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Financial Management Information Systems in OECD Countries

This paper takes stock of Financial Management Information Systems (FMIS) practices in OECD countries based on the results of the 2022 OECD Survey on Financial Management and Reporting. Delegates to the Committee of Senior Budget Officials are invited to approve this report for publication. Please provide any comments by 22 July 2024.

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1 Introduction[1]

1. A Financial Management Information System (FMIS) is the Information Technology (IT) system whose components or modules enable a government to implement its financial management functions. FMIS have a long history in government. Going back to the 1960s and 70s, financial transaction processing was amongst the first government functions to be automated. The first generation of FMISs used centralized mainframe computers and databases. From that period, successive generations of information technology (IT) solutions, including commercial enterprise resource planning (ERP) packages, have allowed the integration of wider financial management and business functions and better responsiveness to users' needs.

2. FMIS's design and implementation forms an integral part of any budget reform. On the one hand, upgrades or development of new systems are needed to support implementation of new budget procedures and processes. On the other hand, the planning for future budget reforms should be guided by a comprehensive understanding of the potential that advancements in IT offer.

3. There is a vast literature on the benefits of FMISs for governments' public financial management. These systems play a pivotal role in streamlining processes, bolstering the control mechanisms for governmental financial transactions, and promoting heightened fiscal transparency. Additionally, in today's data-driven era, FMISs offer a structured platform for gathering, processing, and analysing real-time, comprehensive and reliable financial and non-financial data, which contribute further to the three benefits outlined above.

4. Approaches to generating these benefits vary across countries. Governments are tasked with making crucial strategic choices regarding the design and implementation of their FMISs, including:

- Whether to allocate responsibilities for developing a central FMIS for the whole of government to the ministry of finance, or devolving responsibility for FMIS to individual entities.
- How far to integrate financial management functions on a single platform and when to rely on interfaces and data sharing solutions.
- What level of ownership they expect on the system – e.g., whether to use an ERP or a bespoke solution, whether to retain control of the hardware and software or to move to cloud computing.

5. Given the dynamic nature of FMISs, which are in constant flux due to technological progress and shifting governmental requirements, it is imperative for governments to keep abreast of the latest functionalities and trends. A comprehension of these developments allows governments to make well-informed choices about future enhancements, drawing on the experiences of their peers. Therefore, to support countries in understanding current developments and trends, this paper aims to provide insights

[1] This paper was authored by a team comprising Delphine Moretti, Senior Policy Analyst, Anne Keller, Policy Analyst, and Ivor Beazley, formerly Senior Policy Analyst in the Public Management and Budgeting division of the OECD Public Governance Directorate.

on current practices with FMISs in OECD countries, drawing upon the findings from the 2022 OECD Survey on Financial Management and Reporting (the Survey)[2].

6. Against this background, the report is structured as follows:

- Section 2 discusses current practices in OECD countries, including the degree of system centralisation, the integration of financial management functions, as well as technological choices.
- Section 3 discusses factors for future FMIS developments, including the need for FMIS upgrades and opportunities seized by some OECD countries with using recent technological advancements.
- Section 4 concludes with on overview of key findings of the Survey.

[2] The 2022 OECD Survey on Financial Management and Reporting was distributed to all 38 OECD countries, with 34 responses received. Respondents were predominantly senior officials within accounting and finance departments. Responses draw upon self-reporting from governments, representing the country's own assessment of current practices and procedures in central/federal government as of 30 September 2022.

2 Current practices in OECD countries

7. Literature generally characterises FMIS types based on two main criteria: (i) system centralisation and (ii) integration of financial management functions. These criteria can be briefly described as follows:

8. **System centralisation** pertains to the extent and manner in which various government entities can develop, access and interact with the FMIS. This can be structured in one of two primary ways: either through a centralized FMIS, typically managed by the ministry of finance or a similar central agency, granting access to a select number of other government entities; or alternatively, through a decentralized approach, where the FMIS is managed locally at the individual entity level. This is further discussed in section 2.1.

- **Integration of financial management information functions** refers to the extent and manner to which financial management functions are managed within a single IT platform and shared central database(s), as opposed to operating through separate IT systems that require interfaces and interoperability layers for communication. This is further discussed in section 2.2.

2.1. System centralisation

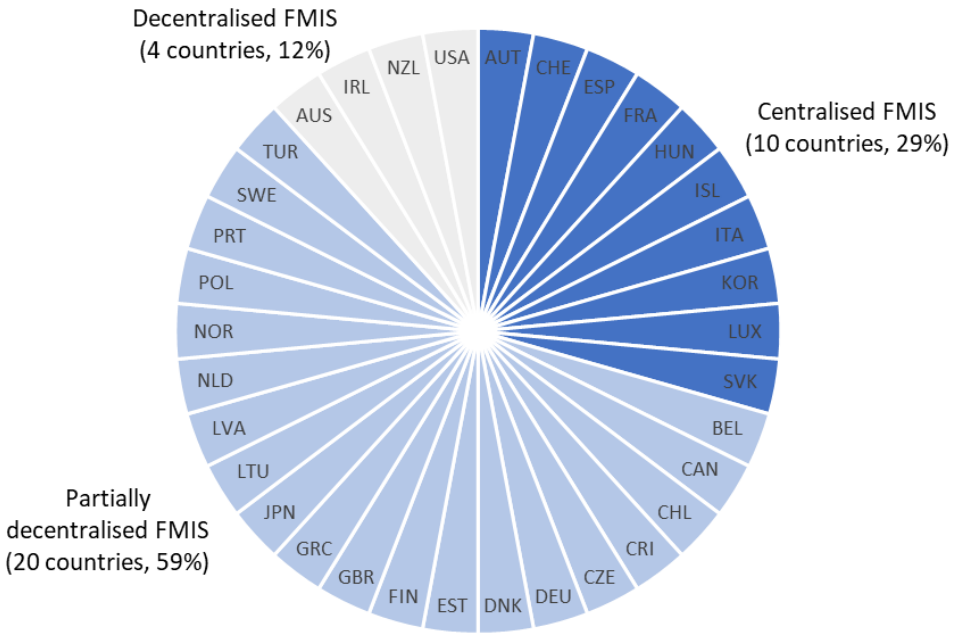
9. Concerning system centralisation, the Survey asked respondents to classify their FMIS under one of the three following models:

