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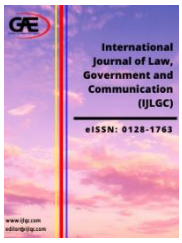

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IR 4.0. IN PARLIAMENT: CONCEPTUALISING THE APPLICATION OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN THE PARLIAMENT OF MALAYSIA'S PARLIAMENTARY QUESTIONS

Muthanna Saari[1]

[1] Research and Library Division, Parliament of Malaysia, Malaysia
Email: muthanna@parlimen.gov.my

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Abstract:

The Fourth Industrial Revolution (IR 4.0.) offers significant opportunities to humankind in revitalising human values through which the emerging technologies inevitably seam into daily societal life. Legislatures face ever-increasing challenges in fulfilling their duties in such a complicated society which subsequently entails complex legislations. Parliamentary questions (PQs) as one of the traditional tools utilised by parliamentarians provide a quintessential mechanism to achieve the oversight functions of parliament. However, there are still immense undiscovered potentials of PQs, yet many previous studies have not looked into the content of the questions and the consequences of the response to the conduct of governments. This paper set out to examine the usefulness of IR 4.0. namely, artificial intelligence (AI) and machine learning towards improving the efficiency, transparency, and accountability of parliament and the government. The research data of this exploratory and interpretative study is drawn from three main sources: literature studies, semi-structured interviews, and participant observation of the existing PQs processing in the Dewan Rakyat, Parliament of Malaysia. This study has found that generally, the approval of such technologies introduction to the parliamentary businesses is contingent upon its ability to capture complex considerations in the existing environment.

Keywords:

Parliamentary Questions, Artificial Intelligence, Machine Learning, Dewan Rakyat, Industrial Revolution 4.0.

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Introduction

The Fourth Industrial Revolution, as what its three predecessors have experienced, has what it takes to 'transform the way human beings create value and change the world' (Schwab & Davis, 2018). The emerging technologies such as artificial intelligence (AI), neurotechnologies, virtual and augmented reality and others that driving the Fourth Industrial Revolution should not confine our thinking of what this era meant to our life. Nonetheless, they offer a breakthrough in human civilisation only if we are able to understand how to embed human values within these technologies. The Fourth Industrial Revolution or widely called as IR 4.0., appears to be spreading its impact into every strand of humankind. Governments face a daunting task in ensuring these technological advancements do not place societal life in danger.

Legislatures have started to embrace technological assistance in their legislative process, mainly of AI-led technology. The United States Congress, for example, has already developed an AI engine to automate the process of comparative analysis between bills, amendments and current laws. The initiative was put as part of the Select Committee on the Modernisation of Congress' effort to help legislators, staffs and the public understand legislative changes as well as to avoid unintended consequences upon passing legislations (Ackley, 2019). Likewise, other legislative businesses' objectives to check governments into account could be of use to the introduction of such technology. Parliamentary questions (PQs) as one of the traditional tools of oversight in legislatures might leverage AI and machine learning as they pose a powerful instrument to connect the government, society, and the policies or legislations that will thoroughly impact the masses.

Parliament of Malaysia, as provided under Article 62(1) of the Federal Constitution, shall regulate its procedure. The Standing Orders provided the procedures for both of the Houses, Senate and the House of Representatives and they govern PQs matters. This paper attempts to conceptualise an AI and machine learning-based system in the existing PQs processing in the House of Representative or Dewan Rakyat, Parliament of Malaysia. In doing so, this paper examines the potential push and pull factors of such system into parliamentary business and intends to determine the extent to which IR 4.0. stands as disruptive towards the good governance of Parliament. This paper offers some important insights into understanding the role of PQs towards enhancing efficiency, transparency and accountability of Parliament and government with what implications IR 4.0. would bring.

Literature Review

The Standing Orders stipulate the rules and procedures for PQs in terms of what issues are allowed to be asked, what is the purpose of the questions, and how questions should be designed. It also includes the administration of questions such as the submissions notice. In the House of Representative's Standing Order 21(3), the purpose of a question 'is to obtain information on a matter of fact within the special cognisance of the member to whom it is addressed' (*Standing Orders of the Dewan Rakyat*, 2018, p. 197). Under normal circumstances, a parliamentary question is directed to Ministers to obtain information concerning the 'affairs within their official functions', or to any members whom responsible for any Bill or motion in the House, as stipulated in Standing Order 21(1) and (2).

