Examining XBRL Adoption Process of Four Regulators using the Diffusion of Innovation Theory on Organisational Context: A Malaysian Evidence

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Abstract: This study investigates the organisational factors that influence the XBRL adoption process involving three phases namely, knowledge and persuasion, decision making and, implementation and confirmation phase. This study utilises the Diffusion of Innovation theory and the qualitative approach on four regulators in the financial reporting environment in Malaysia. This study finds that in the knowledge and persuasion phase, management support is the driving factor whilst lack of expertise, skills and knowledge on XBRL are challenges. In the decision-making phase, capability and data assurance are challenges whilst in the implementation and confirmation phase, resource capacity, adoption cost and financial resources are the driving factors to XBRL adoption process. This study finds lack of expertise, skills and knowledge have encouraged the regulators to rely on external sources in development of XBRL. The findings in this study shed some lights on the XBRL adoption process among regulators and contributes to the financial reporting landscape.

1. INTRODUCTION

The adoption of XBRL has spread throughout the world and it was first introduced in the US (Cohn, 2018). The US, Australia and Netherlands have successfully demonstrated the benefits of data sharing among governments and regulators (Cordery, Fowler, & Mustafa, 2011). US is the largest country with a developed capital market and the SEC was the first to adopt XBRL for use in the equity market (Kernan, 2008) by carrying out voluntary filing programs since 2005 (Callaghan & Nehmer, 2009). There are other early adopters such as US Federal Deposit Insurance Corporation (Abdullah, Khadaroo, & Shaikh, 2009) HM Revenue and Customs (Mousa, 2010) Australian Prudential Regulatory Authority (Efendi, Smith, & Wong, 2011) Dutch Water Authority (Azam & Taylor, 2013) and Companies House (Mousa, 2010).

The ASEAN countries have also moved towards XBRL adoption. China is considered as an early adopter that voluntarily adopted the XBRL filing program in 2003 and mandated XBRL reporting by the Shanghai Share Exchange and Shenzhen Share Exchange (Efendi et al., 2011). Besides China, Japanese organisations, such as the National Tax Agency of Japan, the Sumitomo Mitsui Banking Corporation (SMBC) and the Tokyo Share Exchange (TSE)

(The Institute of Chartered Accountants in England and Wales (ICAEW), 2010) had shown initiatives to adopt XBRL. Similarly, Korea had started XBRL adoption since 2003 with KOSDAQ Share Exchange (Baldwin, Brown, & Trinkle, 2006) leading the way and imposing all public listed companies to file financial statements using XBRL (Kernan, 2008). On the other hand, Singapore required incorporated companies to file financial statements using XBRL since November 2007 under the requirement of the Accounting and Corporate Regulatory Authority (ACRA) (Azam & Taylor, 2013). In India, the Reserve Bank of India (RBI), the Bombay Share Exchange and the National Share Exchange (Kernan, 2008) had started to adopt XBRL since 2007; whilst in Indonesia, the first regulator to use XBRL was the Central Bank of Indonesia (BI) and the full implementation by the Indonesian Share Exchange was in 2016. This evidence of adoption has indicated that there is a need to understand the adoption scenario in Malaysia due to different scenarios among different countries.

This study aims to examine the organisational factors that influence the XBRL adoption process of four regulators in the financial environment in Malaysia. The findings of this study could contribute to the financial reporting context when XBRL could benefit the filers in preparing a financial report. This can act as a guideline for other regulators and government agencies prior to initiating XBRL adoption. The next section, Section 2 presents the literature review. This is followed by Section 3 that provides the research design and

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then the results and discussion in Section 4. The final section, Section 5 concludes this study.

2. LITERATURE REVIEW

XBRL is defined as "An open independent platform, international standard for a timely, accurate, efficient and cost-effective electronic storage, manipulative, repurposing, and communication of financial and business reporting data" Bergeron (2003). The existence of XBRL can be due to the challenges using the internet as a medium for financial reporting. Digital technologies previously available for financial reporting were limited to PDF and HTML. For example, Pollock and Papiernik (2001) noted that the use of PDF and HTML, for example, causes users to have multiple data entry since the data structure is not compatible across systems.

Depietro, Wiarda, and Fleischer (1990) have developed the TOE framework (technology, organisation and environment) from an organisation's perspective, which might influence technological adoption for identifying both drivers and challenges. However, factors that exist in the organisation context might vary depending on the different types of adoption process among various countries. Factors from the organisation context are factors that are considered important. The selection of organisational factors is derived from the organisational learning perspective proposed by Attewell (1992) following prior research using the TOE framework (Henderson, Sheetz, & Trinkle, 2012; Thong, 1999). Based on previous studies, the common factor is related to expertise, skills and knowledge, top management support and resources. These factors can also become drivers or challenges in the XBRL adoption process. Other factors related to this context are expertise, skills and knowledge (David, 2016; Henderson et al., 2012; Mousa, 2010; Steenkamp & Nel, 2012) management support (Cordery et al., 2011; David, 2016; Felden, 2011; Steenkamp & Nel, 2012) organisational champion (Cordery et al., 2011; David, 2016) organisational resources (Cordery et al., 2011; Mousa, 2010; Troshani & Rao, 2007) organisational readiness (Doolin & Troshani, 2007) and change of program sponsor (David, 2016). Due to the development of XBRL, most of studies have investigate the factors from the TOE framework (Depietro et al., 1990). Organisational factors describe the company's characteristics that may influence adoption decisions (Depietro et al., 1990; Doolin & Troshani, 2007; Faisal et al., 2022; Leal et al., 2022). Thus, there is a need to investigate the organisational factors since the XBRL adoption.

