ITJ | The International Tax Journal

Digital technology as a mechanism for the performance of institutions, with the Japanese company "AI Inside" and "Xiaomi" as case studies

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Abstract---This study addresses the theoretical framework of digital technology and its impact on institutional performance, emphasizing that digital transformation has become a strategic necessity in light of rapid technological development. It also reviews the components of digital technology, such as cloud computing and artificial intelligence, and how they contribute to improving operational efficiency, decision-making, and customer relations. The study also highlights the challenges institutions face in adopting these technologies and underscores the importance of strategic planning and the role of technology in enhancing innovation and competitiveness. The study concludes by analyzing case studies of successful companies like AI Inside and Xiaomi to illustrate how to achieve excellence and sustainable growth in the digital age.

Keywords---Digital Technology, Institutional Performance, Digital Transformation, Artificial Intelligence, Operational Efficiency, Innovation, Strategic Planning.

Introduction

In a constantly evolving economic environment, characterized by an unprecedented acceleration in technological advancement, digital transformations have become a strategic necessity for organizations of all sizes and sectors. Digital technology, defined as a set of tools, systems, and techniques that rely on digital data for processing, storing, and transmitting information, includes computing, communications, the Internet, artificial intelligence, machine learning, big data, and the Internet of Things. It has revolutionized various aspects of life and business operations, transforming traditional processes into more efficient and effective ones.

How to Cite:
Hezil, S. (2025). Digital technology as a mechanism for the performance of institutions, with the Japanese company "AI Inside" and "Xiaomi" as case studies. *The International Tax Journal*, *52*(4), 1422–1443. Retrieved from https://internationaltaxjournal.online/index.php/itj/article/view/160

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Submitted: 07 January 2025| Revised: 18 April 2025| Accepted: 18 May 2025

However, despite the clear potential of digital technology in improving institutional performance, many organizations face significant challenges in adopting and integrating it. These challenges may include resistance to change, a lack of digital skills, inadequate technological infrastructure, and an inability to align digital strategies with overall institutional objectives. The impact of digital technology on organizational performance is a complex topic that requires deep exploration, especially in the context of emerging economies and startups seeking to establish their position in the global market.

As for institutional performance, it is a multi-dimensional concept that includes effectiveness, efficiency, productivity, quality, and the ability to achieve strategic goals while adapting to environmental changes. It is assumed that the successful integration of digital technology leads to an improvement in these performance dimensions. However, the precise nature of this relationship and the mechanisms by which digital technology affects operational efficiency, decision-making, stakeholder satisfaction, and competitiveness still require clarification. Therefore, it is essential to study how different aspects of digital technology interact with various aspects of institutional performance to achieve tangible results.

The Problem Statement:

Based on the foregoing, the main problem statement for this study can be formulated as follows: **How does digital technology affect institutional performance, and what are the mechanisms through which these effects manifest?**

Sub-Questions

To answer this main problem, several sub-questions can be posed:

- What are the main components of digital technology and how does their adoption affect the internal operations of institutions?
- How does digital technology contribute to improving operational efficiency and reducing costs within institutions?
- What is the role of digital technology in improving decision-making and strategic planning processes for institutions?
- How does digital technology affect the relationship between institutions and their customers and other stakeholders?
- To what extent does digital technology enhance innovation and competitive capability of institutions in the market?
- What are the main challenges that institutions face when integrating digital technology, and how can they be overcome?

Hypotheses

Based on the problem and sub-questions, the following hypotheses have been formulated:

- The adoption and integration of digital technology components (cloud computing, software, hardware, operations, communication technologies, data, artificial intelligence and machine learning, internet) leads to significant improvement in the internal operations of institutions.
- Digital technology contributes to a noticeable improvement in operational efficiency and a significant reduction in costs within institutions.
- Digital technology plays a crucial role in improving decision-making processes and strategic planning for institutions.
- The use of digital technology positively enhances the relationship between institutions and their customers and improves stakeholder satisfaction.
- Digital technology is a key driver of innovation and increasing the competitive capability of institutions in the market.
- Institutions that overcome challenges related to integrating digital technology (resistance to change, skills shortage, inadequate infrastructure) achieve better performance outcomes.

Study Importance

This study gains paramount importance from several aspects:

- **For institutions:** It will provide clarifications on how digital technology improves their overall performance, enabling them to make informed decisions about their technological investments and digital transformation strategies.
- **For decision-makers and strategists:** The results of this research can serve as a guide for formulating policies and strategies aimed at promoting the adoption of digital technology and maximizing its benefits for economic and social development.
- **For researchers:** The study will contribute to enriching existing literature on digital technology and institutional performance by providing in-depth analysis of impact mechanisms and associated challenges.
- **For emerging economies:** Based on successful case studies such as AI Inside in Japan and Xiaomi in China, this study will provide practical insights and models that can be followed by institutions in similar contexts, particularly in Algeria and the Arab world.

Study Objectives

The objectives of this study are as follows:

- Analyze the concept of digital technology and its basic components in depth.
- Study the impact of digital technology on different dimensions of institutional performance.
- Identify key success factors and challenges related to integrating digital technology in institutions.
- Provide practical recommendations for institutions that wish to improve their performance through digital technology.

Extract lessons from successful international case studies to guide local strategies.

Theoretical Framework for Digital Technology and Institutional Performance
Definition of Digital Technology

The definitions of digital technology have varied and diversified according to each person's vision. Researchers' opinions have differed regarding providing a single and unified definition, because it is considered one of the modern terms that have invaded human life. Therefore, we will try to shed light on a group of definitions to clarify the points of agreement and difference between each definition and another.

Digital technology is defined as a set of tools, systems, and techniques that rely on digital data to process, store, and transmit information. This technology includes everything related to computing, communications, and the internet, and its various applications that have revolutionized different aspects of life. It can also be defined as 'the use of modern technologies such as artificial intelligence, machine learning, big data, and the Internet of Things to transform traditional processes into more efficient and effective digital processes. (Negroponte, Nicholas, , 2008, p. 25)

Digital technology is defined as relying on sending electrical pulses in an ON/OFF manner, where all symbols, letters, numbers, sounds, images, and drawings take a digital code composed of the numbers one (1) and zero (0). (Hassan Emad Mekawy, 2005, p. 42)

This language is called binary/bit. Once letters, symbols, and numbers are encrypted in the form of 1.0 zero-one, this data is compressed for spatial gain purposes, which qualifies storing a large amount of content. However, when messages are received, decompression is controlled and thus decryption is removed. (Mohamed El-Akkab, 2007, p. 13)

Digital technology is also defined in all electronic devices, hardware or software that process data after encoding or encrypting it into binary system signals (1.0), and these devices are usually computers. (Nour Hmeiri,: http://dom.info/ib3/ikonbord.html, accessed on 03/07/2025 at 16:20)