Högenauer (2018) suggests that many studies on PQs analyse PQs in a statistical approach of the number of questions while neglecting the content and the choice of words of the questions.

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Lack of focus in this aspect has resulted in the actual purpose of the questions is relatively unexplored. Nevertheless, she summarises four functions of PQs from other studies on PQs purpose and content as:

> "1) A control function: which aims to impose parliamentary accountability on government. PQs are an important tool for obtaining information from the government on policy development and implementation and for *ex-post* control.
> 2) A legislative function: by asking the government how it intends to address a certain issue, MPs can put pressure on the government to engage actively in a policy-making process to achieve a certain result.
> 3) A representative function: by highlighting concerns of constituents and pushing local issues on to the agenda (representative function).
> 4) An information function: by asking for information on a policy or state of affairs more generally." (p. 63)

A broader perspective has been adopted by Saalfeld (2000), who argues that the complexity of the agency problems in executive-legislative relations has contributed to the role of PQs towards accountability process. In this regard, he argues that the information asymmetry between MPs and governments which has grown over time signifies the enlarged gap of the MPs' relationship in the parliamentary delegation process. He further argues that the agency problems in executive-legislative relations must consider the fact that the delegation process from MPs to the cabinet is conciliated and supervised by political parties. However, several studies such as by Rasch (2011) and Rozenberg and Martin (2011) have suggested that MPs experience less party pressure to pursue their issues of interest through PQs.

The importance of studying and analysing PQs beyond the statistical analysis of the questions is on the impact of PQs towards the role of parliament and MPs in checking the government's business. In a study on PQs, Martin (2011) found that the analysis may provide unique opportunities to identify the behaviour of individual legislators and the function of legislatures. An analysis of PQs also offers the opportunity to explore a contemporary understanding of the role and impact of parliament as a central institution in the political exercise (p. 260). Furthermore, such an analysis may have contributed to the reassessment of the functions of parliament, most notably in checking the executive's accountability. There are two forms of oversight functions of parliament, as what Saalfeld (2000) termed as '*police-patrol oversight*' and '*fire-alarm oversight*' (pp. 362-363). The former is a parliament's initiative which examines government's activities intending to detect and rectify any breach of conduct of legislative goals, while the latter call for the institutionalisation of rules, procedures, and informal practices to examine the implementation and provide a mechanism for remedying any parliamentary goals.

Having discussed the importance of studying the content of PQs, it is necessary to consider the challenges of studying PQs and what are the limitations. Rozenberg and Martin (2011) have identified at least four challenges in using PQs to understand the role of the legislature. Firstly, using PQs for cross-institutional comparison of legislatures does not necessarily an easy task, provided the complex institutional dissimilarities between rules and procedures. Secondly, the preference and behaviour of individual parliamentarians could not merely be identified from the PQs' text without having significant content analysis to get at the heart of the issue of the question. Next, PQs has been questioned its practicality as an oversight function since it serves

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to send information as much as getting information from the executives. In a study on the role of and the reasons for PQs in the Swiss' Nationalrat, Bailer (2011) argues that PQs are frequently served for information gathering more than to represent citizen's concerns. Finally, due to the low costs involved in asking the question, PQs have often been considered as a preferred choice.

Consequently, a study on PQs in the Turkish Grand National Assembly investigates the political function of PQs in parliament (Hazama, Faruk Gençkaya, & Gençkaya, 2007). The reasons for asking questions were associated with the questioner's party affiliation, content, subjected authorities, and the relations with the constituency. Both sides of parliamentarians, opposition or government ministers use PQs to enhance their political credence. The oppositions MPs use PQs to recompense their disadvantage as compared to government party members through blaming and soliciting type questions. Ministers, in turn, take advantage of answering to showcase their capability. The study acknowledged some limitations, such as the nature of the party system, which might hinder a full picture of the way questions being asked. However, it has been shown that 'in terms of agenda topic and geographical focus, PQs can provide a real insight into the preferences of individual legislators' (Rozenberg & Martin, 2011, p. 403).

