DIGITAL CORPORATE REPORTING:

GLOBAL EXPERIENCES FROM THE G20 AND IMPLICATIONS FOR POLICY FORMULATION

PROFESSOR INDRIT TROSHANI AND DR NICK ROWBOTTOM

THE UNIVERSITY of ADELAIDE

CPA AUSTRALIA

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CPA Australia Ltd Level 20, 28 Freshwater Place Southbank VIC 3006 Australia

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EXECUTIVE SUMMARY

The report analyses evidence from digital reporting projects across G20 nations and other jurisdictions of interest to CPA Australia members to identify the key opportunities, challenges and other considerations for policy formulation and practice.

KEY FINDINGS

- While digital XBRL (eXtensible Business Reporting Language) based mandates are becoming the norm in major capital markets, diverse regulatory approaches still remain. In countries where voluntary approaches have been adopted, uptake has been limited unless linked to firm expectations that a mandate will be forthcoming in the future.
- There has been a general shift towards using the newer inline XBRL (iXBRL) specification in preference to the initial XBRL. iXBRL can be advantageous to digital corporate report users as it allows standard web browsers to view content (similar to paper-based formats) whilst retaining the advantages of machine readability in, for example, extracting and comparing specific disclosures across large samples of financial reports.
- The majority of jurisdictions using International Financial Reporting Standards (IFRS) have generally developed local adaptations of the IFRS taxonomy (e.g., by incorporating 'national' disclosure requirements) for digital reporting. Meanwhile there are various policy considerations that deny, restrict or enable companies to extend the taxonomy with their own custom tags. Such policies have significant implications for corporate reporting. Policies that deny extensions support standardised comparability as firms must fit their disclosures within the base taxonomy. However, allowing extensions supports more entity-specific communication in line with principles-based accounting standards as companies can create custom tags for their own unique disclosures, although potentially compromising inter-firm comparability. The direction of future policy appears to be a hybrid system where preparers are encouraged to fit their disclosures into the base taxonomy where possible, and where they do not fit, to provide some link or anchor between their entity-specific disclosures and the base taxonomy.
- Ensuring the creation of high quality digital corporate reporting data remains a significant, but often elusive objective for regulators and stock exchanges. Regulatory checks and assurance are the two main mechanisms to address digital data quality. Given the error rates experienced, particularly during the early years of digital reporting programmes, the presence of automated warnings and validation checks is seen as invaluable to assist preparers with their digital reporting filings. Assurance remains an under-developed activity with regard to digital reporting, but moves in India and across the European Union (EU) are likely to drive developments and help formulate commonly accepted approaches to checking digital reporting control systems including appropriate tag use, digital data accuracy and legal compliance.

INTRODUCTION

Advances in information technology have radically changed the manner in which corporate information is communicated to users. Digital corporate reporting projects utilising XBRL technology are being rolled out across the globe which enable corporate reporting information to be assigned with specific machine-readable tags that facilitate the automated extraction and analysis of specific disclosures across large scale samples (Locke et al., 2018).

Structuring and digitising corporate reporting information in this way offers potentially significant benefits for key stakeholders across the business information supply chain.

It provides regulators and other government entities with the opportunity to build capacity for improved compliance monitoring and supervision, thereby enhancing corporate accountability to society (CPA Australia, 2014).

Investors and other capital market participants can benefit from enhanced access to large scale, "as reported" accounting information, rather than information that has been aggregated and standardised by data aggregators, such as Refinitiv, Bloomberg and Compustat. This offers greater scope for making insightful analyses, comparisons, and risk assessments, and consequentially better-informed capital allocation and investment decisions.

Preparers of financial reports can potentially improve the efficiency of reporting processes, and reduce reporting and compliance costs.

In Australia, major implementations of digital reporting and XBRL technology already include projects to facilitate fulfilment of the business reporting obligations to the Australian Taxation Office (e.g., Standard Business Reporting (SBR) project) (SBR, 2018), and the requirements for regulated entities to file financial data for prudential reporting and compliance to the Australian Prudential Regulation Authority (APRA) (e.g., APRA Connect) (APRA, 2020).

Meanwhile, the Australian Securities and Investment Commission (ASIC) has allowed the filing of digital corporate reports in XBRL since 2010 (Parker, 2020) but no Australian companies have yet taken up this option (XBRL Inc, 2021a).

However, a recent joint Parliamentary Inquiry recommended that the Government make digital corporate reporting a standard practice in Australia following developments in major jurisdictions such as the United States (US) and the European Union (EU) (Parliament of Australia, 2020). It is therefore timely to consider global experiences and assess how they can benefit Australia and other jurisdictions that are considering how to implement digital corporate reporting.

The aim of this report is to examine different digital corporate reporting projects around the world to identify the key challenges and considerations for policy formulation and practice.

We have sourced evidence from digital reporting projects across G20[1] nations and other jurisdictions of interest to CPA Australia members such as Hong Kong SAR, Malaysia, New Zealand and Singapore.

Whilst our research focused on digital corporate reporting projects within capital markets implemented by regulators and stock exchanges, we also include evidence on digital reporting projects undertaken by national company registries[2] across the 24 sample jurisdictions where this interacts with requirements of listed companies.

This report is structured as follows. In the following section, we provide a brief overview of digital corporate reporting and XBRL technology followed by a description of the digital reporting practices in the sample jurisdictions. We discuss the adoption experiences and challenges of the main stakeholders before discussing key considerations for policy formulation.

[1]G20 includes Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union (EU). We note that France, Germany, Italy are both G20 and EU members, whilst the EU as a multi-national jurisdiction is also a G20 member. To avoid double-counting, references to relevant projects in France, Germany and Italy are only counted once, when the projects are part of the wider arrangements of being in the EU.

[2]National company registrars are public authorities that store information on companies operating in a jurisdiction and ensure compliance with relevant legislation. Whilst information requirements may vary across jurisdictions they generally include annual reports and accounts.

WHAT IS DIGITAL CORPORATE REPORTING AND XBRL?

Digital corporate reporting is the process by which paper-based corporate reports are converted and represented in a machine-readable format. XBRL is a key technology that uses "tags" to assign contextual meaning to accounting information in corporate reports.

For example, an accounting number such as Prepaid Expenses of A$2,079,000 reported in the Statement of Financial Position of XYZ & Co can be tagged using XBRL as:

<CurrentPrepaidExpenses contextRef="e2020" unitRef="Australian dollar">2079000 </ CurrentPrepaidExpenses>.

