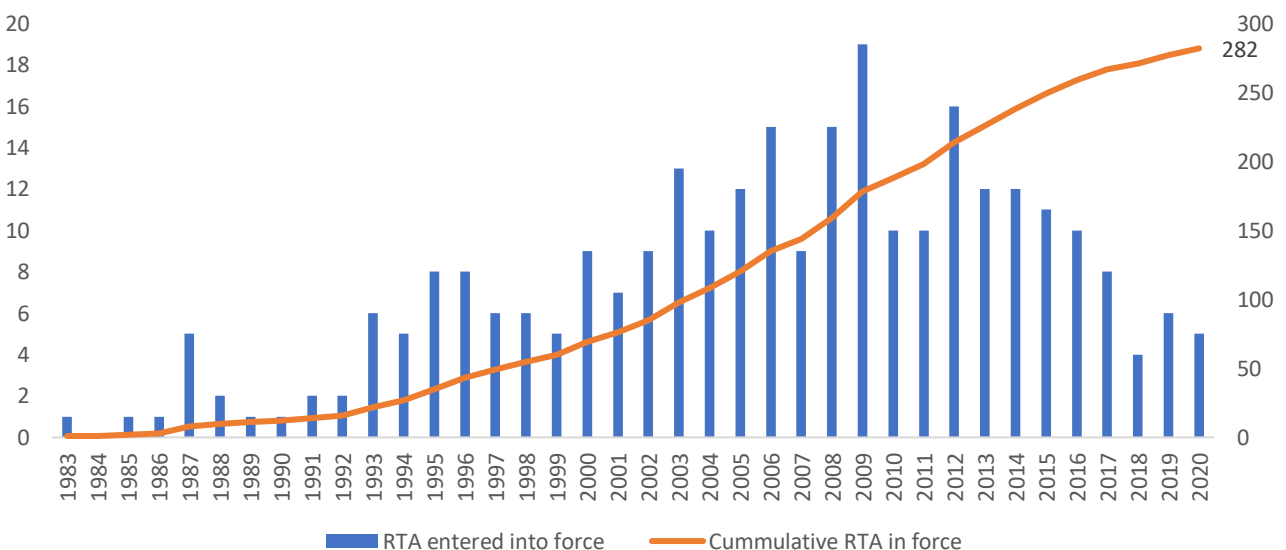


Figure 1 RTA in force by the year of entry into force and cumulatively (1983 - March 2021)

Source: WTO (2021)⁵⁷

The Indonesia-Australia Comprehensive Economic Partnership Agreement is a bilateral preferential trade agreement signed in March 2019. It entered into force in July 2020 and has an implementation period up to 2036 ⁵⁸. According to the Australian Trade Minister, at the time it was signed, this landmark trade agreement was "the most comprehensive bilateral trade agreement Indonesia has ever signed" ⁵⁵.

When the agreement was signed, complex questions emerged around how both countries can better guide the direction and mechanisms of trade to take advantage of new freedoms outlined in the agreement for the mutual benefit of businesses and communities and how can businesses and communities take advantage of the agreement ⁵⁹. For instance, what are the synergies and opportunities for both exporters and communities that

could be prioritised? What sectors would benefit most from export promotion, and what sort of promotion would create the highest growth in trade under the agreement in both the short- and longer-term?

To help assess and evaluate the trade opportunities, we developed and piloted a decision support solution based on MCDA. The focus of this pilot was to aid the development and prioritisation of the investment options with Indonesia for Australian health enterprises under the IA-CEPA. This work was undertaken as part of the series of industry workshops aimed at defining Australia's trade opportunities in Indonesia under the IA-CEPA and towards the development of a "Blueprint for Trade and Investment with Indonesia" (Blueprint)⁵⁹.

3. Material and method

This pilot MCDA aimed to rank the trade investment options for Australian businesses with the Indonesian health sector, considering the priorities and important criteria for public and private stakeholders. This pilot was supported by Austrade and the Australian Department of Foreign Affairs and Trade (DFAT), and included a round of stakeholder engagements at each of two IA-CEPA workshops held in October - December 2020.

The selection of workshop participants was done in consultation with Austrade and DFAT. Invitees were comprised of leading experts in international trade, healthcare research and management. There were also time constraints and participation was restricted to those available for the workshops. While not ideal, there were three rounds of stakeholder lists and these went through three rounds of discussion amongst the research team, Austrade and DFAT to ensure the sectors and nations were broadly represented and potential biases identified and controlled for. The two workshops are described below:

1. Executive-level online workshop with 20 representatives from both the public and private sector.
2. Working-level online workshop with 18 stakeholder representatives primarily from the private sector in health and trade in Australia and Indonesia.

The online workshops included open discussions with the stakeholders and several rounds of surveys (polls) run in real-time. The polls were facilitated by the *Sli.do* software – an online voting system run in parallel to the online workshops. Poll results were made available to participants immediately after completing the polls and discussed with the stakeholder groups. It allowed the project team to test the results with the stakeholders and check for questions and concerns.

