Aligning the interests of Dutch politics and Dutch businesses in the use of artificial intelligence

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ABSTRACT,

Businesses implement artificial intelligence for a competitive advantage; therefore, their influence increases. At the same time, little is known on the risks of artificial intelligence, keeping legislators in the dark. This thesis investigates the alignment of goals of Dutch businesses and Dutch politics regarding AI via structured literature research. The results show that businesses need to extend their cooperation beyond immediate economic advantages and that Dutch politics lack the knowledge and required to comprehend the subject of artificial intelligence fully. Due to the research of election programmes, only one source of political opinions was used. Further research could investigate opinions of political parties in more depth, validate the current results, and research the feasibility of the recommendations made.

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Artificial intelligence, governance, business, policy, implementation

1. INTRODUCTION

1.1 Background

The implications of developments in artificial intelligence are up for discussion around the globe, with daily reports on big tech corporations selling personal data and worries about preserving citizens' privacy. Social unrest grows, which requires policymakers to discuss the subject. In 2017, one in four citizens in the United States feared the use of AI and autonomous robots (Liang & Austin Lee, 2017).

Since the elections for the Dutch House of Representatives in March 2021, a new specialised digitalisation committee started. The committee's goal is to have experts on digital matters in the House of Representatives discuss the new digital technologies. The committee meets once every week for one hour (Tweede Kamer, 2021). Due to the expertise of the committee members, they have an important impact on the voting behaviour of their party members regarding digitalisation legislation.

Businesses keep developing artificial intelligence technology further, whilst the committee has a limited number of moments to discuss the innovations. As the functioning of this committee has a significant impact on the policy of the Dutch government, it is beneficial to research if and how the opinions of the house of representatives and businesses can be aligned.

1.2 Research Question

This research aims to determine how Dutch politics and Dutch businesses look towards using artificial intelligence and how these views can be aligned. The main research question is therefore:

What actions do Dutch Politics and Dutch businesses need to take to align their interests in the use of artificial intelligence?

Sub-questions have been formulated to structure the research and answer the research question. The sub-questions are:

- *What is the opinion of the Dutch political parties regarding the use of AI in businesses?*
- *What is the opinion of Dutch businesses regarding the use of AI in businesses?*

1.3 Structure of the thesis

The second chapter will set the scope of this research by introducing artificial intelligence, Dutch business and Dutch politics in more detail. Chapter three defines the research methodology. Chapter four discusses the results of the literature research, dividing the results into two parts: the perspective of Dutch politics and that of Dutch businesses, whilst breaking these groups up into subgroups. Chapter five discusses the conclusions based on the research, and Chapter six ends with recommendations made to both Dutch businesses and Dutch Politics.

2. LITERATURE REVIEW

2.1 What Is Artificial Intelligence?

There is no one definition of artificial intelligence. "The current field of AI is actually a mixture of multiple research fields, each with its own goal, methods, applicable situations, etc." (Wang, 2019) Other researchers describe it as "some kind of machine learning with the ability to automise the analysation of datasets." (Dwivedi, et al., 2019) This difference in definitions makes it difficult to scope discussions on artificial intelligence.

This difficulty in defining artificial intelligence makes it hard for legislators to draft policy. The European Commission has recognised this difficulty and adopted an inclusive definition co-drafted by the independent high-level expert group on artificial intelligence, a group of big tech representatives and researchers. (Smuha, 2020) Whilst this is also another addition to the set of definitions, they all seem to agree upon one elementary part: the existence of a computer algorithm. The term algorithm is therefore interchangeably used in literature and this paper.

Artificial Intelligence offers potential applications in all industries. Artificial intelligence is, therefore, a generic technology. There are multiple ways to categorise this generic technology into more comprehensible fields. Categorising can be done based on the underlying technologies, e.g., "human-centred computing", "robotics", and "speech" (AAAI, 2021) Or by focussing on the fields in which the technology can be applied.

The largest collaboration on artificial intelligence in the Netherlands: The Netherlands AI coalition, has split up the technology over thirteen industries: Agriculture and Food, Built Environment, Culture and Media, defence, Energy and Sustainability, Education, Financial Services, Healthcare, Public Services, Port and Maritime, Mobility, Transport and Logistics, Security Peace and Justice, and the Technical Industry (NL AI Coalitie, 2021). These industries are used in this research.

Currently, artificial intelligence is attractive to many organisations in these branches, as it offers automation of basic tasks and can help with analysing large datasets due to the ability for machines to improve themselves without human interference. (Brynjolfsson & McAfee, 2017). The application of artificial intelligence can save costs and increase efficiency. Besides the adaptation of existing business processes, artificial intelligence has created new jobs. AI forms an essential basis in the working field of business intelligence and will continue to do so (Ranjan, 2009).

2.2 AI and Dutch Businesses

2.2.1 Explaining Dutch Businesses

The Netherlands is relatively small regarding its population size, yet it has a significant impact on the global economy with a GDP of 750 billion euros, globally ranking it seventeenth in GDP size (Projected World GDP Ranking, 2021). In 2021, the Netherlands counted 1,9 million businesses (Bedrijven; bedrijfstak, 2021). When looking at the number of jobs per sector, three branches are the biggest in The Netherlands: corporate services (2,4 million employees), followed by healthcare (1,7 million employees) and trade (1,6 million employees) (Centraal Bureau Statistiek, 2021).

Businesses are often represented by employers' associations, representing the interests of businesses and often negotiating with policymakers. These associations often represent specific industries, though the largest employers' associations represent multiple industries.

2.2.2 AI and Dutch Businesses

Artificial intelligence offers many opportunities. Businesses will therefore need to start using the technology to keep an economic advantage over competitors. Non-adopters of AI could experience a 20 per cent decline in their cash flow compared to those who do (Bughin, Seong, Manyika, Chui, & Joshi, 2018). This possible decline shows immense pressure on businesses to implement AI technology.

In implementing artificial intelligence, there are three types of businesses that can be defined; front runners, who will have the highest immediate benefit of implementing AI. Followers will start adopting the technology later as they see the success of front runners and the laggards, which by 2030 will not have adopted AI and will have decreased their economic position (Bughin, Seong, Manyika, Chui, & Joshi, 2018).

Figure 1 shows that frontrunners in the adoption of artificial intelligence can double their current cash flow in five to seven years. Whilst many businesses will be categorised as a follower, many will take the trajectory of the laggard. This large discrepancy will cause economic differences between businesses to grow.