The existing body of research on PQs suggests that PQs are essential in holding the government into account. It has previously been observed that by analysing PQs would eventually study the behaviour and preferences of particular parliamentarians in advancing their constituents' concerns. These parliamentarians' inclinations on a specific subject matter thus, would be able to determine appropriate responses to the questions asked. However, the evidence for the relationship of PQs and accountability of the government is inconclusive as to whether 'the ability to question the government would lead ultimately to better government' (Rozenberg & Martin, 2011, p. 403). Nevertheless, Rasch (2011) concludes that study on PQs as an instrument to assess the behaviour of individual parliamentarians not only 'reflect the behaviour but the boundaries dictated by access rules' (pp. 391-392).

The proliferation of information and communication technologies (ICT) in the 1990s has prompted legislatures to start adopting digitalisation and automation in their daily business. From exploring the prospects of having 'e-Democracy' in terms of moving its traditional communications towards digital communications through email and website (Dai, 2007), to the extent of using mash-up technology and Web 2.0 in gathering information from multiple online services into one repository (Missingham & York, 2011), the Internet and ICT have become norm and grow side by side with parliamentary affairs. With the advent of technological advancement vis-à-vis IR 4.0., the concerns of utilising such technology have also revolved around the ethical dilemmas. The dilemma includes the questions of the trustworthiness of the technology in aiding the legislatures and legislators.

The application of artificial intelligence, machine learning and big data are fast becoming a vital instrument in the legislative process among many legislatures around the world. Many countries have joined the growing numbers of legislatures that have mooted or trialled AI in their parliamentary businesses. Legislatures in India consists of Lok Sabha, Rajya Sabha and state legislatures have opted to use AI and machine learning 'to streamline operations and discharge their legislative obligations more efficiently' through National E-Vidhan project. The project intended to have AI and machine learning study the patterns and propose

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improvements from the insight extracted from the system. As a start, the Himachal Pradesh assembly has implemented the submission of questions and replies through its e-platform before rolling-out the data analysis and processing in the next phase of the project (Tripathi, 2018).

The Austrian Parliamentary Administration has developed the EULE Media Monitor or 360° Topic-Monitoring which find, filter and visualise content relevant to MPs. The system implemented with a strict non-partisan rule in feeding the information to the MPs (Reichstaedter & Lanzerstorfer, 2019). Further enhancement to the system in the form of auto-abstracting and content-matching which not only would extend the breadth and depth of available data and information, but achieve 'a fully optimised, customer-oriented type of data'. In a similar vein, the Japanese government is trialling AI to assist in the preparation of responses in parliament. The officials will utilise the information in drafting the 'responses used in policy-making, by mining past opinions on policy issues and alternative suggestions voiced out by officials during parliament' (Chin, 2016). To kick-off the system, five years' data, most particularly relevant to the parliamentary agenda, will be fed to the system before any substantial responses could be churned out.

Likewise, there has been raise of interest in employing artificial intelligence in legislations, specifically in assisting the legislators in making decisions on passing bills or their financial oversight function. The complexity of legislation being introduced in parliaments coupled with limited capability of the legislators to rigorously understand the bill and its implications provide the ideal justification for AI and machine learning to take centre stage as an auxiliary tool in legislation (Furst, 2018; Ghedhioui, 2019). However, it is widely acknowledged that they are meant as complementary and not to replace the role of legislators as the ultimate decision-maker in the legislature completely. The most fundamental element that AI and machine learning bring in the legislation process is to improve efficiency and accuracy while at the same time helping legislators in making informed decisions.

As has been mentioned earlier, one leading concern for the application of AI and machine learning is the plethora of ethical issues surrounding its implementation upon legislation. One of the ethical issues entails from AI is the emergence of a biased algorithm. The potential of bias become visible over time due to how the AI was programmed and trained. In addition, if the supplied data to the AI is already corrupted, there is a high possibility of having biased information (Mehr, 2017). As noted by Schwab and Davis (2018) there are three elements of which are relevant to the ethical issues in AI: 'the extensive use of big data; the growing reliance on algorithms to perform tasks, shape choices and make decisions; and the gradual reduction of human involvement or even oversight over many automatic processes'. There is a need to mitigate ethical risks and refrain from allowing complete AI decision-making. The purpose is to strike the right balance between 'the risk of social rejection and too strict regulation, and to reach solutions that maximise the ethical value of data and algorithms to benefit societies' (Schwab & Davis, 2018).