The application of MCDA commonly involves seven steps, from the decision problem definition through to the analysis and testing of the results. The steps of the MCDA solution developed for this case study and their

application are demonstrated in

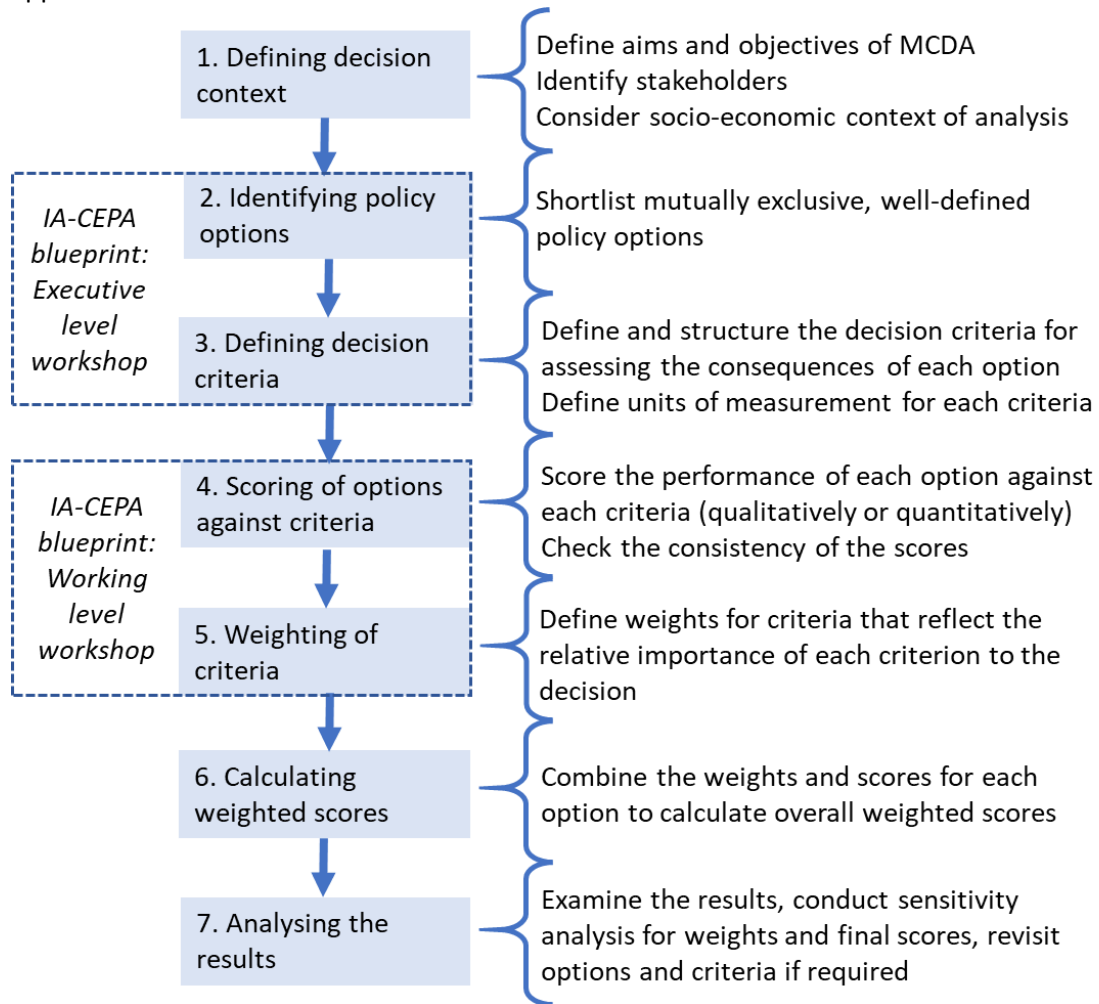


Figure 2.