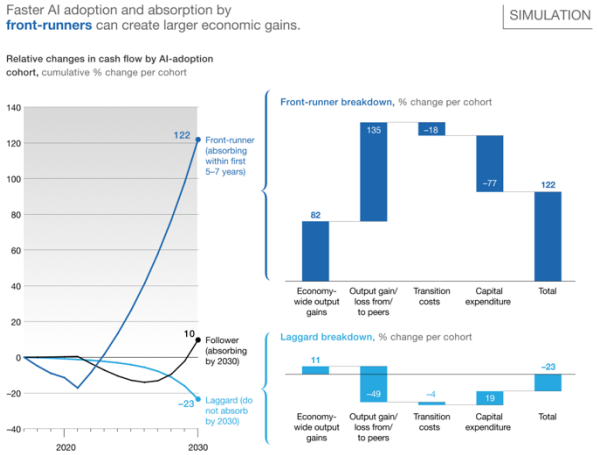

Figure 1. Relative changes in cash flow by AI-adoption cohort (Bughin, Seong, Manyika, Chui, & Joshi, 2018)

However, these economic changes are not restricted to the national level. Due to the international nature of developments in AI and a steadily globalizing market, the competition between companies also affects countries' economic well-being. Coordinated implementation of AI could grow the United States GDP by 1.2 per cent per year until 2030, resulting in a growth of 16 per cent. (Bughin, Seong, Manyika, Chui, & Joshi, 2018)

Dutch businesses have responded to this statement by starting The Netherlands AI coalition, a public, private partnership with government, business, education and research institutes. The goal is: "[…]to substantiate and stimulate AI activities in the Netherlands." (Netherlands AI Coalition, 2021) VNO-NCW, a large Dutch employers federation, started The Netherland AI coalition with an AI task force in collaboration with big business to call for more AI innovation. (Oudshoorn, et al., 2019) The coalition now connects multiple AI R&D labs at research institutions and businesses in the Netherlands.

Newer research shows that in The Netherlands specifically, the GDP could increase potentially by 1.6 per cent. (How nine digital frontrunners can lead AI in Europe, 2020) It is essential to mention that the 1.6 per cent increase in GDP is an average over multiple years. This number is derived from 5 factors, as can be seen in Table 1.

To initiate developments in AI, investments in the development and implementation of AI need to be made. These investments harm the GDP in the short run. Furthermore, using artificial intelligence can cause job loss due to automation and further decrease the GDP. These adverse effects add to a decrease in the GDP of 1.1%, just over 7,5 billion euros. The investments would, in the end, cause an increase in the GDP of 2.8%.

Table 1. GDP changes as a result of AI investments (CPB-Analyse voorstellen Nationaal Groeifonds, 2021)

GDP change	**Effects**
+2,2%	Productivity increase
+0,2%	International trade effects: AI reduces trade friction
+0,4%	Welfare (e.g., better health, more time off)
-0,5%	Investments into AI-implementation
-0,6%	Negative externalities, e.g., unemployment

2.3 AI and Dutch Politics

2.3.1 Explaining the Dutch Political System

The Dutch political system consists of multiple organisations with elected representatives, ministries and institutes. Consequently, the political system has multiple focus levels, both regional and national. Given the vast implications of artificial intelligence, we will focus on the national level of the Dutch political system.

This national system has three elected organisations that determine and influence the policy and laws in the country. First, the House of Representatives, with 150 seats, which currently houses 17 political parties. Secondly, the government, which is often a coalition of political parties that combined are a majority in the House of Representatives. Lastly, there is the Senate which has 75 seats.

Often the government proposes new laws and policies, to which the House of Representatives needs to give its consent. When the House of Representatives has agreed with a new law, the Senate does a final check to make sure the law is legally correct and in line with government policy. This division of tasks means that the government draws up strategic plans, and the House of Representatives can reject and adapt said plans.

When discussing Dutch politics and artificial intelligence, we will focus on the government and the House of Representatives, as the Senate rarely makes any substantive amendments to policy and legislation. In the following two sections, the Dutch government and the House of Representatives are introduced.

2.3.2 AI and The Dutch Government

As artificial intelligence gets applied more frequently, governments are looking into using it as well. (Frederika, Pomp, & Hartog, 2020) The Dutch government has initiated multiple policy papers to investigate the opportunities and risks of artificial intelligence. In the latest, the government makes a distinction based on three tracks: utilise societal and economic changes, creating the right conditions, and strengthening the fundaments. (Ministerie van Economische Zaken en Klimaat, 2019) The Strategic Action Plan Artificial Intelligence (SAPAI) presents 104 actions for the Dutch government to improve artificial intelligence in the Netherlands. The plans are accompanied by a budgetary investment of 45 million euros a year.

The Netherlands Court of Audit is an institute that checks "whether the government is spending money efficiently, economically and carefully." (Netherlands Court of Audit, 2021) In January 2021, they researched the usage of algorithms by the Dutch government and concluded a lack of overview of the technology within the government. The development of algorithms is often a bottom-up approach, and as there is no list of requirements or agreed-upon terminology within the government, developments happen unnoticed. (Netherlands Court of Audit, 2021)

The government has already implemented artificial intelligence, and not always with success. After the Dutch tax agency implemented a screening algorithm, it became apparent that it was discriminating on racial backgrounds. The reason for this bias, according to Hofs and many others; human error. (Hofs, 2020) AI is programmed by humans and uses datasets designed by humans, which will leave room for human bias. (Cowgill, et

al., 2020) When the impact of AI increases, for example, in governmental services, the consequence of these errors increases.

Within the Dutch government, the Ministry of the Interior and Kingdom Relations is charged with overlooking the usage of artificial intelligence. The ministry splits the discussion on artificial intelligence into three categories: shared values & human rights, innovation using AI and Data & algorithms. The ministry seems to be aware of risks and has informed the house of representatives on the possible consequences of these risks on specific AI uses. (Ministerie van binnenlandse zaken en koninkrijksrelaties, 2019)

2.3.3 AI and The Dutch House of Representatives

Since the elections for a new house of representatives in March 2021, a new committee has started: the committee on digital affairs. The committee consists of 14 members of the house of representatives that have the task of creating an overview of digital technology developments and trying to link these to other discussions in the house of representatives given their broad impact. The committee had its first meeting on the 12th of May 2021 and meets once every other week for one hour. The committee is still setting its agenda and sets out a way of working. (Tweede Kamer, 2021)

Besides the new committee, artificial intelligence has been actively discussed in the Dutch house of representatives, with over 750 parliamentary questions, documents and reports discussed in the last five years. (Tweede Kamer, 2021)

Currently, there is no research on the opinion of the Dutch political parties regarding the usage of Artificial intelligence. In less than half of the Dutch party programmes, the words "artificial intelligence" or "kunstmatige intelligentie" are present.