Another group of studies have examined the drivers and challenges of adopting XBRL (David, 2016; Doolin & Troshani, 2007; Mousa, 2010). However, most of these studies were conducted in developed countries namely New Zealand (David, 2016) and Australia (Doolin & Troshani, 2007) resulting in a lack of similar study in developing countries. As of to date, the Philippines Securities Commission has started evaluating the feasibility of using XBRL for reporting purposes (XBRL International, 2019). Similarly, the National Bank of Cambodia has indicated its interest to start implementing XBRL, but they are still working on initiatives prior to adopting XBRL (XBRL International, 2019). In Malaysia, various studies have

suggested that companies lacked of submission of XBRL (Homayoun, Rahman, & Bashiri, 2011; Ilias & Ghani, 2015; Ilias, Ghani, Azhar, & Said, 2016; Hafiz et al., 2022; Jammeh, 2022). Similar results were found by Ilias and Ghani (2015) whereby out of the 100 public listed companies, 24 had prepared their financial reporting using HTML and online interactive methods but not XBRL. Other than these studies, there is a lack of study that have examined adoption process of XBRL.

3. RESEARCH FRAMEWORK

Fig. (**1**) presents the research framework of this study. The framework is developed based on the Diffusion of Innovation theory. The Diffusion of Innovation theory refers to diffusion of a process that occurs over time and cannot be avoided when examining technology adoption. Depietro et al. (1990) had indicated that Rogers (1983) adoption process model is appropriate for investigating XBRL adoption process, which is divided into three phases namely, knowledge and persuasion, decision making as well as implementation and confirmation. Phase one involves gathering knowledge and persuasion. During this phase, the individual is not inspired yet to explore for more information about the innovation. Then, there is the persuasion process that shown that the individual is interested in the innovation and actively seeks related information (Rogers, 2003). The second phase focuses on the decision-making process which taking the concept of change and weighing the advantages/disadvantages of using the innovation and deciding whether to adopt or reject an innovation (Depietro et al., 1990; Rogers, 2003). Finally, Rogers (2003) defined XBRL implementation as the individual also determines the usefulness of the innovation and might search for further information about it. Depietro et al. (1990) stated that the implementation could start after the decision to adopt is made and when the innovation phases have passed, such as hiring personnel, training and developing software. Subsequently, this phase involves determining when to continue with XBRL after confirmation. Rogers (2003) stated that the individual finalizes the decision to continue using the innovation.

The time dimension should be incorporated in identifying and explaining the diffusion of adoption in the adoption-decision process that involves the knowledge phase of adoption through to the decision making phase, whether there is adoption or rejection. Hence, the time dimension should be incorporated to explain the adoption process, beginning from the knowledge and persuasion phase to the decision making phase, as to whether adoption or rejection before the implementation and confirmation phase. In brief, the driving and challenging factors have been the contribution to the decision that has been made related to the organisational factors.

4. RESEARCH DESIGN

4.1. Participants

Four regulators are selected as participants in this study. The regulators are REGULATOR 1 (banking), REGULATOR 2 (securities), REGULATOR 3 (managing registered
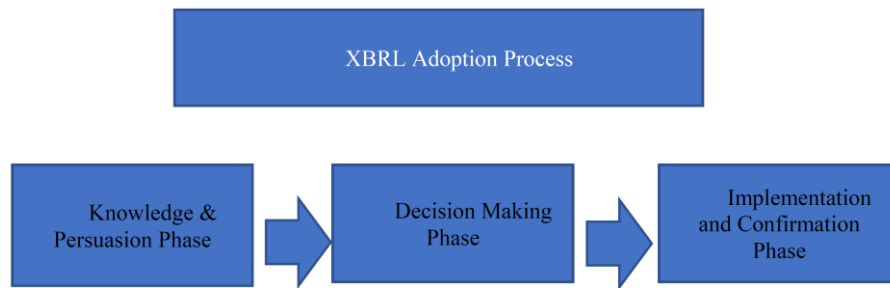
Fig. (1). Research Framework.

companies) and REGULATOR 4 (taxation The four regulators are chosen since they play a key role in initiating XBRL adoption (Abdullah et al., 2009). Four regulators have experience in adopting XBRL as at Table **1**.