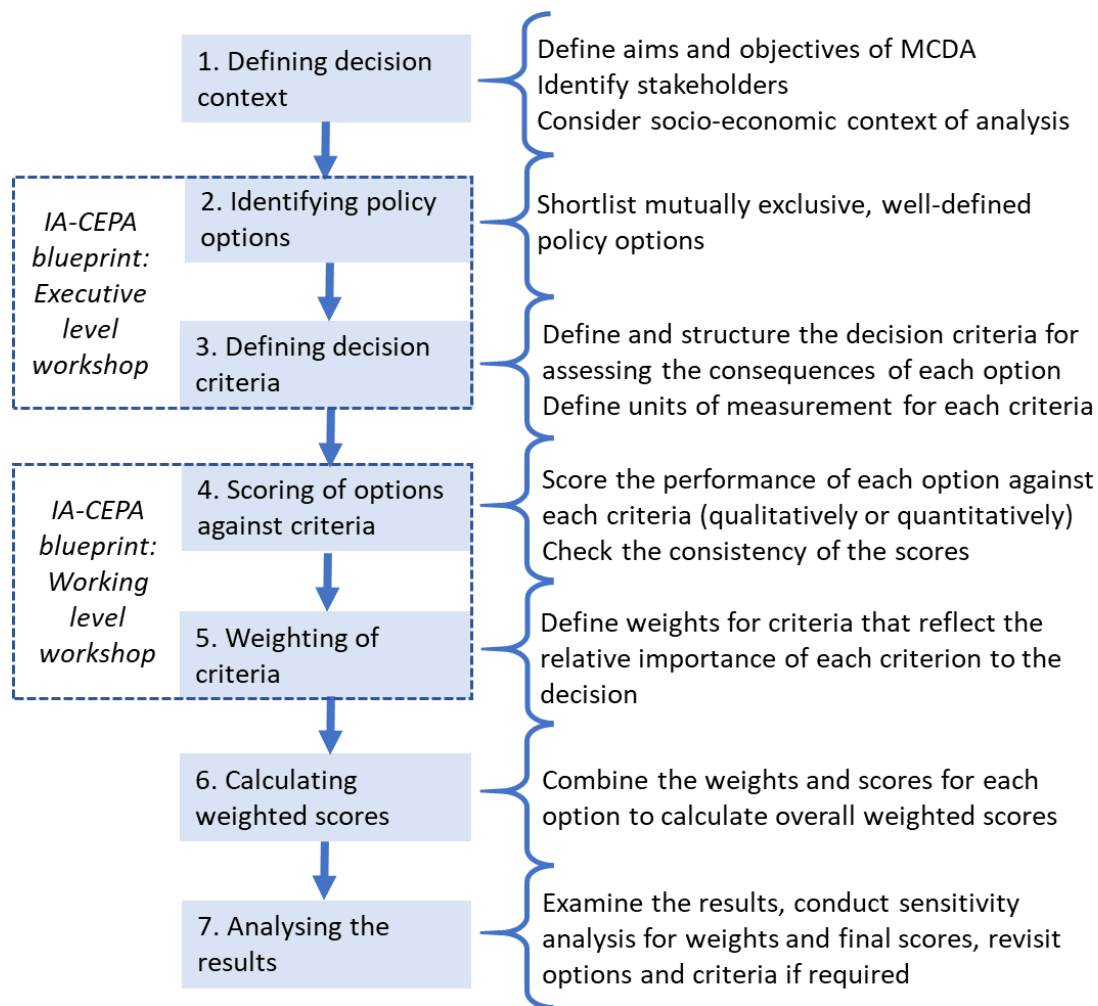


Figure 2 Major steps of MCDA with definitions and applications at IA-CEPA workshops

Source: Adopted from the UK Department for Communities and Local Government ²².

4. Analysis and results

4.1 Refining and shortlisting the priority areas

Executive level workshop held on 30 October 2020 included 20 representatives from organisations in the health industry. These included organisations in both the private and public sectors. MCDA methodology was briefly introduced to workshop participants, followed by a broad definition of decision options and criteria, as shown in Table 1.

Workshop participants were provided with prepared materials on megatrends impacting the Indonesian healthcare sector, statistics on Indonesian healthcare, and pertinent information about public and private healthcare provision and funding in Indonesia. Workshop participants were also given participant information sheets and research ethics information.

The priority areas or policy options presented defined sub-sectors where Australian and Indonesian businesses and governments could collaborate to improve trade under the IA-CEPA. These priority areas were determined

based on the international and national data analysis, the Asialink Business report on Digital Health⁶⁰, and the megatrends study prepared by CSIRO for the Blueprint^{17,59}, that included a rigorous literature review and stakeholder consultations as reflected in the Blueprint^{17,59}. The project team identified seven priority areas (see Table 1). The identified priority areas were tested with the industry stakeholders and refined at the Executive level workshop.

Table 1 Priority areas for Australian exporters in the Indonesian health sector

Option	Description
1. Export of aged care solutions (including digital solutions and staff training)	An aging population is a major demographic trend in many countries, including Australia and Indonesia. An aging and growing population increases pressure on social and health systems. A population with greater numbers of people over 65 years old is characterised by high disability rates and rising burden of chronic disease. The availability of nursing homes and geriatric clinics is limited in Indonesia. This priority area leverages Australian expertise in aged care, including training in geriatric services, the development of technical solutions for aged care and aged care associated services (mobility aids, aged care facilities, and specialist geriatric services and training), and their export and implementation in Indonesia.
2. Telemedicine services and digital health	The use of telehealth has boomed in 2020 due to the COVID-19 crisis. Demand for telehealth services in Indonesia is also growing rapidly with the dramatic increase in digital connectivity among the younger population. Australian companies are capable of exporting telemedicine solutions and high-quality telehealth services to Indonesia, where the growing middle class and large distances between populations will continue to drive demand for quality telehealth.
3. Facilitation of medical tourism	Potential growth of medical tourism in Indonesia offers opportunities for Australian health providers seeking to invest in or develop facilities in Indonesia. There are also opportunities to attract Indonesians to Australia for medical procedures. Indonesians are currently traveling to neighboring countries for health services such as IVF services, cancer treatments, heart health, dentistry, dermatology, weight loss, organ transplants, cosmetic procedures, and joint replacement surgeries. Many of these procedures are not covered by Indonesia's health insurance system, BPJS. There are also opportunities for service providers in complementary sectors such as insurance, tourism, and wellbeing to bundle services in health packages.
4. Export of medical technology	Australia is among the world's leaders in health research and the development of health technology and devices. This includes the provision of vaccines and training in infectious disease control and prevention. The provision of health technology to the growing Indonesian market presents another opportunity. This opportunity is particularly timely following the COVID-19 outbreak and what might be increased investment in the control and containment of emerging infectious diseases. Other areas of Australian expertise that can be leveraged in this priority area include the provision of surgical equipment, medical imaging, and clinical laboratory equipment for diagnostic tests.
5. Personalised health and wellbeing solutions	The growing demand for personalised services and solutions is a global megatrend. Progress in health data analytics and genomics is facilitating growth in the number and range of personalised and yet affordable health and wellbeing solutions which can be exported to Indonesia.
6. Building Indonesia's healthcare workforce through training and exchange programs	There is a current need for health staff training in the Indonesian health sector to improve quality and availability of healthcare services. Australia has extensive expertise in healthcare education and training at vocational education and tertiary education levels. Recognised accreditation across the two countries can open opportunities for training exchanges and help address staff shortages for aged and other care workers in Australia.
7. Assistance in the expansion of healthcare facilities	This priority area includes Australian assistance in expanding much-needed hospitals and other healthcare facilities in Indonesia. It can include design, construction, and operational management services and investment in actual projects under shared ownership arrangements, including public-private partnerships.
8. Other	Participants could identify other areas that were not included as priorities

The Executive level workshop participants were asked to rank the options provided. The ranks were expected to reflect the opportunities within the Indonesian health sector, and priority areas for targeted actions and trade assistance from Australian companies and the Australian government. Results from the initial poll are seen in Figure 3 (see Round 1).

The poll results were brought up on the shared screen for the workshop participants to discuss. As a result of the discussion, an additional option was added – 'Health service exports – clinical trials.'

The second round of polls followed the discussion and returned similar results to Round 1 (see Figure 3). It was concluded that the top six out of eight categories would be taken forward to the next workshop for scoring against criteria.