It is also defined as:
Digital technology: It is a method of presenting information such as images and sounds in video in digital form in binary format. Encrypted information uses two values, one or zero (one or Zero On Off). This information can be encrypted in a series of electronic pulses, and in electronic circuits such as those found in a computer, where switches work or do not work on or Off. (Abdel Hakim Ahmed Al-Khuzami, 2007, p. 30)

It can also be defined as: An appropriate product of the convergence and integration between computer technology and communication technology. (Mohamed El-Hadi Mohamed, p. 153)
It is also defined as: Not only the transfer, processing, storage, and management of information to the widest number of individuals and institutions, but also the continuous sorting between those who generate information and have the ability to exploit it, and consumers with limited skills. (Mohamed Salah Salem, 2002, p. 14)

Rather, acquiring information, storing it, and processing it in its various forms and storage containers, whether printed, photographed, audio, visual, magnetic, or laser-processed, and broadcasting it using a group of electronic containers and remote communication device messages. (Hassan Reda El-Naggar, 2009, p. 445)

Through the previous definitions of digital technology, we conclude that most researchers have agreed that it is all types of technology or devices used in transferring and storing information in electronic form, retrieving it, and includes computer technology, satellites, smartphones, fax machines, and other devices used in communication processes.

1.2 Components of Digital Technology

Digital technology consists of several basic elements that integrate with each other to form an integrated digital system. These components can be classified into:(Zeinab Mohamed El-Amin, 2015, pp. 36-37)

- **Cloud Computing:** A technology that relies on transferring computer processing and storage space to what is called the cloud, a server device that is accessed via the internet. Thus, information technology programs are transformed from products to services.
  It is also a computational method through which a huge amount of information technology capabilities are provided as a service offered via the internet to multiply the number of external customers. It can be briefly defined as an emerging technical model through which applications, data, and information technology resources are provided as services offered to users via the internet.
- **Software:** Software components are represented in symbolic instructions placed by programmers or users to inform the computer system about the desired operations to be performed.
- **Hardware:** Physical components represent all tools that participate in data processing such as computers of various types and input, processing, output, and storage units, as well as all devices attached to them, workstations, communication networks, transport tools, and data warehouses.
- **Transactions:** A set of modifications that occur in the database according to a logical sequence, resulting in some changes in the database such as deleting a record, modifying data, or creating a new record. These are all operations, and these changes become a permanent part of the database if executed completely without errors. However, in case of any error, these changes are rolled back and the database returns to its state before performing operations on it.

- **Communication Technologies:** The means used to send and receive data and information, consisting of a group of stations located in different locations and connected to each other by media that allow users to perform sending and receiving operations.
  Communication networks are considered a huge group of text documents interconnected with each other on the internet. The reason for calling it the World Wide Web or the spider web is due to the intertwining of links between documents that form the sites of this network spread around the world in a way that resembles the intertwining of spider threads. The World Wide Web allows web browser programs to transfer all types of information including programs, news, sounds, video images, as well as texts.
- **Data:** Data is considered the fuel that feeds digital technology. It includes structured and unstructured data that is collected, stored, processed, and analyzed to extract valuable insights.
- **Artificial Intelligence and Machine Learning (AI & Machine Learning):** These are technologies that enable systems to simulate human capabilities in learning, reasoning, and decision-making. They are also used in analyzing big data, pattern recognition, and automation.
- **Internet:** Known as the information network, global network, or spider web, it is a global communication system that allows information exchange between smaller networks through which computers around the world connect. It operates according to specific systems known as the unified protocol (internet protocol). The term internet refers to all information circulated through the network and the infrastructure that transmits information across continents. :(Zeinab Mohamed El-Amin, 2015, p. 38)

1.3 Difference Between Traditional and Digital Technology

The fundamental difference between traditional (analog) and digital technology lies in the method of processing and storing information. Traditional technology relies on analog signals, which are continuous signals that change smoothly over time, such as sound waves in analog radio or images in film cameras. (Al-Zoubi, Mohamed, 2017, p. 45)

In contrast, digital technology converts information into digital data, i.e., sequences of zeros and ones (binary system). This conversion allows processing information with high accuracy, storing it efficiently, and transmitting it quickly across networks. The following table shows the main differences between them:

Table 1 : Difference Between Traditional and Digital Technology

Feature	Traditional Technology (Analog)	Digital Technology
Signal Type	Continuous analog signals	Discrete digital signals (0 and 1)
Data Quality	Susceptible to degradation and noise	Maintains quality during transmission and storage
Storage Capacity	Limited storage capacity	Massive storage capacity
Processing Speed	Slower processing	High-speed processing
Flexibility	Limited flexibility in modification	High flexibility and easy modification
Cost	High maintenance costs	Lower long-term costs
Integration	Difficult integration between systems	Easy integration and connectivity
Automation	Limited automation capabilities	Advanced automation capabilities

Source: Al-Zoubi, Muhammad, The Difference Between Analog and Digital Technology, Journal of Engineering Sciences, Issue 3, Damascus University, 2017, p. 45.

The digital nature of technology also provides unlimited possibilities for expansion, innovation, and automation, making it a key driver of transformation in business and societies. (Al-Qahtani, Nasser, 2018, p. 60)

2- Economic Institutions Performance – Concept and Measurement

2.1- Definition of Institutional Performance

Performance is considered an important concept for institutions in general, as it is the axis around which institutional efforts revolve. Improving and developing institutional performance is not optional but has become a necessary condition for their survival and continuity. The term institutional performance has appeared in many definitions due to the diversity of opinions and orientations of many writers and researchers, among whom we find:

Sheikh Al-Dawi defined institutional performance as: "performing work or accomplishing an activity or executing a task, meaning carrying out an action that helps reach the outlined goals. From this definition, we observe that performance is embodied in carrying out works, activities, and tasks to achieve reaching the goals and objectives outlined by the institution's management. (Al-Sheikh Al-Dawi, 2010, p. 218)

According to Al-Fa'ouri, institutional performance is: "the institution's ability to use its resources efficiently and produce outputs that are harmonious with its goals and suitable for its users. (Al-Faouri, Asmaa Marwan, 2012, p. 41)

Al-Rabiq defined it as: "the interaction between behavior and achievement, meaning it expresses the sum of works and results together. (Mohamed Al-Rabiq, Mohamed bin Ibrahim, 2004, p. 115)

While Marazqa defined it as: a process of measuring the efficiency and effectiveness of past work and evaluating the extent of institutions' success in creating value provided to customers and other stakeholders. (Marazka Issa, 2009)

Miller and Bromily defined: "institutional performance as a reflection of how the institution uses financial and human resources and exploits them efficiently and effectively in a way that makes it capable of achieving its goals. (Adai Hussein Fallah Al-Husseini, 2006, p. 231)

Mahar and Peace view institutional performance as the results achieved as a result of the interaction of internal factors of various types, and external indicators and their exploitation by the institution in achieving its goals. (Taher Mohsen Mansour, Al-Ghalibi Wael Mohamed Sobhi Idris, 2009, p. 39)

From the above, we can say that institutional performance is the outcome of all final decisions made at the institutional level as a whole, and it is the result of both individual performance and organizational units' performance in addition to the effects of social, economic, and cultural environment on them. It is a reflection of organizations' attachment to their goals and their ability to accomplish them.