Table 1. Current State of XBRL Adoption Among Regulators.

Regulator	Regulator 1	Regulator 2	Regulator 3	Regulator 4
Year to initiate	2009	2012	2010	2011
Year of adoption	2012	2015	2019	Expected 2021
Code for participants	B1, B2, B3, B4	C1, C2, C3, C4	S1, MI4, I1, O1, MN1	L1, L2, M1

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4.2. Research Instrument

The semi-structured interview will provide more insight from their involvement as also suggested by Doolin and Troshani (2007); Mousa (2010); Cordery et al. (2011); Mousa (2013) and David (2016). The questions for regulators have gone through two or three sets of draft questions based on the suitability of questions to be answered by respective participants. The set of questions were related to the role and decision making, financial reporting landscape, technological perspective, factors that challenge XBRL adoption process and any related issue on XBRL adoption process. The participants are requested to response the semi-structured questions such as "What are the resources (eg. financial, infrastructure etc.) that you believe are needed for XBRL adoption?, Do you believe that lack of knowledge, expertise and skills in XBRL affects MIA efforts in encouraging members to adopt? and Is there any other factors that motivate the adoption of XBRL?

4.3. Data Collection

This study employed the semi-structured interview since the researcher had close and direct contact with the interviewees. This is because this study interviewed participants who were involved directly with XBRL adoption process in Malaysia Prior to data collection, the researcher sent an official letter to each participant, followed by a phone call to seek permission to start the data collection. the data collection procedure, particularly the interview, being carried out from 22 December 2014 until 4 August 2017. Besides interview, researcher had used both external and internal documents, to obtain information regarding XBRL for each regulator such as regulator document and strategic plan.

4.4. Data Analysis

This study conducted data analysis as suggested by Miles, Huberman, and Saldana (2014) which consisted of both preparation and analysis of the data. The transcribing process has been done after each of interview session with average of transcript length from 6 pages to 16 pages. Each transcribing process is conduct continuously in order to ensure the understanding of adoption and issue for each of participant from four different regulators. Then, the coding started with the first cycle coding, then pattern coding and derived with more general themes. The data coding has made use of the manual process instead of using any software after read and understood each word and phrase in the transcription. From the understanding and interpretation of researcher, researcher has developed descriptive coding as suggested by Miles et al. (2014). Next, the second cycle coding is conducted by utilising pattern coding, which is to group the summaries into smaller number of themes.

5. FINDINGS

5.1. Kknowledge and Persuasion Phase

In the knowledge gathering phase, regulators need to identify experts who can assist them to understand XBRL specifications. Specifically, in this phase, the regulators can enhance their understanding on the XBRL taxonomy and submission platform development process as well as determining compatibility, stability and standardisation of XBRL taxonomy and submission. This study found that such a process differed among the various regulators on how to gather knowledge and skills related to XBRL. The regulators have to rely on international experts as there is a lack of local experts on XBRL. Two factors were identified in this phase, namely expertise, skills and knowledge levels as well as management support.

Since XBRL was relatively new in Malaysia at that time, REGULATOR 1 faced several challenging issues related to XBRL knowledge and skills. This is because none of the Malaysian regulators have started to take the initiative. At the beginning, REGULATOR 1 felt that XBRL knowledge was something that was developing at the time it started gathering knowledge that local experts found difficult to seek, such as skills to develop a data model to produce XBRL. Officer B2 noted that: "The skills for XBRL is too new and still growing in Malaysia". Officer B3 had emphasised on data modelling skills, as follows: "Furthermore, there is a need to learn about the data modelling due to the need to have expertise in data modelling and since the XBRL is considered very technical". Comparatively, REGULATOR 2 felt that XBRL should be understood prior to developing it in their organisation by developing their own expertise related to XBRL. However, this was not considered as a challenge for REGULATOR 2 because it intended to learn and develop new skills related to a new technology. Officer C1 from REGULATOR 2 said that: "I think it is more towards understanding taxonomy, if you know how taxonomy works, do not think it is a challenge, just a new skill that needs to be learned". This was supported by C2: "It's just something new, you must learn it". At the early phase, knowledge pertinent to XBRL is scarcely available in Malaysia due to the lack of local experts. REGULATOR 3 showed the initiative to learn and share its experience with international experts at the knowledge gathering level. Officer S1 noted that: "Not everyone knows and understand about XBRL, so that is the reason to have technical person.". The need to learn XBRL was similar to that of REGULATOR 3, in which the staff involved in XBRL had to learn the technical perspective.