- The **Centralised FMIS model**, in which entities within government are granted access to an FMIS operated by the Ministry of Finance or another central agency, applying common standards, definitions and functionalities.
- The **Partially decentralised FMIS (or "partially centralised FMIS") model**, in which i) certain entities within government are granted access to a centralised FMIS while others are operating a separate FMIS; or ii) only some core financial management functions are managed in a centralised FMIS, while others are managed by entities within government in own IT systems.
- The **Decentralised FMIS model**, in which entities within government are allowed to develop and operate their own FMIS systems, possibly subject to some central government requirements and standards.

10. The Survey results (Figure 1) show that:

- A majority of OECD countries consider that they have a partially decentralised FMIS, with varying degrees of centralised and decentralised approaches.
- Almost one third of OECD countries consider that they operate a centralised FMIS.
- A smaller group of four OECD countries use a decentralised model.

Figure 1. FMIS centralisation: models in OECD countries, 2022

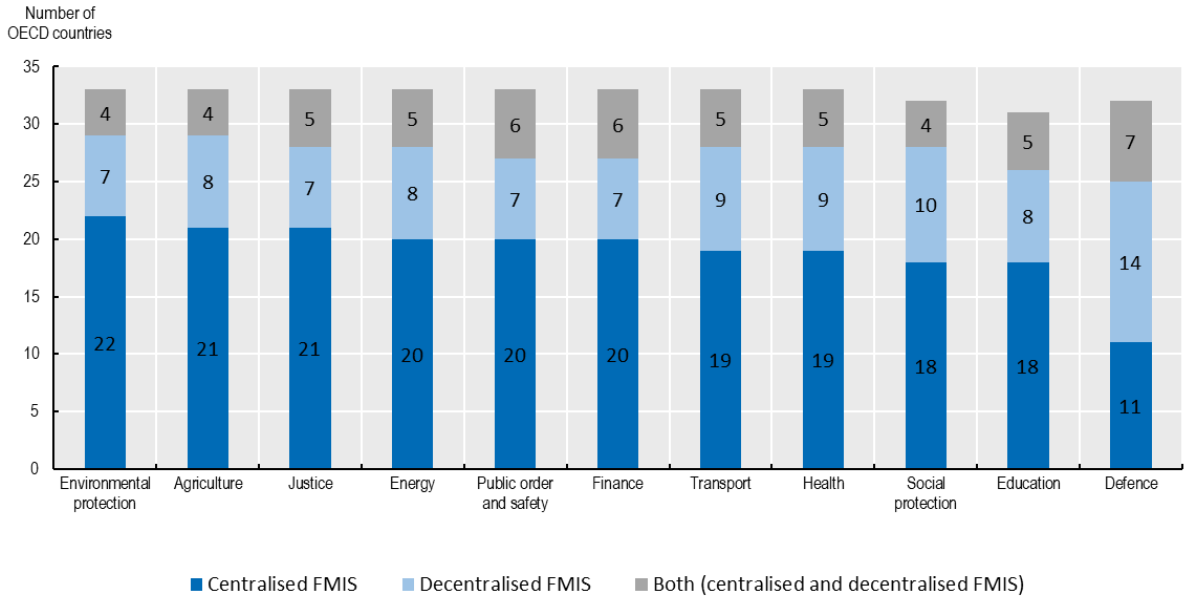


Note: FMIS centralisation classification for core Public Financial Management (PFM) functions. Ireland is in the process of transitioning from a fully decentralised model to a centralised one. Data for Colombia, Israel, Mexico and Slovenia are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q11.

11. For refining the understanding of levels of FMIS centralisation, the Survey also looked at the use of decentralised or centralised models by functions of government and types of government entities. This reveals that:

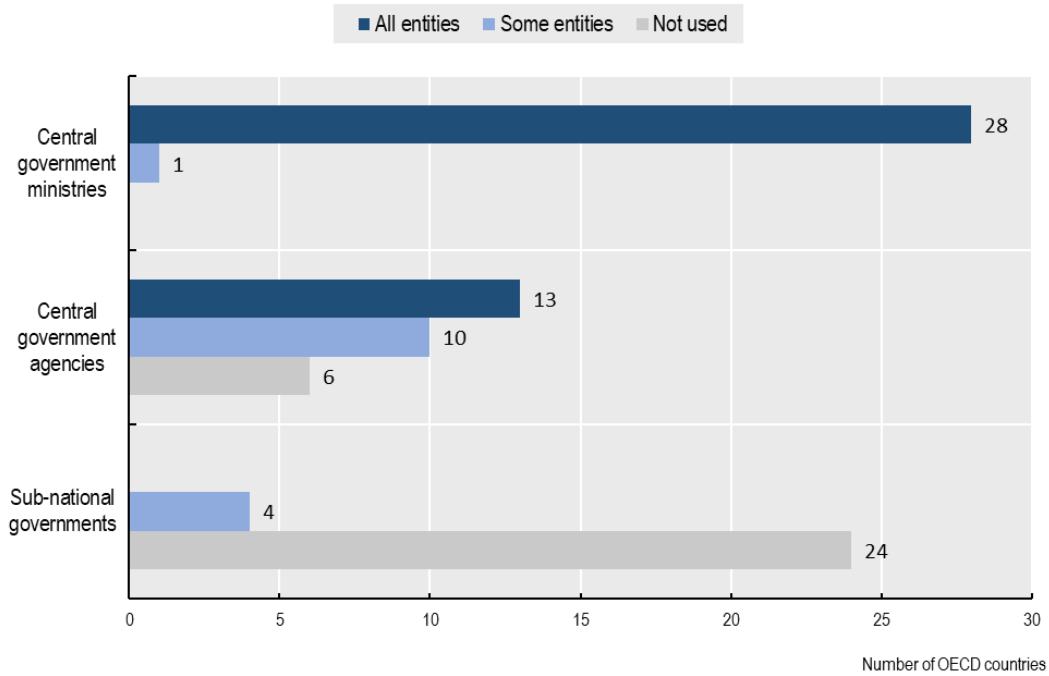
- Defence stands out as the function of central government most likely to operate a decentralised IT system for financial management, likely due to national security concerns (Figure 2).
- The use of a centralized FMIS significantly decreases beyond line ministries. Less than half of OECD countries are requiring all agencies to use the centralised FMIS. Only four OECD countries report that sub-national governments use the centralised FMIS, and this is also only limited to some entities (Figure 3).

Figure 2. FMIS centralisation by function of government in OECD countries, 2022



Note: Not all functions of government are applicable to all countries. Data for Chile, Colombia, Israel, Mexico and Slovenia are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q12.

Figure 3. Use of centralised FMIS by types of government entities in OECD countries, 2022



Note: Only referring to available data for countries with a centralised or partially decentralised FMIS (29 OECD countries). Data for Chile, Colombia, Israel, Mexico and Slovenia are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q15.

12. There is no consensus on whether it is best to centralise or decentralise FMIS, and the arguments in favour of each approach are finely balanced in literature, as well as evolving over time. There is however consensus over the fact that a decentralised model requires some level of quality requirements and standards to be set at central level, as illustrated by the cases of Canada and the UK (Box 1).

Box 1. The decentralised model of FMIS: Canada and United Kingdom examples

In Canada and the United Kingdom, the central budget authority defines standard parameters which devolved systems must satisfy to ensure interoperability and allow the CBA to carry out its. These include a common budget classification, chart of accounts and reporting formats as well as central requirements for minimum system performance, and exchange of data with central systems.

Canada's CFRMS system, managed by the Office of the Comptroller General of Accounts consolidates trial balance information from government ministries, agencies, and crown corporations to generate consolidated financial statements. This system also feeds into the Government of Canada Infobase system which combines finance and performance data to provide performance reports to parliament and information that is accessible to the public.

The United Kingdom's OSCAR 2 system similarly collects information from government departments that operate their own FMIS according using a portal. In addition to generating government financial statements, OSCAR 2 allows the Treasury to monitor budget execution, generate cash flow forecasts and monitor commitments.

United Kingdom's OCSCAR II and Canada's CFRMS both use automated portals whereby ministries upload data required by the MoF.

Source: Authors based on public information.

13. The Survey results reveal that such quality requirements and standards are common across OECD countries (Table 1). Among the 24 OECD countries that use either a partially decentralised or decentralised FMIS model, reporting and data requirements, the budget classification and chart of accounts, and the basis of accounting are centrally set by at least three-quarters of countries. However, requirements in relation to data management standards are significantly less commonly defined centrally (8 countries, 33%), suggesting this is an area where further efforts will be required in the future.

14. Interestingly, acknowledging challenges with level of quality requirements and standards across multiple IT systems, some of the countries currently using the decentralised model are moving towards greater standardization of the FMIS systems operated by line ministries and agencies. Approaches include developing generic systems suited to public finance management that can opt into or applying government-wide standards to the acquisition of FMIS including checklists to ensure that systems have minimum functionality and strengthening data governance frameworks.

Table 1. Central requirements and standards for decentralised FMISs in OECD countries, 2022

	Number of OECD countries
Centrally determined basis of accounting	21
Central budget classification	20
Centrally determined minimum financial reporting requirements	20
Central chart of accounts	18
Centrally defined data elements to be provided"	18
Minimum functional requirements	16

	Number of OECD countries
Common control and compliance functions	13
Technology standards to enable exchange of data between decentralised and centralised systems	12
Other standardized common data elements and definitions	8
Data management standards	8
No centrally determined requirements and standards	0

Note: Only referring to countries with a partially decentralised or decentralised FMIS (24 OECD countries). In Poland a standardized chart of accounts is mandatory for some entities (e.g., budgetary entities like line ministries). Data for Chile, Colombia, Israel, Mexico and Slovenia are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q18.