This effectively means that the number 2,079,000 can be recognised by computer applications to specifically represent Prepaid Expenses of $2,079,000 of XYZ & Co, reported in Australian dollars for the financial year ending 2020, and compared with the same tag reported by other companies.[3]

Structuring accounting numbers and text with XBRL tags that convey contextual meaning enables users to automatically extract specific reported accounting information before analysing it cross-sectionally or longitudinally for a range of companies.

The tags are listed and classified in taxonomies. In ways similar to a dictionary, a taxonomy defines standard tags based on the accounting concepts and standards. Taxonomies also define structures and inter-relationships between accounting concepts, including hierarchical and calculation relationships. For example, a taxonomy can define that Total Assets are comprised of Current and Non-current Assets, whilst Current Assets can include reportable items such as Cash and Cash Equivalents, Prepaid Expenses and Inventories. Similarly, taxonomies can define calculation-based relationships, such that, for example, Gross Profit is calculated as the difference between Revenue and Cost of Goods Sold.

Taxonomies are based on accounting standards and disclosure requirements of a particular country or reporting jurisdiction. For example, Australia's IFRS AU taxonomy 2020 is based on the IFRS taxonomy 2020 but has been extended to include disclosure requirements specific to Australia (SBR, 2020).

Similar to Australia, many jurisdictions that use IFRS have developed local adaptations of the IFRS taxonomy. Meanwhile other jurisdictions have developed their own taxonomies based on local GAAP. For example, the US Taxonomy is based on US GAAP. Similarly, China's CAS taxonomy is based on Chinese Accounting Standards for Business Enterprises which are convergent with IFRS.

When reporting information does not match a specific contextual tag, the taxonomy can be extended. This enables preparers to create their own non-standard custom tags, also known as 'extensions', for firm-specific disclosures that reflect information about the preparer's particular circumstances (Locke et al., 2018). A taxonomy thus enables preparers to produce digital corporate reports based on accounting standards, and users to interpret reported accounting information in the manner intended by the preparers.

Accounting information that is structured using XBRL is intended to be processed by computer applications. However, digital corporate reports can also be visually presented in human readable formats. This capability can be achieved by using Inline XBRL (iXBRL), a standard that allows both human-readable and structured, machine-readable data to be provided in a single document (XBRL Inc, 2021b). iXBRL can, thus, facilitate presentation of digital corporate reports in ways that replicate traditional, paper-based reporting formats, in HTML-based documents that can be easily viewed via standard web browsers, but which are internally structured with XBRL tags.

[3]Note, preparers can be required to assign specific accounting numbers and text to individual tags that represent underlying accounting concepts - known as detailed tagging. By contrast, block tagging means attributing a single tag to a specific block of text and numbers, such as a note to the financial statements.

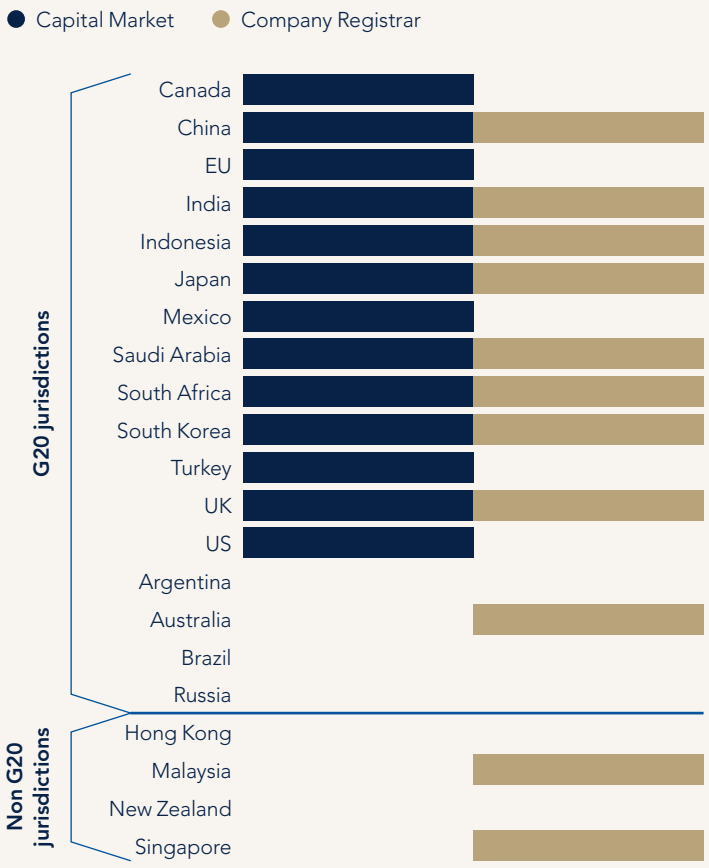
DIGITAL CORPORATE REPORTING PROJECTS

INFRASTRUCTURE DEVELOPMENT

From our sample, 13 G20 jurisdictions have established projects aimed at digitising the corporate reporting requirements for companies listed on capital markets.

A further 11 projects (of which 9 are from the G20) focus on company registries and apply to a wider set of corporate entities in a jurisdiction, not just large listed groups (see Figure 1).

Figure 1 – Capital market and company registrar-focused projects

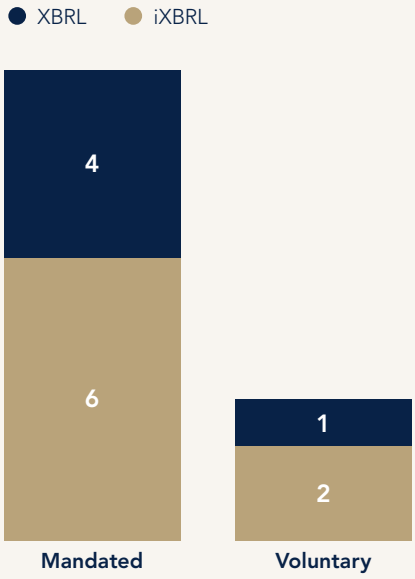


CAPITAL MARKET-FOCUSED PROJECTS

Applicability and technological requirements

Capital market-focused projects implementing digital corporate reporting are led by national regulators or stock exchanges in the G20 jurisdictions. Of the 13 capital market projects, 10 have mandated listed companies to file corporate reports using XBRL or iXBRL technology (see Figure 2).