As for REGULATOR 4, it realised the need to adopt XBRL and had taken the initiative to learn the XBRL development concept, such as that related to XBRL taxonomy. Officer L2 noted that: "For me, accounting people, we did not know, this is a new knowledge. If we own accounting and IT, we should know, so that is why we need to cooperate with the vendor, to inform and translate the accounting part to the form that sufficient to be suited with various scenarios". The issue raised was related to knowledge, skills and expertise levels directly involved with the Malaysian context. This study provide that regulators presumed that Malaysia had insufficient personnel with XBRL knowledge who can deliver pertinent XBRL knowledge to regulators as well as potential filers. As this can be considered common to every regulator, they need to rely on external resources during the early adoption phases so that they can gain knowledge and skills needed for developing XBRL taxonomy and would seize to be a challenge to regulators. According to David (2016) said that the lack of local expertise had influenced the government and private organisations' decisions.

In the XBRL adoption phase, regulators showed that management had provided support when deciding to adopt XBRL. Regulators had indicated the decision to adopt XBRL, which was driven by the decision to initiate XBRL adoption according to several phases. REGULATOR 1 was the pioneer in making decisions based on the initiative taken to identify the suitability of XBRL adoption. This is because the uncertainty in XBRL adoption had encouraged REGULATOR 1 to understand and analyse how REGULATOR 1 would adopt XBRL. For example, REGULATOR 1 had gone through a process to identify reasons for developing XBRL. The process started by REGULATOR 1 determining an action to consider adopting XBRL, as noted by Officer B2: "As mentioned by REGULATOR 1 that the initiative that have taken into action prior to the adoption which are consists of including the benchmarking, cost benefit analysis and having consultation with relevant experts". REGULATOR 2's initiative to adopt XBRL was made by the organisation's top management. Management support was one of the key issues that emerged regarding XBRL adoption in the organisation. According to Officer C1, the organisation's initiative is a good sign that management is interested in the benefits: "So, in last year [2014], management decided to give it a try, how we can benefit from the XBRL in term of financial reporting or filing statistically data to REGULATOR 2".

Both REGULATOR 3 and REGULATOR 4 had decided to adopt XBRL when it became a part of its vision plan for improving the information system architecture. Based on this, XBRL was one of the projects in REGULATOR 3's Direction Plan. This indicates that REGULATOR 3's management was persuaded to adopt XBRL: "XBRL is one

of the projects under Strategic Thrust 1, together with 15 other projects", (Strategic Direction Plan, REGULATOR 3, 2009). REGULATOR 4 intended to improve past practices by simplifying tax returns through an improved XBRL. In order to implement an improved XBRL, REGULATOR 4 focused on tax payers and regulators: "Simplify the tax form which the tax payers would able to submit the related information, will assist tax payers to submit the information in XBRL, the reduction of compliance cost by tax payers because the tax payers will submit to only one agency, for example REGULATOR 3 will able to receive and analysing the financial statement by using XBRL", (Internal Document, REGULATOR 4, 2015). Thus, regulators decided that their objective to adopt XBRL was based on strategic planning. This indicated that the four regulators in this study had decided to adopt XBRL after they understood how XBRL could benefit both regulators and filers. In this phase, REGULATOR 1 focused on data management and analysis, REGULATOR 2 saw better reporting and statistical analysis, REGULATOR 3 needed a standardised reporting system and REGULATOR 4 intended to improve tax auditing and risk analysis. Management support could be a driving factor to the adoption process since regulators had realised the advantages of XBRL adoption. Compared with early studies on XBRL adoption, Troshani and Rao (2007) as well as Doolin and Troshani (2007) found that uncertainties related to adoption had created low levels of willingness to adopt XBRL in Australia. Steenkamp and Nel (2012) also found that there was a lack of perceived benefits that discouraged the South African management.

5.2. Decision Making Phase

During the decision making phase, the regulators evaluated factors that might impact the decision to adopt XBRL. These organisational factors existed among the four regulators prior to developing XBRL taxonomy and submission platform. During this phase, this study presents mixed findings among regulators regarding adoption costs, cost of developing XBRL taxonomy, cost of preparation and submission as well as assurance of data quality. At this phase, regulators should understand these factors in order to develop the XBRL prior to filers accepting it.

This study also found that the cost to implement XBRL is high. REGULATOR 1 stated that the costs involved were high and the organisation should bear them. However, the cost issue is not major if there is a keen interest and overwhelming benefits available. This is because REGULATOR 1 certainly benefits from XBRL adoption. Hence, they would eventually realise whether it is worth the benefits they receive whenever a new format is used for both intra and inter organisational purposes. This is evident according to the statement by Officer B1: "In the early preparation of the XBRL development, the cost involved is considered high. However, the benefits can be seen for the long term". This phase outlines the cost of adoption that impacts both REGULATOR 1 and filers. The cost incurred includes investments to obtain XBRL solutions as well as to hire experts to impart XBRL development skills. This cost involves REGULATOR 1's decision to select XBRL solutions and tools, as explained by Officer B2: "Cost possibly can burden regulator and filers as it required

significant amount of investment due to the solution and the tool as well as to develop skills and abilities". REGULATOR 2 has emphasised on a transparent process to facilitate XBRL submission by filers and the template preparation by REGULATOR 2. Hence, REGULATOR 2 did not consider the XBRL system a high cost venture, as highlighted by Officer C2: "Because this is pilot project, we did not invest so much just want to test the submission engine and then it works". REGULATOR 4 has standard costs for technology adoption, which was tabulated when developing various kinds of technology. Officer L2 stated that: "Cost for XBRL development for these two years is about million ringgit, but still can be acceptable. Value cost for each project is actually based on our act and standard". The adoption costs might be related to developing the preparation and submission method used by regulators, which also affect filers.