In his exciting analysis of the future of AI, Atkinson (2016) identifies five myths on AI and proves the reality of what AI would bring to humanity. The technological upheavals have been continuously purported, out of 'fear of technology, opportunism or ignorance', to take away jobs. It is also thought to have enabled biased algorithms and abuse, encroach privacy, to the extent of exterminating humankind. Biased algorithms, for example, are not the outcome of

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any malicious or flawed system. It is instead, merely following the instructions constructed by the human administrator, or on many occasions are the results of the real-world data that may manifest bias. In most circumstances, AI and machine learning would be less biased than human decision-making which is more bias-prone to many aspects of society. In this regard, Schwab and Davis (2018) point out that a values-based approach to technologies is essential to regain the balance in which a clear relationship between technologies and values should be drawn. Indeed, a more positive perspective of technologies of which technologies and societies are mutually 'shape each other in a reflexive way – we are the product of our technologies as much as they are products we create'.

Returning to the subject of PQs and the application of AI and machine learning in legislation, Parliament of Malaysia may conscientiously explore whether it is possible to incorporate a certain degree of AI and machine learning in its parliamentary businesses of PQs. In what might be an effort to reduce administrative burdens and increase efficiency, the taste of advanced technologies such as AI and machine learning into the overall process of PQs would probably leverage the function of Parliament. Manual processes in delegating questions according to appropriate ministries based on the text of the questions could be enhanced by the automation, which may include current context and the intention of the questioner. These value-added elements may be achieved through machine learning techniques while at the same time abiding with the rules stipulated in the Standing Orders.

Embedded with rules from Standing Order 23(1)(*a*) to (*s*), the system may categorically put any submitted questions based on the rules into further action by the administrator. For example, Standing Order 23(1)(*q*)(i) stipulates that 'a question shall not be asked in regard to any matter within the State List in the Ninth Schedule to the Federal Constitution;'. Further intervention might be needed if the question contains aspects related to the Concurrent List, which does not effectively void of state matters. Apart from assisting the delegation and allocation of PQs before obtaining answers from the proper ministries or government agencies, the use of AI and machine learning could also possibly identify initial responses, either to the ministries or to the questioners. Redundant, duplicate and lookalike questions may be responded at once. MPs may use the initial responses produced from the system to tweak their supplementary questions which might present a better outcome.

Besides the rules from Standing Order 23(1) to determine the validity of the submitted questions, the system shall be able to learn the current scenario extensively, locally or internationally with regards to the subject matter of the question. It would be beneficial for such a question to reflect the latest pressing needs and conditions, thus, be prioritised in the order of the questions of the day. Furthermore, by having a thorough understanding of the subject matter relative to the latest situation, a particular question might profit from multidisciplinary responses combining every relevant aspect pertaining to the question. A question on haze situation for example, although was asked to the Ministry of Energy, Science, Technology, Environment and Climate Change, might include some element of foreign policy, finance and economic implications, health, sustainable development, works and human resources and so on. Therefore, the machine learning from its rigorous processing might exhibit its prowess in feeding such information and recommendations.

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Methodology

This paper was exploratory and interpretative in nature and took a qualitative approach in addressing the objectives as mentioned in the introduction. The problem statement in the form of the current processing procedures of PQs in the Parliament of Malaysia was identified before the idea of having automated processing of PQs being put forward in this paper. Descriptive studies on the challenges, limitations, as well as benefits posed from applying AI and machine learning on legislative businesses were carried out. These studies were primarily looked at the potential of technologies in alleviating the common difficulties faced by government and public-oriented services, including parliaments. The application of AI and machine learning in parliamentary businesses could potentially address the issues that predominantly characterise public service efficiency.

Many attentions have been given on how complex are the legislations tabled in legislative institutions that technologies could come quickly to overcome such complexity. The associated role of parliaments in debating and passing laws has placed these parliamentary businesses in the spotlight. Legislators are in urgent need to give their thought on any bills presented in parliament despite having scores of limitations including time and critical and in-depth analysis on the subject matter. Therefore, the use of AI and machine learning has always been directed towards providing a 'cooked information' to parliamentarians so that they would be able to debate the subject matter in a more insightful manner. However, PQs have a pivotal role in checking the policies and laws introduced by the government if they are to be utilised appropriately.