2.2- Importance of Institutional Performance

The concept of institutional performance is considered one of the most recent and important topics in the field of public administration of institutions, especially in light of global challenges and the increasing intensity of competition to provide high-quality services to beneficiaries. Therefore, excellence has become one of the goals that many educational institutions seek to achieve in a changing and accelerating competitive environment that depends on accuracy, flexibility, and innovation. The importance of institutional performance stems from the stability and continuity of work, maintaining the accumulation of experiences, experiments, and information, and is not affected by changes in leadership. Institutional performance ensures that leadership does not monopolize decision-making related to the institution, and institutional performance contributes to administrative stability through following a set of work systems that work to achieve goals with available means in accordance with the institution’s vision and mission. Institutional performance also ensures the commitment of workers in

the educational institution to the system of values and principles around which their performance, behavior, and professional and human relationships revolve. (Habes Mohamed Hatamleh, Najwa Abdel Hamid Darawsheh, 2019, p. 271)

The importance of institutional performance is also manifested in being a vital indicator of the institution's health and its ability to survive and grow in a changing business environment. Its importance can be summarized in the following points: (Al-Ghamdi, Noura, 2019, p. 90)

- **Achieving Strategic Goals:** Measuring institutional performance helps ensure that the institution is on the right path toward achieving its vision, mission, and strategic goals.
- **Improving Efficiency and Effectiveness:** Performance analysis allows identifying strengths and weaknesses in operational processes, enabling management to take corrective actions to improve efficiency and reduce waste.
- **Supporting Decision Making:** Institutional performance provides reliable data and information that help management make informed decisions regarding resource allocation, product development, and entering new markets.
- **Increasing Competitive Capability:** High-performing institutions are more capable of competing in the market, attracting customers, and retaining them, which enhances their position in the industry.
- **Enhancing Stakeholder Satisfaction:** Good performance leads to increased satisfaction of customers, employees, investors, and government entities, which enhances the institution's reputation and value.
- **Sustainable Growth:** Strong institutional performance contributes to achieving sustainable growth for the institution in the long term through building strong internal capabilities and adapting to external changes.

2.3- Dimensions of Institutional Performance

Institutional performance is characterized by its multiple dimensions, as it is not limited to the financial aspect only. The dimensions of institutional performance can be classified into several main aspects that integrate with each other to provide a comprehensive picture of the institution's performance. Among the most prominent of these dimensions are: (Rais Wafaa, 2011, p. 14)

- **Economic Performance:** Economic performance measurement tools are represented in the use of financial analysis, where reliance is placed on profitability measures of various types and financial ratios, based on the institution's records and books, as well as the statements and reports it prepares.
- **Administrative Performance:** Where the efficiency and effectiveness of implementing plans, policies, and operations are measured, relying on quantitative means that assist in decision-making such as operations research and linear programming.
- **Social Performance:** It depends on creating cooperation between different projects and in different fields such as exchanging technical expertise, investments, and research on one hand, as well as the institution's contribution to some aspects of social and cultural activity and developing surrounding communities on the other hand, thus achieving social responsibility.
- **Environmental Performance:** This is through determining the results of the institution's intervention in the environmental aspect, i.e., determining the positive and negative results arising from changes that occur in the characteristics of the environmental system due to natural or unnatural activities or groups of activities.
- **Strategic Performance:** According to Peters and Waterman, strategic performance is linked to institutional excellence that involves the systematic application of strong organizational logic. A successful institution is one whose success comes from respecting sound principles.
- **Competitive Performance:** Porter added the competitive aspect as one of the performance determinants, where successful organization is judged according to what would have been obtained on the rules of the game in sector competition. He highlights in his model three levels of procedures according to the nature of the competitive system:

- Enhancing core competencies and protecting their defensive position;
- Playing according to the rules of the game which can change the power features of a particular sector;
- Building new rules that expect changes in this industry to create a competitive advantage in the future faster than the competitor.

3- Performance Measurement Indicators and Methods

Measuring institutional performance is a vital process for evaluating the extent to which the institution achieves its goals and identifying areas for improvement. This measurement depends on a set of indicators and methods that vary according to the nature of the institution and its objectives.

3.1- Performance Measurement Indicators

Performance measurement indicators are measurable values that show the extent of the institution's effectiveness in achieving key business objectives. These indicators help track progress, identify problems, and make strategic decisions. Performance is usually measured by several indicators, which can be divided into four basic groups: (Jamil Mukhaimer, Abdel Aziz et al., 1999, pp. 12-13)

- **Effectiveness Indicators:** That is, achieving the goals that government agencies work to develop, and this group of indicators depends on the nature of activity and objectives of each unit.
- **Efficiency Indicators:** That is, the use of resources used in each government agency, where this group includes the ratio of total costs to some specific outputs provided by the agency, and this basically expresses the cost of the service provided by this agency.
- **Productivity Indicators:** These are government agency units, and this is through the relative relationship between outputs and inputs of those units, and this agrees with both total productivity and partial productivity of elements.
- **Quality Level Indicators:** These are the services performed in government agencies, and this includes an analysis of the basic dimensions that make up service quality in general and government service quality in particular.

3.2- Methods of Institutional Performance Evaluation

There are multiple methods for evaluating institutional performance, and each method depends on a specific methodology for collecting and analyzing data. Among the most prominent of these methods are: (Al-Qahtani, Abdul Rahman 2020, p. 100)

Balanced Scorecard (BSC): It is considered one of the most famous and comprehensive performance evaluation methods, as it is not limited to financial indicators only, but includes four main dimensions: the financial dimension, customer dimension, internal processes dimension, and learning and growth dimension. This scorecard aims to translate strategy into a set of interconnected objectives and indicators.

Total Quality Management (TQM): This method focuses on improving quality in all aspects of the institution through involving all employees in the continuous improvement process. It relies on principles such as customer focus, continuous improvement, and process management.

SWOT Analysis: A strategic analysis tool used to evaluate the institution's internal strengths and weaknesses, in addition to external opportunities and threats. This tool helps determine the current position of the institution and formulate future strategies.