In the case of REGULATOR 2, it was uncertain whether it had invested more on XBRL development due to the pilot study on XBRL implementation. In a similar vein, REGULATOR 4 said that adoption costs would be acceptable at the XBRL development phase. Thus, adoption costs would be a challenge to REGULATOR 1, though not to REGULATOR 2 and REGULATOR 4, since they decided that the costs are acceptable. This was based on their own planning to implement XBRL and the cost borne for gaining knowledge and skills. Steenkamp and Nel (2012) stated that the reason not to implement the XBRL would be the implementation costs but not many regulators were concerned.

In the decision making, regulators need to identify costs incurred when deciding on developing the XBRL taxonomy and submission method. Adoption costs are usually related to gaining knowledge and skills by regulators. However, this could be a challenge for REGULATOR 1 although it was not the main issue for other regulators. This was acceptable as REGULATOR 1 was an early adopter and uncertain about the costs incurred to gain knowledge and skills by hiring international experts. The cost for developing the taxonomy and system could be higher as it also involves the cost of acquiring expert services. REGULATOR 1 had incurred costs because it hired experts to develop XBRL taxonomy and the accompanying system. Officer B4 explained: "The ability to buy a system is highly cost regarded as it relates to things like acquiring expert services to build XBRL taxonomies and integrate XBRL systems". According to REGULATOR 2, the cost of developing the XBRL taxonomy and system was not one of the challenges when preparing XBRL as it was similar with the cost for developing any technology. Officer C1 mentioned as follows: "I would say not a high cost. It is normal cost for system development. It is quite minimum". During the interview, REGULATOR 3 did not directly mention the issue of costs for developing the system. The system developed for REGULATOR 3 was also meant for online infrastructure, hence, developing the XBRL taxonomy and submission platform was not an issue.

REGULATOR 1, REGULATOR 2 and REGULATOR 3 had raised the cost factor issue directly related to developing the taxonomy and submission platform as well as adoption.

Hence, it was suggested that the cost of developing the XBRL taxonomy and submission platform could not be a challenge to regulators. There were mixed responses regarding the cost factor that directly involves XBRL development and poses a challenge to adoption (Dunne, Helliar, Lymer, & Mousa, 2013). This was due to incremental costs and efforts associated with the full integration of XBRL that might take several years before reported benefits are fully realised (Dunne et al., 2013).

This study indicate several issues related to costs incurred by filers as these costs are necessary to ensure a smooth preparation of XBRL and change in XBRL taxonomy. This cost also depends on the method chosen for XBRL preparation because it has a certain level of cost involved, based on a chosen method. Officer C3 explained: "It affects the filers, when filers need to provide and deliver new information to REGULATOR 2. For example, filers have their own system and REGULATOR 2 has available systems, so issues related to mapping the information. Let's say REGULATOR 2 requests certain information with certain requirements, but in other provided formats, but the REGULATOR 2 format has another requirement, so the filers need to do a mapping requirement XBRL taxonomy with the filers' format. So, this mapping has costs to filers.". REGULATOR 3 was thinking about costs associated with the process of converting financial statements to XBRL. These costs involved a system capable of facilitating the conversion process. Filers can use various types of systems found in the market similar to those used for implementing the GST system. Some filers were worried about costs involved in preparing financial statements using XBRL. Officer S1 noted that: "Companies have also begun to ask about this XBRL, when it will begin to be implemented? Some companies are already worried because they have heard about the cost".

According to Troshani and Rao (2007) XBRL solutions involve high supporting costs for potential adopters and might impact adoption costs, thus affecting the decision to adopt. Prior to any XBRL adoption, regulators should weigh the costs for preparing and submitting XBRL, which was raised by REGULATOR 2 and REGULATOR 3. Regulators have to understand the filers' costs for preparing XBRL. Compare with Alkhatib, Ojala, and Collis (2019) in UK scenario has found the high cost of preparation of XBRL submission among filers from small companies that use commercial filing software and consequently consider the software and set-up costs of digital reporting. While in Australia, Perdana, Robb, Rohde, and Birt (2018) has suggested that the cost of regulatory and business reporting will reduce due to the XBRL submission. Thus, this can indicate that the cost of preparation and submission by filers has shown differently among different countries and method of XBRL submission.

In addition to the preparation and submission costs, there is the additional auditing cost in line with the issue of assuring XBRL data. This auditing cost might involve regulators who intend to have audited XBRL data. Audit assignments are associated with the assurance of data quality; hence, auditing would be an added cost to filers. REGULATOR 2 also raised the issue of audit costs that filers themselves must bear.

