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«International format of financial reporting XBRL in Kazakhstan»

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Abstract

The paper is a descriptive study that investigates the adoption and implementation of the International Financial Reporting Standard XBRL (eXtensible Business Reporting Language) in Kazakhstan, utilizing SWOT, PEST, BCG matrix, and Porter's Five Forces methodologies. A comparative analysis of key economic indicators among countries employing the XBRL format and those that have not yet adopted it is also presented. The results indicate that the development and implementation of XBRL in Kazakhstan offer substantial benefits, including increased efficiency, transparency, and comparability of financial information, which contribute to economic growth and attract foreign investment. The evidence strongly supports the adoption of XBRL in Kazakhstan, contingent on addressing challenges related to training, education, technological infrastructure, and regulatory enforcement.

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Introduction

Theoretical Framework

In this context, the theoretical framework will begin with an analysis of the idea of financial reporting and the international regulations governing it. Also emphasized will be the relevance of financial reporting in the global economy, particularly in terms of openness, comparability, and accountability. The next topic has discussed the function of XBRL in financial reporting and its global implementation.

Then, the theoretical framework has delved into Kazakhstan's unique obstacles in applying XBRL for financial reporting. These hurdles to adopting global standards may be political, economic, or cultural in nature. In addition, an evaluation of the advantages and disadvantages of applying XBRL in Kazakhstan and its potential influence on the country's financial reporting system will be done.

The theoretical framework concludes with a discussion of potential solutions to these issues and their implementation in Kazakhstan. These solutions may include policy recommendations, educational programs, or other initiatives aimed at enhancing the nation's financial reporting procedures. The paper's theoretical framework provides a comprehensive understanding of the main concepts, theories, and models associated with the international financial reporting format in Kazakhstan based on the use of XBRL.

Research purpose

The purpose of this dissertation was to investigate the current state of financial reporting in Kazakhstan and to assess the pros and cons of using the eXtensible Business Reporting Language (XBRL) format. The objective of this study was to identify potential obstacles to the successful implementation of XBRL, such as a lack of comprehension of the format, resistance to change, and technological constraints. The study examined the regulatory and institutional framework required for XBRL adoption. The results contribute to the extant literature on financial reporting and accounting standards by illuminating the potential benefits and drawbacks of adopting XBRL in Kazakhstan. The research is relevant to policymakers, regulators, financial institutions, and other parties involved in financial reporting and accounting processes.

The research question is formulated as follows: To what extent does Kazakhstan need to implement the XBRL financial reporting format?

Considered problem

This dissertation investigates the implementation of the XBRL financial reporting format in Kazakhstan, which is an essential issue. eXtensible Business Reporting Language, or XBRL, is a standard for the electronic transmission of business and financial data. Kazakhstan's financial reporting system will be more transparent and efficient as a result of the implementation of this format. Currently, the lack of standardization in Kazakhstan's financial reporting system makes it difficult for investors, creditors, and other stakeholders to compare the financial information of different businesses. This absence of transparency can result in inaccurate financial reporting, which has a negative impact on the economic growth of the country.

XBRL Definition

Extensible Business Reporting Language, abbreviated as XBRL, is an open standard language used for the electronic transmission of commercial and financial data. It facilitates the transfer of financial data between applications and platforms regardless of their technical specifications (Debreceeny & Gray, 2001). This language facilitates the generation, analysis, and sharing of financial data in a standard format, making it simpler to compare and analyze data across businesses, industries, and countries (Robinson, 2020).

Globally, governmental entities, regulatory authorities, and accounting firms use XBRL to streamline the compilation of financial reports, reduce errors, improve the accuracy and transparency of financial statements, and reduce the number of errors. This language was designed to be flexible and adaptable, allowing businesses to tailor their financial reports to their particular demands and requirements (Watson & Hoffman, 2003). In addition, XBRL has the capacity to automate data collection, processing, and report generation, allowing organizations to save time and money. XBRL is a powerful instrument that revolutionizes the exchange and analysis of financial data, allowing investors, regulatory bodies, and other stakeholders to make well-informed decisions based on precise and timely data (Leuz et al., 2008).

Next, for a deeper understanding, every word in the definition of XBRL will be analyzed. Firstly, Business Reporting, as a rule, consists of: tax returns, annual reports, internal sales figures, etc. Each report represents a certain set of facts and data, for example:

1. Reporting period;
2. Annual income;
3. Number of customers;

4. Inventory numbers,

Etc (Weverka & So, 2008).

For many years, to create such reports, it was necessary to collect information on a huge number of paper media. After that, the completed form from these paper carriers was sent to interested parties. The problem lies in the fact that often every interested person, be it a bank, a state organization or an investor company, requires the provision of the necessary data in different formats. Therefore, the report compiler has to fill in the same data several times in different formats. XBRL is a solution to this issue since it improves the process of developing, disseminating, and customizing report data for usage in other sectors (Bolgiano et al., 2009). The XBRL format specifies an electronic reporting format that enables electronic applications to generate, validate, and process reports automatically. It also specifies a method for ensuring that communicated business facts have a unified semantic meaning. The compiler of the report might simply produce a single report including all the information and hand it over to the receiver, who would then choose the facts he needs and display them in any format he wished. Establishing a single semantic interpretation for each information assures that each report receiver perceives the data in the same way (Hodge et al., 2004). Importantly, it is possible to separate the report's format from its substance. The pre-configured report form serves as a template that specifies the factual content. It is made just once by the report receiver. And the information that is developed each time while creating reports consists of the sent facts (Grady et al., 2019).

The XBRL standard utilizes a similar separation (Debreceeny & Gray, 2009):

- The so-called taxonomy specifies the ideas in the business field for which reporting is created and describes what should or can be included in the report.
- The data itself is referred to as an XBRL (instance document) report. It contains the transmitted information. The report references the taxonomy to provide

context for the information. Each fact contained in the report corresponds to a taxonomy concept.

Extensible comes after the letter X in the abbreviation XBRL. XBRL is extensible, according to a second premise. Returning to the scenario of the established method for collecting and distributing financial statements, the following example is proposed. Assume that the European Union establishes reporting requirements for all EU-based businesses:

1. Such a requirement is likely to be stated in English, but the majority of businesses would prefer to have a reporting form in their native tongue due to the difficulty of translating business terms.

2. It is possible that such reporting requirements are already in place in some nations, possibly with country-specific modifications. In order to avoid having to prepare two distinct forms with overlapping requirements, both forms can be combined into a single form for a particular country. However, this will necessitate the creation of a new version of the primary form.

XBRL helps to support such needs. The EU will establish a single taxonomy for reporting requirements. The so-called label linkbase contains the translation of technical ideas in the taxonomy into language intelligible to the user. Each language inside the EU may have its own database of labels, or a single database including labels for all languages may be created. Note that it is not necessary to repeat the definition of concepts in each language. A nation that wishes to expand the EU taxonomy will simply construct its own taxonomy that refers to the EU taxonomy in terms of broad ideas. It is sufficient for this nation to define only concepts that are not included in the EU taxonomy (Weverka & So, 2008).

And the final word in the XBRL definition is Language. The XBRL language provides a method for expressing XBRL taxonomies and reports in a single, clear

format, a need for computer processing of data. The XBRL language is founded on international standards including XML and their respective specifications.

Description of the structure and principles of XBRL

Firstly, the idea of taxonomy is often a collection of connected documents known as a Related set of taxonomies. Taxonomy Scheme is the foundation of this complex. This is the document that the XBRL report references. This taxonomy schema may include references to other papers, which may in turn contain references to more documents, etc. Viewing the schema necessitates following all links until all associated papers have been read.

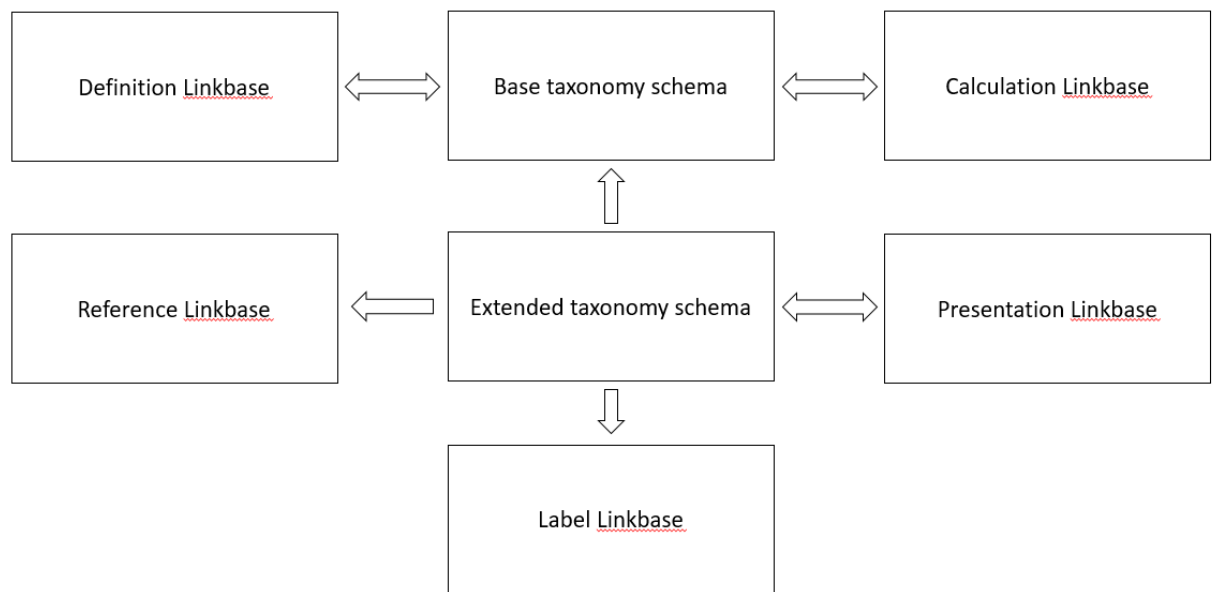
Taxonomy can refer to two distinct document types:

1. Taxonomy describes the situation in which one taxonomy (Extended Taxonomy) extends another (Base Taxonomy).
2. Linkbase is utilized to offer more information on taxonomy-defined concepts. Relationships between concepts and between the concept and supplementary information are described in reference databases. There are five primary types of link databases, each of which will be examined in further depth in the following sections (Weverka & So, 2008):

- Definition;
- Calculation;
- Presentation;
- Label;
- Reference.

Schematically, this can be depicted as follows (Weverka & So, 2008):

Figure 1. XBRL structure schema



It is important to note that some reference databases (Reference and Label) are unidirectional, i.e. the link leads from the taxonomy to the resources of the reference database. Other reference databases (Definition, Calculation, and Presentation) are bidirectional. Links point from one part of the taxonomy to another part. The core of a taxonomy is its schema, which is a mandatory document. This schema is actually an XML Schema document (a W3C standard that allows you to define the structure of XML documents). The XBRL specification uses XML Schema as the base language for describing taxonomies. On top of this basic language, it defines a set of XBRL-specific additions and restrictions (Cox, 2006).

As part of the taxonomy scheme, it is possible to:

- Import another "basic" taxonomy allowing you to construct extensions of existing taxonomies;
- Specify the concepts for which reports will be generated;
- Define the roles used in reference databases; Access the reference databases.