Benchmarking: It involves comparing the institution's performance with the performance of best practices in the industry or with leading competitors. It aims to identify performance gaps and set realistic improvement goals.

360-Degree Evaluation: A method for evaluating employee performance by collecting feedback from multiple sources, such as managers, colleagues, subordinates, and customers. This method helps provide a comprehensive picture of individual performance and identify development areas.

When these indicators and methods are integrated, they allow institutions to obtain a comprehensive view of their performance, enabling them to make informed decisions to achieve excellence and sustainable growth.

4- Factors Affecting Institutional Performance

Institutional performance is affected by a wide range of factors that can be classified into internal factors stemming from the institution's own environment, and external factors related to its surrounding environment. Understanding these factors helps institutions develop effective strategies to improve their performance and adapt to changes.

4.1- Internal Factors Affecting Institutional Performance

The internal factors affecting institutional performance are represented in:

a- Organizational Structure: It determines the administrative patterns specific to the integrated roles performed by individuals within the administrative levels in it. In addition to that, the organizational structure is considered a basic factor that helps create cooperation between work groups and opens doors for individual creativity, which helps achieve the institution's goals. The existence of an organizational structure in the institution is necessary as the institution can achieve many benefits including: avoiding conflict and friction between workers in the institution because it defines for each individual in the institution their duties and authorities, working on optimal use of available resources whether material or human through achieving coordination and integration between them, which drives the institution to achieve its desired goals, and helping in organizing work and its smooth flow, which enables achieving desired goals in the shortest possible time. (Amal Nimer Hassan Siam, 2010, p. 45)

b- Organizational Culture: It expresses the general pattern of beliefs and shared principles of the institution's members that crystallized during the institution's history to form the basis and logic for much of the formal and informal behavior and customs. Strong culture is one that spreads throughout the institution and enjoys trust and acceptance from all individuals working in it who share a homogeneous set of values, beliefs, traditions, and standards that govern their behavior within the institution. When the institution succeeds in spreading its values widely, it has succeeded in creating a strong culture. (Ahmed Qatamin, 2002, p. 64)

c- Human Resources: Humans are considered among the most important effective elements in the institution as they lead it to growth and development, and are considered the most valuable capital for the organization. They are the creative, innovative, and developer, and good individual performance means the performance of the institution as a whole. (Belkbir Boumediene, Fouad Boufatima, 2005, p. 282)

4.2- External Factors:

External factors mean everything outside the institution, as they affect and are affected by the external environment. Some of these factors can be mentioned as:

a- Legal and Political Factors: Granting public character and legal personality enables public organizations to benefit from all the means provided by administrative law, including: their funds are public funds subject to public law rules unless there is an explicit text to the contrary, and their activities and services have a public character. (Mohamed El-Mirfi, 2005, p. 142)

b- Economic Factors: They refer to the characteristics and directions of the economic system in which the institution operates and include the state's balance of payments position, the method of income distribution to the population, and the monetary and financial policies adopted by the state to treat inflation cases, availability of capital and labor. (Kazem Nizar Al-Rikabi, 2004, p. 136)

c- Social and Cultural Factors: They contain various customs and traditions of individuals who belong to the society in which the institution operates, and these variables have an impact on the organization's marketing ability and its various other functions, such as spatial changes and the

quality of moral values adopted by community members. Cultural factors also contribute to influencing institutional performance where the higher the level of education and culture of human resources, the more qualified and efficient human resources are produced.

d- Technological Factors: These factors are considered among the most important factors that raise the level of institutional performance through: (Ibrahim Bakhti, 2005, p. 317)

- Providing accurate and up-to-date information to support decision-making.
- Providing better services to employees, which reflects positively on the institution.
- Eliminating waste of time, effort, and resources.
- Providing services faster and at lower cost.

Technology has the advantage of reducing the percentage of human intervention in the mentioned information and improving the image of institutional outputs and performance, accelerating information exchange processes, and also helping in making appropriate and quick decisions.

5- Strategies for Improving Institutional Performance

The concept of strategic management refers to alignment, adaptation, response, and influence between the institution and its environment, while strategic processes focus on the institution's health and performance to accomplish established operational standards. Performance management processes specific to their performance each focus on the health of individual employee performance to achieve established work standards that monitor, measure, and control interrelated actions. Institutions seek to achieve their goals of profits, market share, and competitive advantage by developing a comprehensive strategic plan for the institution and at the same time allowing business units, departments, sections, work groups, and individuals within the institution to adapt their strategies and activities in an interconnected and harmonious fabric with the overall strategy. (Sanaa Abdel Karim Al-Khanaq, 2005, p. 37)

Improving institutional performance is considered a strategic goal that all institutions strive for to ensure their continuity and growth in the competitive business environment. Achieving this goal requires adopting a set of integrated strategies that target various aspects of performance. Among the most prominent of these strategies are: (Ali Mia et al., 2007, p. 195)

- Defining a roadmap for the institution that determines its position within the geography of business in the future.
- Contributing to increasing the institution's ability to face intense local and international competition.
- Granting the institution the possibility of possessing a continuous competitive advantage.
- Enabling the institution to use resources effectively.
- Providing opportunities for all administrative levels to participate in the process, which leads to reducing resistance that may occur when making changes, in addition to providing homogeneity of thought and administrative practices among the institution's managers.
- Developing the ability for creative strategic thinking among managers and making them initiate creating events rather than being recipients of them.

6- The Role of Strategic Planning in Improving Institutional Performance

Strategic planning is considered a vital process for institutions in the contemporary business environment, as it effectively contributes to improving their overall performance. It provides an organized framework for determining the future direction, setting long-term goals, and allocating resources effectively to achieve these goals. Strategic planning also ensures that activities and programs are aligned with the institution's vision, which increases its effectiveness and ability to adapt to changes. (Nahawa Abla, 2024, p. 5) It also has great importance represented in: (Ali Mia et al., 2007, p. 200)

- **Determining Direction and Vision:** Strategic planning helps the institution clearly define its future vision, its mission that expresses the reason for its existence, and its core values. This clarity provides a reference framework for all decisions and procedures, and ensures the alignment of efforts of all departments and individuals toward a common goal.
- **Improving Decision Making:** Strategic planning provides an organized framework for evaluating opportunities and threats, and analyzing internal strengths and weaknesses. This comprehensive analysis enables management to make informed decisions based on accurate information, which reduces risks and increases chances of success.
- **Efficient Resource Allocation:** By determining strategic priorities, the institution can allocate its resources (financial, human, technological) more efficiently.
- **Enhancing Adaptation to Changes:** In a rapidly changing business environment, strategic planning helps the institution anticipate changes and prepare for them. It enables it to develop flexible strategies that allow it to adapt to new challenges and benefit from emerging opportunities.
- **Improving Overall Performance:** Effective strategic planning leads to performance improvement in all aspects of the institution. It links strategic goals with key performance indicators (KPIs), allowing the institution to track its progress and evaluate the extent to which it achieves its goals.
- **Motivating Employees:** When employees have a clear understanding of the institution's vision and strategic goals, they feel they are part of something bigger, which enhances their belonging and loyalty, and increases their motivation to contribute to achieving the goals.
- **Promoting Innovation:** Strategic planning encourages future thinking and searching for innovative solutions to challenges. It creates an environment that supports experimentation and developing new ideas, which enhances the institution's competitive ability.