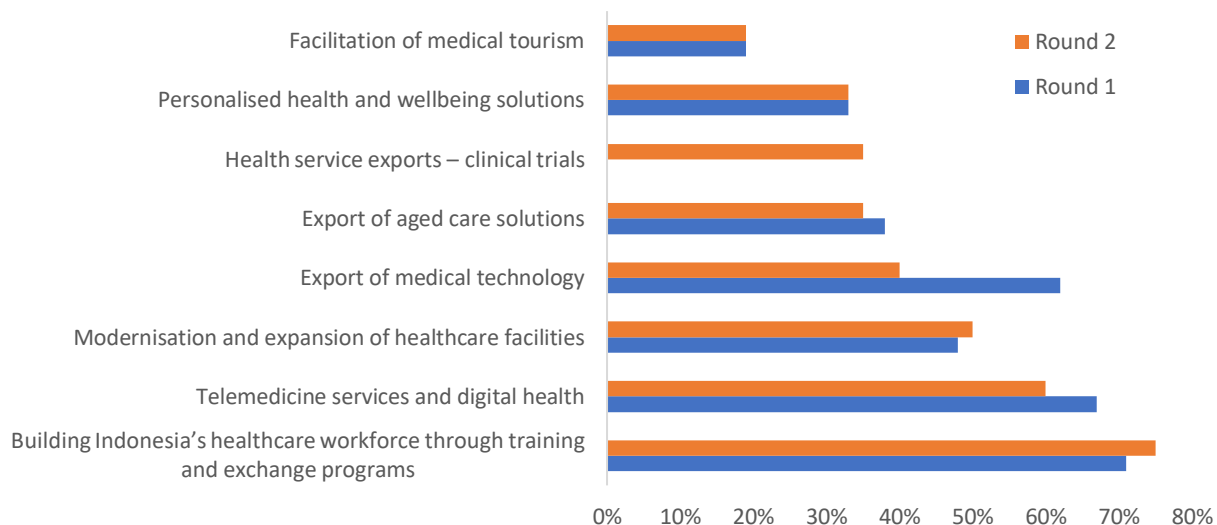


Figure 3 Executive level workshop results for policy options shortlisting.

Decision criteria in an MCDA reflect the things that matter the most when we decide which policy option is worth investing in. A set of nine criteria plus an open-ended 'other' criterion were developed for the Executive level workshop participants to discuss. Participants were asked to shortlist the five most important criteria (see Table 2). Following the introduction of the criteria, the executive level workshop participants were asked to give a 1 to 5-star rating to each criterion, reflecting their perception of the criteria's importance.

Table 2 Decision criteria for prioritisation of investment decisions in the Indonesian health sector

Criterion	Description
1. Comparative advantage of Australian companies and competitiveness of the sector	What is the intensity of competition from other international providers in this area (including from other countries)?
2. Digital focus and availability of digital delivery of the export of health goods or service	Is digital delivery available for the product / service under consideration?
3. Value/ volume of the opportunities in the priority area	What is the potential value of the opportunity for Australian exporters? Do the products and services in this area provide high-value or high-volume benefits and opportunities?

4. Export readiness of Australian firms	Are there many Australian businesses ready to export goods and services in each priority area?
5. Level of public investment of time and resources required to compete in the priority area	Would this priority area require substantial public investment to kick off or expand export opportunities for Australian companies?
6. Potential risks and barriers that can suspend the development of the priority area	Are there risks and barriers such as regulatory (including IP rights, standards, ownership regulations, or tax rules), cybersecurity, or other considerations that can push back the development of export opportunities in this area for Australian companies?
7. Future growth projections in the target area	Does this priority area have a growing market with clear growth projections for the next decade?
8. Inclusiveness	Does the priority area represent an opportunity for all sizes of Australian companies?
9. Potential to convene a strategic 'Team Australia' approach	Would the priority area be worth considering if the Team Australia approach could not be applied?
10. Other	Please comment if you think any important criteria are missing.

Results from the poll can be seen in Figure 4. The five criteria with the top scores were shortlisted for further attention in the MCDA and the options scoring at the working level workshop. As a result of the post-poll discussion, it was also decided that the criterion: "Potential to convene a strategic 'Team Australia' approach" needs to be considered a constraint or pre-requisite for any project to be undertaken under the IA-CEPA initiative.

Another pre-requisite that the discussion has shaped is a need for any priority area to meet the mutual interests of both parties. That is to say, selected options must fall in line with Australian business capabilities and the Indonesian demands/needs of the broader population.