The XBRL information model is composed primarily of two components: the XBRL report (XBRL instance) and the XBRL taxonomy. A taxonomy is a definition of particular facts, including their syntax, form, and characteristics. An XBRL report contains specific facts, and a taxonomy is a definition of those facts. XBRL instances include specific business information. The most fundamental element of which is the fact (facts). For instance, "Sales during the previous quarter" is a fact. Objects are simple facts without sophisticated information systems.

A set of related facts can be aggregated and represented using relatively complicated structures, such as tuples, to describe increasingly complex information units. A tuple may include both items and additional tuples. An illustration is used to illustrate the report's specifics. The taxonomy determines the language standards that these specific facts must adhere to, as well as their forms and signs. The taxonomy should first identify the elements of the financial statements to be used in the financial statements, then add other pertinent information such as the relationship between each element, as well as the name and position of each element in the report, and reflect the accounting standards by which the financial statements are prepared.

The XBRL taxonomy consists of the Taxonomy Schema (.xsd) file as well as five database reference files: calculation, definition, label, display, and reference. The classification file specifies a variety of items, such as element names, ID attributes, element kinds, etc., and describes the mathematical and defining connections between them. "Restrict and regulate. The calculation database reference file defines the link between projects from the perspective of data calculation; for instance, the idea of "profit after tax" is derived by subtracting "profit tax" from "profit before tax." User must construct a database link file to comprehend the conceptual ties between projects, such as general and special relationships: "postalCode" is a generalization of "zipCode," etc.; the tag database link file determines the actual display of the project in the name of the

financial report. For instance, user may utilize a tag link to associate the text string "total income for the previous year" with the record "RMRY" defined in the category. The financial report defines the display database reference file to unify the order in which all sub-elements of the parent element are presented; for instance, in the presentation report, sales and sales should be displayed as parent-child relationships.

Similar to the tag database link file, accessing the reference information of the database link file to identify an element with which the user can properly comprehend the true meaning of the element. XBRL is an XML-based cross-platform data transmission standard; hence, if the user's browser supports XML, he may see and download financial reports in XBRL format similarly to how he views web pages in HTML format. Modern web browsers all support XBRL. Some software providers, including SAP, ORACLE, and ACCPAC, have currently integrated the ability to generate XBRL documents into their software packages. If the enterprise's software does not support XBRL, XBRL financial statements can be generated using proprietary or third-party applications such as Excel2003, ExcelXP, etc.

Main application areas of XBRL

XBRL has a vast variety of applications in economic activity, which may be condensed into the six areas below:

1. The field of business administration. With XBRL, the company's management may swiftly gather and assess the financial status of several departments and affiliated businesses. In addition, this information may be swiftly gathered to secure market support. In addition, as an information provider, a business can use XBRL technology to complete the conversion of the XBRL format in a single step using a specialized application program for format conversion (Valentinetti & Rea, 2011). Previously, this process required the submission of written financial reports, online financial information,

or uploading to the relevant competent authorities. The data processing operation need not be performed multiple times.

2. Audit area. It is possible to enhance the process of creating and checking financial statements (Valentinetti & Rea, 2011). The most significant advantage of using XBRL for unified disclosure of corporate financial information in corporate financial reports for audit organizations is that it is no longer necessary to manually interpret data in different formats; instead, it is possible to directly obtain the content of financial data disclosed by clients. through conventional uses. It can also be connected to a single XBRL-formatted economic database of the organization (Valentinetti & Rea, 2011). If each company verifies that the system is well-controlled and logically sound, they are able to undertake continuous activities in real time. audits and field audits conducted electronically. Therefore, lowering the amount of manual activities and enhancing the audit's efficiency and quality.

3. The extent of the company's credit rating evaluation. Businesses, banks, and credit rating agencies are able to obtain the credit rating status of relevant buyers, sellers, and financial institutions more quickly than in the past (Valentinetti & Rea, 2011).

4. The realm of the securities market First, ordinary investors can obtain financial data of businesses more quickly, precisely, and conveniently. Internet-obtained data may be utilized immediately for analysis by expert investment analysts, and the desired output format can be selected to increase the efficiency of data gathering and analysis, therefore reducing the amount of repeated labor necessary. The cost and duration of data processing are crucial. If all listed businesses adopt the XBRL format to replace the present PDF format for electronic files, securities management agencies may execute the download of textual materials and data at the same stages, and each firm can upload its files. It can be directly checked, compared, and analyzed if it is in the

same format, and disclosure, transparency, and equity can be achieved with minimal expense.

5. The realm of commerce and taxation. Using XBRL, the tax return materials of each enterprise can be directly generated from the same database used by the company to prepare financial statements, without the need for additional data preparation, and can be directly transmitted to various tax authorities via the Internet in order to implement a paperless tax return (Halim et al., 2015). In addition to effectively preventing data entry errors caused by the human factor and improving the efficiency of the tax department, it can also reduce the difficulties associated with the fact that the taxpayer must contact the tax unit in person to declare the tax during the filing period of the declaration (Halim et al., 2015).

6. The discipline of financial management. While investigating financial trends and monitoring the risks of financial institutions, departments of financial management can also utilize XBRL successfully. The government can design standard forms and formats of XBRL documents for various government agencies and non-profit organizations and upload them on publicly accessible government websites so that companies can use them to submit information (Halim et al., 2015). In the future, documents and forms will be in XBRL format. Standardized documents that can streamline the document processing operations of government or nonprofit organizations. XBRL will streamline existing electronic bond procedures and implement the harmonization of business financial data and the tax department's data interface. In addition, accounting papers, applicable legislation, and other materials saved in the XBRL file format can only be understood using a standard web browser, which facilitates maintenance and automatic search.

Literature Review

The literature review commences with a brief overview of several foundational sources, which provide the essential information needed to understand the basics.

"XBRL: The New Language of Business Reporting" by Liv Watson and Charlie Hoffman (2003) serves as an excellent starting point. This work is rightly considered one of the earliest XBRL-focused publications. This book elaborates on what XBRL is and how its implementation can enhance the efficiency of the financial sector. At the beginning of the book, the main issues and shortcomings of the currently accepted method of financial reporting are highlighted. Here, the authors emphasize the difficulties associated with comparing the reports of various organizations, as well as the high cost and potential risks involved in processing quantitative and textual data. Furthermore, they present some solutions to these aforementioned problems with the innovative financial reporting format XBRL. This source is valuable as it details the origins of this format, its evolution over time, and the initial stages of its implementation. The authors thoroughly demonstrate how XBRL can be used to automate and standardize financial reporting for better inter-organizational communication. Additionally, they underline the benefits of using the format for various financial institutions. One of the major strengths of the book is its practical nature. The authors provide numerous examples of XBRL in action, as well as guidelines for preparing and using financial reports with XBRL tags. Moreover, they address common challenges and concerns related to XBRL implementation, such as data quality, taxonomy creation, and software compatibility.

The next source is "XBRL for Dummies" by Diana Muller and Charles Hoffman (2009). This book offers an introduction to eXtensible Business Reporting Language (XBRL). The book provides an overview of XBRL and explains how it can be used to

improve financial reporting and analysis. The first part of the book introduces financial reporting and the issues associated with traditional reporting methods. Then, it introduces XBRL and describes its structure and capabilities in simple language. The authors present examples of financial reports using XBRL tags and explain how they can be used to automate the exchange of financial data across organizations. One of the strengths of the book is its accessibility. The writers use plain language and avoid technical jargon, making the text more approachable to readers without a background in accounting or technology. Additionally, they provide various examples and illustrations to help readers understand the topics presented.

Following this, the research paper titled "The Effect of XBRL on Financial Reporting" by Richard A. Hicks and Susan M. Williams (2011) is selected for examination. This paper focuses on the challenges of implementing the XBRL format at the corporate and governmental levels. As a result, it highlights the difficulties associated with the processes of integrating different taxonomies, the issues related to the cost of implementing this format, and the potential problems concerning the presentation quality of financial reporting data. The authors argue that the full potential of the XBRL format can only be realized if it is widely disseminated among all parties involved.

The study article "XBRL and Financial Analysis" by Christian Lenz, Robert Libby, and Peter Wysocki (2008) examined the possible influence of the extensible Business Reporting Language (XBRL) on financial analysis. The authors began by discussing the present status of financial analysis and the constraints of conventional financial reporting. They then presented XBRL as a potential solution to these limitations and discussed the advantages of using XBRL-tagged financial data for financial analysis. Possible benefits of applying XBRL for financial analysis were outlined in this document. For instance, it could enhance the comparability of financial statements across

industries and firms, making it easier for investors and analysts to analyze performance. It could also minimize the time and resources required to acquire and analyze data, and increase the quality and dependability of financial data.

The aforementioned sources provided a general understanding of the theoretical component necessary to immerse oneself in the study topic. This information allowed for initial inferences to be drawn. The sources clarified what financial statements are, the formats in which they are presented, and their primary advantages and disadvantages. Furthermore, the technical aspects of XBRL were explained in detail in the "XBRL Implementation Guide" by Mark Bolgiano, Campbell Pryde, and Anne B. Botos (2009), which offered a comprehensive review of XBRL and its potential benefits, as well as guidance for integrating XBRL into financial reporting procedures. The guide provided a step-by-step approach to using XBRL in financial reporting procedures, which included defining taxonomy, labeling with XBRL, and validating. It also provided recommendations for integrating XBRL into current financial reporting systems and processes.

The research paper "XBRL and Financial Reporting Quality: Evidence from China" by Qiang Cheng, Ying Chou Lin, and Xiaohong Xu (2016) examined the application of the XBRL format in China. A sample of Chinese companies that had implemented XBRL was compared to a control group of companies that had not. The authors analyzed financial statement quality indicators, such as profit management, timely recognition of losses, and audit reports, to investigate the impact of XBRL on financial reporting quality. The results revealed that companies that had adopted XBRL had higher-quality financial reporting than those that had not. The implementation of XBRL was associated with a decrease in profit management, an improvement in the timeliness of loss recognition, and an increase in the probability of achieving an unqualified audit opinion. The study also examined the influence of business size on

the relationship between XBRL implementation and financial reporting quality and found that the impact was greater for smaller businesses. This study highlights the potential of XBRL to enhance the accuracy and reliability of financial reporting and its implications for decision-makers who rely on financial information.

The research paper entitled "Impact of XBRL adoption on financial reporting quality: A global evidence" by Tawiah and Borgi (2018) is a key source for this paper. The authors examine the impact of XBRL adoption on financial reporting quality using a sample of companies from different countries. The study presents actual evidence of the potential impact of XBRL on financial statement quality, which is of great importance for regulators, investors, and other decision-makers who rely on accurate and trustworthy financial information. However, the study did not include Kazakhstan in its sample. Therefore, this work aims to contribute to the literature by comparing the impact of XBRL adoption on financial reporting quality in Kazakhstan with the results of the study by Tawiah and Borgi. The findings of this research will provide insights into the implementation of XBRL in Kazakhstan and its impact on the quality of financial reporting.

Methodology

Research Methodology

This study combines quantitative and qualitative data collection and analysis using a mixed methods methodology. The study collects data from publicly available official sources. The sources are listed below. The main focus is on existing academic papers and publications.