7- The Role of Technology in Improving Institutional Performance

Technology has become an indispensable element in institutions' pursuit to improve their performance and achieve competitive excellence. With rapid developments in fields such as artificial intelligence, big data, and the Internet of Things, institutions have become capable of achieving unprecedented levels of efficiency, innovation, and adaptability. Technology has contributed to improving institutional performance through: (Mubaraky Saleh, 2018, pp. 146-160)

a- Improving Financial Performance: Technology is considered a main driver for improving the financial performance of institutions. Through automating accounting and financial processes, human errors can be reduced and financial report preparation can be accelerated, providing accurate and timely insights for making strategic decisions. Technology also contributes to improving cost management and increasing revenues through analyzing financial data and identifying new opportunities.

b- Enhancing the Customer Dimension: Technology plays a crucial role in enhancing the relationship with customers and improving their satisfaction. Customer Relationship Management (CRM) systems enable institutions to better understand customer needs, provide customized services, and improve communication channels. Digital platforms also contribute to facilitating customer access to products and services, which enhances their experience and loyalty.

c- Raising Internal Process Efficiency: Technology effectively contributes to raising the efficiency and effectiveness of the institution's internal processes. Through automating routine tasks, institutions can reduce the time and effort required to complete work, which increases productivity and reduces operational costs. The use of Enterprise Resource Planning (ERP) systems also connects different departments and functions, which improves coordination and accelerates information flow.

d- Supporting Growth, Learning, and Innovation: Technology is considered a fundamental catalyst for growth and continuous learning within institutions. It provides the necessary tools for research and development, analyzing big data to explore new opportunities, and developing innovative products and services. It also contributes to building a culture of organizational learning by providing platforms for continuous training and development of employees.

e- **Improving Environmental and Social Performance:** Technology can contribute to achieving environmentally and socially sustainable performance for institutions. Through using technologies such as the Internet of Things (IoT) and artificial intelligence, institutions can monitor energy and resource consumption, improve waste management, and reduce carbon footprint. Technology also contributes to enhancing the institution's social responsibility by improving transparency and communication with stakeholders.

f- **Enhancing Competitive Ability and Adaptation to the Environment:** In the constantly changing business environment, technology enables institutions to enhance their competitive ability and adapt to environmental variables. Through adopting modern technologies, institutions can respond quickly to market changes, provide new products and services that meet evolving customer needs, and improve the quality of products and services.

g- **Innovation in Financial Services (Financial Technology):** Financial Technology (FinTech) has revolutionized the financial sector, positively affecting the performance of financial institutions. It has contributed to improving financial processes through modern applications and operations, and providing innovative financial products and services such as instant loans and electronic payments. It has also worked to reduce the gap in digital illiteracy by promoting digital culture and trust in technology.

8- Case Study of a Successful Japanese Startup as a Model

The Japanese company AI Inside is a prominent example of how to leverage digital technology, especially artificial intelligence, to improve institutional performance. The company was founded with the goal of addressing the challenge of digitizing handwritten documents, which still constitute a large part of operations in many companies, especially in Japan.

AI inside Inc has experienced rapid growth in its financial performance in recent years, especially in Japan. For the fiscal year ending March 2025, net sales reached JPY 4,399 million, an increase of 5.0% on an annual basis. Despite the company achieving an operating profit of JPY 385 million, it recorded an ordinary profit of JPY 405 million, and a net loss of JPY 497 million. This discrepancy reflects the company's continuous investments in research and development and expanding its business scope. (https://finance.yahoo.com/quote/4488.T/](https://finance.yahoo.com/quote/4488.T/)

Table 2: Key Financial Indicators for AI inside Inc for the Fiscal Year Ending March 2025

Financial Indicator	Value (JPY Million)	Notes
Net Sales	4,399	Increased by 5.0% annually
Operating Profit	385	Decreased by 14.2% annually
Ordinary Profit	405	Decreased by 5.3% annually
Net Profit	-497	
Total Assets	6,943	(as of March 31, 2025)
Net Assets	4,523	(as of March 31, 2025)
Cash and Equivalents	5,093	(end of period)

Source: Yahoo Finance. (2025). AI inside Inc. (4488.T) Stock Price, News, Quote & History. Available at: https://finance.yahoo.com/quote/4488.T/

Other financial indicators show that the company's market capitalization reached JPY 15,957 million as of March 1, 2025. Although the profit margin was negative at -11.30%, the return on assets was 3.40%, while the return on equity was -10.48%. These figures reflect the nature of emerging companies that often focus on growth and market share acquisition before achieving significant profits.

8.1- Growth and Performance Analysis

Data shows that AI inside Inc has achieved significant growth in its revenues, driven by the increasing demand for AI solutions in the Japanese and global markets. The growth in net sales indicates the company's ability to expand its user base and attract new customers. However, the decline in operating and ordinary profit, in addition to the net loss, may be a result of significant investments in research and development, market expansion, and new product development, as well as operating costs associated with rapid growth. This is a common pattern in emerging companies that focus on building capabilities and innovation for the long term.

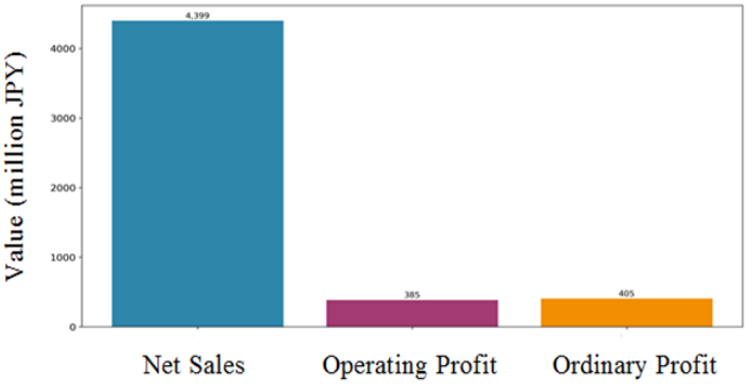

Figure 1: Key Financial Indicators of AI inside Inc (2025)
Source: Prepared by researcher based on the table of key financial indicators for AI inside Inc for the fiscal year ending March 2025

Analysis:

This bar chart illustrates three key financial indicators for AI inside Inc for the fiscal year ending March 2025: net sales, operating profit, and ordinary profit. The figures show that net sales (JPY 4,399 million) are significantly higher, reflecting the company's ability to generate substantial revenue from its operations. However, operating profit (JPY 385 million) and ordinary profit (JPY 405 million) are much lower than net sales. This indicates that the company incurs significant administrative and operating costs relative to its revenues. This is a common pattern in emerging companies that focus on rapid growth and investment in research, development, and expansion, leading to higher costs in early stages. The ordinary profit being slightly higher than the operating profit may indicate the presence of non-operating revenues or a reduction in non-operating expenses that compensate for part of the operating costs.