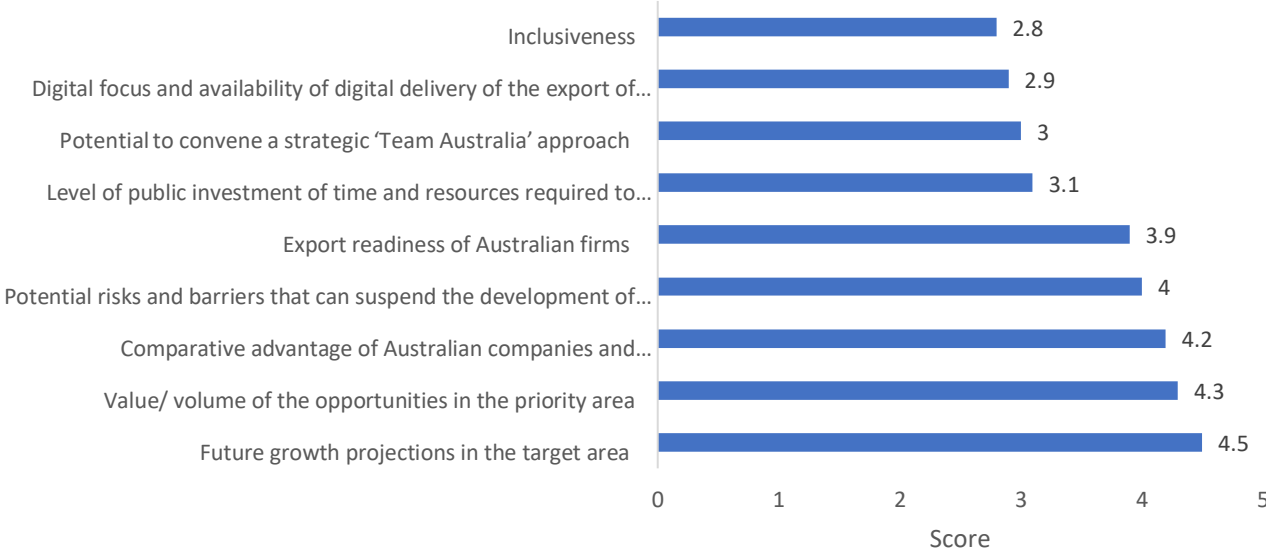


Figure 4 Executive level workshop results for decision criteria ranking

4.2. Working level workshop: scoring the priority areas against criteria, testing the MCDA results

The Working level workshop included 18 representatives from public and private entities working in the Australian and Indonesian health and trade sectors. The workshop participants were briefed on the MCDA methodology and the results of the Executive level workshop. Following the introduction, two live polls were conducted:

- Poll 1 – to determine the criteria weights that reflect the relative importance of shortlisting criteria for the decision problem.
- Poll 2 – to score each of the shortlisted options against each criterion.

Defining the criteria weights

Experts were asked to give six shortlisted criteria 1–5-star ratings. Results of the poll returned can be seen in Figure 5. Criteria weighting results were presented to the workshop participants immediately after the poll. The following discussion resulted in a consensus that the obtained weights are a good reflection of the preferences across the audience.

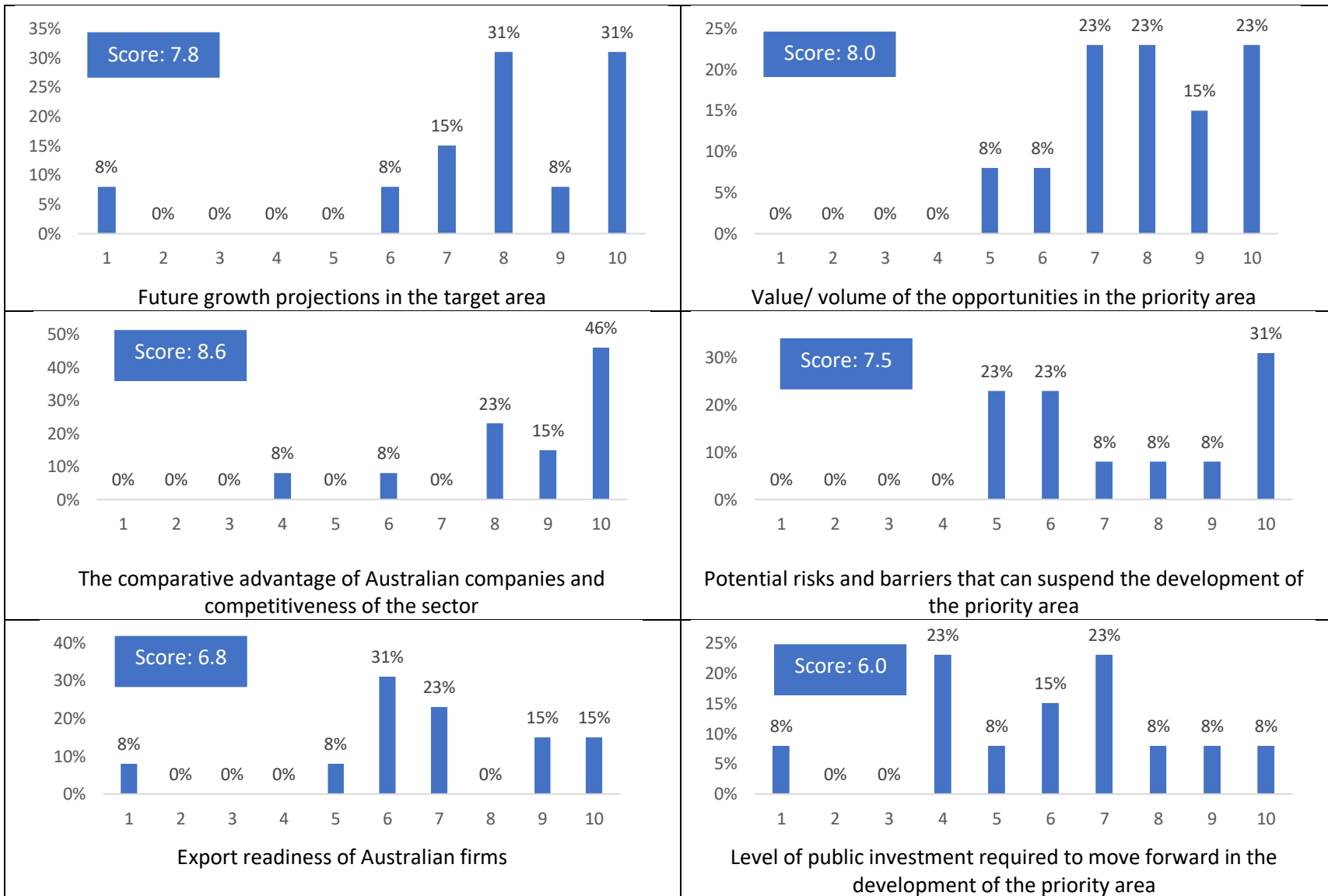


Figure 5 Criteria weighting – results of the poll at the Working level workshop

Scoring of priority areas against criteria

The second poll included questions to allow experts to score the priority areas against all criteria. Scoring is essential to form the performance matrix and conduct further steps of MCDA. The complete list of questions and poll results are provided in the Appendix.