SWOT Analysis

A SWOT analysis was chosen as the first method of analysis. It provides a framework for identifying and analysing the strengths, weaknesses, opportunities and challenges associated with the implementation of XBRL in Kazakhstan. It helps to gain

a fuller understanding of the elements that may affect the success or failure of XBRL implementation in the country.

Table 1. SWOT analysis of XBRL

Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Enhanced financial reporting accuracy and transparency; 2. Improved comparability of financial data; 3. Streamlined regulatory compliance; 4. Increased efficiency in processing and sharing financial info; 5. Promotion of digital transformation in Kazakhstan. 	<ol style="list-style-type: none"> 1. Limited awareness and understanding of XBRL; 2. High initial implementation costs; 3. Insufficient IT infrastructure and technical expertise; 4. Resistance to change due to complexity.
Opportunities	Threats
<ol style="list-style-type: none"> 1. Strengthening the national financial reporting framework; 2. Facilitating foreign investment; 3. Enhancing monitoring and supervision capabilities; 4. Leveraging XBRL for advanced analytics and decision-making. 	<ol style="list-style-type: none"> 1. Slow or uneven adoption of XBRL; 2. Potential for data security and privacy breaches; 3. Challenges in maintaining quality and consistency of data; 4. Risk of XBRL implementation being overshadowed by other factors.

Strengths: The implementation of XBRL in Kazakhstan has several strengths. First, it improves the precision and openness of financial reporting, which is essential for

fostering investor confidence. XBRL also enhances the comparability of financial data across companies and industries, making it simpler for investors, analysts, and regulators to analyze financial data. Thirdly, it facilitates regulatory compliance and reduces the reporting burden on companies, thereby enhancing the reporting process's efficacy. The implementation of XBRL improves the processing, analysis, and dissemination of financial data, which is essential for making informed decisions (Leuz et al., 2008). Lastly, the implementation of XBRL promotes innovation and competitiveness by contributing to the digital transformation of Kazakhstan's corporate environment.

Weaknesses: Despite its potential benefits, there are several disadvantages associated with the implementation of XBRL in Kazakhstan. XBRL's adoption and use may be slowed by enterprises' and stakeholders' lack of understanding and familiarity with the format (Joshi, 2010). Some businesses may be dissuaded from employing the reporting standard by the high initial implementation costs, particularly for small and medium-sized businesses (SMEs). Limited IT infrastructure and technical knowledge to support XBRL implementation can hinder the reporting language's successful implementation (Joshi, 2010). In addition, enterprise resistance to change due to the complexity of XBRL may hinder the standard's widespread adoption.

Opportunities: The introduction of XBRL in Kazakhstan presents several opportunities for the country. It can help strengthen the national financial reporting system and bring it in accordance with international standards, such as those established by the IFRS Foundation. Better financial reporting and data comparability can help attract foreign investment, thereby contributing to economic growth. Moreover, the implementation of XBRL can improve the surveillance and supervision capabilities of regulators, assuring compliance and reducing risk in the financial sector. Using XBRL for complex analytics

and decision assistance can provide enterprises, investors, and policymakers with valuable information (Hicks & Williams, 2011).

Threats: Several threats could undermine the successful implementation of XBRL in Kazakhstan. Delayed or inconsistent XBRL implementation in the business sector may reduce its efficacy and influence (Cox, 2006). Due to digital reporting's vulnerabilities, data security and privacy breaches may occur. Ensuring the quality and consistency of XBRL-labeled financial data can be difficult, potentially impacting the accuracy and dependability of financial data (Bolgiano et al., 2009). In Kazakhstan, the possibility that XBRL implementation will be overshadowed by competing demands or regulatory changes could threaten the standard's long-term implementation and success.

After identifying the strengths, weaknesses, opportunities and threats associated with XBRL implementation in Kazakhstan, the data is used to better understand the elements that may affect the success or failure of XBRL implementation in the country. This helps identify potential barriers to implementation. It also helps identify areas where XBRL implementation can be most effective.

BCG Matrix analysis

Lucian Cristian Eni in his work "Empirical Research: Exploring Extensible Business Reporting Language and Views of Romanian Accountants" conducted a survey among auditors, including a number of questions. The auditors' answers to one of the questions will be used to build the BCG matrix. Lucian Cristian Eni administered an online questionnaire to 250 recipients, consisting of certified accountants and accountants who are also certified auditors. Out of the 250 recipients, only 16 responses were received, which represents roughly 7% of the total sample size.

The sample population was selected from two sources:

- Randomly chosen from the member database of CECCAR, which stands for the Chamber of Certified Accountants.

- Sampled from the member database of CAFR, which stands for the Chamber of Financial Auditors. Specifically, the sample was drawn from the subset of members who are both certified public accountants (members of CECCAR) and certified auditors (members of CAFR).

The second question on the online questionnaire asked the respondents to indicate the format in which the company they work for, or for which they do accounting, has published financial/non-financial data. The results are presented in the table below (Eni, 2015):

Table 2. Distribution of formats by use in reporting

	Hardcopy	PDF	HTML	Excel	CSV	XBRL	XML	Other formats
Balance Sheet	12.5%	75%	0.00%	0.00%	0.00%	0.00%	12.5%	0.00%
Profit and Loss Statement	18.75%	68.75%	0.00%	0.00%	0.00%	0.00%	12.5%	0.00%
Cash Flow Statement	25%	37.5%	0.00%	31.25%	6.25%	0.00%	0.00%	0.00%
Notes to Accounts	12.5%	31.25%	0.00%	25%	31.25%	0.00%	0.00%	0.00%
Trial Balance	31.25%	37.5%	0.00%	18.75%	0.00%	0.00%	0.00%	12.5%
Directors`Report	18.75%	18.75%	0.00%	6.25%	56.25%	0.00%	0.00%	0.00%
General Ledger	31.25%	31.25%	6.25%	6.25%	0.00%	0.00%	0.00%	25%
Day Book	31.25%	31.25%	6.25%	6.25%	0.00%	0.00%	0.00%	25%
Suppliers and Customers Ledger	31.25%	31.25%	6.25%	12.5%	0.00%	0.00%	0.00%	18.75%

Based on the responses received, it appears that accountants primarily use the "first generation of digital reporting," where reports are published and disseminated online in essentially the same formats as their hard-copy versions. The two most common internet reporting formats used are Portable Document Format (PDF) and Hyper-Text Mark-up Language (HTML). The electronic format of the annual financial statements typically includes a PDF file with an attached XML file and a zip file that contains various forms. This type of PDF file is also referred to as an "intelligent" PDF because it enables several checks thanks to its XML features. The mandatory PDF file generated by software is

most likely used by accountants to disseminate information within the online environment, or other conversion software may be used to obtain the PDF file. It was found that the most frequent format used for publishing all reports is PDF, with the exception of the Director's Report, which is primarily a CSV document. In some cases, Microsoft Excel is used as a format, particularly for general ledger, day book, and suppliers/customers ledger. These reports are also published in other formats than those mentioned, but PDF remains the most common format for financial statements (Eni, 2015).

This was followed by a BCG (Boston Consulting Group) matrix study to assess the market growth potential and market share of XBRL.

Table 3. BCG Matrix analysis of XBRL

Format	Market Share	Market Growth
XBRL	Low	High
PDF	High	Low
Excel	High	Low
CSV	Low	Low
HTML	Low	Low

Using the table above, we can place each financial reporting format in the BCG matrix:

- Stars (High Market Share, High Market Growth Rate): PDF
- Cash Cows (High Market Share, Low Market Growth Rate): Excel
- Question Marks (Low Market Share, High Market Growth Rate): XBRL.
- Dogs (Low Market Share, Low Market Growth Rate): CSV, HTML

XBRL has gained popularity in recent years. Various regulators, including the U.S. Securities and Exchange Commission (SEC), the European Securities and Markets

Authority (ESMA), and the International Accounting Standards Board (IASB), have approved XBRL as a reporting standard (XBRL International, SEC, ESMA.). As a result, low XBRL's market share and growth rate are considered high.

PDF (Portable Document Format) is a popular format for presenting financial reports because it preserves the document's layout and formatting regardless of the viewing device. PDFs are less appropriate for data analysis and extraction due to their unstructured and inert nature. PDFs remain a popular option for financial reporting despite their limitations due to their accessibility and user-friendliness. Thus, PDFs have a high market share while the market development rate is modest (Pinsker & Li, 2008).

Microsoft Excel is an application for creating and editing spreadsheets. Excel is extensively utilized for financial reporting due to its adaptability, user-friendliness, and compatibility with numerous accounting software packages. However, its lack of standardization and human error risk limit its growth potential. Therefore, Excel's market share is considerable despite its market growth rate being modest (Pinsker & Li, 2008).

CSV (comma separated values) is a straightforward text format that uses commas or other delimiters to separate data. While CSV files are simple to process and analyze, the lack of strict formatting standards makes it difficult to standardize and maintain data consistency. Consequently, CSV's market share and growth rate are minimal (Pinsker & Li, 2008).

HTML (HyperText Markup Language) is a markup language used to construct Web pages. Financial reports can be presented as web pages, allowing browsers to access them. HTML documents, like PDFs, are immutable and unstructured, making it challenging to analyze and retrieve data. Thus, HTML's market share and growth rate are minimal (Pinsker & Li, 2008).

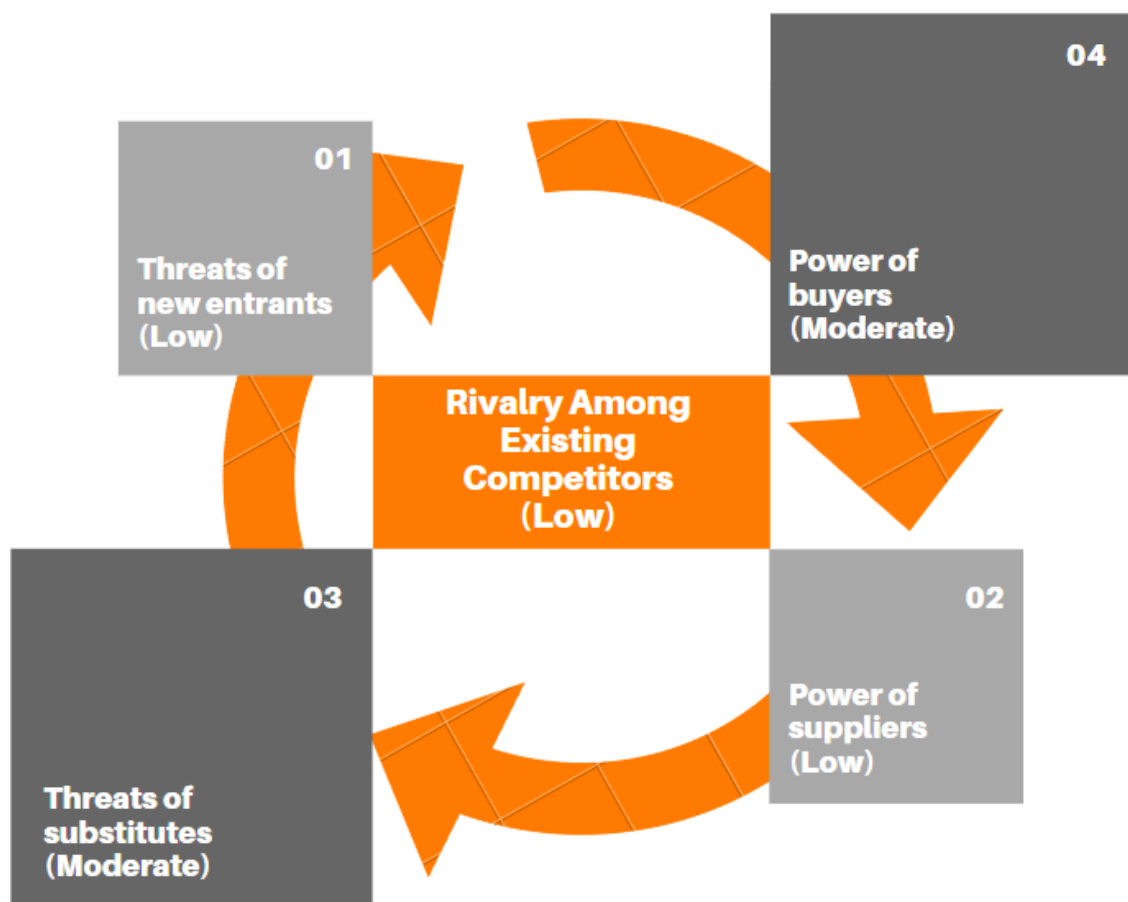
Using BCG matrix analysis, it is simpler to comprehend the position of XBRL on the Kazakhstan market and to identify potential implementation and expansion options.