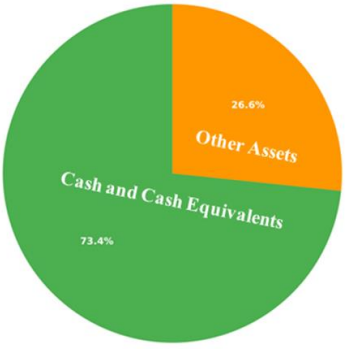

Figure 2: Asset Distribution in AI inside Inc (2025)
Source: Prepared by researcher based on the table of key financial indicators for AI inside Inc for the fiscal year ending March 2025

Analysis:

This pie chart shows the asset distribution of AI inside Inc. Cash and equivalents represent the largest portion of assets (73.4%), while other assets (such as accounts receivable and inventory, fixed assets) represent the remaining 26.6%. This high percentage of cash and equivalents (JPY 5,093 million) indicates strong financial liquidity for the company. The presence of high liquidity can be a positive indicator of the company's ability to cover its short-term obligations, invest in future growth opportunities, or face any unexpected financial challenges. However, it may also indicate that the company does not utilize all its assets efficiently in its operating activities, or that it maintains cash as a cautious strategy in a volatile business environment.

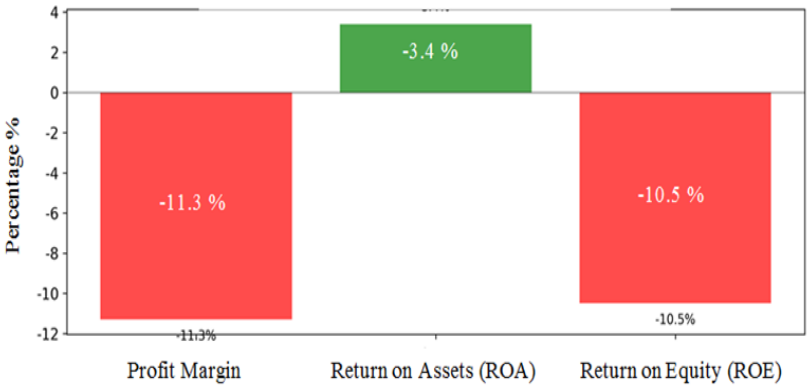

Figure 3: Financial Performance Indicators of AI inside Inc (2025)
Source: Prepared by researcher based on the table of key financial indicators for AI inside Inc for the fiscal year ending March 2025

Analysis:

This bar chart presents the key financial performance indicators for AI inside Inc: profit margin, return on assets, and return on equity. The chart shows that the profit margin is negative (-11.30%), and the return on equity is negative (-10.48%), while the return on assets is positive (3.40%). The negative profit margin confirms that the company has not generated a profit from its operations after deducting all expenses, which is consistent with the previously mentioned negative profit. The negative return on equity means that the company does not generate positive returns for shareholders. However, the positive return on assets indicates that the company uses its assets to generate some revenues, even if they were not sufficient to cover all expenses and achieve a net profit. This discrepancy can be attributed to the nature of an emerging company that may be in an intensive investment phase, where profits are reinvested (even incurring losses) to foster future growth.

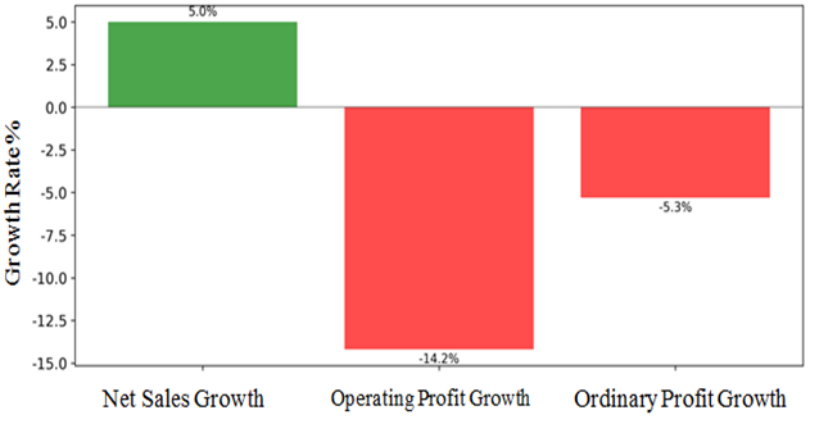

Figure 4: Annual Growth Rates of AI inside Inc (2025)
Source: Prepared by researcher based on the table of key financial indicators for AI inside Inc for the fiscal year ending March 2025

Analysis:

This bar chart illustrates the annual growth rates for net sales, operating profit, and ordinary profit. The chart shows positive growth in net sales at 5.0%, confirming that the company continues to expand its revenue base. However, operating profit and ordinary profit show a decrease of -14.2% and -5.3% respectively. This scenario, where revenues grow while profits decline, indicates that operating costs or other expenses are growing faster than revenues, or that the company is investing heavily in areas such as research and development, marketing, or expansion into new markets. Despite its negative impact on short-term profits, this approach can be a long-term strategy to acquire a larger market share and foster future growth in a competitive sector like artificial intelligence.

8.2- Overview of AI Inside and Its Product

AI Inside was founded in 2015 and specialized in developing artificial intelligence solutions for processing handwritten texts. The goal was to enable companies to convert paper documents into searchable and analyzable digital data, reducing human errors and saving time and effort. (Asharq News. (2022). https://asharq.com/reports/369-%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1-%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A-%D8%A7%D9%84%D9%8A%D8%A7%D8%A8%D8%A7%D9%86%D9%8A-%D9%8A%D8%AD%D9%88%D9%84-%D8%A7%D9%84%D9%85%D8%B3%D8%AA%D9%86%D8%AF%D8%A7%D8%AA-%D8%A7%D9%84%D9%85%D9%83%D8%AA%D9%88%D8%A8%D8%A9-%D8%A8%D8%AE%D9%84%D9%81-%D8%A7%D9%84%D9%8A%D8%AF-%D8%A5%D9%84%D9%89-%D9%85%D9%84%D9%81%D8%A7%D8%AA-%D8%A5%D9%84%D9%83%D8%AA%D8%B1%D9%88%D9%86%D9%8A%D8%A9)

One of AI Inside's most prominent products is **DX Suite**, which is a comprehensive solution based on artificial intelligence for document digitization. DX Suite consists of several main components: (AI Inside. (n.d.). *DX Suite*. Available at: https://inside.ai/en/dx-suite/)

- **DX Suite AI-OCR:** This is an artificial intelligence-powered optical character recognition (OCR) technology that can read handwritten texts with high accuracy, even those that are difficult to read by traditional methods. This technology uses advanced deep learning models to recognize different patterns of handwriting.