3. RESEARCH DESIGN

3.1 Research methodology

To answer the research question "What steps need to be taken to align the interests of Dutch politics and businesses in the use of artificial intelligence?*"* a structured literature search will be conducted to discover the interests of Dutch politics and businesses. These findings will be combined in a set of recommendations to the Dutch House of Representatives.

The house of representatives has 150 electable positions. Currently, there are 17 factions in the house of representatives. The most recent elections at the moment of writing took place on the 17th of March 2021. All parties have published an election program listing their opinions on current matters, including artificial intelligence. The literature search will analyse the party programmes of all elected parties currently in the house of representatives.

The political parties that are being researched are, with between brackets, their current number of seats; VVD (34), D66 (24), PVV (17), CDA (15), SP (9), PvdA (9), GroenLinks (8), FvD (8), PvdD (6), CU (5), VOLT (3), JA21(3), SGP(3), DENK(3), 50-plus (1), BBB(1), BIJ1(1).

Multiple sources are used to research the business perspective of AI in the Netherlands. First, an initiative of a few large Dutch companies. Secondly, the position paper and strategy plans drafted by The Netherlands AI Coalition are analysed. Finally, as this AI coalition represents not all companies and industries, individual branch organisations are contacted to investigate whether they have strategy documents available regarding the use of AI.

In the end, the results of both subsets are compared, and a conclusion is drafted with recommendations.

4. RESULTS

4.1 AI in Election Programmes

The party programmes of all elected parties in the Dutch house of representatives have been analysed. The analysis has been done in two stages; first, reading through the programmes and summarising relevant policy and plans regarding the use of artificial intelligence. The second stage was to categorise the information by the sectors as presented by the Dutch AI-Coalition to create an overview of the subjects covered by the House of Representatives. This categorisation table can be found in Appendix A. The literature search was structured by scanning the documents using multiple keywords:

- Kunstmatig
- Intelligentie
- KI
- Artificial
- Algoritme
- Automatisering
- Digital

Kunstmatig, Intelligentie, KI and Artificial are all variations to, and parts of, the word AI in both Dutch and English. As some parties might not have used these words, the most publicly known definition of AI, algoritme, is also used. For political parties, the result of implementing policy is more interesting than the underlying technology. Therefore, the word automatisering was also added. Though not part of AI, the word digital was used to draw attention to equivalent technological changes to ensure no implicit mention of AI was overseen.

If a relevant result came up to the search for these words, the entire page was read, and conclusions were summarised in the sections below. At the same time, the result was compared to the 13 sectors as defined by The Netherlands AI Coalition. A distinction has been made between the language used by political parties. The relation between a sector and party programme was written down if the technology is used to advance the sector. The results of which can be found in Appendix 1.

4.1.1 VVD -34 seats

Artificial intelligence is mentioned multiple times throughout the election programme. AI is identified as a critical technology for economic growth. Therefore, the government should invest in artificial intelligence by subsidising research and financially supporting businesses, e.g., via projects like invest-NL and private financing. The government will take a leading role in boosting market innovation by more often acting as the primary customer. Given the financial certainty of the government, they can cover a bigger loss if something goes wrong with risky high-potential projects.

The programme states that artificial intelligence and robotics should be used more in national defence. The Netherlands should no longer be the best behaving country but dare to take some risks. More money needs to be spent on artificial intelligence on a national level and a European level.

Finally, the digital market trades in unconventional materials. For many tech companies, the principal used resource is user data and data on customer behaviour. The party states that we, therefore, need to adapt our tax laws for this digital economy. Doing so should be aligned with other countries and therefore discussed on a European level.

4.1.2 D66 – 24 seats

Both the VVD and D66 actively mention artificial intelligence and digitalisation in their programmes. Both mention the subject over seven to eight industries, as shown in Appendix A. The first

time AI is discussed is about making the new resilient in the world of AI. Therefore, it is stated that in education, kids need to be taught to think critically about privacy and the ethics of using artificial intelligence. We need more artificial intelligence graduates and need to invest more in artificial intelligence.

D66 recognises the opportunities of AI and discusses explicitly the effects it might have on the legal system. AI can speed up legal procedures, but a human being should always take the decisions which follow from an AI. Legal studies should pay more attention to using evidence provided by AI, given the promises the technology makes. The use of artificial intelligence in the legal system should therefore be regulated.

The government links more systems and data, which shifts the responsibility for this data from civilians to the government. There need to be legislative restrictions on using the data of innocent civilians for tracking and experimentation. Without a legislative framework, it should be prohibited to do so.

Tech companies that select and decide what people see based on an algorithm need to justify their decisions and be open and transparent about their algorithm. Furthermore, there should be acted against the possible discrimination of these algorithms. Setting up an algorithm watchdog should oversee this.

We need to ambitiously shape the European strategy on the use of artificial intelligence. We should be on top of regulating the use of artificial intelligence in our health care. There are many chances, but regulations lack behind. Patient interest should be taken into account early in the development stages by, for example, peer review and accreditation by an independent organisation.

4.1.3 PVV – 17 seats

This party sees potential in the use of digital systems to shame delinquents publicly. It furthermore believes more attention should be paid to digital safety, especially fraud and threats. Police should do more about these acts. Furthermore, we should weaponize ourselves against, often international, advanced cybercrime. There is no attention to the implementation of the technology, and there is no mentioning of artificial intelligence

4.1.4 CDA – 15 seats.

The police should use artificial intelligence to do better research. Artificial intelligence is recognised as an essential part of our digital future. The party recognises the importance of digital innovation and the risks it brings. Privacy, equality and human dignity all need to be protected, which to CDA means regulating big tech. Specifically, we need to prevent big tech from being a broker in personal medical data in the world of medicine.

We need to reclaim the digital domain in a time of digital revolution. Kids need to be raised for a digital world, and all children should be able to get an education. Digitalisation can facilitate this. Finally, digital activities need to be taxed the same as physical business activities.