Figure 2 – Capital market-focused projects in G20 jurisdictions: applicability and technological requirements



In some jurisdictions such as US and Mexico, XBRL filing mandates were preceded with voluntary adoption programs. Additionally, in the US a phased-in approach was undertaken for the introduction of XBRL in 2009, and iXBRL in 2019, whereby digital filing became progressively applicable to more preparers based on their size over three-year periods, with larger preparers being required to file digital corporate reports first.

In other jurisdictions such as Canada, South Africa and Saudi Arabia, digital corporate reporting by listed companies via XBRL or iXBRL is voluntary (see Figure 2). Whilst there is limited evidence, the available data suggests that few preparers choose to digitally report in these jurisdictions on a consistent basis. For example, a search for XBRL filings in the Canadian Securities Administrators' (CSA) SEDAR online platform shows that only 25 Canadian-listed preparers have voluntarily filed their financial statements in XBRL format since it was made available to them over a decade ago. These preparers have not filed on a regular basis and the last filing in XBRL format was in 2018 (SEDAR, 2021).

Filing mechanisms and public accessibility

G20 jurisdictions typically use dedicated online filing or submission systems for preparers to file their XBRL/iXBRL reports that have been developed by regulators or stock exchanges. For example, US listed firms file their reports via the US Securities and Exchange Commission's (SEC) Electronic Data Gathering, Analysis and Retrieval (EDGAR) System whilst Japanese listed firms file their reports via the Timely Disclosure network (TDnet) system which was developed by the Tokyo Stock Exchange.

Firms listed in the EU must file via an 'Officially Appointed Mechanism' (OAM) designated by each member state. For example, EU states such as Finland, Iceland and Lithuania use a Central Storage Facility which is developed and operated by NASDAQ.

Across most G20 jurisdictions, digital data are publicly accessible via the same systems that are used to collect digital corporate reports. In addition to search and download functionalities, these systems also offer some capacity for analysis and cross-firm comparisons, and English language translations where English is not the official reporting language (e.g., South Korea's Data Analysis, Retrieval and Transfer (DART) system).

In the US, the EDGAR system also allows for integration (via Application Programming Interfaces) with third-party software providers to facilitate both manual and automated extraction and analysis of digital corporate reporting data. By 2019, the US SEC reported that approximately 85% of EDGAR queries were automated (Lawton, 2019).

Whilst access to digital data is free-of-charge in most jurisdictions, Japan's TDnet system offers subscription-based access for historical digital financial data.

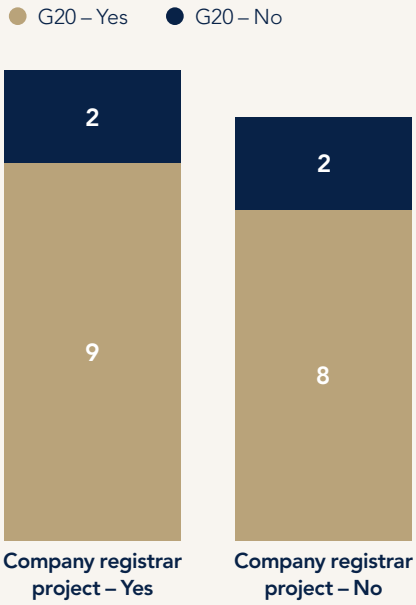
In the EU, although digital corporate reporting data are accessible via each state's OAM, work is under way to develop the EU-wide European Single Access Point to enable users to access both financial and non-financial data of firms listed across EU capital markets.

COMPANY REGISTRAR-FOCUSED PROJECTS

Company registration is another important area in each jurisdiction where regulators such as company or business registrars have developed XBRL or iXBRL filing regulation and infrastructure to accommodate the submission of statutory accounts by a wider proportion of business entities. In some cases, these systems have been integrated with capital market projects to reduce the compliance burden on listed groups.

There are 11 company registrar-focused projects in the sample, of which 9 are based in G20 nations (see Figure 3).

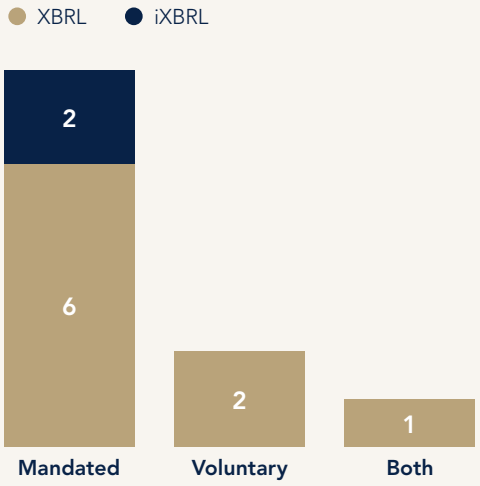
Figure 3 – Company registrar-focused projects in sample jurisdictions



Applicability and technological requirements

Of the 11 projects in the sample, XBRL/iXBRL filing is mandated in 9 jurisdictions (see Figure 4) where Australia is the only dominion where digital filing to ASIC is voluntary. In Malaysia, digital filing of XBRL-based audited statutory financial statements and accounts via the Malaysia Business Reporting System is mandated by the Companies Commission (SSM) in one state within the federation and in the federal territory of Kuala Lumpur, but encouraged elsewhere.

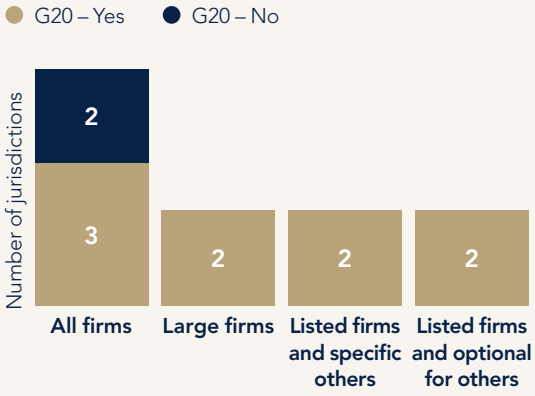
Figure 4 – Company registrar-focused projects in sample countries: applicability and technological requirements



Across company registrar-focused projects, there is some variation in the size and type of entities to which digital filing is required or permitted.

In three G20 countries (Australia, China and the UK), all firms are included within the scope of the project, although filing is a requirement in China, but optional in Australia and the UK (see Figure 5). Elsewhere, XBRL filing requirements apply only to larger, public interest entities such as insurers and banks. For example, Japan's Financial Services Agency project applies to all listed firms and approximately 3,300 investment funds, South Africa's Companies and Intellectual Property Commission project applies to all listed firms and public interest entities, whilst an Indian mandate applies only to larger listed companies (see Figure 5). The projects of registrars in other jurisdictions, such as the South Korean Financial Supervisory Services (FSS) and the Indonesia Financial Services Authority (IFSA) are focused on larger, listed companies but do allow other entities to file in XBRL.