- **DX Suite AI-Agent:** These are artificial intelligence robots that automate repetitive tasks related to document processing, such as data entry and verification. These robots can work around the clock, increasing operational efficiency and reducing errors.
- **DX Suite AI-Analytics:** This tool provides advanced analytics for data extracted from documents, helping companies extract valuable insights and make informed decisions. These analytics can be used to improve operations, identify trends, and discover patterns.

8.2- AI Inside's Impact on Institutional Performance

AI Inside's solutions have significantly contributed to improving institutional performance through several aspects: (AI Inside. (n.d.). *DX Suite*. Available at: https://inside.ai/en/dx-suite/)

- **Increasing Operational Efficiency:** Through automating the document digitization process, companies were able to reduce the time and effort required for data processing, leading to a significant increase in operational efficiency. For example, AI-OCR can process thousands of documents in a very short time compared to manual work.
- **Reducing Human Errors:** Manual processes rely on the human element, which increases the likelihood of errors. Thanks to AI-OCR's accuracy, errors were significantly reduced, leading to improved data quality and more accurate decision-making.
- **Improving Data Quality:** AI Inside's solutions provide organized and accurate digital data, making it easier to analyze and use in various business systems. This improvement in data quality supports analysis and decision-making processes.
- **Cost Savings:** By reducing the need for manual work and reducing errors, AI Inside contributed to significant cost savings for companies, whether labor costs or costs associated with error handling.
- **Enabling Comprehensive Digital Transformation:** AI Inside's solutions are considered a starting point for many companies toward broader digital transformation. Once data is digitized, companies can leverage it in other artificial intelligence applications, data analytics, and customer relationship management (CRM) systems, opening new horizons for innovation and growth.

Finally, the AI Inside case study confirms the pivotal role of digital technology, especially artificial intelligence, as an effective mechanism for improving institutional performance. By providing innovative solutions for digitizing handwritten documents, AI Inside not only contributed to increasing operational efficiency and reducing errors, but also enabled companies to achieve broader digital transformation. The lessons learned from this Japanese experience can serve as a roadmap for institutions worldwide, including Arab and Algerian institutions, that seek to adopt digital technology as a strategy to achieve excellence and growth in the digital age.

9- Case Study of a Successful Chinese Startup

China is known as one of the fastest-growing environments for startups in the world, driven by technological innovation, government support, and a huge domestic market. Many Chinese startups that have achieved remarkable success stand out, becoming models to be emulated in various sectors. Among these companies, we can highlight **Xiaomi** as a model for a successful Chinese startup.

9.1- Xiaomi: From Startup to Global Giant

Xiaomi was founded in 2010 and started as a smartphone manufacturer, but it quickly expanded to include a wide range of consumer electronics, including smart home devices, televisions, wearable devices, and others. What distinguishes Xiaomi is its unique business model that combines high-quality devices at competitive prices with an integrated ecosystem of services and software. (Wang Fei, p. 20)

Xiaomi has witnessed significant financial growth since its establishment, according to its 2024 annual report. Revenues reached 365,906 million Chinese Yuan, with a gross profit of 76,560 million Chinese Yuan. Despite fluctuations in operating profit and profit for the year over the years, the company has demonstrated its ability to achieve massive revenues and maintain a strong financial position

.(https://ir.mi.com/system/files-encrypted/nasdaq_kms/assets/2025/04/24/5-27-15/%E8%8B%B1%E6%96%87.pdf](https://ir.mi.com/system/files-encrypted/nasdaq_kms/assets/2025/04/24/5-27-15/%E8%8B%B1%E6%96%87.pdf)

Table 3: Key Financial Indicators for Xiaomi (in millions of Chinese Yuan)

Year / Financial Indicator	2020	2021	2022	2023	2024
Revenues	245,865	328,309	280,044	270,970	365,906
Gross Profit	36,751	58,260	47,577	57,476	76,560
Operating Profit	24,034	26,028	2,816	20,008	24,502
Profit for the Year	20,312	19,283	2,502	17,474	23,578
Profit attributable to Owners	20,355	19,339	2,474	17,475	23,658
Total Assets	253,679	292,891	273,507	324,247	403,155
Total Equity	124,013	137,432	143,923	164,261	189,205
Total Liabilities	129,666	155,459	129,584	159,985	213,950

Source: Prepared by researcher based on Xiaomi's Key Financial Indicators table

Analysis of Growth and Performance

Xiaomi's financial data shows strong revenue growth over the years, reflecting the success of its strategy in offering diverse products and expanding into new markets. Despite a decline in revenues and operating profit in 2022, the company regained momentum in 2024, achieving its highest revenues. This indicates the company's flexibility and ability to adapt to market challenges. Xiaomi's growth also heavily relies on its smartphones and smart home devices, as well as its recent expansion into the smart electric vehicle market.

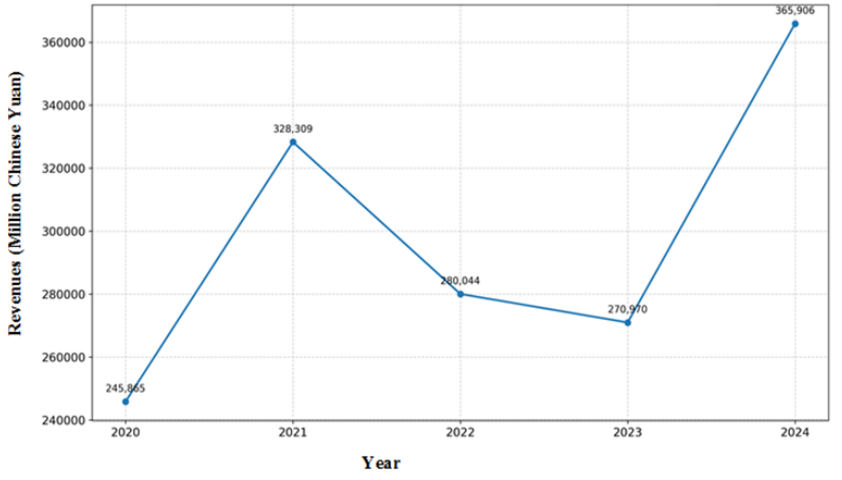

Figure 5: Xiaomi's Revenue Growth Over the Years (in millions of Chinese Yuan)
Source: Prepared by researcher based on Xiaomi's Key Financial Indicators table

Analysis

The chart indicates that Xiaomi has experienced strong revenue growth over the long term. However, despite some challenges in 2022 and 2023, the strong recovery in 2024 demonstrates the company's resilience and ability to regain momentum in the market. This growth can be attributed to its expansion strategies into new markets and products, such as smartphones, IoT devices, and smart electric vehicles.