First, this paper looked into the existing body of research of PQs in other legislatures. The studies focused on the essence of the questions in terms of identifying the behaviour of the parliamentarians. The behaviour could be useful to map their interest accordingly. Having reviewed the application of technologies in other legislatures' practices, this paper conceptualised the new processing practices of PQs in the Parliament of Malaysia, specifically the House of Representatives or Dewan Rakyat. The concept consists of the application of AI and machine learning from the start of the processes; submission of questions, assign the questions to the most appropriate ministry, recommend initial responses, analyse and categorise questions, make suggestion based on the background and interest of the questioner, and arrange the questions' order based on the content of the questions as well as the background of the questioner. All of these variables are meant to improve the efficiency of PQs processing. It is also eventually for the attainment of the oversight functions of Parliament through PQs.

Next, a participant observation approach was adopted to have a better understanding of the current PQs processing procedures. In this approach, the role of the secretariat, in this context, officer at the Dewan Rakyat Management Division has been reflected. The division is responsible for processing the questions submitted by the MPs, including to coordinate with the ministries for the responses. This approach is particularly useful in identifying the potential gap for the proposed technologies to slot into the existing procedure and processing framework. The involved observation and participation for this purpose were the coordination meeting with the ministries after the submission of questions closed, the daily PQs order arrangement, and the receipt of responses from ministries.

Semi-structured interviews were also carried out with the officers responsible for these PQs processes as well as with several MPs. The subjects were selected on the basis of the degree of

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homogeneity of their understanding of the process, issues facing the existing procedures, and the expectations from the application of such technologies into the current setup. These interviews offer an effective way to explore the level of approval (or disapproval) towards the concept and also any foreseeable impact and challenges from the implementation. However, there are certain drawbacks associated with the use of these semi-structured interviews, precisely, the tendency to get diverted from the objective of the interview.

Finally, a content data analysis was carried out to process the data collected from the interviews, observations, and literature studies. This method was selected due to its flexibility to fit in with the exploratory nature of this paper. The themes or categories, on the other hand, were derived directly from the data through an inductive approach. This inductive approach was chosen to enable more freedom in identifying the key theme from the collected data. It was also apposite to adopt this approach as the paper sought to introduce a new concept hence, was exploring the attitudes of involved actors against such technologies assistance.

Results and Discussion

Standing Order 22(4) allotted a parliamentarian with not more than 10 oral questions and five (5) written questions in any single meeting of the House. For every single oral question, the Speaker shall allow additional three (3) supplementary questions to 'elucidate any matter of fact regarding which an oral answer has been given' as stated in the Standing Order 24(3). For the questions to be accepted and raised in the meeting of the House, the notice of every question shall be given to the Secretary (Clerk of the House) not later than 10 working days as stated in the Standing Order 22(2), or three (3) questions shall be given to the Secretary during the sitting of the House not later than seven (7) days before the date for which the question has been put down (Standing Order 22(5)).

Furthermore, in an amendment of the Standing Order in 2016, a new Standing Order 24A has been added to create a new provision for the Minister's Question Time. This provision enabled a member to bring current and most recent issues to the Minister's attention, and most importantly, the Minister must be present to answer the question. The Minister's Question Time, as stipulated in the Standing Order 24(5), shall be held for 30 minutes every Tuesday and Thursday before the beginning of the regular Question Time. In all types of PQs, either the regular questions or for the Minister's Question Time, the Standing Order 23(1)(*a*) to (*s*) serve as the rules and guidelines for a question to be accepted in the House.

In the letter of notice on the meeting of the House issued by the Secretary of the House, the notice calling for the submission of questions is included. The submission of questions is detailed with necessary deadlines, including for every single Minister's Question Time day's deadline and the questions under the Standing Order 22(5). In the case of the Third Meeting of the Second Term for the Fourteenth Parliament (the Budget Session), once the deadline of the regular questions' submission (Standing Order 22(2)) passed, the Dewan Rakyat Management Division only has two (2) days to compile the full list of the submitted questions. These accepted questions were distributed to every single day of the meeting and grouped within a particular group of ministries. The grouping of the ministries was done to facilitate the attendance of the Ministers and their officers for PQs session.