Officer C1 stated that: "That is a challenge related to the auditor's task to check XBRL data, the firm needs to bear the cost. Unless, the auditors want to do it with the free of charge. It is a cost". REGULATOR 3 also agreed that audit costs create additional charges for filers. This charge is a cost that is chargeable to filers if XBRL data are audited. Thus, REGULATOR 3 had considered the data audit and audit costs issue related to XBRL adoption. In relation to the assurance of data quality through auditing as discussed above, it could incur additional costs, such as the auditing costs. This is the additional cost faced by filers. In addition, regulators need to study how auditing costs are incurred and borne by filers when preparing high quality data. This study has also indicate that the issue on additional costs was related to auditing work on XBRL. As noted by Officer S1: "I have thought about the audit for XBRL data, but they will have some extra cost which the auditor will charge a little bit higher for audit the XBRL data and it will costly and too much. For audit, they need to incur additional works, means additional fees, additional costs to the companies (filers)". This audit cost might not be a challenge to regulators at this moment since they are not yet concerned about auditing XBRL data. In relation to auditing costs on XBRL, it refers to the cost for additional work for IT staff and auditors (La Rosa & Caserio, 2013). The external assurance and the cost of audit ensures the production of high-quality data though XBRL (Shan & Troshani, 2014).

During this phase, regulators had also raised the issue of assuring data quality, which concerned REGULATOR 3 and REGULATOR 2. This assurance is important for producing high quality, accurate and reliable data from the XBRL. However, there is a lack of skills and knowledge when auditing XBRL data. The need for auditing XBRL-produced data would pose a challenge to regulators as this factor could ensure the production of high-quality data. In this study has provide that REGULATOR 2 and REGULATOR 3 were concerned about this and how it should be verified. REGULATOR 2 was concerned about preparing audited reports and would verify the data prepared using XBRL. However, data verification determines the best way for verifying the validity of the produced data. Even with XBRL, data can be validated by tagging the XBRL taxonomy. Officer C1 noted that: "I think when we talked about audited account have more issue. Talk about the issue whether there is a need of auditors to certified the document or if the document is already XBRL audited".

REGULATOR 3 also targeted the production of high-quality data by using XBRL. However, there is also a possibility of inaccurate data provided by filers. REGULATOR 3 had also examined the possibility of this matter, which was related to the assurance of data quality. In addition, REGULATOR 3 had been involved in the XBRL development process and it was also concerned about the verification of data produced via XBRL. The issue is more on who would be responsible for verifying the data as well as audit issues related to XBRL. This is also important as it is related to the accuracy of data produced and prepared by XBRL in line with the objective of adopting XBRL by regulators and filers as Officer S1 noted that: "When there is XBRL that has been implemented, there is a possibility of inaccuracy data that has been provided. At the earlier phase, we do not want to

burden the auditor for the XBRL because we (REGULATOR 3) do not have the capacity and resources". In addition with the audit cost, Makni, Masmoudi, and Boujelbène (2018) has found that the reduce of audit cost due to the XBRL submission among filers in Belgium. In addition to the ensure the assurance of XBRL data, India is an example of the first country that implement the audit (Abhishek, Ashok, & MS, 2018).

5.3. Implementation and Confirmation Phase

Prior to XBRL adoption, regulators should have enough resources to manage XBRL. However, this study presents that the regulators were concerned on resource utilisation since there has been a lack of expertise regarding XBRL development. However, XBRL adoption could differ when there are different financial resources used in XBRL adoption. Only REGULATOR 3 and REGULATOR 4 have highlighted the issue of financial resources. Moreover, REGULATOR 3 and REGULATOR 4 were also concerned on the process of educating and promoting XBRL adoption, which would attract filers to accept XBRL. In this phase, factors related to resource capacity, financial resources as well as educating and promoting strategies involved in the adoption process.

REGULATOR 1 needed staff well-versed in the IT field, which is a field considered important for preparing and developing XBRL taxonomy and the submission platform. REGULATOR 1 emphasised that skills needed by the staff involved those related to XBRL development. This is because human resources should gain knowledge on business as well as information technology skills, especially technical management. Officer B2 stated that: "Employees involved in XBRL development should consist of statistical units that can work together with the information technology division". REGULATOR 2 emphasised on having a sufficient XBRL team that is able to handle the XBRL taxonomy and submission process as well as XBRL data. However, the REGULATOR 2 team was too small to handle various projects, such as IT and XBRL projects. Officer C1 explained: "We need to develop the team basically, in term of XBRL taxonomy and ensure the technology to be able to capped file to XBRL, to make it, more efficient to the market". REGULATOR 3's resources could help develop their own XBRL taxonomy based on the consultant's evaluation. This could be a challenge to REGULATOR 3 since it is still in the midst of securing sufficient and capable staff to handle the XBRL taxonomy development Officer S1 explained that: "Again, when you said about recruit, the recruit of team are from internally, will be from REGULATOR 3 itself. There will a group that will handle the development of XBRL. We will develop on our own but we need outside IT vendor or consultant to evaluate our XBRL taxonomy". REGULATOR 4 raised the issue of adequate sources necessary for XBRL adoption. This is because existing resources should be apportioned according to various projects, including developing XBRL. Based on the findings on the sufficiency of resources, Officer L2 stated that: "We are faced with resource constraints because our resources are not just about holding projects and we need to focus on IT vendors. We need to meet the timeline that has been set. Well, we do not need to make sure we meet the

target. So, need to manage the resources well". According to Mousa (2010) the lack of internal resources is not a challenge since the organisation had outsourced the majority of its IT tasks.