Moreover, it assists in identifying potential risks and possibilities related with the adoption of XBRL in Kazakhstan, depending on the country's market position and growth potential.

Porter's five forces analysis

The competitive environment surrounding the adoption of XBRL in Kazakhstan was analysed at a deeper level using Porter's five forces method:

Figure 2. Porter's five forces analysis of XBRL.



Threat from new entrants (Low): Threat from new entrants refers to the probability that new competitors will enter the market and challenge the current status quo of XBRL implementation in Kazakhstan. The analysis reveals a minimal threat from new entrants, predominantly as a result of several entry barriers. Companies, particularly

small and medium-sized enterprises (SMEs), are deterred from adopting XBRL because of the high initial implementation costs. Inadequate IT infrastructure and technical expertise can also prevent new entrants from entering the market (Joshi, 2010). In addition, regulatory obstacles, such as mandatory reporting standards and compliance requirements, restrict the number of new entrants (Debreceeny, Gray, & Rahman, 2002).

Bargaining Power of Suppliers (Low): refers to the capacity of vendors, such as XBRL software vendors and consultants, to exert influence over the implementation of XBRL in Kazakhstan. Due to the limited number of XBRL software vendors and consultants, the analysis reveals that vendors have limited bargaining power. Moreover, relying on international XBRL organizations, such as the IFRS Foundation, for taxonomy revisions and recommendations diminishes the negotiating position of local vendors (IFRS Foundation, 2021). In addition, companies that have already invested in XBRL-compliant systems are less likely to transfer vendors due to high switching costs (Joshi, 2010).

Bargaining Power of Buyers (Moderate): The bargaining power of purchasers, such as businesses and other stakeholders, indicates their capacity to influence the implementation and adoption of XBRL in Kazakhstan. This analysis indicates that consumers have moderate bargaining power. XBRL can provide companies and stakeholders with accurate and transparent financial reporting. For effective oversight, regulators require standardized and comparable financial data, which further motivates the adoption of XBRL (Debreceeny et al., 2002). However, if the expense associated with implementing XBRL is too high, businesses might choose for alternative financial reporting solutions, which could weaken their negotiating position.

Threat of Substitute Products or Services (Moderate): The threat of substitute products or services refers to the possibility that other digital reporting formats will

replace XBRL. The analysis indicates that substitute products or services pose a moderate threat. Some businesses might contemplate PDF or Excel as alternatives to the XBRL format (Leuz et al., 2008). Due to their unique requirements, some companies may favor customized internal financial reporting systems (Joshi, 2010). Rapid advances in financial technology could also result in the creation of new reporting solutions that challenge XBRL's dominance.

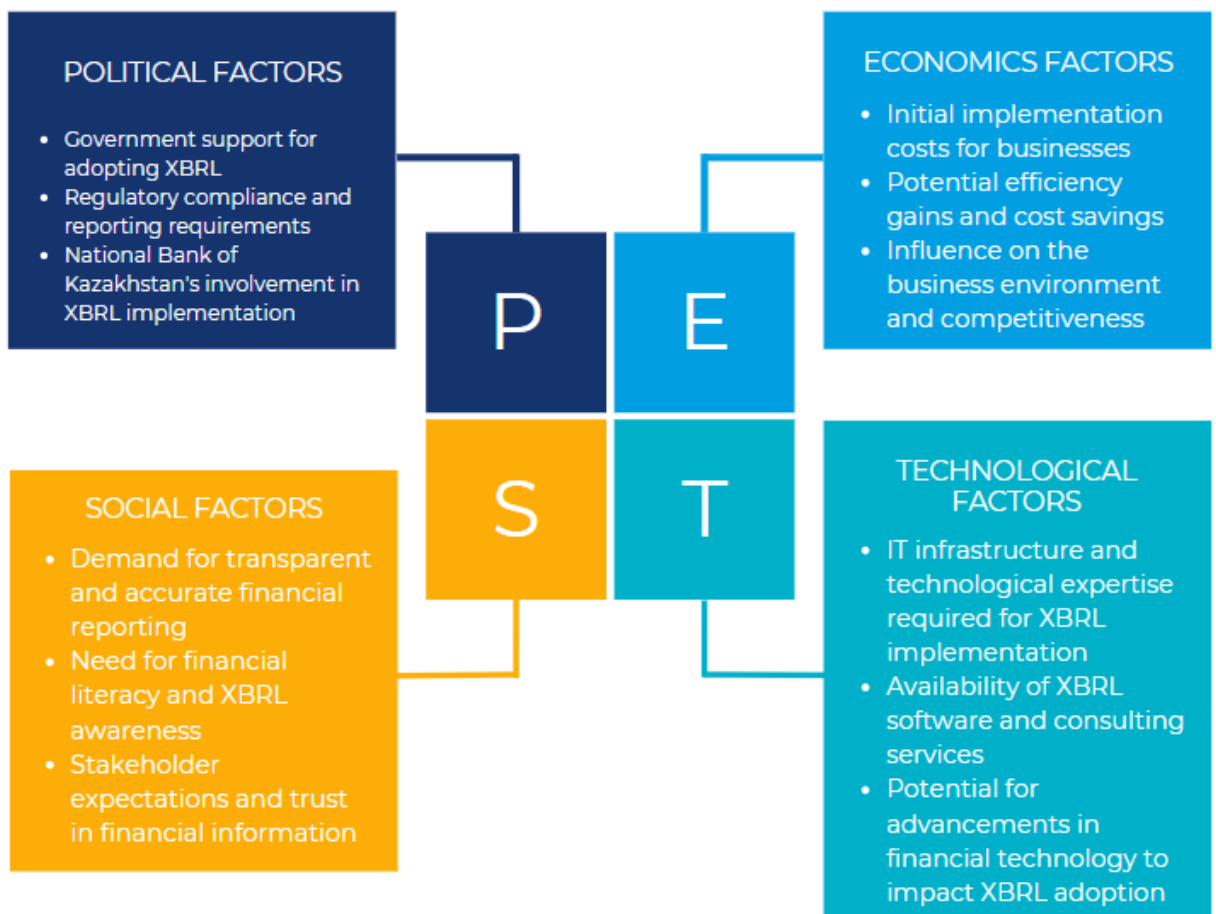
Competitive Rivalry among Existing Competitors (Low): Competitive rivalry among existing competitors reflects the degree of competition among businesses implementing XBRL in Kazakhstan. This analysis indicates minimal competition, as XBRL has become a globally recognized standard for digital financial reporting (Bolgiano et al., 2009). Support for XBRL implementation by the National Bank of Kazakhstan decreases the possibility of competition.

The analysis of Porter's Five Forces is enhancing comprehension of the competitive environment surrounding the adoption of XBRL in Kazakhstan. The opportunities and risks involved in the SWOT analysis from the other side has been disclosed here.

PEST analysis

The final analysis included a PEST assessment. It served as the basis for an analysis of the political, economic, social and technological aspects that may affect the adoption of XBRL in Kazakhstan.

Figure 3. PEST analysis of XBRL.



Political Factors: the adoption of XBRL in Kazakhstan may be influenced by political factors such as government support, regulatory compliance, and the involvement of the National Bank of Kazakhstan in the implementation process. The government of Kazakhstan has committed to employing XBRL as the standard for digital financial reporting. Compliance with regulations and reporting requirements in Kazakhstan can encourage the adoption of XBRL because it offers a standardized and comparable format for financial data (Debreceeny, Gray, & Rahman, 2002). The National Bank of Kazakhstan's participation in the implementation of XBRL may also encourage the adoption of this reporting standard, as it can provide businesses and stakeholders with guidance and support.

Economic Factors: initial implementation costs for businesses, potential efficiency gains and cost reductions, and the impact on the business environment and competitiveness are economic factors that may influence the implementation of XBRL in Kazakhstan. XBRL implementation can be expensive for businesses, particularly small and medium-sized businesses (SMEs). However, the potential gains in efficiency and cost savings from using XBRL can be substantial over time (Joshi, 2010). Furthermore, the implementation of XBRL may have an impact on the competitiveness of Kazakhstan's enterprises, as it may facilitate access to global financial markets and increase transparency (Cox, 2006).

Social Factors: the demand for transparent and accurate financial reporting, the need for financial literacy and awareness of XBRL, and stakeholder expectations and confidence in financial information are social factors that may influence the implementation of XBRL in Kazakhstan. XBRL facilitates businesses and constituents in Kazakhstan's demand for transparent and accurate financial reporting. However, financial literacy and XBRL awareness may need to be increased in the country to assure its effective implementation. Additionally, stakeholder expectations and confidence in financial information may motivate the adoption of XBRL as a standardized and reliable reporting format (Debreceeny et al., 2002).

Technological factors: may impact the implementation of XBRL in Kazakhstan include the IT infrastructure and technological expertise required to implement XBRL, the availability of XBRL software and consulting services, and the potential for financial technology developments that may impact XBRL implementation. Implementing XBRL requires a substantial IT infrastructure and technical expertise, which can be an impediment. XBRL implementation may also be affected by the availability of XBRL software and consulting services in the country, as businesses require access to these resources to implement the reporting standard. In addition, financial technology

advancements may have an impact on XBRL adoption, as new reporting solutions may arise to challenge its dominance (Cox, 2006).

Data analysis

Selection of indicators

To review the information that the introduction and use of the XBRL financial reporting format has a positive impact on the economic and accounting environment in the country, we use an indicator - the World Economic Forum Index of Auditing and Reporting Standards. Currently, this index covers 140 countries with developed and developing type of economy. This analysis will be based on the assessment already made by Tawiah, V. & Borgi in "Impact of XBRL adoption on financial reporting quality: A global evidence". This paper will collect more recent data on the analyzed indicators, as well as will be compared with the data collected separately for Kazakhstan. The 140 countries covered by the Audit and Reporting Standards Index are reduced to a sample of 86 countries with publicly available macroeconomic indicators (Table 3). Of the 86 countries represented, only 34 countries have implemented the XBRL format at the state level. In 52 countries, the format is either partially implemented, in the process of being implemented, or not implemented at all.