In the coordination meeting with the ministries which was held two (2) days after the submission deadline, the Dewan Rakyat Management Division will present the received

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questions. The total number of questions submitted is shown in Table 1, ranked with the number of questions for the responsible ministries. Prime Minister and the three (3) ministers at his department topped the list with total 217 oral questions. They followed by the Ministry of Education, Ministry of Home Affairs, Ministry of Finance and Ministry of Economic Affairs. A simple analysis of the PQs has listed the issues of transboundary haze, the pension scheme for government servant, selling of the national identity card syndicate, and the recent major system failure in the KLIA. These are the issues that have dominated the PQs for the session, and the scope could be broad and multi-dimensional.

Table 1: Statistics of Questions from Members of Dewan Rakyat for the Third Meeting, Second Term, Fourteenth Parliament (2019)

NO.	MINISTRY	ORAL	WRITTEN	MOTION	TOTAL
1.	Prime Minister	217	78	12	307
2.	Education	137	56	2	195
3.	Home Affairs	132	54	0	186
4.	Finance	126	33	2	161
5.	Economic Affairs	69	22	1	92
6.	Agriculture and Agro-based Industry	67	14	0	81
7.	Housing and Local Government	63	37	2	102
8.	Energy, Science, Technology, Environment and Climate Change	61	26	0	87
9.	Human Resources	56	22	0	78
10.	Health	52	31	0	83
11.	Transport	49	16	2	67
12.	Communications and Multimedia	45	13	0	58
13.	Primary Industries	45	12	0	57
14.	Rural Development	39	18	0	57
15.	Works	35	15	0	50
16.	Water, Land and Natural Resources	32	11	0	43
17.	Tourism, Arts and Culture	31	14	0	45
18.	Defence	31	11	1	43
19.	Domestic Trade and Consumer Affairs	31	9	0	40
20.	Youth and Sports	30	14	0	44
21.	Women, Family and Community Development	26	15	0	41
22.	Entrepreneur Development	22	11	0	33
23.	International Trade and Industry	19	6	0	25
24.	Foreign Affairs	18	9	1	28
25.	Federal Territories	9	12	1	22
TOTAL		**1442**	**559**	**24**	**2025**

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Source: Draft Order Paper, Dewan Rakyat Third Meeting, Second Term, Fourteenth Parliament, Monday 7 October 2019 to Thursday 5 December 2019

The simple analysis, apart from identifying the issues, also produced a statistical analysis of the questions for each ministry. PQs which have been pre-assigned to particular ministry will be collated among its group of ministries. This statistic is important to determine an even distribution of PQs for any single day of the meeting. For example, the group consists of Ministries of Finance, Health, Housing and Local Government, Rural Development, Works, Tourism, Arts and Culture, Foreign Affairs, and Entrepreneur Development has been joined by the Ministry of Communications and Multimedia to balance the overall number of questions. This minor adjustment of a ministry to another group is understandable as to avoid other significant consequences to the existing schedule for ministries' PQs session.

Another major component of the coordination meeting was to agree on the delegation of the questions to the most appropriate ministries. As the question submitted by the MP shall state to whom the question is addressed, it should be the basis to understand the context and the actual intention of the question. A question might be contended by the ministries, arguing whether the question does correspond to the portfolio of the ministry. For example, an official from a ministry requested by saying, "*Mr. Chairman, can I ask for the question No.14 to be moved to the Home Ministry, please?*". The process of requesting and asking for a particular question to be transferred to another ministry indicates the reluctance of the designated ministry (from the MP's question) to answer the question. Possible reasons for reluctance might be the complexity of the question or its relevance to the scope of the ministry.

The complexity of the question could be demonstrated from this oral question, "[..] asks the Prime Minister to state the status and the latest decision by the National Physical Planning Council (*Majlis Perancang Fizikal Negara*) on the implementation of the Penang South Reclamation project". The question contains an element of the State List in the Federal Constitution as it asks about matters under the state of Penang jurisdiction. However, the secretariat was of the opinion that the Council is under the Ministry of Federal Territories jurisdiction hence, contains an element of federal matter to make the question acceptable. The argument on which ministry should take a question, or even should the question be dropped or rejected, proved to be a thorny issue during the coordination meeting. In the end, the designated ministry should compromise by first accepting to answer the question with inputs contributed from other relevant ministries or agencies.