Figure 5 – Company registrar filing applicability



Integration with stock exchanges

In most sample jurisdictions, company registrars have worked closely with stock exchanges in developing their taxonomies and implementing their respective filing systems.

As a result, such work has often culminated with joint infrastructure arrangements for taxonomy development, use, and for filing. Therefore, digital corporate reports filed with stock exchanges can be jointly submitted with, or reused for registry filings. Evidence indicates that in 4 out of 11 jurisdictions, company registrars shared taxonomies with stock exchanges (see Figure 6) whilst in 3 out of 11 jurisdictions, companies used the same filing system (see Figure 7). For example, South Korean firms file via the DART system to the FSS. The FSS automatically forwards digital data of listed firms to stock exchange entities such as Korea Exchange. Similarly, in Indonesia, the Indonesian Stock Exchange (IDX), and IFSA have integrated their individual filing systems, namely, IDXNet and Sarana Pelaporan Elektronik (SPE), into the joint platform, IDXNET-SPE, enabling IFSA and IDX preparers to file once. The rationale underpinning such joint arrangements is to reduce the regulatory burden on preparers when digital data filing requirements are congruent.

Figure 6 – Joint/separate taxonomy use

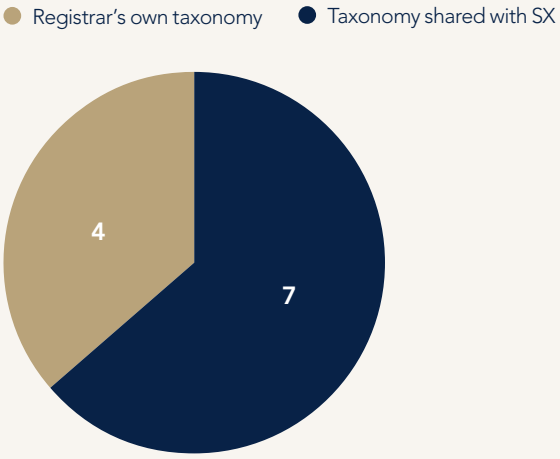
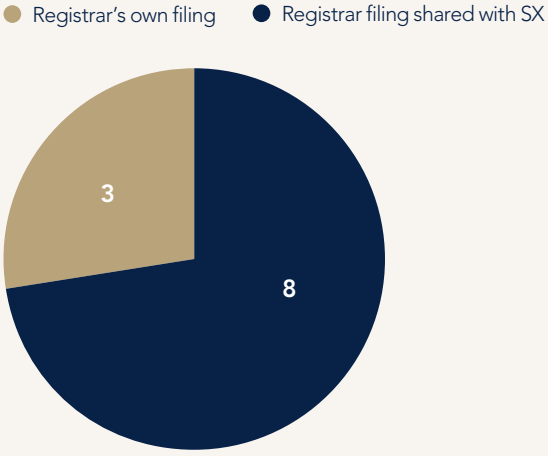


Figure 7 – Joint/separate filing arrangements



TAXONOMIES AND TAGGING

Taxonomy use

There are common patterns in taxonomy use across the 13 capital market-focused projects in G20 members (see Figure 1) inclusive of three projects where digital reporting is voluntary (see Figure 2).

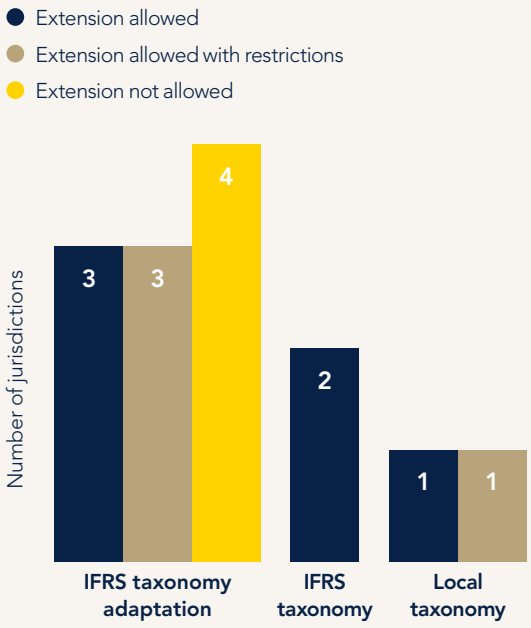
The majority of projects (10) use taxonomies that are based on the IASB's IFRS taxonomy where regulators or stock exchanges adapt the IFRS taxonomy to suit local filing requirements (see Figure 8).

For example, ESMA has developed the ESEF[4] taxonomy which is based on the IFRS taxonomy with minor additions such as the inclusion of elements translated in official EU languages and guidance hints on where similar or more detailed taxonomy elements can be found. EU regulation requires annual updates to the ESEF taxonomy as the IFRS taxonomy is updated each year to incorporate changes to standards, common disclosure practices and labels.

Elsewhere, preparers are expected to use local taxonomies. For example, US listed firms use the local US GAAP Financial Reporting taxonomy. Similarly, the taxonomies used by China's Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) reflect local and specific exchange filing requirements, and are not based on the IFRS taxonomy.[5]

Foreign private issuers in the US are allowed to use the IFRS taxonomy when filing to the US SEC. Similarly, since Canada has adopted the IFRS, Canadian-listed firms that choose to voluntarily file digital reports to the CSA, are expected to use the IFRS taxonomy, whilst those Canadian-listed firms listed in the US are allowed to file their XBRL financial statements to the CSA using the US GAAP taxonomy (US SEC, 2017a).

Figure 8 – Taxonomy use and extension policy in capital market-focused projects



[4]The European Single Electronic Format (ESEF) applies to all issuers in the EU regulated markets (ESMA, 2021).

[5]Whilst the SSE and SZSE taxonomies are different, both are in line with the requirements of China Securities Regulation Committee (CSRC). For simplicity, in this report we consider the SSE and SZSE projects jointly as China's capital market project.

Use of custom tags

Taxonomy extension policies vary across jurisdictions in whether they deny, restrict or enable companies to create their own custom tags for entity-specific disclosures.

The use of custom tags is allowed in Canada, Indonesia, Mexico, South Korea, and the US. In the US, domestic filers are encouraged to use the base taxonomy wherever possible, but extensions are permitted.