4.1.5 SP – 9 seats

This party programme mainly focuses on the implications of digitalisation concerning social media. There needs to be supervision for the algorithms social media companies use. If big tech firms use algorithms to provide one-sided information, the Dutch government needs to act against this. Furthermore, social media cannot be a wild card for threats and intimidation.

The SP recognises that technological developments are complex for politics to follow. Therefore a “digitalisation committee” should advise politics on the consequences of technological developments and propose additional civilian rights in the digital era. Police need to have more means to deal with digital crimes. A special tax should be introduced for digital services and companies.

4.1.6 PvdA – 9 seats

Artificial intelligence is mentioned as a critical technology in the election programme by the PvdA. The party recognises that tomorrow’s technologies can solve today’s problems. Therefore, the government should invest in tech like AI. The government should only use open-source software and be transparent about the use of algorithms.

The party programme has a specific digitalisation chapter, which mainly focuses on the consequences of digitalisation, e.g., the introduction of a digitaks for digital businesses and digital police to patrol the internet. There is specific attention to the importance of informing the public on digitalisation.

4.1.7 GroenLinks – 8 seats

There need to be ambitious investments in digitalisation, and companies need to be supported to do so too. The government should not use algorithms that predict behaviour and decision making until laws cover all dangers. Furthermore, collecting biometric data in public will be prohibited.

4.1.8 FvD – 8 seats

Throughout the election programme, the party mentions the digitalisation of our cultural archive. This digitalisation process leaves room for further implementation of artificial intelligence yet is not mentioned as such. At the end of the election programme, a chapter on privacy discusses digitalisation by focusing on the adverse effects. Governmental data collection on citizens should be minimised, and citizens need to be in charge of data instead of big-tech. In the end, the party believes all algorithms that are used by social media need to be open to review for the public.

4.1.9 PvdD – 6 seats

The election programme of the PvdD recognises that digitalisation offers chances but that it also poses risks. The programme continues to only focus on the risks of the technology. In the programme, digitalisation is indistinguishable from automation and reduction of work. Data collection by corporations and governments is seen as a danger to privacy without focusing on minimising this risk. Privacy is linked to digitalisation and mentioned at the end of the party programme. Collecting more data on civilians and using more camera's poses risks. Furthermore, Big tech is gaining more influence.

4.1.10 CU – 5 seats

Big data and artificial intelligence are in some ways already better at diagnosing and detecting malignant in our care system. As long as the technology does not interfere with the personal contact between patient and doctor and is beneficial to the care, it could be applied. However, we need to watch out for patients' privacy and forbid the commercialisation of the gathered data.

There needs to be more control over the usage of algorithms as we should prevent discrimination in digital algorithms. There will be a quality mark to recognise safe algorithms. Laws should be adapted to our digitalising lives, like clear rules on protecting data at public organisations.

4.1.11 VOLT – 3 seats

Artificial intelligence is identified as the technology to change our lives in the coming years. It is part of the fourth industrial revolution. Due to the improvements it offers for our lives, we need to increase the speed of development. The EU needs to invest, combine knowledge and collaborate. Furthermore, we need to define ethical guidelines. Safety is an essential subject in this party programme.

We need to bundle the knowledge on digitalisation within the government and introduce a ministry of digital affairs. The minister of this ministry will take the initiative for a European digital identity. This is needed because the significance of technology keeps increasing.

4.1.12 JA21 – 3 seats

JA21 does not mention the possible uses of artificial intelligence. However, the party does mention the risks of cybercrime and the influence of digital currencies. Furthermore, according to JA21, the digital government should be further improved.

4.1.13 SGP – 3 seats

Artificial intelligence offers much potential. However, during the development, the ethical guidelines and shared values need to be protected. AI should therefore meet the principles of: "proportionality, subsidiarity, data minimalization and transparency". To protect these principles, we need to stay in control of the development. To keep control will require us to invest in AI development to prevent China and the US from having all power over this technology.

The programme focuses on multiple fields of digitalisation: healthcare, police, asylum procedure, infrastructure, agriculture and construction, all primarily from a safety perspective. Furthermore, the capacity for digital fraud detection should be increased at the Dutch police and sentences for digital sexual harassment and extortion need to be more severe. Information systems about asylum seekers should work together more. Moreover, investments in better security for our digitally controlled infrastructure need to be made. The state should support the further digitalisation of agriculture and construction. There need to be international agreements on the collection, use and protection of data. Finally, we should prepare for digital warfare, especially defining when a digital war would be going on and what measures would follow.

4.1.14 DENK – 3 seats

Artificial intelligence is not mentioned in the election programme. However, digitalisation is mentioned three times, all about preventing online discrimination. An example of a possible AI application presented by this party is an automated racism detector. The reason for such a detector being that discriminating algorithms should be forbidden. Discrimination is another way of stating that an algorithm is biased.

4.1.15 50-plus – 1 seat

This programme does not mention Artificial intelligence. Instead, digitalisation is mentioned and seen as a platform that fuels aggression. It is concluded that there should therefore be lessons to teach people how to work with digital services. However, until everyone in the Netherlands is digitally skilled, we should not entirely switch towards digital contact, as some people might be left out.

4.1.16 BBB – 1 seat

This programme does not mention Artificial intelligence. Digitalisation is mentioned twice, once regarding offering online education and once about lowering financial support for the public broadcasters. Neither link with artificial intelligence.

4.1.17 BIJ1 – 1 seat

Artificial intelligence is implicitly mentioned as an algorithm. One of the main worries regarding the use of algorithms is the possibility of ethnic profiling. Therefore, algorithms need to be transparent and prove that they are not discriminating. Being transparent requires the government only to develop open-source[1] software. Digitalisation can be used to increase education quality and to make it more accessible. We need to make agreements to fight digital insults and bullying more effectively. Everyone should have access to digital communication.

However, there are risks. Businesses and governments can track us, and the data gathered is used for commercial means without us giving permission. Google and Facebook have become superpowers, and there is little to no legislation to do something about it. Digitalisation policy needs to focus on citizens' rights and requirements.