The regulators also need to evaluate the financial resources available to cover the cost of XBRL adoption. Financial resources act as a challenge to regulators since this initiative is presumed to be an individual initiative. In this case, financial resources are a challenge to regulators to spend more on the adoption process. In the Malaysian context, XBRL is not supported by the government as mentioned by REGULATOR 2, REGULATOR 3 and REGULATOR 4. This is one of the reasons to adopt XBRL at the corporate level, because the government intends to evaluate the benefits gained by regulators who adopt XBRL. Only REGULATOR 3 and REGULATOR 4 have raised the issue of financial resources, which encourages XBRL implementation. REGULATOR 3 did not raise the organisational cost issue as a major issue but only informed that the cost of these charges was more than the regulator's own liability. This was consistent with their understanding that XBRL development has benefits and they should take their own initiative to seek funding, while the costs incurred are REGULATOR 3's responsibility. This was highlighted by Officer S1: "For now, everything is come from the pocket initiative of the organisation and not from the government".

Expenditure for XBRL development projects differs compared to that of REGULATOR 4. REGULATOR 4 intended to initiate the XBRL development project and bear its expenses, which was considered high. However, the expenditure was in the form of assistance by government agencies. Officer L1 noted that: "For the XBRL project, it can get money from a ministry under a government with a committee. This REGULATOR 4 is under one ministry and we send an application to this ministry and then approve the application, and we proceed to open the tender". However, regulators need financial resources to gain some knowledge and skills prior to XBRL implementation. During the early phase of XBRL adoption in Australia, Troshani and Rao (2007) found that there were limited financial resources, which could pose a challenge to XBRL adoption.

Similarly, David (2016) found providers with limited funding for financing XBRL initiatives among groups that struggled to compete with other institutes or government agencies when deciding not to adopt XBRL.

In order to convince local filers to accept and adopt XBRL, it is important to have an education and promotion strategy. This study show a lack of understanding on the use of XBRL among filers. REGULATOR 3 has actively carried out training to increase the awareness and knowledge of filers to adopt XBRL. Besides the rumour on the training, there was also the assumption by practitioners that REGULATOR 3 has never shared knowledge about XBRL development or taxonomy. Officer S1 noted: "Rumour said there is no training conducted by REGULATOR 3, there will be training with the training partners that involved few professional bodies. There is rumour that REGULATOR 3 have never share about the XBRL, however REGULATOR 3 has released the taxonomy on the 2017 during their national conference 2017".
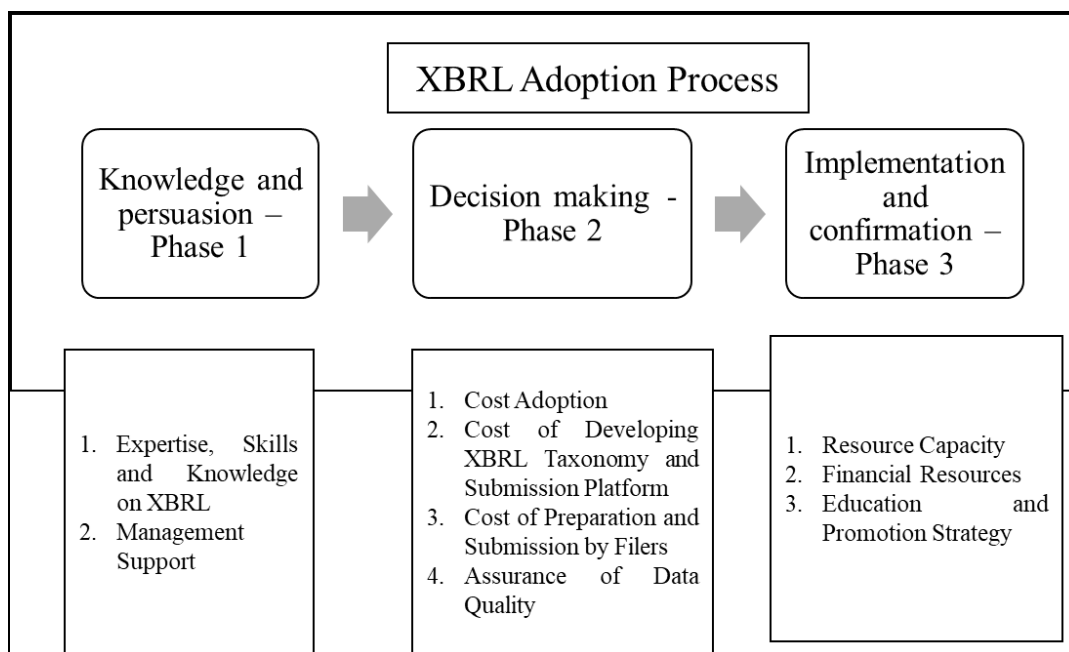
Fig. (2). XBRL Adoption Framework.