2.2. Integration of financial management functions in FMIS

15. Concerning the integration of financial management functions in the FMIS, the Survey asked respondents to classify their FMIS under one of three following categories:

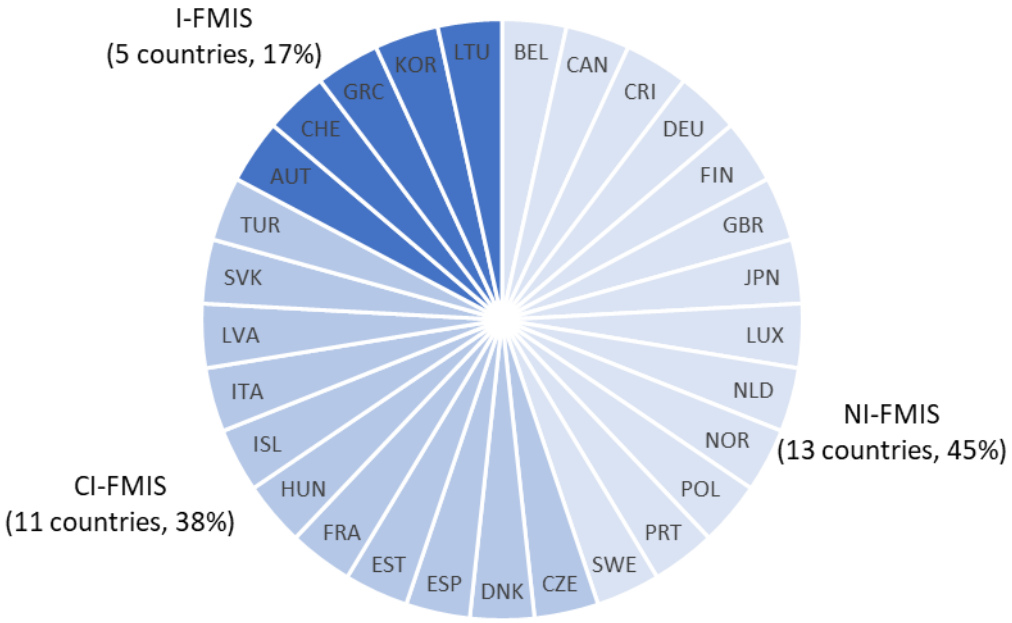
- Non-integrated FMIS, or NI-FMIS: this is the case where financial management functions are supported by multiple IT systems with data exchanges typically supported by interfaces and/or other interoperability layers.
- Core Integrated FMIS, or CI-FMIS: this is the case where so-called core financial management functions are inter-connected, supported by a common IT platform and shared central database(s), but other financial management functions (non-core) are supported by separate IT systems.[3]
- Integrated FMIS, or I-FMIS: this is the case where all or most financial management functions (core and non-core) are inter-connected and share the same IT platform and database(s).

16. For those 29 OECD countries that use a centralised or partially decentralised FMIS, the Survey results (Figure 4) show that:

- Close to half of respondents classify their IT system for financial management functions as NI-FMIS (13 OECD countries).
- A significant group of eleven OECD countries classifies their IT system under the CI-FMIS category.
- A small group of five countries classify their IT system under the I-FMIS category.

[3] "Core" financial management functions are generally defined as functions in relation to budget execution, treasury and cash management and reporting (Uña, Allen and Botton, 2019[6]). Such systems are also sometimes referred to as "treasury systems/FMIS".

Figure 4. FMIS integration: categories in OECD countries, 2022



Note: FMIS integration classification for core PFM functions. Only showing available data for countries with a centralised or partially decentralised FMIS (29 OECD countries). In countries with a decentralised FMIS model, core functions are not managed at the central level but by individual entities. This approach prevents the integration of financial management information systems for core functions across government. Consequently, all countries with a decentralised FMIS model (Australia, Ireland, New Zealand and the Unites States) indicated to have a NI-FMIS. Data for Chile, Colombia, Israel, Mexico and Slovenia are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q19.

17. Within the large group of countries that use a NI-FMIS (13 countries), the shared and centrally managed system is used for only two financial management functions by more than half of countries. These functions are in most cases the management of budget appropriations and cash basis reporting, as is the case for instance in Germany Box 2).

Box 2. Non-integrated FMIS model: Germany example

In Germany the three main phases of the budget cycle, budget planning, budget execution and rendering of accounts are supported by “Federal Budget, Cash Management and Accounting System” system or HKR system, an integrated software package developed in-house. HKR supports budget execution for all authorities that manage federal budget funds nationwide and provides up-to-date information about the status of budget execution to all levels. The system also provides all the reports necessary for the Federal Court of Auditors and the parliament for the purpose of auditing and formally discharging a completed fiscal year.

For general administrative activities, the ministries and agencies either participate directly in the central HKR system or they use their own ERP systems. These ministry specific ERP systems are linked to the HKR system via standardised interfaces with real time access. The HKR system also has interfaces to separate systems supporting other “non-core” functions including debt management, liquidity planning, tax determination procedures and centralised customs procedures, and salaries and pension payments.

Source: Authors based on public information.