4.2 AI in Dutch Businesses

4.2.1 Dutch AI collaborations

Within the Netherlands, multiple AI initiatives involve businesses. They share the motivation of boosting the development of AI in the Netherlands. However, all collaborations have their approach to realising this goal. Philips, Ahold Delhaize, KLM, ING & NS have started Kickstart AI. The goal of this initiative is to: "[…] bridge the AI gap between the Netherlands and other countries […]" Which they aim to realise by "[…] promoting the development of AI technology and nurturing AI talent in the country." (Kickstart-AI, 2021)

Furthermore, collaborations focus on aligning research objectives to maximise AI research results on a national level. The Innovation Centre for Artificial Intelligence (ICIA) is one of these collaborations. Besides this academic perspective, the goal of ICIA is to connect businesses, politics and research.

Businesses also collaborate to create societal awareness about Artificial intelligence. The best example is the national AI course. This course is a set of free lessons to learn about the implications and possibilities of AI, which is still being developed further and has been finished by 170.000 people. (AI-cursus, 2021)

These activities show that within the Netherlands, AI is a relatively actively discussed topic. Businesses are taking action to speed up the implementation and connect with the government to realise this ambition. We can identify three types of collaborations: Investments into nurturing AI developments in the future (Kickstart AI), Development collaborations (ICIA) and Societal awareness (AI-Cursus).

4.2.2 Netherlands AI coalition

The Netherlands AI Coalition is the largest collaboration of businesses for the development of AI in The Netherlands. The coalition came to existence from an initiative by VNO-NCW, EZK, TNO, IBM, Seedlink, Philips, Ahold Delhaize and the Dutch Digital Delta, called Taskforce AI. In 2019, when the coalition was founded, these parties wrote a position paper, starting the conversation on a nationwide approach to AI development.

Parallel to the publication of the position paper, the Dutch government drafted a strategic action plan for AI.

Innovation in AI needs a long-term view. Therefore, the Netherlands AI coalition has started the AiNed National Growth Fund Investment Programme. This programme has requested an investment from the National growth fund and has been granted 276 million euros for the first phase with a reservation for another 750 million euros for later phases. The programme identifies five bottlenecks in AI implementation: Innovation, Knowledge base, Employment Market, Society and Data sharing.

[1] Software, that is free to use and can be studied or improved by anyone because it is based on a code that anyone can use (Open-source, 2021)

Based on an interview with one of the representatives of the Netherlands AI coalition, some general positions on the development of AI can be concluded. It is stated that the subject of AI is confusing to MP's. It is often thought that AI will make decisions on its own, which it is not. Furthermore, the development of AI is often by labour parties, seen as the same thing as automation. This association fuels fear of job loss, which is not the direct effect of AI development. It can actually generate new jobs.

The most important thing to know is that AI requires data to work. Therefore, data is the most important part of an AI. It is the fuel on which it runs. For the rapid development of AI, data needs to be standardised between systems and organisations. The government should take the lead in this development. Not by forcing the change but by first levelling out its own data flows among ministries followed by external contractors who work together. In the end, this will also standardise the production of data.

Now, there are two main challenges, which are connected. First, the creation of new features of AI and the second is to use current AI technologies to automate existing processes. Only in the latter, the Dutch government can apply control.

4.2.3 Other industry associations

The Netherlands has multiple employers' associations. The two largest, MKB-Nederland and VNO-NCW, are covering multiple industries. Both of these are collaborating in the Netherlands AI Coalition. Next to these larger two, there are employer associations for specific industries.

MKB-Nederland and VNO-NCW do not represent all Dutch businesses. For a representative image of the position of Dutch businesses, it was decided to contact other employers' associations. Using the 13 sectors the Netherlands AI Coalition has divided itself into, a list of 13 associations was drafted. Public services are difficult to define. Therefore, it was chosen to focus on the VNG. The list of 13 associations can be seen in Appendix C.

The associations have been contacted via email with two questions: They were asked whether they were involved in implementing artificial intelligence within their sector, and if they did, whether there were documents available on the implementation and use of said information.

Of the 12 associations, eight responded. The responses of these organisations can also be found in appendix C. All though the set is not representative of business life in all sectors, it does show some interesting patterns.

4.2.3.1 Built Environment

Bouwend Nederland, the employer's association for 4300 construction-related firms, is seen as the biggest representative in the construction industry. (Over Bouwend Nederland, 2021) Bouwend Nederland has recently joined the Netherlands AI coalition. Informatization regarding AI is seen as one of the most critical subjects in the world's organization. Their goal is to get the most out of the built environment. Currently, many smart devices are developed and installed, yet they all have their data standard. For further AI development, data needs to be standardised.

4.2.3.2 Defence

The NIDV, the Netherlands Institute for Defence & Security, is the industry representative for defence. This organization connects government, industry and research industries. The NIDV recognizes that AI development is going very fast, which besides opportunities also involves significant challenges in identifying and applying the new technology. According to the NIDV, government institutes do not think about the opportunities technology offers but instead from a desire or need. Therefore, technology gets in view when they have already been applied to a product. Within defence and the police, institutes are doing research already to recognize the technology a step earlier.

The NIDV is involved in the Netherlands AI coalition in a platform that focuses on vital digital technologies. They advise both businesses and the government on how to position themselves in these technologies.

4.2.3.3 Financial Services

As a representation of the financial sector, Adfiz was contacted. Adfiz is the industry representation for 15.000 employees in the financial sector. The organization cannot provide input on AI implementation in its industry, though it is aware of AI implementation research.

4.2.3.4 Healthcare

The healthcare industry has an overarching association that represents industries within healthcare. This organization is called BoZ, the Branche organization for healthcare. They are not involved with conversations on the use of AI.

4.2.3.5 Port and Maritime

Dutch shipping companies are represented by the KVNR, which has stated not to be involved with developments in Artificial Intelligence.

4.2.3.6 Security, Peace and Justice

The "security branch" represents the security companies in the Netherlands. They have stated not to be involved with the development of artificial intelligence. However, their members individually might.

4.2.3.7 Technical Industry

High tech NL was contacted, the industry-representation for high tech developments in The Netherlands. According to them, Artificial intelligence is "hyped" and "overrated". Artificial intelligence has existed for a while, yet they believe many organizations only use the name of the technology to gather funding.

Besides all this, AI could be an enabler to speed up or improve other developments, e.g., better-equipped robotics. Together with the Holland Robotics group, they already concluded that the focus should be more on collecting and processing data. The application of said data would result in AI models.