Meanwhile, REGULATOR 4 had also started the promotion and education program after the XBRL development system was ready. This study provide that promotions can have an impact on the readiness to implement XBRL. Promotions are a way of educating both, regulators and filers. However, at the time of the interview, promotions were not yet implemented, as mentioned by Officer L1: "In the scope of XBRL development, we have a promotion but have not yet reached the promotion level yet. We will hold a seminar together with the Malaysian Tax Association, we will hold a briefing with them. We will check out how the development of XBRL and we will start XBRL promotion". In relation to the promotion and the readiness situation, the regulators have explained on their level of readiness. Officer M1 noted that: "REGULATOR 3 shown very high readiness and REGULATOR 4 have very high readiness. High readiness means members of meetings, attended members of conferences and workshop and have a lot of knowledge about how XBRL works and what needs to be implemented". Officer C2 also mentioned that REGULATOR 2 had shown readiness to adopt XBRL: "REGULATOR 2 very high readiness and for example REGULATOR 2 have advance in gaining knowledge related to the process of XBRL taxonomy and the tools. Malaysian Stock Exchange have own basic readiness". Officer B2 also mentioned how REGULATOR 1's team members were ready to adopt XBRL: "REGULATOR 1 have high readiness, there is a team of people who attended a number of workshops which I mean, have high readiness and the REGULATOR 1 have ready to implement XBRL". Besides that, there were matters related to the assurance of readiness phase made by the regulator against the filers. A level of organisational readiness is necessary for regulators to attract filers. Thus, regulators need to educate filers so that the former are ready to use XBRL in future. Officer M1 explained: "We could also ensure the readiness of filers also through continuous education and communication".

Education and promotion strategy is another factor that could impact a smooth XBRL adoption process initiated by regulators and fliers. This is an important factor that was raised by REGULATOR 3 and REGULATOR 4. Prior to the adoption, each regulator must instruct filers to prepare and submit the XBRL. However, there is a challenge in educating and promoting the need to adopt XBRL by filers. Similar with David (2016) that found lack of promotion and communication is factor that influenced the non-adoption of XBRL on the XBRL adoption process initiated by regulators that can either become drivers or challenges to this process.

6. CONCLUSION

In the organisational context as Figure 2, XBRL and expertise in management support were required in the first phase before making decision to adopt XBRL. During the second phase, the regulators were concerned on the costs and assurance of data quality prior to the implementation and confirmation to adopt XBRL. During the third phase, the regulators need to have sufficient resources that are XBRL-friendly together with the financial resources for XBRL development. In this phase, the regulations also helped to educate and promote strategies to attract filers in adopting XBRL.

In ensuring the success of XBRL adoption, organisational factors enhance the organisation's capability to develop XBRL. The resources' capacity, adoption costs and financial resources also impact the regulator's decision to rely on external sources. The organisation's capability decides how an organisation views costs incurred when developing the XBRL taxonomy and submission platform. Besides that, the regulators need to ensure the decision on the XBRL template and submission platform would be considered the possible cost of preparation and submission that filers would need to spend and the way to educate filers by promotion strategy.

This study has its limitations. the first, this study did not capture the stakeholder's acceptance of XBRL. Hence, the participants were not able to understand the impact of XBRL adoption for each implementation phase. Secondly, this study did not investigate the impact of XBRL adoption based on several adoption phases. This study did not attempt to seek evidence on the effect of XBRL adoption on each stakeholder. Therefore, the findings of this study are limited to regulators' adoption process.

This study provides some understanding to the regulators need to prepare sufficient resources and XBRL expertise within the Malaysian environment. Regulators need to develop their own expertise that can handle the development of XBRL taxonomy and submission. With this capability, regulators become more efficient in the adoption process. The capability also include the internal capability and financial resources that encourage adoption. Besides that, regulators need to be ready with an education and promotion strategy to ensure that XBRL can be adopted in future. The findings on the organisational context were derived from drivers and challenges that acted as a guideline for other regulators and government agencies prior to initiating XBRL. The study has contributed to XBRL adoption by identifying these driving factors and challenges based on the four regulators and various different phases of Rogers' adoption process. These drivers can encourage any government agency or regulator to understand the need to adopt XBRL, whether for intra or inter-organisational purposes. The challenges could help decision makers from an organisation to consider XBRL adoption.

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