Extensions are allowed with restrictions across the EU and other G20 members such as China, Japan and UK. The EU employs an 'anchoring' policy where filers may extend the taxonomy with their own custom tags when they are anchored to core elements in the ESEF taxonomy with the closest accounting meaning (Georgiou et al., 2021).

An alternative approach is undertaken across other G20 countries where extensions to the base taxonomy are currently not allowed in India, Saudi Arabia, South Africa and Turkey.

Policies pertaining to whether jurisdictions deny, restrict or enable companies to extend the taxonomy with their own custom tags have significant implications for corporate reporting. Those policies that deny extensions support standardised comparability as firms must fit their disclosures within the base taxonomy. Allowing extensions supports more entity-specific communication in line with principles-based accounting standards as firms can create custom tags for their own unique disclosures (Rowbottom et al., 2021).

Tagging practices

It is the responsibility of individual preparers in all sample jurisdictions to organise tagging of the reports before filing with stock exchanges or regulators. Generally, three common tagging practices are observed.

- First, preparers use dedicated tagging tools provided by regulators or stock exchanges at submission portals or via web-based applications that facilitate the preparation of digital corporate reports.
- Second, preparers complete tagging inhouse using dedicated tagging applications available commercially by third-party software providers. In this case, regulators or stock exchange entities often provide lists of approved software developers and available tagging applications in their jurisdictions that meet their tagging requirements (e.g., in South Africa and India).
- Third, preparers outsource report tagging to third party service providers such as software vendors or consultants that provide tagging services.[6] Whilst the choice for outsourcing tagging is usually at the preparer's discretion, the practice has been encouraged by stock exchanges in China (Wang, 2015).

Our evidence suggests that tagging generally is undertaken as an add-on activity that occurs after reports are created using traditional means. There is limited evidence, from the US for example, that a small number of firms have integrated tagging processes at the data capture level (e.g., when transactions are initially recorded), thereby facilitating the easier production of digital corporate reports.

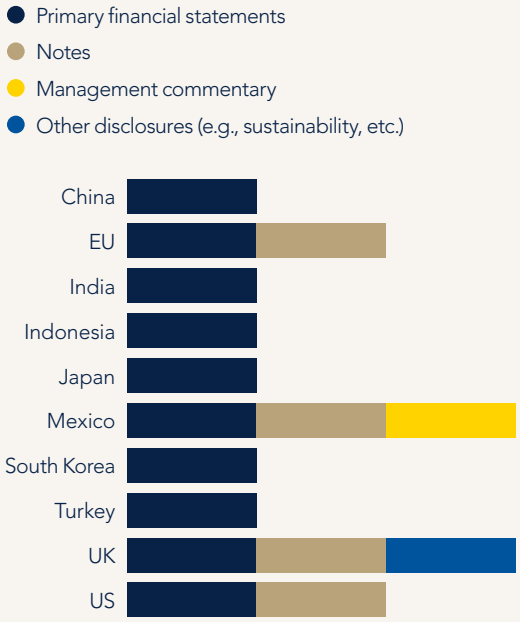
[6]Examples of tagging providers include (but are not limited to) Big 4 accounting firms such as PwC and other providers such as Workiva, Iris, and Volition LLP.

Tagging scope

The scope of digital reporting requirements varies across the G20 jurisdictions and may include financial statements, notes, management commentary and other information, including sustainability disclosures.

Ten G20 jurisdictions require the tagging of financial statements whilst a further 4 also require the tagging of the notes (see Figure 9). The requirement for 'block' tagging of notes to the accounts across the EU and UK is due to come into effect from 2022 and 2023 respectively, and is being considered in Indonesia.

Figure 9 – Reporting scope in sample jurisdictions



In South Korea, firms can voluntarily file management commentary, notes and other disclosures using XBRL whilst regulators in the EU, US and India are considering requiring listed firms to file sustainability disclosures in XBRL or iXBRL formats.

DATA QUALITY

Regulators and stock exchanges have used two key forms of controls, regulatory checks and assurance, to safeguard the quality of digital corporate reporting data.

Regulatory checks

Data validation checks are undertaken on digital corporate reports upon submission to ensure that digital files are valid and comply with technical XBRL specification and taxonomy rules.

The regulatory checks are generally automated and alert filers upon submission of data quality defects via error and warning messages. The types of error detected by regulatory checks include values that have been incorrectly tagged as negative, incorrect calculations, use of outdated tags and the unnecessary use of custom tags where 'appropriate' tags exist in the base taxonomy.

In the majority of the G20 countries including China, South Korea, Japan, Mexico, Indonesia, and the US, functionality for regulatory checks is integrated with filing or submission systems provided by regulators or stock exchanges. In the EU regulatory checks are currently undertaken by designated, national OAMs.

In some jurisdictions, regulators have documented filing rules in manuals that guide preparers and can be incorporated by software providers into commercial tagging applications. For example, the ESMA provide the ESEF Reporting Manual whilst in the US, the SEC provide the EDGAR Filer Manual.

Assurance

Jurisdictions have debated whether and how to assure digital corporate reports given indications that initial XBRL filings have contained errors. For example, evidence from the US shows common errors include inaccurate values (e.g., monetary versus percentage), scaling errors (e.g., values presented in thousands instead of millions) and incorrect structures of submitted files which negatively impact access to digital data (Hoitash et al., 2021).

The requirements for assurance of digital corporate reports vary across jurisdictions.

In India, files are subject to a certification mandate where firms are required to employ an external chartered accountant, cost accountant or qualified company secretary to certify that XBRL filings are accurate, complete and fairly represent audited financial reports presented in the traditional format. In China, the SSE and SZSE require assurance that XBRL filings comply with the requirements of their respective taxonomies. Meanwhile, in Canada, those firms choosing to submit XBRL reports are encouraged, but not required, to provide independent assurance of their XBRL filings.

In the EU, the European Commission has recently provided clarification on the practical implications pertaining to the audit of ESEF taxonomy filings. Specifically, the European Commission stated that:

> *"To ensure the integrity of the internal market and a homogeneous level of protection for all users of financial statements and annual financial reports, users should be granted the same level of protection irrespective of how they access the information contained in the financial statements, be it for instance via scanned-paper documents or via electronically structured documents." (Commission Delegated Regulation (EU) 2019/815)*

This means that auditors will be required to check compliance with statutory digital reporting requirements and assure the tags assigned to corporate disclosures are appropriate given the nature of the disclosure and the intended purpose of the tag in the taxonomy. Further, emerging guidance has been issued by the Committee of European Auditing Oversight Bodies (CEAOB) (CEAOB, 2019).