The poll results were converted into scores in the performance matrix, as demonstrated in Table 3.

Table 3 MCDA performance matrix with evaluation results

		Criteria						SCORE
		1. Future growth projections in the target area	2. Value/ volume of the opportunities in the priority area	3. Comparative advantage of Australian companies and competitiveness of the sector	4. Potential risks and barriers that can suspend the development of the priority area	5. Export readiness of Australian firms	6. Level of public investment of time and resources required to compete	
Priority areas	1. Building Indonesia's healthcare workforce through training and exchange programs	3	3	2	2	2	2	105.2
	2. Telemedicine services and digital health	3	2.5	1	2	2	2	92.6
	3. Modernisation and expansion of healthcare facilities	2	3	2	1	1.5	2	86.5
	4. Export of medical technology	3	3	1	1	2	2	89.1
	5. Export of aged care solutions	3	2	2.5	1	2	2	94
	6. Health service exports – clinical trials	2	3	2	1	2	2	89.9
Weights		7.8	8.0	8.6	7.5	6.8	6.0	

The final MCDA rankings (see Figure 6) were shared with the workshop participants in real time immediately after the conclusion of the poll. During a round of discussion that followed the release of the final MCDA results, experts agreed that the obtained results were as they expected and reflected their group priorities. Workshop participants also agreed that the top-scored priority areas need to be further developed through the IA-CEPA. They assessed these as the priority opportunities for Australian trade in the Indonesian health sector.

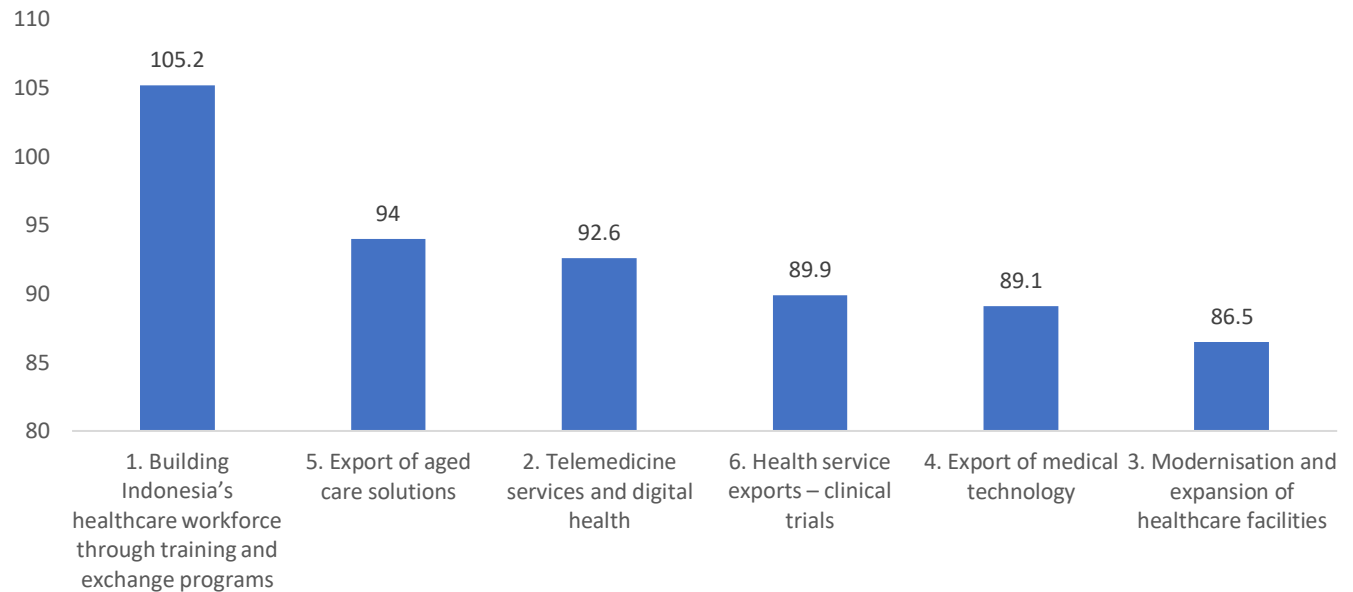


Figure 6 Priority areas final ranking with scores

5. Discussion and limitations

MCDA demonstrated that the best performing option was 'Building Indonesia's healthcare workforce through training and exchange programs'. This option substantially outperformed the following five options, which showed similar results in scoring. The second top priority area for export was 'Export of aged care solutions', followed by 'Telemedicine services and digital health'.

Overall, MCDA proved to be an effective decision aiding tool that allowed groups of stakeholders to shortlist and rank the investment opportunities based on qualitative crowdsourced data. MCDA helped to facilitate and structure the discussions openly and transparently. While stakeholder responses could have been analysed using alternative analytical techniques (e.g. analytical hierarchy process, delphi method among others), we selected MCDA as an efficient, easy-to-understand, transparent, and effective analytical mechanism in the online workshop environment.

As the world opens up post-COVID-19 and goes through the current geopolitical tensions, the new norm in international trade is emerging with a new set of expectations about the government's role in international trade. The government will likely face more complex problems of balancing conflicting objectives such as openness, protectionism, security, and competition. In this new reality, support tools such as MCDA can become a helping hand for decision-makers to deliver robust, reliable, and transparent decisions to complex problems.

When using and interpreting the results of this case study, a few limitations need to be acknowledged.

Firstly, MCDA results are limited to the level of expertise and engagement of workshop participants. Not everyone invited could attend the workshops when they were conducted, and not every workshop participant demonstrated interest in taking part in the MCDA evaluation process. Even though it was an

open invitation process, the range of views represented by participants in the workshop may have been skewed, or non-representative of the broader stakeholder community.