The ambiguity on who should answer the question could have affected the quality of the response to the question. There are also growing sentiments among the MPs that the ministries did not specifically answer the questions. This occurrence is possibly due to the inability of the ministries to grasp the question and provide a tailored answer to the question asked. In many occasions, slightly similar questions will be answered once and sometimes the answers are being copied in general to another question without addressing the specific nature of the questions. As a response, an MP felt that the PQs session is not more than a lip service without any significant action taken. However, the MP also thinks that the PQs session is reciprocal, to get the right answer, the question must be equally good.

The coordination meeting is seen as the platform for the ministries' officials to reduce the workload and lessen the complexity of the questions. Frequently, the ministries' officials

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requested for a particular question to be editorially amended, as one official raised, "*this Ministry requests for the question to be re-worded to make it more relevant*'. Although the Standing Order 23(5) allows the Secretary to edit the submitted questions, the secretariat has been reluctant in having too many editorial amendments, fearing the questions being diverted from the original spirit of the question. Moreover, officials also attempted to use the Standing Order 23(1)(*c*) to disallow questions with bad assumption as the rule stated, 'a question shall not contain any argument, interference, opinion, imputation, epithet or misleading, ironical or offensive expression nor shall a question be frivolous or be asked seeking information on trivial matters'.

As shown in Table 1, a total of 2025 items were forwarded by the MPs, which will be distributed across 36 days of the meeting of the House. All of these items, with the most attention, was given to the oral questions, were reviewed on a page-by-page basis during the coordination meeting. The secretariat has produced a draft book consists of almost 400 pages of all the oral and written questions and the motions. The coordination meeting has been exhaustive and dragging with lots of issues as previously discussed. The level of tenacity in examining the questions might drop as the meeting went along. Growing weariness might have cost the more latter PQs in the draft book without serious attention or being abandon altogether.

Another significant aspect of PQs is the order of the oral questions asked during the 90 minutes of the daily PQs session. On average, there are between 30 to 60 questions listed daily, but due to time constraint, only 10 to 15 questions usually managed to be answered by the ministry in the House. In addition, this 90 minutes PQs session is broadcasted live on the national television channel thus, was given high priority by the MPs. They are driven by the probability of boosting their political mileage by appearing in the live telecast. Although the order of daily PQs is handled randomly by the system based on few criteria set by the secretariat, and the draft book roughly had the arranged questions, the final order of PQs is still very much subjected to changes. The interferences at the eleventh hour to re-arrange the order of the daily PQs have somewhat interrupted the secretariat job, especially in finalising the daily order paper.

Having identified a number of issues plaguing the processing of PQs at the House of Representatives, it is worthy to consider some innovations to improve those deficiencies. As has been mentioned earlier, the conceptualisation of incorporating AI and machine learning into the current processing of PQs could potentially eliminate the flaws in the system. Whilst it is only a conception of having AI and machine learning into the processing of PQs, the data collected from this study should provide some early insights on the applicability and the viability of these technologies towards the existing procedures. The findings from the study are divided into two main arguments; firstly, whether IR 4.0., i.e. the AI and machine learning are disruptive towards good governance of Parliament, and secondly, how the foreseeable impact and challenges that the IR 4.0. brought could influence parliamentary businesses.

The question of disruptiveness of technologies in the PQs processing can best be addressed by gauging the foreseeable impact of these technologies. Drawing on the theory of disruptive innovation by Clayton Christensen on businesses, the theory has been misapplied, and its core concepts have been regularly misunderstood (Christensen, Raynor, & McDonald, 2015). First, disruption is a process rather than a final product or service at one point. Second, a new introduction usually innovates differently from the incumbents. Third, too much focus has been

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directed at the results by arguing that a disruptiveness is measured of its success. Finally, the threat of disruption has always left the incumbent to overreact to such innovation which would cause an even greater disruption to the existing system.