18. For OECD countries that classify their IT systems as either a CI-or I-FMIS (16 countries), the Survey results (Table 2) reveal that the level of integration of financial management functions remains limited.[4] Specifically:

- For countries that declare using a CI-FMIS, core financial management functions - budget execution, treasury functions such as payments of goods and services, grants and transfers and management of non-tax revenue, as well as reporting on cash and/or accrual basis - are commonly not systematically managed in the main FMIS.
- For countries that declare using a I-FMIS, these core functions are integrated systematically, with in most cases annual budget preparation, procurement, commitments recording, cash management also integrated in the FMIS.

19. The Survey's results also reveal that some functions currently remain managed manually by some OECD countries. Budget tagging and performance objectives management is done manually in eight and six OECD countries respectively. Commitments and guarantees are reported manually in four and five OECD countries respectively.

Table 2. Integration of financial management functions within the main central FMIS in OECD countries, 2022

Budget management

	CI-FMIS Core Integrated FMIS (11 OECD countries)	I-FMIS Integrated FMIS (5 OECD countries)
Multi-year budget baseline	45%	40%
Annual budget preparation	45%	80%
Approved budget/appropriations	82%	100%
Non- financial performance information	27%	40%
Tagging/earmarking	45%	60%

[4] These results need to be interpreted in light of differences in the types of financial management functions implemented across countries. For instance, concerning budget preparation management, three countries indicate that multi-year baselines formulation is not a function applicable in their case and ten and eleven countries provide the same answer respectively for tagging of strategic budget initiatives (e.g., on climate, gender or Sustainable Development Goals) and performance objectives management.

Revenue and expenditure management

	CI-FMIS Core Integrated FMIS (11 OECD countries)	I-FMIS Integrated FMIS (5 OECD countries)
Revenue receipts (non-tax)	91%	100%
Cash management	73%	80%
Procurement	36%	80%
Commitments	64%	80%
Payments for goods and services	91%	100%
Payroll	73%	40%
Payment of social benefits	55%	60%
Grants and transfers	91%	100%
External grants management	55%	60%

Financial reports management

	CI-FMIS Core Integrated FMIS (11 OECD countries)	I-FMIS Integrated FMIS (5 OECD countries)
Cash-basis reporting		
Interim budget execution (cash)	82%	100%
Year-end budget execution (cash)	82%	100%
Accruals-basis reporting		
Annual financial statements (accrual)	73%	80%

Note: Only showing available data for countries with a centralised or partially decentralised FMIS (29 OECD countries). Data for Chile, Colombia, Israel, Mexico, Slovenia and the United States are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, selected categories in Q22.

2.3. Technological choices

20. The main technological choice for governments in choosing a software for the management of financial management functions is between buying a commercial off-the-shelf software (COTS), often an ERP with some level of customization to match government requirements, or to develop a bespoke system, which may be done either by a commercial software developer or by an in-house IT department.

21. An off-the-shelf product offers a measure of reliability and robust processes, but the detailed processing of transactions will often not be an exact match to government processes, requiring some level of customization. Factors that discourage the use of COTS packages include the cost of the package, recurrent license fees and the costs associated with customization, which constitute major cost elements of a systems implementation project (Hashim, 2014[1]). In general, the more customization the government requires the less value is realized from taking an off-the-shelf product.

22. Bespoke products have the advantage of more exactly matching government needs as the software is developed to precisely match the user requirements and can more easily adapt to changing business processes. On the other hand, to work well, governments need to provide very precise specifications of business processes and controls. This can be very costly and time-consuming, requiring extensive expertise in technical aspects, business operations and project management. Korea's DBrain2 system provides a good example of a bespoke system, developed in cooperation with a specialist software development company, that integrates a much broader range of financial management functions than a typical FMIS to suit government's needs.

23. Another important technological choice is in relation to cloud-based computing. Cloud-based computing allows for the delivery of various services such as storage, servers, databases, networking, software, analytics, and intelligence, through the internet. It offers greater scalability, flexibility, and resilience to FMISs, ensuring systems are both accessible and robust, capable of handling varying workloads with optimal performance. Moreover, their accessibility from anywhere with internet connection supports real-time data processing and access, enhancing the efficiency and timeliness of operations and decision-making.

24. Typical concerns are the security of data, especially in the case of sensitive and confidential information. This includes concerns regarding cyber threats, data breaches and unauthorized access. Other concerns can be the location of data storage and vendor dependency in case applications and data are not easily transferable. Governments have addressed these issues by developing policies, protocols, and framework agreements with cloud service providers.

25. Despite each technological choice having its benefits and challenges, the Survey shows clear key technological trends with COTS being the choice of a majority of respondents for their CI or I-FMIS. It is however interesting that the technology capacity to reflect all relevant business processes within government is among the top-five challenges of IT projects identified by respondents (Figure 8). Another related commonly cited challenge is the performance of the COTS service provider. This suggests that although COTS are largely adopted, they may represent a barrier to greater integration of financial management functions in a CI- or I-FMIS.

26. Cloud-based computing being already used by almost a quarter of OECD countries and being considered for implementation by more than half of them (respectively 7 and 17 out of 30 countries). To do so, OECD countries typically:

- Adopt policies that actively encourage, or require, government departments to make use of cloud-based services and protocols, and framework agreements with cloud service providers.
- Help government agencies to decide when it's appropriate to use cloud computing services and what type of cloud services they should use and to ensure that proper safeguards are in place. For instance, governments may make use of a "private cloud" where the servers are located at a site that is under government control.