However, in the US, where mandatory digital corporate reporting has a longer history, there remains no independent assurance requirement applicable to digital data filed with the SEC.

ADOPTION EXPERIENCES AND CHALLENGES[7]

CAPITAL MARKET PARTICIPANTS

Recent academic studies have looked at the capital market consequences of digital corporate reporting. This research has examined associations between the introduction of digital corporate reporting in countries where XBRL filing has been mandated for listed firms (e.g., US, China, Japan and South Korea) and a range of capital market indicators such as the cost of capital, cost of debt, information asymmetry and analyst forecast accuracy.

Generally, the research provides evidence that capital market indicators have changed after XBRL adoption was mandated, and those changes suggest that digital corporate reporting is associated with a reduction in the information processing costs of capital market participants, leading to improvements in capital market efficiency.[8] Furthermore, the observed effects are generally more pronounced for larger professional investors and during later, rather than earlier, stages of adoption.

Explanations suggest that larger professional investors are more likely to have greater capacity to adapt or leverage existing infrastructure and know-how to use digital XBRL-based data relative to smaller investors. Adoption maturity is associated with organisational learning and experience, and wider accessibility to XBRL -enabled applications as technology matures.

PREPARERS

Although tagging can be outsourced to third-party providers, or undertaken as a bolt-on process after traditional reports have been produced, commentators argue that preparers will experience digital reporting benefits when they tag data at the source, transactional level. However, this entails integrating XBRL into existing accounting packages, ERP systems[9] and organisational infrastructure (Singh, 2017a).

Due to required organisational infrastructure upgrade costs, this practice may not be widely adopted, particularly amongst smaller preparers who may lack resources and investment capacity for infrastructure upgrades and training. Nonetheless, this practice is argued to offer significant benefits to preparers by reducing reporting costs and increasing the efficiency of reporting processes (Singh, 2017b).

Adoption of bolt-on tagging processes by preparers in-house using third-party tagging applications can provide benefits by creating opportunities for preparers to gain knowledge and experience with XBRL technology and tagging processes. However, at the onset of the adoption mandates, the cost of tagging applications has generally been seen by smaller preparers as significant and in-house tagging processes as burdensome.

In the absence of assurance requirements in many jurisdictions, limited XBRL knowledge and experience have led many early digital corporate filings to contain errors. Research indicates that error rates in XBRL submissions tends to be high just after adoption mandates come into effect for both financial statements and notes, but decline overtime (Hoitash et al., 2021).

However, recent surveys have shown that the cost of tagging applications and processes has dropped over time suggesting that the domain has become more mature (XBRL Inc, 2018). Experiences reported in China about the negative impact of limited XBRL knowledge by preparers and in Japan about the significance of preparer training underscores the role and importance of training and gaining sufficient XBRL knowledge for effective tagging.

[7] Additional detail about the research reviewed in this section can be found in Troshani and Rowbottom (2021).

[8] Whilst the reviewed studies do not measure the actual information processing costs of the preparers affected by the digital reporting mandate, it is generally argued that cost reductions are attributable to the technological change, as a major exogenous factor in the sample periods.

[9] Some software providers offer integrated XBRL tools. For example, Amana is reported to be used in Germany where firms have had to comply with ESEF since 2020.

The practice of outsourcing tagging is seen as an attractive option for some preparers who can continue to use established reporting practices, and also comply with digital corporate reporting requirements. Early preparer perceptions that XBRL data filed with regulators was not used, contributed to the deprioritisation of XBRL by some firms and reinforced the outsourcing of tagging to third-parties (PwC, 2014). However, the use of third-party providers is viewed by some commentators as problematic given they have limited knowledge about a preparers' business, often resulting in the inappropriate assignment of taxonomy tags, thereby lowering data quality and leading to inaccurate disclosures. This has also meant that preparers adopting this practice have had limited engagement with XBRL technology, and consequentially limited organisational learning.

REGULATORS

Machine readable reports enable regulators to monitor regulatory requirements and compliance across large scale samples. Digital corporate reporting information has therefore been utilised in the development of Regulatory Technology (RegTech) and Supervisory Technology (SupTech) to more efficiently pursue regulatory functions. For example, RegTech can utilise machine learning and predictive data analytics to identify market misconduct and exercise macro-prudential supervision.

US evidence notes how the SEC has progressively used digital corporate reporting information. In 2012, the SEC developed an Accounting Quality Model and associated data analytics to identify anomalies and earnings management in XBRL filings using an automated risk score (US SEC, 2012, Singh and Peters, 2016). More recently, digital XBRL-based reporting data has been used to support risk assessment, rule-making, post-implementation reviews of standards and enforcement activity (Harris and Morsfield, 2012, US SEC, 2017b, Bauguess, 2018).

Elsewhere, the ESMA is also seeking to develop EU wide supervisory methodologies for risk modelling and data analysis of digital reporting filings (Maijoor, 2019).

KEY CONSIDERATIONS FOR POLICY MAKERS

MANDATORY VS VOLUNTARY

In countries where voluntary approaches have been adopted uptake has been limited or lacking. However, voluntary approaches seem more effective when linked to a common expectation that a mandate will be forthcoming in the future. This approach provides a means for companies to generate capacity, skills and organisational knowledge in a voluntary 'learning' period before a mandate takes effect.

Without a clear signal that digital reporting will be required in the future, firms have been found to see no incentive in voluntarily tagging their disclosures in XBRL as indicated by the lack of response to the Australian ASIC voluntary filing programme.

Accordingly, jurisdictions without a digital reporting mandate may consider signalling to the market their regulatory intentions to drive firms to voluntarily engage with digital corporate reporting. The scope of digital reporting can also be gradually expanded from financial statements to notes, management commentary and other disclosures over time. As digital XBRL-based filing becomes a norm in major capital markets, knowledge, experiences and software will ease the transition period for those firms subject to future mandates.

XBRL AND iXBRL

Whilst preparers using XBRL produce machine-readable reports, users need to use XBRL -enabled applications to view report content and perform analyses. By contrast, preparers using iXBRL produce reports in both machine- and human-readable formats. Users of iXBRL reports can therefore use standard web browsers to view content of digital reports.