4.2.3.8 Mobility, transport and logistics

To represent the transport industry TLN, the largest employer's association had been contacted. TLN states that they are not involved with discussions regarding AI, yet some of their members are.

5. CONCLUSIONS

This chapter will discuss the conclusions from the literature research and answer the research questions. Then, based on these conclusions, recommendations will be made, which will be directed at both business and politics combined.

5.1 AI and Dutch Politics

The first question to be answered in this research is:

What is the opinion of the Dutch political parties regarding the use of AI in businesses?

After analysing the election programmes of parties in the Dutch House of Representatives, conclusions can be drawn. First, there is a noticeable difference in the degree to which parties mention artificial intelligence in their programmes. A five-point scale was used to show the awareness of opportunities and challenges

involved with AI to visualise this difference. These results are bundles in table 2.

Table 2. Awareness of opportunities and challenges of AI in Dutch election programmes

Awareness of:	Opportunities of AI	Challenges of AI
VVD	4	1
D66	4	4
PVV	1	1
CDA	4	4
SP	1	5
PvdA	3	3
GroenLinks	3	5
FvD	2	5
PvdD	2	4
CU	4	4
VOLT	5	3
JA21	1	2
SGP	5	5
DENK	1	2
50-plus	1	2
BBB	1	1
BIJ1	2	4
Average:	2,59	3,24

The points assigned are based on the following distribution: 1 = Not mentioned; 2 = Below average; 3 = Average; 4 = More than average; 5 = Extensive. These points were assigned based on the observations in chapter 4.1. The average on both categories is too little interest, as a relative scale is used. Therefore, the difference within a category is more indicative. When looking at a frequency table, as can be seen in Table 3, the difference becomes clearer.

Table 3. Frequency table of results of table 2

Rating	Frequency Opportunities of AI	Frequency Challenges of AI
1	6	3
2	3	3
3	2	2
4	4	5
5	1	5

Table 3 shows a big difference in the awareness of political parties. Over a third of the programmes does not mention any opportunities for the use of AI, and the others are relatively reserved on paying attention to the subject. When analysing the awareness of challenges, there is a significant shift. When talking about the challenges of AI, over half of the parties pay much attention to this aspect.

These results show that there are mainly three conclusions when analysing awareness of artificial intelligence in Dutch politics:

1. There is more focus on the challenges of AI than the opportunities of the technology.
2. AI is not discussed by all political parties.
3. There is a big difference between political parties on the awareness and knowledge of AI.

The existence of a government written strategic AI action plan and the participation of multiple ministries in AI collaborations shows that the Dutch government is actively involved with the development and implementation of AI. On the other side, the house of representatives seems to want to push the brakes, as challenges and risks of using artificial intelligence seem to overrule the discussion over the advantages of implementing AI.

Appendix B shows a categorisation of the challenges political parties see when describing artificial intelligence in their party programmes. The results show that the political parties worry most about bias, closely followed by privacy and ethics. These are therefore important factors when developing policies about artificial intelligence.

It is essential to mention that these worries on the bias, privacy and ethics are not confined to the algorithms which are powering artificial intelligence. These worries mostly rely on the collection and structure of data that AI uses. The discussion should therefore focus on whether data is collected in an inclusive, non-biased way and whether people keep control over their data—a discussion that can be separated from the implementation of artificial intelligence.

The lack of awareness of the possibilities of AI combined with this focus on challenges especially shows in the election programme written by the PvdD. In their programme, digitalisation is indistinguishable from automation and reduction of work. AI is seen as a threat to the current way of working.

GroenLinks, positive towards the development of digitalisation, states that the government should not be allowed to use any algorithms which predict behaviour or makes decisions until the law covers their workings (Postma, et al., 2021). Many other parties apply this approach of banning a technology until it is fully understood. Prohibition seems to be the solution, according to many. Nevertheless, given the fast, international development, impossible to implement.

Another example of this restrictive way of thinking is the idea of restricting big tech as the next step in controlling the development of artificial intelligence. None of the parties mentions how they want to realise this. Which once again conflicts with other statements like the development of digital crime detection. Unless significant investments are made in AI developments for the Dutch government, they will be dependent on international (big) tech corporations to develop these tools.

In many cases, Artificially Intelligence is only implicitly mentioned in election programmes, which results in parties contradicting themselves when their ideas would be put into action. For example, parties want to fight crime using AI by collecting behavioural data whilst at the same time being strictly against the collection of citizens data.

Besides contradicting their own statements, some statements clash with the Dutch Government. One of the often return proposals is that taxes for digital services need to be the same as non-digital ones, perhaps even higher according to some political parties. Unless the increased taxes are directly invested back in the technological development of digitalisation, the change seems to conflict with the government's idea of boosting innovation.

5.2 Dutch Businesses

What is the opinion of Dutch businesses regarding the use of AI in businesses?

Businesses are eager to develop artificial intelligence. This is proven by the AI coalitions and projects initiated by Dutch businesses. The Netherlands has many artificial intelligence initiatives, of which all have different perspectives and goals and all involve businesses.

The largest AI collaboration, the Netherlands AI coalition, counts almost 200 members. With almost 1,9 million businesses in the Netherlands in total (Bedrijven; bedrijfstak, 2021), it is

clear that the subject of artificial intelligence in the Netherlands is discussed by only a small group of businesses.

When looking at employers' associations for industries, it becomes clear that many associations are not working on artificial intelligence. Some associations are aware of businesses that are involved with the technology, yet many are not. Within the Netherlands AI Coalition businesses of all the contacted industries are represented. The unawareness of employer's association proves the decentralised knowledge on the use of artificial intelligence.

Businesses feel the desire to work together in the developments of artificial intelligence, hence the existence of the Netherlands AI coalition. With the founding of the Netherlands AI coalition, existing structures for representation and political influence are bypassed. The reason being that the technological application of AI cannot be confined to specific industries, as the underlying technology behind, e.g., facial recognition, can be used in other practices like package tracking in transportation, cancer detection in health and harvesting indicators in agriculture. This choice is evident from a technological perspective. However, the current influences on policy still revolve around the industry-specific divisions.

5.3 Problem Statement

From the conclusions discussed in sections 5.1 and 5.2, two main problems can be identified: one for Dutch politics and one for Dutch businesses. The possible solutions are discussed in section 6.