Table 4. List of countries

Albania	Panama	Kazakhstan	Mexico
Armenia	Paraguay	Kenya	Mongolia
Australia	Peru	Kuwait	Montenegro
Austria	Philippines	Kyrgyz Republic	Morocco
Bangladesh	Poland	Latvia	Mozambique
Barbados	Portugal	Lebanon	Netherlands
Belgium	Romania	Lesotho	New Zealand
Benin	Russian Federation	Lithuania	Nicaragua
Botswana	Rwanda	Luxembourg	Nigeria
Brazil	Saudi Arabia	Madagascar	Norway

Brunei Darussalam	Senegal	Malawi	United Kingdom
Bulgaria	Serbia	Malaysia	Uruguay
Burkina Faso	Singapore	Malta	Zambia
Cambodia	Slovak Republic	Mauritius	Zimbabwe
Cameroon	Slovenia	Ukraine	Trinidad and Tobago
Canada	South Africa	Jamaica	Tunisia
Chile	Spain	Jordan	Turkiye
Colombia	Sri Lanka	Italy	Uganda
Costa Rica	Sweden	Hungary	India
Cote d'Ivoire	Switzerland	Iceland	Indonesia
Croatia	Tanzania	Israel	
Czechia	Thailand	Ireland	

For a more extensive assessment of the impact of the implementation of the XBRL format on the economic performance of the country, empirical data was collected on several indicators. The following is an overview and rationale for the selection of each indicator:

1. **The Strength of Auditing and Reporting Standards (SARS)** Index of the World Economic Forum (WEF) is an indicator of the integrity of financial reporting and auditing practices in a country. It is based on a survey of business executives who ranked the rigor and quality of these practices on a scale from 1 (least rigorous) to 7 (highest quality) (highest). The index can be regarded an indicator of the integrity of financial reporting for a number of reasons:

- Regulatory framework: In general, a higher SARS score indicates that a country has a robust set of regulations with accounting and auditing standards that are associated with international norms, such as International Financial Reporting Standards (IFRS) and International Standards on Auditing (ISAs). These standards aid in ensuring consistent and transparent financial reporting, thereby enhancing the quality of financial reporting.

- Auditor independence and professionalism: a higher SARS score means that auditors in a particular country are effectively capable of performing objective, impartial audits, which is essential for enhancing the credibility of financial reports.
 - Disclosure requirements: the SARS index considers the sufficiency of a nation's disclosure requirements. A higher score indicates that a country's financial reporting practices comply with strict reporting standards, assuring investors, creditors, and other stakeholders of timely and accurate disclosure.
 - Enforcement mechanisms: the SARS index reflects a country's effective enforcement mechanisms. Robust enforcement practices indicate that noncompliance with financial reporting standards is less likely to go unrecognized, which can act as a deterrent against fraudulent practices and contribute to the improvement of financial reporting.
 - Investor confidence: the SARS index reflects a country's effective enforcement mechanisms. Robust enforcement practices indicate that noncompliance with financial reporting standards is less likely to go unrecognized, which can act as a deterrent against fraudulent practices and contribute to the improvement of financial reporting.
2. **XBRL adoption (XBRL).** XBRL implementation is measured as a binary variable, similar to other recent accounting developments such as International Financial Reporting Standards. XBRL assigns a value of 1 to adopting countries and a value of 0 to non-adopting nations. XBRL adoption data is obtained from the global XBRL adoption website.
 3. **Accounting globalization.** It refers to the increasing harmonization and integration of international accounting practices, principles, and standards. Adoption of International Financial Reporting Standards (IFRS) and International Auditing Standards (ISAs) plays a crucial role in advancing the globalization of accounting.

The status of IFRS and ISA adoption can be used as an indicator of globalization in accounting for the reasons given:

- Common accounting language: Adoption of IFRS and ISA encourages uniformity and comparability of financial reporting across nations by providing a common accounting language. This harmonization of accounting practices facilitates cross-border financial analysis and facilitates a greater level of comprehension among investors, creditors, and other parties, thereby supporting to globalization.
- Enhanced comparability: The use of IFRS and ISA helps create comparable financial statements across different jurisdictions. This comparability makes it easier for investors to evaluate investment opportunities across borders, which can lead to increased cross-border capital flows and greater economic integration among countries.
- Improved transparency: The adoption of IFRS and ISAs enhances the transparency of financial reporting by mandating companies to provide more comprehensive and current data. This increased transparency enables stakeholders to assess the financial health of companies regardless of their location more accurately, furthering the globalization of accounting.
- Reduction in information asymmetry: Adoption of IFRS and ISA significantly minimize information asymmetry between nations by establishing a level playing field with respect to financial reporting standards. As a result, cross-border investment and cooperation can be encouraged, as investors will have more confidence in the quality and comparability of financial data.

- Facilitation of multinational operations: The widespread adoption of IFRS and ISAs facilitates the operations of multinational corporations by minimizing the complexities associated with complying with numerous accounting standards in various jurisdictions. This contributes to the globalization of business and facilitates mergers and acquisitions across international borders.
- Regulatory cooperation: Adoption of IFRS and ISAs encourages regulatory cooperation between nations, as regulators collaborate to ensure uniform application and interpretation of the standards. This collaboration can result in a more globalized and integrated accounting environment.

4. **Six World Governance indicators** as a measure of Institutional quality. The World Bank's World Governance Indicators (WGI) initiative provides a comprehensive framework for measuring institutional integrity in various countries. The World Governance Indicators (WGI) consists of six essential indicators that reflect various aspects of governance and institutional quality. These characteristics include:

- Voice and Accountability: this indicator measures the extent to which a country's citizens can elect their government, as well as their freedom of expression, association, and access to independent media. High scores on voice and accountability indicate that a country has robust democratic institutions and respects fundamental human rights, contributing to the overall character of institutions.
- Political Stability and Absence of Violence/Terrorism: this indicator reflects the probability of political instability or politically motivated violence, such as terrorism. A high score in this area indicates a political environment that is stable and less prone to conflict, which can provide a firm foundation for good governance and strong institutions.

- **Government Effectiveness:** This indicator evaluates the character of public services, the capacity of the public service, the degree of independence from political pressure, and the overall quality of policy formulation and implementation. Higher metrics of government efficacy indicate that a country's institutions are effective and able to provide quality public services, which is crucial for the quality of institutions as a whole.
- **Regulatory Quality:** This indicator measures the government's capacity to devise and implement solid policies and regulations that foster private sector growth. High indicators of government effectiveness indicate that a country has a favorable business climate with clear and consistent norms that support the development of the private sector and contribute to the overall quality of its institutions.
- **Rule of Law:** This indicator reflects the extent to which agents have faith in and abide by the norms of society, such as the quality of contract enforcement, property rights, police and tribunals, and the likelihood of crime and violence. High scores in the rule of law indicate a robust legal framework, efficient law enforcement, and impartial judicial systems, all of which are essential for preserving institutional quality.
- **Control of Corruption:** This indicator measures the extent to which state power is used for private benefit, including both minor and significant forms of corruption as well as the capture of the state by elites and private interests. Low levels of corruption, as indicated by high scores in this area, contribute to greater transparency, trust, and efficacy of state institutions, which is essential for the quality of institutions as a whole.

5. **Gross National Product (GNP) per capita** as a measure of economic development. It can serve as a measure of economic development and a proxy for financial reporting quality for the following reasons:

- Measure of economic development: GNP per capita reflects the average income of a country's residents and serves as a measure of their standard of living. A higher GNP per capita shows a more advanced economic development, as it demonstrates that the average resident of a country has more resources and greater purchasing power.
- Attraction of foreign investment: A higher GNP per capita can entice foreign investors who view the country as having favorable economic prospects and a stable business climate. To maintain this confidence and attract additional investment, countries with a higher GNP per capita have an incentive to improve their financial reporting practices by assuring their financial reporting's transparency and credibility.
- Access to global markets: Countries with a higher per capita GNP are more likely to engage in international commerce and have access to global markets. This access raises the importance of high-quality financial reporting, as companies must follow international accounting standards and provide accurate, transparent data to global investors and stakeholders.

6. **Secondary school enrollment rate** as a measure of education level. It refers to the percentage of the relevant age group enrolled in secondary education. While it may not have a direct relationship with financial reporting quality, it can still serve as an indirect proxy for several points:

- Access to higher education: Higher high school enrollment rates can increase access to postsecondary education, including accounting,

finance, and related fields. This access can contribute to the development of a population of qualified professionals who are equipped to maintain high-quality financial reporting.

- Economic development: There is an association between a country's high school enrollment rates and its overall economic development. As mentioned in previous statements, countries with higher levels of economic development tend to have more developed financial markets, institutions, and regulatory environments, which can positively impact financial reporting quality.
- Attraction of foreign investment: A highly educated population, as demonstrated by secondary high school enrollment rates, can attract foreign investors who view the country as having strong human capital and a skilled labor force. To maintain investor confidence, nations are incentivized to improve their financial reporting practices and ensure financial reporting transparency.

7. **Foreign Direct Investment (FDI)**, and trade openness can be considered indirect proxies for high financial reporting quality:

- FDI and regulatory environment: Foreign direct investment can aid in the enhancement of a nation's regulatory framework, as foreign investors frequently demand greater levels of transparency, integrity, and corporate governance. This can contribute to the development and administration of more stringent accounting standards and auditing procedures, which aid in enhancing the quality of reporting.
- Trade openness and competition: Greater trade openness exposes domestic firms to international competition, which may motivate them to enhance their

financial reporting practices in order to attract global investors and maintain a market advantage. This contest can assist in enhancing the content of reporting.

Pivot comparison table

Since the data analysis will be done on the basis of the R-studio program, it is necessary to give each indicator the value of the corresponding variable. The final table of variables (Table 4) is represented by the corresponding code:

```
«tabledata <- data.frame(mydata)
View(tabledata)
variable_A <- tabledata$Foreign_direct_investment
variable_B <- tabledata$Economic_development
variable_C <- tabledata$Education
variable_D <- tabledata$Trade_Openness
variable_E <- tabledata$XBRL
variable_F <- tabledata$Institutional_Quality
variable_G <- tabledata$Financial_reporting_quality
variable_H <- tabledata$Control_of_Corruption
variable_I <- tabledata$Government_Effectiveness
variable_J <- tabledata$Political_Stability_and_Absence_of_Violence.Terrorism
variable_K <- tabledata$Regulatory_Quality
variable_L <- tabledata$Rule_of_Law_Percentile_Rank
variable_M <- tabledata$Voice_and_Accountability_Percentile_Rank».
```

Table 5. Variables for analysis

Foreign direct investment	Variable A
---------------------------	------------

Economic development	Variable B
Education	Variable C
Trade Openness	Variable D
XBRL	Variable E
Institutional Quality (Accounting globalization)	Variable F
Financial reporting quality	Variable G
Control of Corruption	Variable H
Government Effectiveness	Variable I
Political Stability and Absence of Violence/Terrorism	Variable J
Regulatory Quality	Variable K
Rule of Law Percentile Rank	Variable L
Voice and Accountability	Variable M

Below is a summary comparison table for the above variables.