Secondly, the weighting and scoring polls results were automatically summarised and averaged across the respondents in this study. Researchers did not access the individual responses. This approach was chosen at the design stage of the MCDA process since we needed to capture de-identified responses and present the results immediately in a real time format. However, if individual responses were tracked, we could have defined and analysed biases among the respondents. An additional step in the analysis could have been added to determine personal bias with a pre-workshop survey of the experts and stakeholders. The survey would have helped gain insights into stakeholder group including: areas of expertise, specific sectors that they represent and level of executives, group preferences and their perception of factors that were important for Australian businesses to succeed in Indonesia. That would have helped understand the choices made and manage potential vested interest.

Thirdly, stakeholders in the group were not told of the MCDA process in advance of the workshops. They were unaware of the processes prior to the workshop and were given pre-prepared background material, an overview of MCDA, and what their role in the process would be, at the start of each workshop. This approach allowed for spontaneous responses and mitigated the risk of organisation between parties that may have wanted to influence the voting outcomes. At the same time, it meant that workshops participants did not give a lot of prior consideration to the options presented, and some of the voting may have been done with lack of awareness, or with awareness that overly relied on the background material provided.

Lastly, while the MCDA revealed stakeholders' preferences for the development of trade opportunities for Australian businesses with the Indonesian health sector, the applied MCDA solution didn't allow the consideration of possible combinations of the priority areas. There can be cases when additional economic and social impact is created if two or more opportunities are developed together. This potential synergy effect should be studied separately (e.g., through portfolio analysis) and is beyond the scope of this research.

Furthermore, in this MCDA case study's post-workshop discussion, experts shared that MCDA could be a valuable tool if applied for decision-making at sub-national or regional government level. For example, it might be best utilised by State Trade Offices to identify where to focus on conjunction with industry groups or peak bodies and federal colleagues, reflecting that the nature of national-level trade policy involves negotiating key arrangements with trading partners, while sub-national trade policy is more closely focused on provision of direct assistance to exporters to build capacity and capability to take advantage of trade agreements and protocols.

In one example the authors are aware of, a state government agency used MCDA to prioritise work on market access issues for a specific industry sector, considering factors such as the estimated value of market access to the state's economy, strategic value to communities, local industry readiness, demand and influence of import partners, and the transferability of export protocols. Key to operationalizing this analysis was close communication and collaboration with national counterparts, to ensure state government trade assistance was targeted to help exporters in priority sub-sectors to achieve and demonstrate compliance with market access protocols being actively negotiated at the federal level with international trading partners. In a complex federal system, MCDA presents a potentially powerful tool for sub-national government agencies to shape and deliver against a Team Australia agenda.

6. Conclusions

In the current geopolitical and economic environment, building international trade relationships is complex. For Australia, building trade with partner nations in Asia is critically important for the national economy. However, it is a complex task that is contingent upon multiple important criteria, including economic indicators, social and business inclusiveness, national security and protectionism, and established relationships, among many more.

Furthermore, establishing trade priorities in the early stages of trade agreements is critical for decision-makers. Trade promotion priorities and targeted industry-specific facilitation can impact trade agreements' trajectories and long-term outcomes, particularly in times of trade constriction or disruption. Businesses and governments are limited in their capacity and resources to understand and enter new markets, build beneficial trading relationships, and harness comparative advantage. This is even more so the case for developing countries.

MCDA is an approach that can help tackle the complexity of trade decisions, structure the decision-making process, and assist decision-makers in prioritising options. MCDA is a well-regarded decision support tool with a history of effective applications to support decision-making in various sectors, particularly in the health sector and natural resource use. While MCDA seems to be an excellent fit for the decision-making in international trade due to its need to navigate complex and competing criteria and objectives with decision transparency, to the best of our knowledge, the MCDA methodology has not been widely applied in this field. This study demonstrates the effective use case of MCDA in considering multiple criteria in establishing trade priorities and provides the opportunity for extensive stakeholder engagement, creating support or sector' buy-in' for targeted government trade facilitation. The use of the proposed solution is demonstrated through a case study of Australia-Indonesia trade under the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA). This case study of the IA-CEPA application of MCDA showed how MCDA could offer transparent and structured solutions to assist decision-making when establishing trade relationships in a particular sector (healthcare).

In applying an MDCA to the prioritisation of actions under an FTA, we make several contributions to the literature. We demonstrate how MCDA can be used for international trade priority settings. Also, the MCDA framework demonstrated in this paper was set up to facilitate decision-making in real-time. It allowed the stakeholders to observe how the rankings were formed and discuss the results in real-time during a single videoconference meeting. In doing so, we sought to demonstrate MCDA as an effective way to assist decision-making in an online real-time format. While acknowledging the benefits of such an approach, however, we also acknowledge that the results may not be generalizable, it demonstrated some weaknesses that will need to be addressed in future applications and there might be better solutions offered by alternative decision-support tools. Issues to be addressed in future uses of MCDA in trade selection include: more rigorous sample selection of industry experts and stakeholders - some of whom may have limited or vested expertise in this demonstration; not being able to gauge individual bias if de-identified data is collected for real-time voting and display; using a stakeholder group that is either under-, or over- prepared for taking part in an MCDA process; and not taking into consideration combinations of competing trade objectives in prioritizing industry sectors. This exercise was a

demonstration of the application only, highlighting that these are all areas for further consideration in developing MCDA in prioritizing sectors for trade and export assistance.