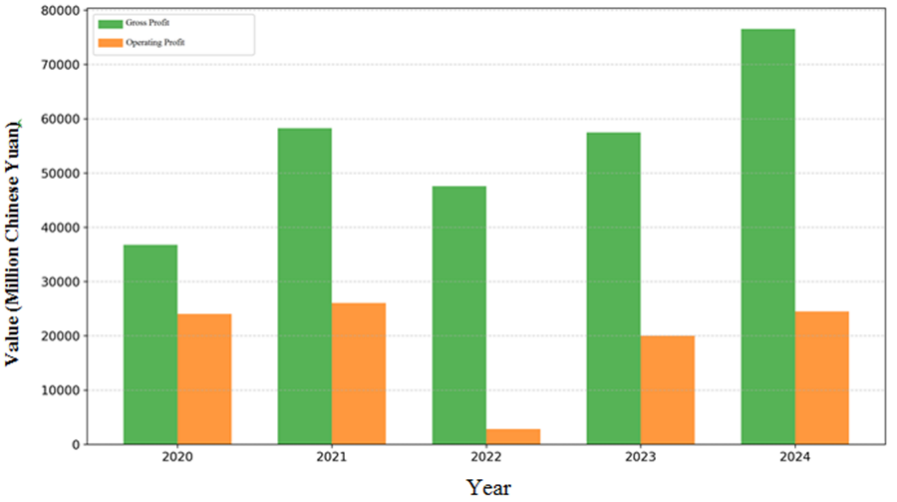

Figure 6: Comparison of Xiaomi's Gross Profit and Operating Profit (in millions of Chinese Yuan)
Source: Prepared by researcher based on Xiaomi's Key Financial Indicators table

Analysis

This chart reflects fluctuations in Xiaomi's profitability, with 2022 being a particularly challenging year for the company in terms of operating profitability, possibly due to market challenges or economic factors. However, the strong recovery in 2023 and 2024 indicates the company's ability to manage its costs and improve its operational efficiency, leading to increased profits.

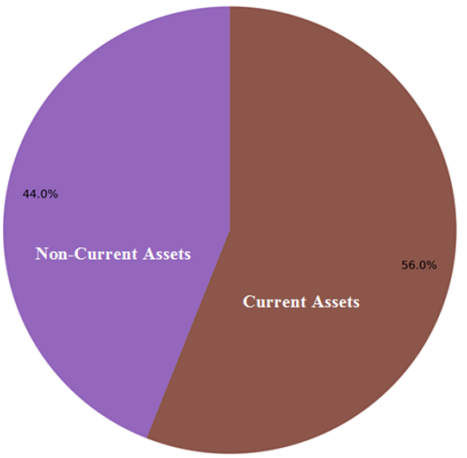

Figure 7: Xiaomi's Asset Distribution (2024)
Source: Prepared by researcher based on Xiaomi's Key Financial Indicators table

Analysis

This distribution indicates that the majority of Xiaomi's assets in 2024 are current assets. Current assets are those that can be easily converted into cash within one year, such as cash, inventory, and accounts receivable. This high percentage of current assets indicates strong liquidity and the company's ability to meet its short-term obligations. This also gives Xiaomi significant financial to invest in growth or face economic challenges. Furthermore, the presence of a significant percentage of non-current assets (such as property, plant, and equipment, and long-term investments) indicates the company's investments in infrastructure and future growth.

9.2- Xiaomi's Success Factors

The success factors of the Chinese company's institutional performance were represented through: (Chen Li, 2021, p. 125)

- **Innovative Business Model:** Xiaomi initially relied on the direct online sales model to reduce costs, allowing it to offer products at lower prices than competitors. It also focused on building an integrated ecosystem of hardware, software, and services, enhancing customer loyalty.
- **Focus on Community:** Xiaomi built a strong community of fans and users (Mi Fans) who participate in product development and provide feedback. This participatory approach contributed to improving products and effectively meeting customer needs.
- **Continuous Innovation:** Xiaomi invests heavily in research and development, continuously introducing new and innovative products. It also adopts the latest technologies such as artificial intelligence and the Internet of Things in its products.
- **Global Expansion:** Xiaomi was not limited to the Chinese market but quickly expanded to global markets, especially in India and Europe, contributing to its rapid growth and transformation into a global brand.
- **Product Diversification:** Xiaomi did not rely on one product but diversified its product portfolio to include many smart devices, reducing risks and increasing revenue sources.

Xiaomi is considered a strong example of how Chinese startups can achieve global success through innovation, smart business models, and focus on customer needs. The company has become a major player in the global consumer electronics market and continues to expand and grow.

Conclusion

Digital technology has become an undeniable driving force in shaping the future of economic institutions. Through analyzing its concept and components, and the fundamental differences between it and traditional technology, it becomes clear that we are facing a qualitative transformation that requires institutions to reassess their strategies and business models. Understanding institutional performance with its multiple dimensions and measurement indicators is essential for any institution seeking to achieve excellence and competitiveness in the digital age.

The case studies presented, from the Japanese AI Inside company to the Chinese Xiaomi company, demonstrate how digital technology can be effectively employed as a mechanism to improve institutional performance. These experiences show that successful digital transformation is not just about adopting new technologies, but requires a comprehensive vision that includes changing organizational culture, developing human capabilities, and redesigning business processes.

In light of the rapid developments in digital technology fields such as artificial intelligence, big data analytics, cloud computing, and the Internet of Things, institutions must be prepared to continuously adapt and innovate. Digital transformation is no longer a luxury or future option, but has become an urgent necessity for survival and growth in an increasingly competitive business environment.

For Arab and Algerian institutions specifically, the lessons learned from successful global experiences provide valuable guidance on how to leverage digital technology to improve performance and achieve sustainable competitive advantage. This requires strategic investment in digital infrastructure, human resource development, and building partnerships with technology providers.

Ultimately, digital technology as a mechanism for improving institutional performance represents a golden opportunity for institutions that are able to adopt it intelligently and systematically. Success in this field requires a long-term vision, strong leadership commitment, and the ability to manage change effectively. Institutions that can achieve this balance will be best positioned to thrive in the digital age and achieve sustainable success.

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