Table 6. Pivot comparison table

Variables	Mean (average)	25 th (developing countries)	Median	75 th (developed countries)	Kazakhstan
------------------	-------------------	-----------------------------------------------	--------	----------------------------------------------	-------------------

Financial reporting quality	4.570	4.480	4.570	4.810	4,81
XBRL	0	0	0	1	0
Accounting globalization	1.672	1.500	2.000	2.000	0,753
Institutional Quality	48,43	34,61	55,76	78,67	74,03
Economic development	18497.8	2826.3	9103.0	23497.8	9,009
Education	74.56	35.84	94.47	106.29	112.9
Foreign direct investment	4.244	1.238	2.401	4.124	2,30
Trade Openness	90.37	55.34	76.00	108.68	57,5

The table presents summary data for the selected countries, as well as data for Kazakhstan in a separate column. The table shows the mean, median value, as well as the values of 1 and 3 quartiles.

Results

Results overview

The following will be a brief analysis on the data obtained.

The quality of financial reporting is the first variable to assess the impact of the format on the country's financial system. Kazakhstan's score is 4.81, which is 0.022 below the global average and 0.013 above the median value. This is a relatively good score, given that Kazakhstan belongs to the group of emerging economies. As we can see, most of the countries in the sample have not yet implemented the format or are in the process of implementing XRBL. Next are two indicators for XBRL. The first indicator determines whether the XRBL format is accepted at the state level. If yes - 1 point is given, if no - 0 points, Kazakhstan including. The second indicator evaluates the experience of using the standard in the number of years. The indicator is evaluated on the basis of adoption of IFRS and ISA. If both standards are adopted - you are awarded 2 points. If only one standard is adopted - 1 point is assigned. If both standards are not adopted - 0 points. In this case, in Kazakhstan, both standards are partially adopted, so here we give 1 point. Countries with developed economies get 2 points, which also explains the high score in the first indicator. Indicator Institutional Quality is a value of composite index of six World Governance indicators calculated on the basis of Principal component analysis. Here we can see that Kazakhstan's indicator is significantly higher than the average for the sample, but also significantly lower than the indicators of the top countries. Assessment of economic development based on gross national product per capita. Since the comparison is for the end of 2022, we have 9009 dollars per capita, which is 466 dollars less than the average, and 13% less than the countries in the third quartile. The next indicator assessing the level of education shows a high indicator in Kazakhstan - 22.3% above the third quartile and 51.2% above the average value.

The next indicator is calculated as the share of foreign direct investment in gross national product. Here Kazakhstan's indicators are significantly inferior to those of other countries. The last indicator, evaluating openness to trade, is calculated from the share of the sum of exports and imports of the country to GDP. Kazakhstan's score is almost

identical to the first quartile at 57.5%. We are not assessing Kazakhstan's overall economic condition in this paper. However, we can see from the data that most of the indicators lag significantly behind developing countries.

As stated above, the dependent variable is the quality of financial reporting, variable G. Further, in order to assess the influence of independent variables, as well as to determine the possible effect of multicollinearity, a correlation matrix (Figure 4) will be constructed with the following code:

```
«variables <- data.frame (variable_A, variable_B, variable_C, variable_D,
variable_E, variable_F, variable_G, variable_H ,variable_I, variable_J, variable_K
,variable_L , variable_M)

correlation_matrix <- cor(variables)

print(correlation_matrix)

View(correlation_matrix <- cor(variables))».
```

Figure 4. Correlation matrix

	variable_A	variable_B	variable_C	variable_D	variable_E	variable_F	variable_G	variable_H	variable_I	variable_J	variable_K	variable_L	variable_M
variable_A	1.000000000	0.04057870	0.05318892	0.43317769	-0.09816710	-0.05806183	-0.15308780	0.003248698	0.06171365	0.18249658	0.07636729	0.04937114	-0.02690012
variable_B	0.040578704	1.000000000	0.52857251	0.56181827	0.37137470	-0.06778272	0.18328740	0.766683436	0.76156300	0.68697148	0.75379812	0.78657133	0.67139471
variable_C	0.053188917	0.52857251	1.000000000	0.30443364	0.45726906	-0.05317101	0.15036164	0.654388548	0.66871432	0.51040731	0.71406984	0.64832969	0.54674864
variable_D	0.433177667	0.56181827	0.30443364	1.000000000	0.09509367	-0.08697275	-0.01797132	0.406076225	0.43226065	0.50919601	0.45819057	0.44221260	0.29696142
variable_E	-0.098167095	0.37137470	0.45726906	0.09509367	1.000000000	-0.02944575	0.24927668	0.351394256	0.42740019	0.14158464	0.42041718	0.36676539	0.34644200
variable_F	-0.058061826	-0.06778272	-0.05317101	-0.08697275	-0.02944575	1.000000000	0.00944696	0.070297928	0.04259650	0.10169395	0.00698453	0.06813276	0.08027916
variable_G	-0.153087804	0.18328740	0.15036164	-0.01797132	0.24927668	0.00944696	1.000000000	0.077399349	0.04592166	-0.04354641	0.10829155	0.06101833	0.14103600
variable_H	0.003248698	0.76668344	0.65438855	0.40607623	0.35139426	0.07029793	0.07739935	1.000000000	0.90556531	0.80073624	0.88331594	0.94379892	0.77207925
variable_I	0.061713648	0.76156300	0.66871432	0.43226065	0.42740019	0.04259650	0.04592166	0.905565311	1.000000000	0.79122979	0.94530958	0.93090093	0.74530713
variable_J	0.182496575	0.68697148	0.51040731	0.50919601	0.14158464	0.10169395	-0.04354641	0.800736237	0.79122979	1.000000000	0.80292612	0.82011673	0.72666153
variable_K	0.076367286	0.75379812	0.71406984	0.45819057	0.42041718	0.00698453	0.10829155	0.883315935	0.94530958	0.80292612	1.000000000	0.91722512	0.79879870
variable_L	0.049371140	0.78657133	0.64832969	0.44221260	0.36676539	0.06813276	0.06101833	0.943798917	0.93090093	0.82011673	0.91722512	1.000000000	0.79973476
variable_M	-0.026900121	0.67139471	0.54674864	0.29696142	0.34644200	0.08027916	0.14103600	0.772079248	0.74530713	0.72666153	0.79879870	0.79973476	1.000000000

Based on the data obtained in the correlation matrix, it is possible to exclude the multicollinearity factor. However, in order to exclude unnecessary indicators that may interfere with the evaluation and drawing of conclusions, it is necessary to include regression analysis.

However, in order to exclude unnecessary indicators that may interfere with the evaluation and drawing of conclusions, it is necessary to include regression analysis. A multiple linear regression is constructed by the following code:

```
«multiple_regression_model <- lm(variable_G ~ variable_B + variable_A+
variable_C+variable_D+variable_A+variable_E+variable_F+variable_H+variable_I+vari
able_J+variable_K+variable_L+variable_M)

summary(multiple_regression_model)

Residual standard error: 0.3118 on 76 degrees of freedom

Multiple R-squared: 0.5667, Adjusted R-squared: 0.46702

p-value: 0.0987».
```

The residual standard error: 0.3118 at 76 degrees of freedom is the root mean square error (RMSE) of the model. This measurement shows how much the residuals (the difference between the actual and predicted values) deviate from the regression line. The smaller the value, the better the model fits the data. Multiple R-squared: 0.5667 is the R^2 coefficient of determination, which shows how much of the variability of the dependent variable is explained by the model. The value of R^2 can range from 0 to 1, where 1 means that the model explains 100% of the variability of the dependent variable. In this case, the R^2 is 0.5667, which means that the model explains approximately 56.67% of the variability of the dependent variable. Adjusted R-squared: 0.46702 is the adjusted R^2 coefficient of determination, which takes into account the number of independent variables in the model and sample size. Unlike the regular R^2 , the adjusted R^2 may decrease if the addition of minor variables does not improve the model. In this case, the adjusted R^2 is 0.46702, which means that the model explains about 46.70% of the variability of the dependent variable given the number of independent variables and sample size. The p value: 0.0987 is the overall p value associated with the F-statistics of the model. It is used to test the null hypothesis that all regression coefficients are zero

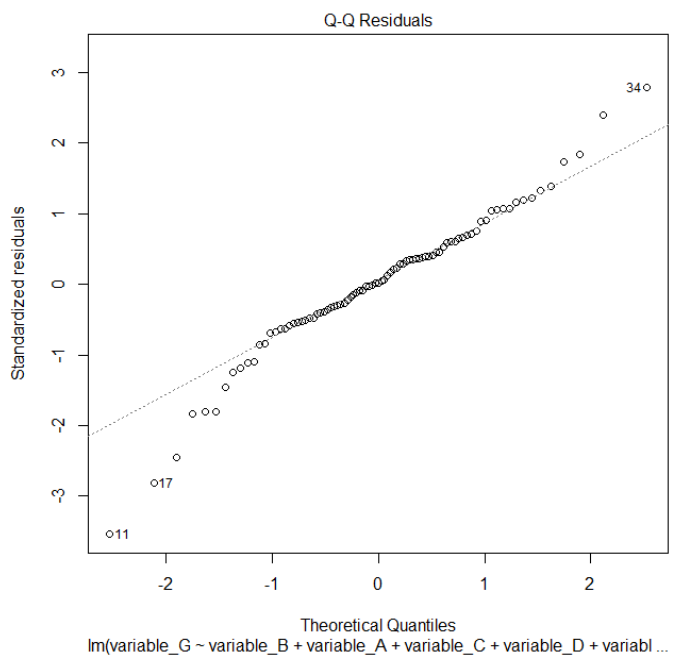
(i.e. there is no relationship between the dependent variable and any of the independent variables). If the p-value is less than the chosen significance level (usually 0.05), we can reject the null hypothesis and conclude that at least one of the independent variables has a significant effect on the dependent variable. In this case the p-value is 0.0987, which is higher than the usual 0.05 threshold, and we cannot reject the null hypothesis. The residual standard error: 0.3118 at 76 degrees of freedom is the root mean square error (RMSE) of the model. This measurement shows how much the residuals (the difference between the actual and predicted values) deviate from the regression line. The smaller the value, the better the model fits the data. Multiple R-squared: 0.5667 is the R^2 coefficient of determination, which shows how much of the variability of the dependent variable is explained by the model. The value of R^2 can range from 0 to 1, where 1 means that the model explains 100% of the variability of the dependent variable. In this case, the R^2 is 0.5667, which means that the model explains approximately 56.67% of the variability of the dependent variable. Adjusted R-squared: 0.46702 is the adjusted R^2 coefficient of determination, which takes into account the number of independent variables in the model and sample size. Unlike the regular R^2 , the adjusted R^2 may decrease if the addition of minor variables does not improve the model. In this case, the adjusted R^2 is 0.46702, which means that the model explains about 46.70% of the variability of the dependent variable given the number of independent variables and sample size. The p value: 0.0987 is the overall p value associated with the F-statistics of the model. It is used to test the null hypothesis that all regression coefficients are zero (i.e. there is no relationship between the dependent variable and any of the independent variables). If the p-value is less than the chosen significance level (usually 0.05), we can reject the null hypothesis and conclude that at least one of the independent variables has a significant effect on the dependent variable. In this case the p-value is 0.0987, which is higher than the usual 0.05 threshold, and we cannot reject the null hypothesis.