Appendix

Scoring of priority areas against shortlisted criteria at the Working level workshop

Scoring of priority areas	Poll results
Building Indonesia's healthcare workforce through training and exchange programs	
1. Future growth projections in the target area	
A growing market with clear future growth projections	69%
Growing market, but projections of the future growth are not clear	31%
Current need, but not a clearly growing market	0%
2. Value/ volume of the opportunities in the priority area	
HIGH value or volume	69%
MEDIUM value or volume	31%
LOW value or volume	0%
3. Comparative advantage of Australian companies and competitiveness of the sector	
The LOW intensity of competition	23%
MEDIUM intensity of competition	69%
HIGH intensity of competition	8%
4. Potential risks and barriers that can suspend the development of the priority area	
LOW level of risks and barriers	8%
MEDIUM level of risks or barriers	54%
HIGH level of risks or barriers	38%
5. Export readiness of Australian firms	
Many Australian businesses are export-ready	36%
Some Australian businesses are export-ready	43%
A small number of Australian businesses are export-ready	21%
6. Level of public investment of time and resources required to compete	
Little investment is required to expand the area	29%
Some investment is required	57%
Major public investment is required	14%
Telemedicine services and digital health	
1. Future growth projections in the target area	
Growing market with clear future growth projections	69%
Growing market, but projections of the future growth are not clear	31%
Current need, but not a clearly growing market	0%
2. Value/ volume of the opportunities in the priority area	
HIGH value or volume	50%
MEDIUM value or volume	50%
LOW value or volume	0%
3. Comparative advantage of Australian companies and competitiveness of the sector	
The LOW intensity of competition	14%
MEDIUM intensity of competition	36%
HIGH intensity of competition	50%
4. Potential risks and barriers that can suspend the development of the priority area	
LOW level of risks and barriers	0%
MEDIUM level of risks or barriers	54%
HIGH level of risks or barriers	46%

5. Export readiness of Australian firms	
Many Australian businesses are export-ready	16%
Some Australian businesses are export-ready	69%
A small number of Australian businesses are export-ready	15%
6. Level of public investment of time and resources required to compete	
Little investment is required to expand the area	22%
Some investment is required	64%
Major public investment is required	14%
Modernisation and expansion of healthcare facilities	
1. Future growth projections in the target area	
Growing market with clear future growth projections	43%
Growing market, but projections of the future growth are not clear	57%
Current need, but not a clearly growing market	0%
2. Value/ volume of the opportunities in the priority area	
HIGH value or volume	69%
MEDIUM value or volume	23%
LOW value or volume	8%
3. Comparative advantage of Australian companies and competitiveness of the sector	
The LOW intensity of competition	23%
MEDIUM intensity of competition	46%
HIGH intensity of competition	31%
4. Potential risks and barriers that can suspend the development of the priority area	
LOW level of risks and barriers	23%
MEDIUM level of risks or barriers	15%
HIGH level of risks or barriers	62%
5. Export readiness of Australian firms	
Many Australian businesses are export-ready	14%
Some Australian businesses are export-ready	43%
A small number of Australian businesses are export-ready	43%
6. Level of public investment of time and resources required to compete	
Little investment is required to expand the area	15%
Some investment is required	54%
Major public investment is required	31%
Export of medical technology	
1. Future growth projections in the target area	
Growing market with clear future growth projections	79%
Growing market, but projections of the future growth are not clear	21%
Current need, but not a clearly growing market	0%
2. Value/ volume of the opportunities in the priority area	
HIGH value or volume	64%
MEDIUM value or volume	36%
LOW value or volume	0%
3. Comparative advantage of Australian companies and competitiveness of the sector	
The LOW intensity of competition	0%
MEDIUM intensity of competition	29%

HIGH intensity of competition	71%
4. Potential risks and barriers that can suspend the development of the priority area	
LOW level of risks and barriers	0%
MEDIUM level of risks or barriers	38%
HIGH level of risks or barriers	62%
5. Export readiness of Australian firms	
Many Australian businesses are export-ready	8%
Some Australian businesses are export-ready	77%
A small number of Australian businesses are export-ready	15%
6. Level of public investment of time and resources required to compete	
Little investment is required to expand the area	31%
Some investment is required	61%
Major public investment is required	8%
Export of aged care solutions	
1. Future growth projections in the target area	
Growing market with clear future growth projections	64%
Growing market, but projections of the future growth are not clear	36%
Current need, but not a clearly growing market	0%
2. Value/ volume of the opportunities in the priority area	
HIGH value or volume	43%
MEDIUM value or volume	50%
LOW value or volume	7%
3. Comparative advantage of Australian companies and competitiveness of the sector	
The LOW intensity of competition	38%
MEDIUM intensity of competition	38%
HIGH intensity of competition	24%
4. Potential risks and barriers that can suspend the development of the priority area	
LOW level of risks and barriers	23%
MEDIUM level of risks or barriers	31%
HIGH level of risks or barriers	46%
5. Export readiness of Australian firms	
Many Australian businesses are export-ready	8%
Some Australian businesses are export-ready	69%
A small number of Australian businesses are export-ready	23%
6. Level of public investment of time and resources required to compete	
Little investment is required to expand the area	22%
Some investment is required	57%
Major public investment is required	21%
Health service exports – clinical trials	
1. Future growth projections in the target area	
Growing market with clear future growth projections	36%
Growing market, but projections of the future growth are not clear	43%
Current need, but not a clearly growing market	21%
2. Value/ volume of the opportunities in the priority area	
HIGH value or volume	47%

MEDIUM value or volume	38%
LOW value or volume	15%
3. Comparative advantage of Australian companies and competitiveness of the sector	
The LOW intensity of competition	8%
MEDIUM intensity of competition	54%
HIGH intensity of competition	38%
4. Potential risks and barriers that can suspend the development of the priority area	
LOW level of risks and barriers	0%
MEDIUM level of risks or barriers	15%
HIGH level of risks or barriers	85%
5. Export readiness of Australian firms	
Many Australian businesses are export-ready	23%
Some Australian businesses are export-ready	46%
A small number of Australian businesses are export-ready	31%
6. Level of public investment of time and resources required to compete	
Little investment is required to expand the area	8%
Some investment is required	69%
Major public investment is required	23%

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