Box 3. Cloud computing: New Zealand example

The New Zealand government requires government organisations to adopt public cloud services in preference to traditional IT systems. Adoption decisions are made on a case-by-case basis following a risk assessment. A limitation on use of public cloud services is that only data classified as "restricted" or below can be stored in a public cloud service, whether it's hosted onshore or offshore.

Payroll processing is a practical example how the government facilitated transfer of a financial function to cloud computing. The objective was to deliver cost savings by avoiding the development of bespoke payroll processes and simplifying procurement from outsourced service providers. Led by the Government Chief Digital Officer (GCDO) a programme team, with input from both agencies and suppliers developed a framework of good practice benchmarks for payroll functions representing a minimum viable product for payroll processing systems. This sets out the government's requirements for payroll and payroll-related enterprise software, payroll and payroll-related managed/outsourced services, and payroll professional services. The programme team also established commercial arrangements with payroll management system providers who were able to match the requirements. Based on these individual agencies could start a secondary procurement process to payroll providers.

Source: Authors based on public information.

3 Where to from here?

3.1. Factors for change

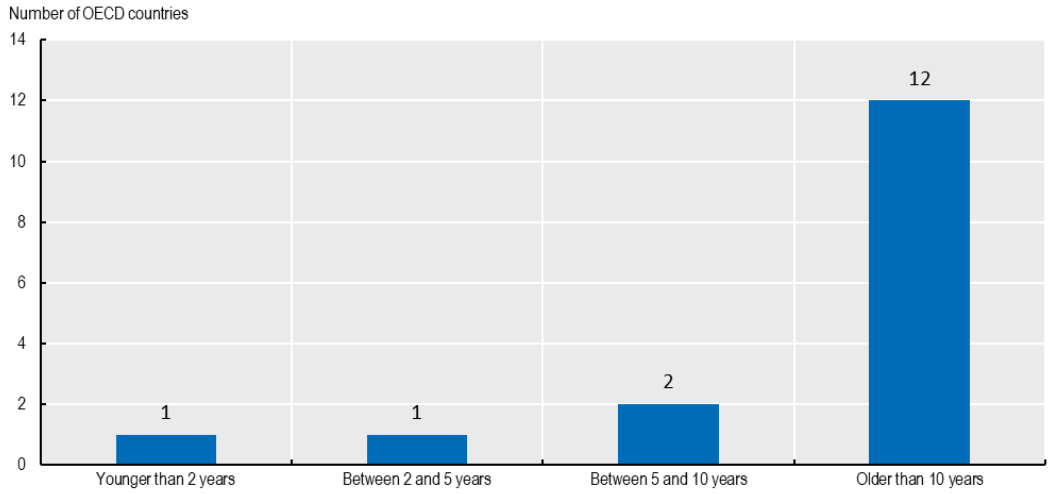
27. A notable finding of the Survey is that a large majority of OECD countries with integrated financial management systems use systems that are more than 10 years old (Figure 5). Relying on outdated IT systems poses several significant challenges and risks, including:

- Lack of efficiency as older systems are typically slower and less efficient, which can hinder employee productivity and operational efficiency. They may also lack the features and capabilities of newer systems, which can limit functionality.
- Difficulty in scaling as outdated systems may not be scalable to meet the growing needs of an organization, limiting its ability to expand or adapt to changing market demands.
- Lack of computability with newer technologies, leading to inefficiencies and limitations in leveraging modern tools and applications.
- Lack of updates and patches for newly discovered security threats, making them more susceptible to cyber-attacks, data breaches, and unauthorized access.
- Increased maintenance costs and lack of support for troubleshooting and repairs.

28. Therefore, unsurprisingly, a significant number of countries are currently doing or planning an upgrade or replacement of their FMIS (Figure 6). The objectives for changes identified by these OECD are matching the challenges and risks outlined above (Figure 7). The most important factors for change are improvements to:

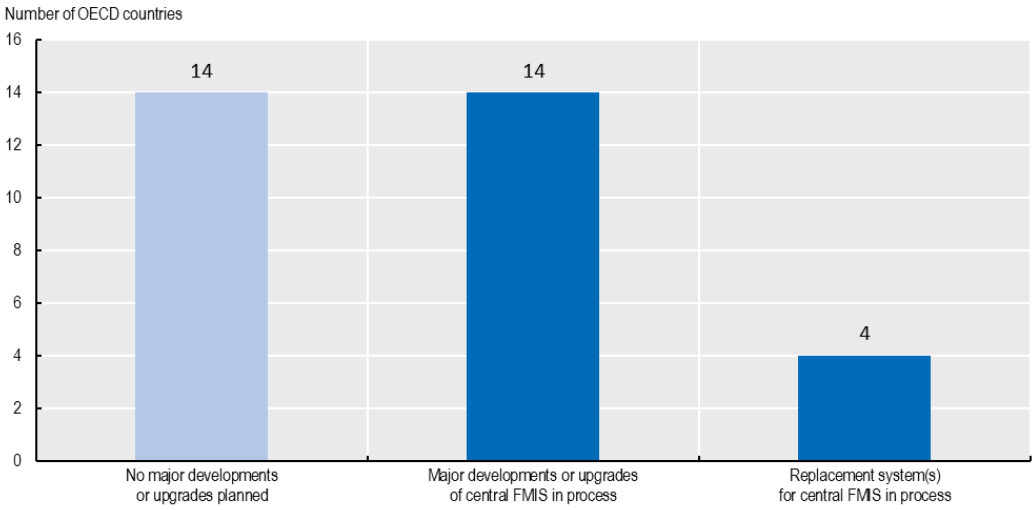
- Improvements of the technical performance of FMIS that would address most of the issues associated with legacy systems outlined above; allow developping technical functionalities that can manage newer aspects of budgeting, such as performance budgeting and tagging and earmarking of expenditures, currently poorly supported by FMIS; and support new AI-based technologies effectively.
- Capabilities for data analysis. Data and data flows are an essential resource for governments in increasingly digitised economies. Governments want their FMIS to facilitate data analysis, which in turn will support management decision making and policy development.
- Integration of financial management functions. As noted above, a significant group of countries use a centrally managed system for only two financial management functions, leaving some core financial activities outside of the shared system. In such cases, greater systems' cohesion or greater integration is seen as an objective. In the case of Ireland and Greece, for a centralised and integrated model is on-going. In the case of Ireland, some modules of the new FMIS already available to a number of line departments.