Thus, the variables that negatively affect the significance of the model are removed from the formula. The following model is constructed:

```
«multiple_regression_model <- lm(variable_G ~ variable_B + variable_A+
variable_C+variable_D+variable_A+variable_E+variable_F)
summary(multiple_regression_model)
Residual standard error: 0.231 on 72 degrees of freedom
Multiple R-squared: 0.7667,    Adjusted R-squared: 0.7369
p-value: 0.0487».
```

The results are much better. The model is described by 76.67%. The null hypothesis is rejected (Figure 5).

Figure 5. Multiple regression model



Segmented analysis

Next, for a more detailed assessment of economic indicators, we analyzed two countries that implemented the XBRL format at the same time in 2002. Based on the data, a time series model was built using data from 1988 to 2021. The time periods of both countries are divided into two segments: before and after the implementation of

XBRL. Since, according to the regression analysis, we see the greatest relationship between high financial reporting and variables denoting the level of investment and exports and imports into the country, we will focus on looking at these indicators (Figure 6 and Figure 7). To visualize the analysis, the following code was introduced:

```
split_year <- 2002

data_before <- data[data$year < split_year, ]

data_after <- data[data$year >= split_year, ]

model_before <- lm(value ~ year, data = data_before)

model_after <- lm(value ~ year, data = data_after)

ggplot(data, aes(x = year, y = value)) +

  geom_point() +

  geom_smooth(data = data_before, method = "lm", se = FALSE, linetype =

"solid", color = "blue") +

  geom_smooth(data = data_after, method = "lm", se = FALSE, linetype = "solid",

color = "red") +

  ggtitle("Segmented Time Series Analysis Italy")
```

Figure 6. Segmented time series analysis - Italy

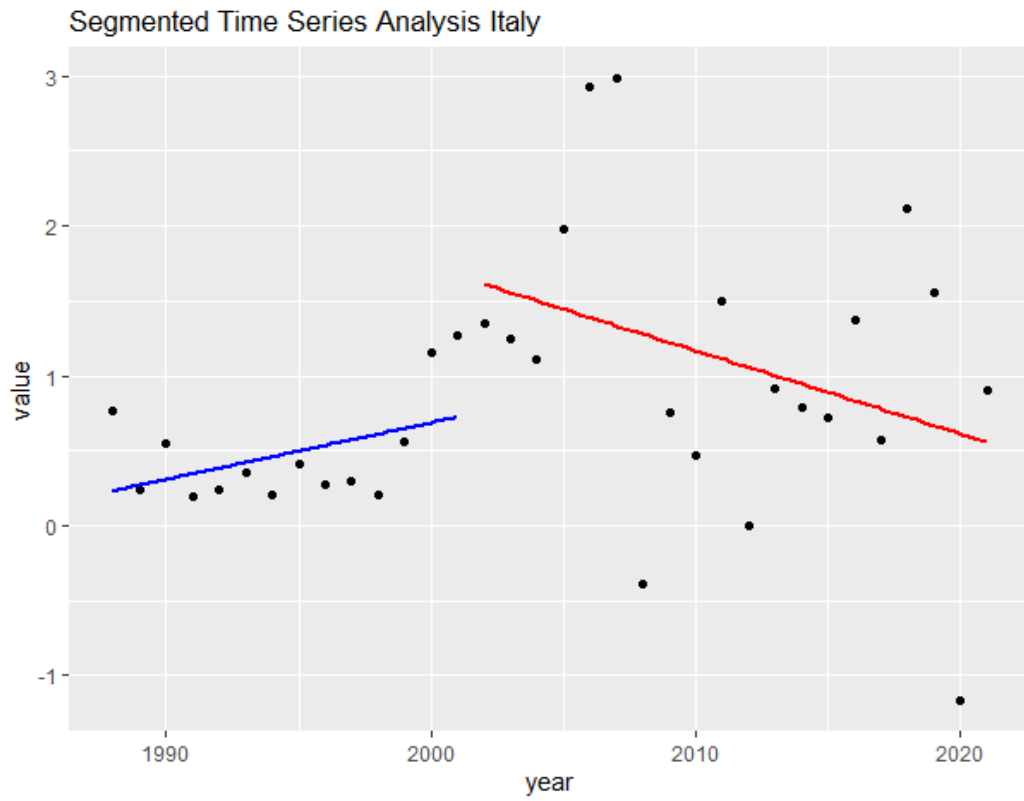
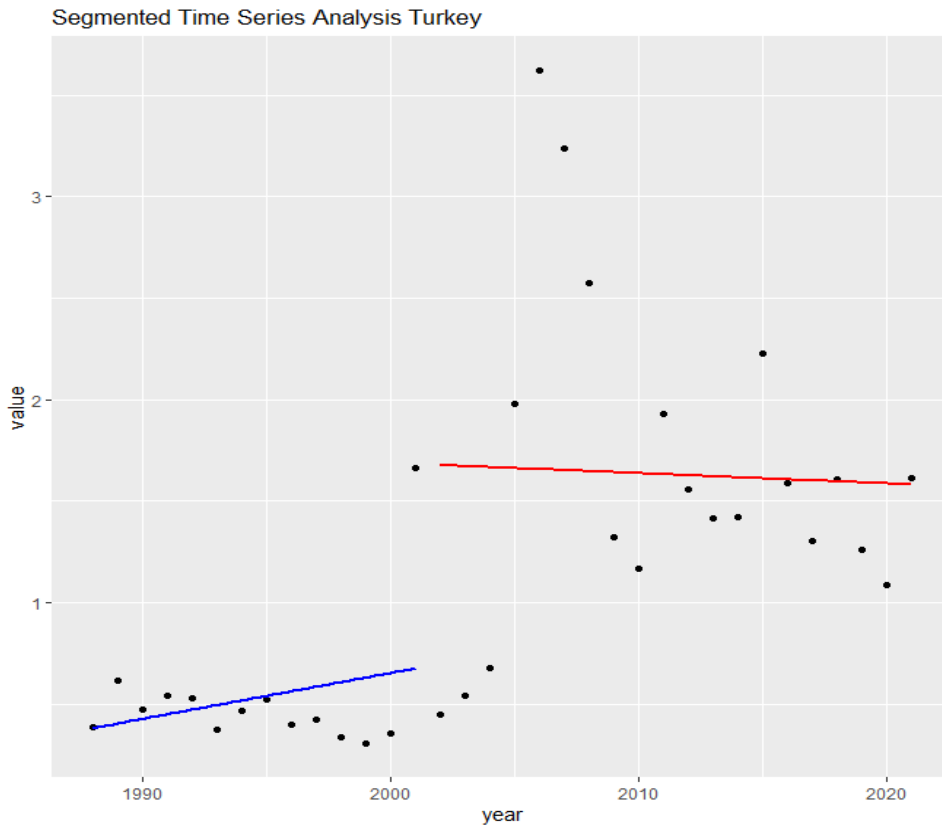


Figure 7. Segmented time series analysis - Turkey



According to these graphs, we can assume a positive impact of the introduction of the XBRL format, which in turn is closely related to the quality of financial reporting, as already defined above.

Suggestions for XBRL implementation

Globally, the concept of digital transformation is proliferating. In modern civilization, digital technologies play an increasingly important role in the growth of national economies. They provide numerous benefits, such as easier access for individuals and businesses to government services, faster information exchange, opportunities for business innovation, the development of new digital products, and so on. Kazakhstan's government and government agencies recognize the importance of informatization of society and the development of digital technology for long-term economic growth, and they actively participate in the development of this field, integrating it into key areas of government policy.

The state initiative "Information Kazakhstan 2020," which was approved in 2013, served as the foundation for the digital transformation of Kazakhstan's economy. The program contributed to the growth of the information society, the enhancement of public administration, the establishment of an "open and mobile government," and the expansion of corporate and citizen access to the information infrastructure.

Table 7 presents possible problems that the National Bank may encounter when implementing the XBRL format (Basoglu & White 2015).

Table 7. Potential difficulties of XBRL implementation

Potential problem	Suggested solution
Lack of methodology specialists with experience with XBRL.	Conducting training of employees of the National Bank of the Republic of

	Kazakhstan. Creation of advisory centers and supervisory bodies.
Lack of regulatory framework for the use of XBRL in the National Bank of the Republic of Kazakhstan and other companies.	Approved developments governing the process of creating elaborated instructions and manuals, developed in conjunction with external consultants, as well as having undergone the evaluation procedures of independent experts.
Insufficient number or lack of IT specialists to support and implement technical processes to implement XBRL.	Development and support of software for the conversion of financial reporting data in the XBRL format, creating conditions for training specialists.

It is crucial to consider international experience for the successful implementation of XBRL in Kazakhstan's economic environment. In this context, it is important to note the European Single Electronic Format (ESEF) initiative, which was developed in accordance with the European Securities and Markets Supervisory Service's identical requirements. It is intended to implement this singular format beginning in 2020.

As part of this initiative, Fujitsu proposed the RAPORTADO unified software package, which takes into account the requirements of both regulators (including tools for working with taxonomies, developing filling templates, validation rules, etc.) and supervised organizations (automatic generation of web forms, conversion of Excel files).

In addition, the Committee on Statistics of the European Central Bank (ECB) has established a special group dubbed GRISS (Group de Reflexion on the Integration of Statistical and Supervisory Data) for the integration of statistical and supervisory data.

This group is engaged in the formulation of recommendations and a plan of action for this area (FUJITSU Software Interstage XWand, n.d.).

Despite the foreign companies' extensive experience in reporting using the extensible language XBRL, its implementation remains a matter of debate:

- First, the use of the XBRL format makes sense and is warranted for organizations whose securities are traded on stock exchanges and whose reporting must comply with International Financial Reporting Standards (IFRS). The financial statements in XBRL format are advantageous because they give foreign investors access to this information without incurring additional labor and financial costs.
- The possibility of producing financial statements in other formats (text or physical copy) is not excluded, even though XBRL-formatted statements are in high demand among users. This suggests that the overall cost of reporting may increase.
- Thirdly, the implementation of XBRL format cannot completely eliminate errors in financial statements; however, the automatic comparison of financial statement indicators in XBRL language helps to reduce errors (Bank of Russia: Bulletin of XBRL: Issue #2 (11), n.d.).

Foreign practice shows that the implementation of the XBRL language in the preparation of financial statements can be based on different approaches.

Option 1: Requires mandating all organizations, financial and non-financial, to prepare their financial statements in XBRL format. This requires the formulation and implementation of uniform requirements for the composition, structure, completeness, and frequency of reporting, as well as a substantial investment for the implementation of the project and the availability of qualified personnel. Additionally, the government should

actively support the implementation of XBRL, including financing the associated work (Romanova et al., 2021).

Option 2: A voluntary XBRL financial reporting system is the second option. It would apply to organizations with foreign capital that must report in this format. It would also apply to companies seeking foreign investment and stock exchange listings (Romanova et al., 2021).