5.3.1 Politics

The house of representatives has limited time to discuss policy, yet the developments in Artificial Intelligence are so complex that they require ample time to be fully understood. The house of representatives is tasked with assuring government policy is in the best interest of the country and its citizens. When in doubt, the house of representatives will sooner opt for safety than risk. This causes a conflict: The house of representatives needs to take a decision on a highly uncertain technology, whilst they desire safety and security. The problem statement in politics is, therefore: how can the house of representatives adequately judge AI policy.

5.3.2 Businesses

About 200 businesses have joined forces in the Netherlands AI coalition. This coalition is seen as the biggest AI coalition in the Netherlands and, therefore, actively involved with policy plans. Besides these 200 businesses, industries seem to be little aware of artificial intelligence, as can be seen by the lack of awareness amongst employers' associations. This causes a knowledge gap amongst Dutch businesses. This causes a problem. So, how can the developments of AI in businesses be on the agenda of all Dutch businesses?

6. RECOMMENDATIONS

Based on the results, conclusions and problem statements from section 5, recommendations are made both to Dutch politics and Dutch businesses to answer the research question: *What actions do Dutch Politics and Dutch businesses need to take to align their interests in the use of artificial intelligence?*

6.1 Politics

First, politicians need to have a basic level of knowledge on developing policy around technological developments. These developments require a quicker and more flexible view of legislation. This is not solely restricted to artificial intelligence as more technologies are widely used within society, requiring a different approach to legislation.

Second, to make decisions on policy, it is required that those who take decisions understand all sides of the subject. Therefore, awareness and training are required. However, this is where issues arise. There is an endless list of subjects discussed in the house of representatives, and members of the house of representatives do not have time to study all these subjects. Therefore, political parties should try to differentiate the knowledge of their members in electable positions and prioritise important subjects. Therefore, the recommendation is to have at least one technologically aware member in an electable position and for all political parties to discuss artificial intelligence, given its considerable economic potential.

Third, as this requirement of a technologically aware member puts immense pressure on this one person, there needs to be an easier way to understand the policy about AI. An objective, standardised indicator could be the solution to this problem. AI and other technology could be scored on categories that are important to political parties. A scoring system based on the top three worries of political parties could be used: Bias, Privacy and Ethics. By relying on objective indicators, members of the House of Representatives need less knowledge on AI and can connect these indicators to their political opinions.

Fourth, installing a ministry of technology could help with centrally organising the technological developments within our country. A significant part of this ministry could focus on the use of artificial intelligence. This ministry would become a centre for technological knowledge and support the economic importance of technology. However, a new ministry for technology would not fulfil the objectivity required for an indicator, as mentioned before, as the cabinet oversees ministries.

Finally, the trend of prohibiting technology needs to stop. Technology is developing internationally, and research shows that we will need to adopt the technology sooner or later to keep an economic advantage. Instead of prohibiting specific uses of the technology, politicians should focus on leading by example. Leading by example means being the first to take a step in the right direction. One of the most essential requirements for national AI development is a uniform dataset. Politicians take the first steps in standardising the datasets within the government, set up guidelines regarding collecting this data to take care of worries around bias and privacy, and eventually require other parties to use this standard.

6.2 Businesses

First, businesses need to continue the collaborations they have started to promote the development of artificial intelligence. However, these collaborations need to be extended beyond the front runners. It is beneficial to the entire Dutch economy to start implementing artificial intelligence as soon as possible.

Second, to make businesses adopt artificial intelligence, they need to learn more about the technology. This requires businesses that are already working with AI to share their knowledge with other businesses. At the same time, businesses that have not yet become active with AI need to investigate the technology more actively.

Third, businesses have gathered in coalitions to discuss the developments of artificial intelligence, whilst industry associations are not aware or involved in these coalitions. Industry-specific employers' associations have built relations with politicians over many years. AI coalitions, try to use these existing relations and involve industries as soon as possible. This will guarantee a broader discussion of the subject and a bigger chance of being picked up by politics.

Fourth, the public and politicians are aware of the risks artificial intelligence might pose. However, there is no clear

documentation to take away these fears. Businesses, be more transparent about the risks of AI. Only focussing on the opportunities is dangerous. People need to be able to make a well-educated decision on the use of AI.

Finally, to boost the development of artificial intelligence, data needs to be structured more. Data standards need to be introduced for systems to be more connected. This standardisation requires collaboration amongst businesses beyond their own individual economic advantages. As research shows, this is required for economic advancement in the long run.

7. LIMITATIONS

Artificial intelligence is a collective name for many different technologies with different implications. This collective definition means that the research and recommendations are restricted to a generic scope. Further research needs to be conducted to analyse legislation regarding specific parts of AI.

The usage of election programmes to research the opinion of political parties is a limited representation of the actual opinions of parties and individual representatives. The election programmes are a snapshot influenced by an urge to please voters. Therefore, research should be conducted to investigate the opinions of political parties in more depth.

Artificial intelligence is a technology that cannot be easily divided over individual branches. Often AI technologies can be applied in multiple branches. Therefore, focussing on specific branches is only a limited way to analyse the use of AI. New research could research artificial intelligence from the technological perspective.

Gathering opinions on artificial intelligence within industries were restricted to one organisation per industry. This strictly limits the diversity of sources that shape an industry. Therefore, further research needs to be conducted in each industry to investigate the project and knowledge within these industries.

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Appendix A – Mentioning of using AI and digitalisation in party programmes to be applied in 13 branches as defined by the Dutch AI coalition ranked by number of seats