Figure 5. FMIS lifecycle stage in OECD countries, 2022



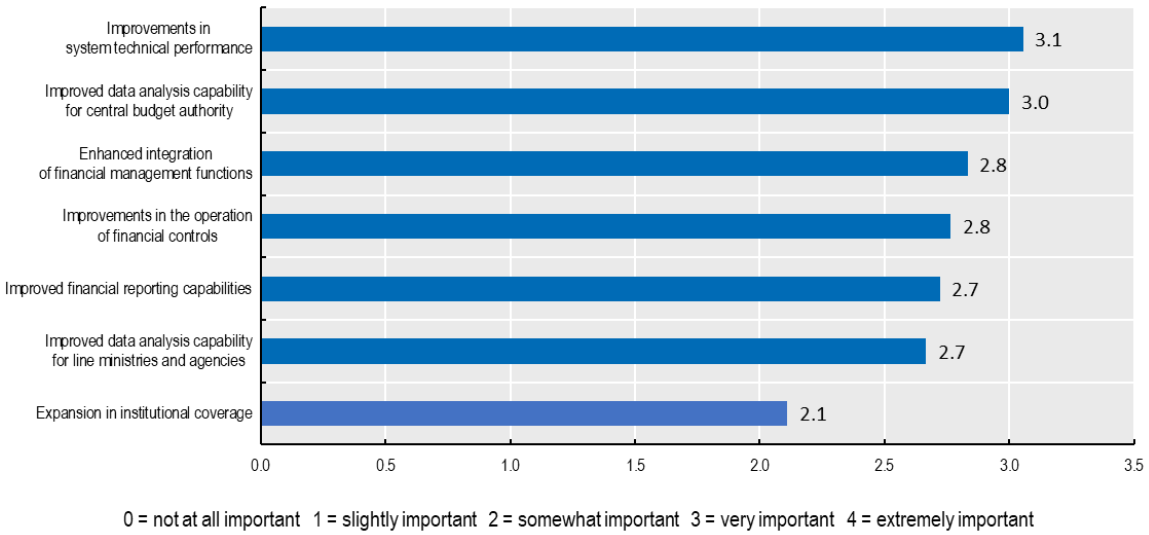
Note: Only referring to countries with an integrated FMIS, either a CI-FMIS or I-FMIS (16 countries). Data for Chile, Colombia, Israel, Mexico and Slovenia are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q21.

Figure 6. FMIS modernization strategy for central FMIS in OECD countries, 2022



Note: Data for Chile, Colombia, Israel, Mexico, Slovenia and the United States are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q23.

Figure 7. Objectives for developments and replacements in OECD countries, 2022



Note: Referring only to countries currently undertaking major developments, upgrades or replacements of their central FMIS (18 countries). Ratings present the average level of importance assigned to each objective by all respondents. Data for Chile, Colombia, Israel, Mexico, Slovenia and the United States are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q24.

3.2. Breaking new technological grounds

29. The improvement of technical performance of FMIS is intrinsically linked to the adoption and integration of new technologies. The Survey's focus on Business Intelligence (BI) tools, Artificial Intelligence (AI), and blockchain reflects a recognition that these advanced technologies are likely to be pivotal in enhancing the technical performance of FMIS, driving efficiency, security, and innovation in financial management (Figure 8).[5]

30. Business Intelligence (BI) tools are software applications used to analyze an organization's raw data. BI tools can enhance FMIS's functionalities by providing sophisticated data visualizations, analytical capabilities, enabling more accurate decision-making. This is the only technology that a large majority of respondents are already implementing or seriously considering implementing, in line with "improvement to data analytics" being identified as key objective for an upgrade or replacement of FMIS.