Option 3: The third approach is based on the principle of a gradual introduction of XBRL, beginning with a requirement that certain organizations, such as those required to report under IFRS, prepare financial statements in XBRL. This practice may then be implemented by additional organizations. This strategy reduces the cost of locating and compensating specialists with the necessary knowledge and skills, as well as the cost of utilizing the accumulated experience and knowledge to further disseminate XBRL, resulting in financial investment savings (Romanova et al., 2021).

In the CIS economic space, an example of successful implementation of the XBRL format can be seen in Russia. Based on the analysis of the main processes of format implementation in Russia, an approximate action plan for the management of the National Bank of the Republic of Kazakhstan on the implementation of the format was made (Table 8) (Bank of Russia, 2022). The plan consists of three main areas: administrative, methodological and technological.

Table 8. The XBRL Implementation Action Plan

Administrative track	
Implementation period	Key actions

1-2 months	Approval of the National Bank of the Republic of Kazakhstan to implement the XBRL project.
1 month	Entry of the National Bank of the Republic of Kazakhstan into the XBRL International Association.
up to 3 months	Creation of a Working Group for the implementation of the project, which should include both financial market participants and executive bodies.
up to 12 months	Formation and transfer of test financial reports in XBRL format to the National Bank, followed by analysis and evaluation of the results.
up to 12 months	Establishment of a permanent XBRL jurisdiction to develop and support the implementation of the format.
12 to 24 months	Selecting some financial market participants to start collecting and processing financial statements in XBRL format, for example, we can start with: 1) Insurance companies; 2) JSC "Single accumulative pension fund"; 3) Securities market participants.
Methodological track	
Implementation period	Key actions
5-6 months	Development and publication of the basic XBRL taxonomy of the National Bank of the Republic of Kazakhstan with subsequent testing.

5-6 months	Development and publication of the extended XBRL taxonomy of the National Bank of the Republic of Kazakhstan with subsequent testing.
up to 12 months	Development and publication of the final version of the XBRL taxonomy of the National Bank of the Republic of Kazakhstan with subsequent testing.
up to 12 months	Development of normative legal acts regulating the requirements for the preparation and submission of reports, taking into account the peculiarities of the taxonomy.
Technological track	
Implementation period	Key actions
up to 12 months	Participation in the development and additions to the XBRL taxonomy.
12 to 24 months	Development of certification software necessary to perform conversion of data into XBRL format.
Up to 5-6 months	Organization of a support center for companies, on consultations in the preparation and processing of financial statements in the new format.
12 to 24 months	Preparation and publication of guides and manuals on open portals, as well as translation of foreign literature on XBRL reporting.
Up to 12 months	Launch and support of a course on XBRL technology on the basis of universities that train specialists primarily in "Finance", "Accounting and Auditing", "Information Technology".

Limitations

This research has a number of drawbacks. Initially, limited country focus: although the literature review includes studies from various countries, it cannot provide a complete picture of the adoption of XBRL and its impact on financial reporting quality worldwide. As a result, the findings may not be generalizable to all countries and regions. Secondly, lack of recent sources: Some of the sources cited in the literature review are relatively old (e.g., Watson and Hoffman, 2003), which may limit the relevance and relevance of the information presented. Thirdly, insufficient research on problems and obstacles: While the literature review mentions some of the challenges of implementing XBRL, it does not provide an in-depth analysis of the potential barriers and difficulties organizations may face in the implementation process, such as resistance to change, lack of experience, or regulatory issues. There is also a potential bias toward the positive effects of XBRL: a review of the literature appears to emphasize the benefits and positives of implementing XBRL, which could lead to a reassessment of its impact on financial reporting quality. It is important to maintain a balanced perspective by also examining the potential disadvantages or unintended consequences of implementing XBRL. It's best to resort to an in-depth numerical assessment later on.

Further recommendations

In a further study, it is possible to disclose in more detail data on the top 10 countries that have already implemented this format. Conduct an analysis for multicollinearity for the selected indicators. And also, based on the regression equation, make a forecast for improving the assessment of the quality of financial reporting for Kazakhstan in the event that the XBRL standard is adopted.

Conclusion

In conclusion, this thesis has conducted a thorough examination of the International Financial Reporting Standard XBRL and its potential adoption and implementation in Kazakhstan. Utilizing numerous analytic techniques, such as SWOT, PEST, the BCG matrix, and Porter's Five Forces, the study has systematically examined the benefits and drawbacks of incorporating the XBRL format. In addition, the thesis provides a comparative analysis of important economic indicators between countries currently using the XBRL format and those who have not yet adopted it. The findings of this study firmly suggest that the development and implementation of the XBRL format in Kazakhstan would be beneficial and advantageous to the economic growth of the country.

The SWOT analysis has revealed a number of significant strengths and opportunities associated with Kazakhstan's adoption of the XBRL format. Enhanced financial information efficiency, transparency, and comparability would not only improve the investment climate but also strengthen the nation's financial market. In addition, enterprises would be able to operate more efficiently, contributing to the expansion of the Kazakhstani economy as a whole. To ensure the successful implementation of the XBRL format, it is essential to address and mitigate obstacles such as the need for training and education, technological infrastructure, and regulatory enforcement.

The PEST analysis has shed light on the political, economic, social, and technological factors influencing Kazakhstan's adoption of the XBRL format. Economic incentives for businesses to adopt the XBRL format are essential, as is political support for the implementation of international financial reporting standards. In addition, fostering a culture of financial transparency and literacy is crucial to the successful implementation of XBRL. Lastly, investments in the creation and incorporation of technological infrastructure are crucial for the pervasive adoption of XBRL.

The BCG matrix has categorized the potential adoption of the XBRL format in Kazakhstan as a "star" initiative, indicating high growth and market share prospects, which would result in long-term benefits for the country. Kazakhstan has the opportunity to establish itself as a regional leader in financial reporting by adopting the XBRL format, thereby attracting more foreign investment and nurturing sustainable economic growth.

The competitive landscape of XBRL adoption in Kazakhstan was depicted using Porter's Five Forces model. It is estimated that the threat of new entrants and the bargaining power of suppliers are comparatively low, whereas the bargaining power of buyers, the threat of substitute products, and competitive rivalry are moderate. These conditions suggest that the Kazakhstani market is well-positioned for the adoption and implementation of the XBRL format, which would enhance the country's global financial competitiveness.

The comparative analysis of key economic indicators between nations using the XBRL format and nations that have not adopted it has highlighted the advantages of adopting the format. Notably, countries that have implemented XBRL tend to experience increased financial transparency, an increase in foreign investment, and a rise in economic growth. This strengthens the case for Kazakhstan to implement the XBRL format.

The evidence presented in this thesis strongly supports Kazakhstan's adoption and implementation of the International Financial Reporting Standard XBRL. The prospective benefits of adopting the XBRL format, which include increased efficiency, transparency, and comparability of financial information, as well as the prospects for economic growth and the attraction of foreign investment, outweigh the associated challenges and risks. By addressing these challenges and capitalizing on these opportunities, Kazakhstan will be able to successfully implement the XBRL format, securing the nation's economic future.

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Appendix A. Overview of the implementation and adoption of the XBRL format at the end of 2022

Country	Status	Country	Status	Country	Status
Albania	<i>Not adopted</i>	Hungary	<i>Not adopted</i>	Pakistan	<i>Not adopted</i>
Armenia	<i>Not adopted</i>	Iceland	<i>Not adopted</i>	Panama	<i>Not adopted</i>
Australia	<i>Adopted</i>	India	<i>Adopted</i>	Paraguay	<i>Not adopted</i>
Austria	<i>Not adopted</i>	Indonesia	<i>Adopted</i>	Peru	<i>Adopted</i>
Bangladesh	<i>Not adopted</i>	Ireland	<i>Adopted</i>	Philippines	<i>Not adopted</i>
Barbados	<i>Not adopted</i>	Israel	<i>Adopted</i>	Poland	<i>Adopted</i>
Belgium	<i>Adopted</i>	Italy	<i>Adopted</i>	Portugal	<i>Adopted</i>
Benin	<i>Not adopted</i>	Jamaica	<i>Not adopted</i>	Romania	<i>Not adopted</i>
Botswana	<i>Not adopted</i>	Jordan	<i>Not adopted</i>	Russia	<i>Adopted</i>
Brazil	<i>Adopted</i>	Kazakhstan	<i>Not adopted</i>	Rwanda	<i>Not adopted</i>
Brunei	<i>Not adopted</i>	Kenya	<i>Not adopted</i>	Saudi Arabia	<i>Adopted</i>
Bulgaria	<i>Not adopted</i>	Kuwait	<i>Adopted</i>	Senegal	<i>Not adopted</i>
Burkina Faso	<i>Not adopted</i>	Kyrgyz Rep.	<i>Not adopted</i>	Serbia	<i>Not adopted</i>
Cambodia	<i>Not adopted</i>	Latvia	<i>Adopted</i>	Singapore	<i>Not adopted</i>
Cameroon	<i>Not adopted</i>	Lebanon	<i>Not adopted</i>	Slovakia	<i>Not adopted</i>
Canada	<i>Not adopted</i>	Lesotho	<i>Not adopted</i>	Slovenia	<i>Not adopted</i>
Chile	<i>Adopted</i>	Lithuania	<i>Not adopted</i>	Africa	<i>Not adopted</i>
Colombia	<i>Adopted</i>	Luxembourg	<i>Adopted</i>	Spain	<i>Adopted</i>
Costa Rica	<i>Not adopted</i>	Madagascar	<i>Not adopted</i>	Sri Lanka	<i>Not adopted</i>
Cote d'Ivoire	<i>Not adopted</i>	Malawi	<i>Not adopted</i>	Sweden	<i>Adopted</i>
Croatia	<i>Not adopted</i>	Malaysia	<i>Adopted</i>	Switzerland	<i>Not adopted</i>
Czech	<i>Not adopted</i>	Malta	<i>Adopted</i>	Tanzania	<i>Not adopted</i>

Republic					
Denmark	<i>Adopted</i>	Mauritius	<i>Adopted</i>	Thailand	<i>Not adopted</i>
Dominican Republic	<i>Not adopted</i>	Mexico	<i>Adopted</i>	Trinidad and Tobago	<i>Not adopted</i>
Estonia	<i>Adopted</i>	Mongolia	<i>Not adopted</i>	Tunisia	<i>Not adopted</i>
Finland	<i>Adopted</i>	Montenegro	<i>Not adopted</i>	Turkey	<i>Adopted</i>
France	<i>Adopted</i>	Morocco	<i>Not adopted</i>	Uganda	<i>Not adopted</i>
Georgia	<i>Not adopted</i>	Mozambique	<i>Not adopted</i>	Ukraine	<i>Not adopted</i>
Germany	<i>Adopted</i>	Netherlands	<i>Adopted</i>	United Kingdom	<i>Adopted</i>
Ghana	<i>Not adopted</i>	New Zealand	<i>Not adopted</i>	Uruguay	<i>Adopted</i>
Greece	<i>Not adopted</i>	Nicaragua	<i>Not adopted</i>	Zambia	<i>Not adopted</i>
Guatemala	<i>Not adopted</i>	Nigeria	<i>Not adopted</i>	Zimbabwe	<i>Not adopted</i>
Honduras	<i>Not adopted</i>	Norway	<i>Adopted</i>		