The majority of the capital market and company registrar-focused projects across sample jurisdictions are currently implemented using XBRL technology, rather than the newer iXBRL specification (see Figures 2 and 4). However, implementations in major jurisdictions such as the EU use iXBRL, whilst some projects that were initially implemented in XBRL have more recently been extended or converted into iXBRL implementations such as the US, Japan and South Africa. Amongst national registrar projects, the UK's Companies House was of one the first projects in the world that utilised iXBRL, whilst Singapore's ACRA and Australia's ASIC projects were initially implemented in XBRL but subsequently converted into iXBRL.

The key advantage and benefit of iXBRL technology (relative to XBRL) is its ability to build digital reports that cater to the needs of both humans and machines.

In the US, the move to iXBRL (from XBRL) was justified on the grounds that it would help preparers in generating digital filings given that they can more easily detect data errors, and have less incentive to include custom tags designed to mimic the appearance of a HTML filing (US SEC, 2016). iXBRL also offers users the ability to trace any disclosure in the machine-readable filing back to its human readable 'source'.

Given the benefits iXBRL offers, we recommend jurisdictions adopt iXBRL for non-standardised filing requirements such as principles-based corporate reporting. This enables companies to retain control over the presentation of their accounts whilst offering users the benefits of machine readability.

TAXONOMY DEVELOPMENT

To enable digital corporate reporting, jurisdictions must develop taxonomies, or use existing taxonomies that reflect the GAAP in use and local legal requirements.

For those jurisdictions that use, or are convergent with existing taxonomies such as IFRS, decisions must be made on whether to add tags reflecting local disclosures such as national entity identifiers to the IFRS taxonomy. Furthermore, the IFRS taxonomy is updated each year to reflect new standards and other changes, and jurisdictions must formulate policy on how to update their own taxonomies and infrastructure to accommodate the annual updates.

For those jurisdictions developing new taxonomies, it is recommended that policy makers be aware of the different technical approaches to taxonomy design used around the world. For example, whilst FASB make use of extensible enumerations in the US GAAP taxonomy, this approach is not used by the IFRS Foundation.

TAXONOMY EXTENSION POLICY

Recall that custom tags allow preparers to extend the base taxonomy to make those disclosures that are unique to them, and for which they believe there are no appropriate, available tags.

The degree to which jurisdictions deny, restrict or enable companies to extend the taxonomy with their own custom tags has implications for the nature of corporate reporting. Denying or restricting extensions improves cross-firm comparability as users are offered more standardised corporate reporting datasets. Freely enabling firms to extend the taxonomy with their own custom tags supports entity-specific communication as users can identify disclosures that are unique or material to a specific firm. Custom tags therefore allow preparers to provide disclosures that reflect their particular circumstances, and therefore "tell their own story" in the reports, consistent with principles-based reporting standards such as the IFRS (Rowbottom et al., 2021).

Jurisdictions such as India that prohibit preparers from extending the taxonomy with custom tags support reporting comparability outcomes, yet risk firms assigning different amounts to a specific tag, leading to 'fake comparability'. Elsewhere, jurisdictions allow extensions but seek to control their usage.

In the US, extending the taxonomy has been permitted but increasingly discouraged by the SEC. Initial XBRL filings were judged to contain unnecessary extensions where preparers created custom tags even though appropriate tags were available in the taxonomy. As a consequence, the US GAAP taxonomy grew over time to offer more tags to cater for the disclosure needs of different firms in different sectors, and thereby dissuade firms from creating their own custom tags. Nevertheless, research suggests extensions have remained at a stable level where custom tags represent approximately 17-19% of financial statement tags (US SEC, 2018, 2019, 2020).

To cater for the principles-based nature of corporate reporting, the IFRS Taxonomy has progressively included more elements representing disclosures not required by accounting standards. 'Common Practices' identified by the IFRS Foundation, and examples used in IFRS have been added to the taxonomy to enable firms to reduce their use of custom tags (similar to the US). It is therefore important to recognise that the IFRS taxonomy diverges from the standards given it incorporates many disclosures that are not explicitly required by IFRS. As such, the taxonomy can act as a standardising mechanism where it is perceived to be an authoritative collation of expected reporting disclosures.

In the EU, extending the taxonomy is permitted but controlled by an 'anchoring' policy that requires custom tags to be linked to a core taxonomy element with the closest accounting meaning. Anchoring constitutes a compromise between providing some flexibility to preparers to make disclosures that reflect their particular circumstances whilst also guaranteeing comparability at least at the anchoring level. Recent revisions to the IFRS taxonomy have sought to support the application of anchoring (IFRSF, 2020a, 2020b) but it is recognised that not all disclosures can be anchored to an existing element in the base taxonomy (FASB, 2017).

In formulating policy, regulators must be cognisant that the nature of taxonomy extension rules will tend to support more cross-firm comparability at the expense of entity-specific communication, or more entity-specific communication at the expense of cross-firm comparability. Both large scale, standardised datasets, and entity-specific, unique disclosures may be valued by different users as distinctive aspects of decision relevance.

Regulators must therefore consider how the consequences of extension policy choices will influence the future direction of corporate reporting in their jurisdictions.

QUALITY CONTROLS AND ASSURANCE

The quality of digital accounting information cannot be overstated given that, once reported, it can be automatically distributed and disseminated. Preparers submitting erroneous digital reports can also be subject to regulatory, liability and reputational risks.

Our evidence shows that two mechanisms can be used to improve quality of digital accounting information: automated regulatory checks and assurance. Whilst automated regulatory checks have been used in most jurisdictions in the sample, their effectiveness is generally limited to validating compliance with technical specifications, and they have not eliminated the use of incorrect tags as observed in jurisdictions such as the US and Indonesia.

Assurance offers another key measure to ensure the quality of digital accounting information. Assurance of digital corporate reports is not required in most sample jurisdictions but inconsistencies can arise between the assured information published via traditional communication channels and digital information. For example, in the absence of assurance obligations, the US SEC effectively provides two sets of reports: audited human-readable filings, and unaudited machine-readable filings (Hoitash et al., 2021).

In India, assurance obligations require firms to ensure the digital filings are a fair representation of the 'hard copy' statements, whilst Chinese requirements require assurance the taxonomy has been correctly used. We have found no evidence of penalties or sanctions that are applied by regulators when preparers provide poor quality digital corporate reports.

As digital corporate reporting matures, it is likely that further assurance will be introduced by regulators and research has debated different policy options (Hoitash et al., 2021).

- Auditors could provide data-level assurance of digital corporate reports by assuring specific data identified in digital reports and tag choices made by preparers.
- Auditors could provide materiality assessments of digital corporate reports pertaining to material misstatements arising from tagging errors or processes adopted by preparers.
- Auditors could assess financial reporting internal controls used by preparers to ensure the integrity of digital corporate reports and related control risks.