Nevertheless, historical analysis of questions asked in Parliament with the intelligence to identify not only lookalike questions to be grouped together but also previous responses given could mean a new process with higher efficiency has been generated. Moreover, the ability to have knowledge on the questioners' background, including their past and dominant interests, could potentially establish the intended dimension from the answer to the questions. Parliament with large datasets either internally or externally suits well with the application of AI and machine learning (Mehr, 2017, p. 4). The sheer amount of datasets piled up in 60 years of Parliament certainly provide sufficient data for the AI's learning process. The application of AI and machine learning forms part of the process to improve efficiency and accomplishing the functions of Parliament.

The sentiments of MPs with regard to the disruptions of technologies towards the PQs processing are contingent upon their willingness to adapt with changes, including the impression of which the technologies are too advance and undesirable. Apart from that, the learning process of the machine and the MPs themselves are the other determiners of the disruptiveness. On the other hand, in a more pragmatic tone, the secretariat acknowledged that an AI and machine learning system presents the opportunity for efficiency and transparency, and eliminates overbearing bureaucracy and prospective corruption. These results further support the idea of PQs' contribution to the accountability process and reflect those of Saalfeld (2000) and Hazama et al. (2007) who found that political credence of MPs serves as a decisive factor to the PQs' functioning. However, the complexity of the process of arranging the daily oral questions, especially for the first 15 questions, has left the secretariat in doubt over the capability of the system to have all necessary considerations in the order of questions.

It is interesting to note that the observations and the data obtained in this paper provide a befitting attribute to the introduction of AI and machine learning in parliamentary businesses. The AI and machine learning-based system trained from an all-encompassing algorithm consists of rules of questions stipulated in the Standing Order 23(1)(*a*) to (*s*), the background of the MPs, historical analyses of the PQs answers, policies, relevant datasets, and other current larger public opinion and concern, sets to accommodate the existing PQs processing. A recurrent theme in the interviews was a sense amongst the interviewees that the system would be able to recommend; the acceptability of questions, initial responses to the ministries and MPs tailored to the dimension intended in the question, and the order of the question. Although there is concern on algorithm bias as it could 'reinforce historical discrimination or obscure undesirable behaviour' (HC, 2018), in general, it seems that an AI and machine learning-based system which 'learns from supervised training and inputs over time to improve responses' (Dai, 2007, pp. 3-4), serves a powerful instrument which could leverage parliamentary business efficiency to another level.

Conclusion

The present paper aimed to examine the current processing of PQs in the Parliament of Malaysia and in what circumstances the components of IR 4.0. namely, AI and machine learning could seam into the picture. The second aim of this paper was to investigate the foreseeable impact and challenges for such application towards parliamentary business. The

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paper has been explorative in the sense of assessing the behaviour of relevant stakeholders in the PQs processing against the introduction of the technological instrument. This study has shown that the existing processing of PQs lacks the element of efficiency; hence, hampering the objective of oversight and scrutinisation of the government. Furthermore, the complexity and dynamic for daily parliamentary questions order might open up to a semi-automated system.

The analysis of PQs undertaken here has extended our knowledge of how an efficient and effective PQs session could enhance the level of parliamentary democracy in this country. The evidence from this study suggests that the introduction of AI and machine learning in PQs session provides useful assistances to increase efficiency and improve productivity. The attitude towards such technological support was quite amenable as also evidenced when the existing '*e-Parlimen*' was introduced to assist in PQs management in the Parliament of Malaysia. This study has raised important questions about the implications of IR 4.0. into governance in which generated ethical and accountability concerns remain to be answered.

Further studies regarding the accuracy of the responses to the questions would be worthwhile. Content analysis of the PQs would help to establish a greater degree of accuracy on this matter. The findings of this study have a number of practical implications for the possible progression of IR 4.0. in parliamentary business. A natural progression of this work is to conceptualise further the algorithm of the system which partakes of every single limitations and scenario that the existing PQs processing system hitherto encountered. The imminence of IR 4.0. technological upheaval means legislatures and legislators face enormous challenges in dealing with the emerged complexities, as Schwab writes: 'my concern is that decision-makers are too often caught in traditional linear (and non-disruptive) thinking or too absorbed by immediate concerns to think strategically about the forces of disruption and innovation shaping our future' (Schwab, 2016).

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