	VVD (Rosenthal, Dijkhoff, van 't Wout, Heinen, & ter Borg, 2021)	**D66** (Koolmees, et al., 2021)	**PVV** (Het gaat om u, 2021)	**CDA** (Knapen, et al., 2021)	**SP** (van Raak, et al., 2021)	**PvdA** (Sent, et al., 2021)	**GroenLinks** (Postma, et al., 2021)	**FvD** (FvD, 2021)	**PvdD** (PvdD, 2021)	**CU** (Bikker, et al., 2021)	**Volt** (Volt, 2021)	**Ja21** (JA21, 2021)	**SGP** (SGP, 2021)	**Denk** (DENK, 2021)	**50-plus** (Haan, Graaff, Nagel, Kuijk, & Kenny, 2021)	**BBB** (BBB, 2021)	**BIJ1**
Agriculture and Food						AI (p17)	Digitalisation (p92)						Digitalisering (p120)				
Built environment													Digitalisering (p130)				
Culture and media	Digitalisation (p33)	Digitalisation (p39)				Digitalisation (p86)		Digitalisation (p14)	Digitalisation (p84)	Digitalisation (p71)							
Defence	AI (p47)	Digitalisation (p132)	Digitalisation (p20)	Digitalisation (p95)									Digitalisering (p155)				
Energy and Sustainability						AI (p17)				Digitalisation (p66)	AI (p24)						
Education	Digitalisation (p31)	AI (p104)		Digitalisation (p35)		Digitalisation (p36)	Digitalisation (p43)				AI (p24)					Digitalisering (p27)	Digitalisering (p43)
Financial Services		Digitalisation (p99)															
Healthcare	Digitalisation (p36)	AI (p170)		Digitalisation (p23)		AI (p17)				AI (p48)	AI (p24)		Digitalisering (p31)				
Public Services	AI (p97)					Digitalisation (p77)							Digitalisering (p69)				
Port and Maritime	Digitalisation (p88)																
Mobility, Transport and Logistics				Digitalisation (p61)													
Security, Peace and Justice	Digitalisation (p53)	Digitalisation (p114)	Digitalisation (p20)	AI (p87)	Digitalisation (p21)	Digitalisation (p62)	Digitalisation (p80)			Digitalisation (p28)							
Technical Industry	AI (p14)	Digitalisation (p94)		AI (p55)			Digitalisation (p10)										

Appendix B – Categorisation of challenges of AI as perceived by political parties ranked by number of seats

	VVD	D66	PVV	CDA	SP	PvdA	GL	FvD	PvdD	CU	VOLT	JA21	SGP	DENK	50-plus	BBB	BIJ1	Frequency
Privacy		x		x				x	x	x								5
Bias		x		x	x		x	x		x				x			x	8
Crime			x									x						2
Ethics				x							x		x				x	4
Taxation	x			x	x	x												4
Unemployment									x									1
Safety											x							1

Appendix C – Branch organisations contact schedule and responses.

Sector	Contact info	Contacted	Reminder 1	Reminder 2	Response
Agriculture and Food	https://www.lto.nl/over-lto/contact/	21-5-2021	28-5-2021	10-6-2021	N/A
Built environment	advies@bouwendnederland.nl	21-5-2021	28-5-2021	N/A	Meeting with Built environment association +. Rep. Dutch AI coalition
Culture and media	info@federatiecultuur.nl	21-5-2021	28-5-2021	10-6-2021	N/A
Defence	office@nidv.eu	21-5-2021	28-5-2021	N/A	Als organisatie die overheid, industrie en kennisinstellingen verbindt hebben wij primair een faciliterende rol, niet inhoudelijk op het gebied van AI. Omdat de technologie enorm snel gaat zien wij vooral dat, naast de grote kansen die nieuwe technologieën bieden, ook grote uitdagingen zijn deze tijdig te herkennen en zelf een toepassing voor te vinden. Maar juist bij grote en overheidsorganisaties wordt er vaak niet vanuit kansen maar vanuit behoeftes gedacht waardoor technologieën pas in de productfase de weg vinden naar de organisatie. Wel zijn er bij o.a. Defensie en de Politie innovatieclubs actief die intern hier mee bezig zijn, ik ga ervan uit dat je deze al kent. Zo niet, laat het maar even weten. Als NIDV hebben wij (minimaal) drie rollen die wij wel vervullen op het gebied van AI. Wij zijn actief als deelnemer binnen de NL AI-coalitie. We hebben een werkgroep (platform) dat zich bezighoudt met digitale sleuteltechnologieën en wij adviseren zowel bedrijven als overheid over hoe zij zich zo goed mogelijk kunnen positioneren bij deze ontwikkelingen. https://www.nidv.eu/platform/nidv-informatie-voorzienings-platform/
Energy and Sustainability	info@energie-nederland.nl	21-5-2021	28-5-2021	10-6-2021	N/A
Education	info@vo-raad.nl	21-5-2021	28-5-2021	10-6-2021	N/A
Financial Services	info@adfiz.nl	21-5-2021	N/A	N/A	Wat een ambitieus onderzoek. Ik weet niet of wij je kunnen helpen. Misschien interessant voor jou is het WRR onderzoek: weten is nog geen doen. Daarin wordt een reëel beeld geven van het verschil tussen wat technisch mogelijk is en de maatschappelijke praktijk.
Healthcare	https://www.brancheorganisatieszorg.nl/contact/	21-5-2021	28-5-2021	N/A	De Boz is zelf niet bezig met AI. Wellicht dat de bij de BoZ aangesloten Branceorganisaties je verder kunnen helpen. Zie https://www.brancheorganisatieszorg.nl/over-boz/leden/ Succes met je onderzoek.

Port and Maritime	https://www.kvnr.nl/contact	21-5-2021	28-5-2021	10-6-2021	De KVNR is niet bezig met artificiële intelligentie. Wellicht dat de vereniging voor scheepsbouw en -toelevering (https://maritimetechnology.nl) wel iets met AI doet.
Mobility, Transport and Logistics	info@tln.nl	21-5-2021	28-5-2021	10-6-2021	Excuus voor late reactie, maar het is druk momenteel. Wij doen zelf (nog) niets met AI, maar bedrijven in de sector wel.
Security, Peace and Justice	https://www.veiligheidsbranche.nl/contact/	21-5-2021	N/A	N/A	Uw bericht hebben wij in goede orde ontvangen. Wij hebben hier echter geen informatie over. Voor meer informatie kunt u wellicht contact opnemen met de grote bedrijven: Securitas, Trigion en G4S. Contactgegevens kunt u vinden op onze website.
Technical Industry	info@hightechnl.nl	21-5-2021	28-5-2021	N/A	AI is volgens ons op dit moment behoorlijk gehyped en over rated. AI bestaat al heel lang. Er zijn alleen veel partijen die dit nu gebruiken en inzetten om funding op te halen. AI is volgens wel een enabler om andere ontwikkelingen te verstellen of te verbeteren. Denk hierbij aan Robotica die door betere AI ook nog meer een vlucht zal nemen. Wij hebben het onlangs met de roadmap groep van Holland Robotics hierover gehad. We zouden meer moeten focussen op op halen van data en hoe dat we die verwerken. En toepassingen in modellen zodat er AI ontstaat.
VNG	info@vng.nl	26-6-2021	N/A	N/A	N/A