For those jurisdictions yet to mandate digital corporate reporting, regulators can consider the nature and robustness of regulatory checks built into filing infrastructure. For those jurisdictions where digital reporting is established, the application of specific forms of 'digital assurance', and related sanctions are likely to be implemented as reporting practices mature in order to incentivise data quality.

CONCLUSION

Digital corporate reporting and the use of XBRL technology is gaining traction across the world. In this report, we have examined global adoption experiences and identified implications for both policy and practice relevant to jurisdictions at different stages of policy development. We find that:

- In contrast to digital reporting mandates, voluntary approaches have been associated with limited uptake, unless linked to a common expectation that a mandate will be forthcoming in the future. Such an approach has been useful to allow companies to generate capacity, skills and organisational knowledge in a voluntary 'learning' period before a mandate takes effect.
- Both XBRL and iXBRL specifications have been used for digital reporting implementations across jurisdictions, though more recently there has been greater preference for iXBRL. iXBRL offers the advantage of human and machine readability, which means reports can be viewed in standard web browsers whilst also enabling the extraction and analysis of specific reporting information across large samples.
- The scope of digital reporting requirements varies across the G20 jurisdictions and generally commences with the primary financial statements, before moving towards 'block' tagging the notes. Some jurisdictions have extended the requirements to include the detailed tagging of notes and some ESG disclosures. It is expected that the scope will expand in the future in some jurisdictions to include more aspects of sustainability disclosures, management commentary and other information.
- Taxonomy development is a key digital reporting consideration across jurisdictions. Generally, jurisdictions using IFRS have adapted the IFRS taxonomy to include 'national' disclosure requirements such as legal entity identifiers, and required disclosures arising from company law rather than accounting standards. There are also cases in key jurisdiction such as the US where local taxonomies are developed and used.
- Policies pertaining to whether jurisdictions deny, restrict or enable companies to extend the taxonomy with their own custom tags have significant corporate reporting implications. Policies that deny extensions support standardised comparability. However, policies that allow extensions support more entity-specific communication, but potentially at the expense of comparability. Future policy appears to be favouring a hybrid approach where preparers are encouraged to fit their disclosures into the base taxonomy, and where they do not fit, to provide some link or anchor between their entity-specific disclosures and the base taxonomy.
- Our evidence suggests that XBRL tagging for producing digital reports can be outsourced to third-party providers, or undertaken as a bolt-on process after traditional reports have been produced using traditional means. Given the importance of knowing the nature and accounting meaning of firm disclosures in the tagging process, commentators recommend the involvement of the reporting firm in the tagging process. Commentators also argue that preparers will experience digital reporting benefits when they tag data at the source, transactional level. This, however, entails integrating XBRL into existing accounting packages, reporting processes and organisational infrastructure and incurs costs.
- Regulatory validation checks and assurance controls are the main controls used to safeguard the quality of digital corporate reporting data. Automated warnings and validation checks are seen as invaluable to assist preparers with their digital reporting filings. Whilst assurance remains an under-developed activity with regard to digital reporting, moves in India and across the EU are likely to drive developments and help formulate commonly accepted approaches to checking digital reporting control systems, the appropriateness of tagging, legal compliance and the accuracy of digital filings.

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DISCLAIMER

Although the best efforts, have been undertaken to ensure the accuracy of the information in this report, international regulatory policies are dynamic and subject to change.

APPENDIX

Sample countries

NO	COUNTRY	G20 (YES/NO)	CAPITAL MARKET - FOCUSED PROJECT	CAPITAL MARKET MANDATE	CAPITAL MARKET - FOCUSED PROJECT TECHNOLOGY	COMPANY REGISTRAR - FOCUSED PROJECT	COMPANY REGISTRAR MANDATE	COMPANY REGISTRAR - FOCUSED PROJECT TECHNOLOGY
1	Argentina	G20 – Yes	No	Not applicable	Not applicable	No	Not applicable	Not applicable
2	Australia	G20 – Yes	No	Not applicable	Not applicable	Yes	Voluntary	iXBRL
3	Brazil	G20 – Yes	No	Not applicable	Not applicable	No	Not applicable	Not applicable
4	Canada	G20 – Yes	Yes	Voluntary	XBRL	No	Not applicable	Not applicable
5	China	G20 – Yes	Yes	Mandated	XBRL	Yes	Mandated	XBRL
6	France	G20 – Yes	Yes	Mandated	iXBRL	No	Not applicable	Not applicable
7	Germany	G20 – Yes	Yes	Mandated	iXBRL	No	Not applicable	Not applicable
8	India	G20 – Yes	Yes	Mandated	XBRL	Yes	Mandated	XBRL
9	Indonesia	G20 – Yes	Yes	Mandated	XBRL	Yes	Mandated	XBRL
10	Italy	G20 – Yes	Yes	Mandated	iXBRL	No	Not applicable	Not applicable
11	Japan	G20 – Yes	Yes	Mandated	iXBRL	Yes	Mandated	iXBRL
12	South Korea	G20 – Yes	Yes	Mandated	XBRL	Yes	Mandated	XBRL
13	Mexico	G20 – Yes	Yes	Mandated	XBRL	No	Not applicable	Not applicable
14	Russia	G20 – Yes	No	Not applicable	Not applicable	No	Not applicable	Not applicable
15	Saudi Arabia	G20 – Yes	Yes	Voluntary	XBRL	Yes	Mandated	XBRL
16	South Africa	G20 – Yes	Yes	Voluntary	iXBRL	Yes	Mandated	iXBRL
17	Turkey	G20 – Yes	Yes	Mandated	XBRL	No	Not applicable	Not applicable
18	UK	G20 – Yes	Yes	Mandated	iXBRL	Yes	Voluntary	iXBRL
19	US	G20 – Yes	Yes	Mandated	iXBRL	No	Not applicable	Not applicable
20	EU	G20 – Yes	Yes	Mandated	iXBRL	No	Not applicable	Not applicable
21	Singapore	G20 – No	No	Not applicable	Not applicable	Yes	Mandated	XBRL
22	Malaysia	G20 – No	No	Not applicable	Not applicable	Yes	Mixed	XBRL
23	Hong Kong	G20 – No	No	Not applicable	Not applicable	No	Not applicable	Not applicable
24	New Zealand	G20 – No	No	Not applicable	Not applicable	No	Not applicable	Not applicable

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