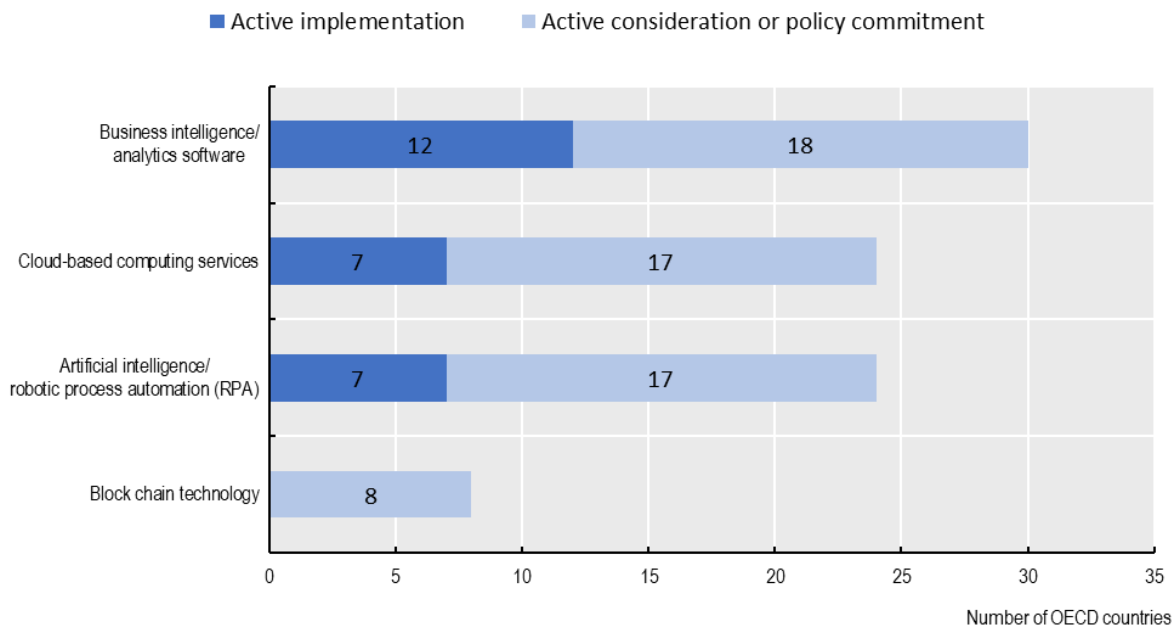
31. Robotic process automation (RPA) and artificial intelligence (AI) introduce automation and cognitive capabilities into FMIS, facilitating more efficient processing, anomaly detection, and predictive analytics, thereby streamlining financial management processes. RPA is increasingly being adopted, possibly due to its direct benefits in efficiency and accuracy of financial controls – a key factor for change according to OECD countries and availability in ERP systems. There is however noticeable caution among countries regarding the implementation of AI involving full end-to-end automation without any human intervention, due to a variety of factors including perils associated with development of models, data management and governance.

32. Finally, the Survey did not identify any examples of OECD governments making use of the blockchain technology in public financial management. However, a literature review shows keen interest

[5] Cloud computing being arguably a less recent technology is discussed in section 2.3 above.

in its long-term potential. For example, the US Government has looked at the use of the blockchain technology in financial management of federal research grants. (JFMIP, the Joint Financial Management Improvement Program, 2023[2])

Figure 8. Government interest in technology developments for financial management in OECD countries, 2022

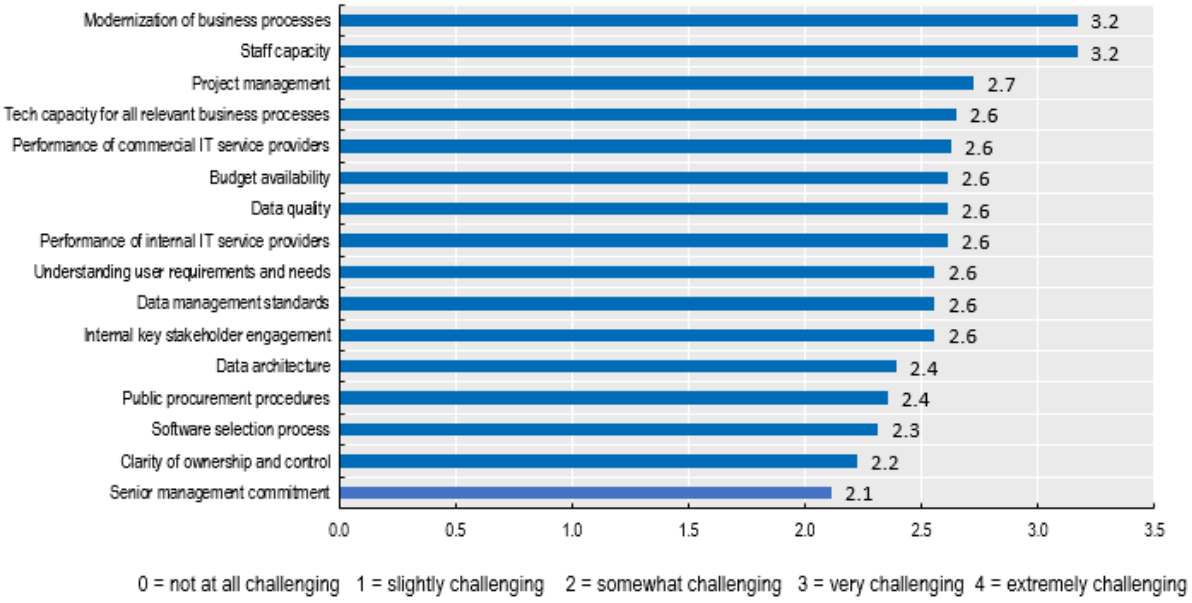


Note: Data for Chile, Colombia, Israel, Mexico, Slovenia and the United States are not available. For cloud-based computing services, data for Czechia and Iceland are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q26.

3.3. Challenges

33. The Survey asked countries to rate various challenges they might face in developing or replacing their FMIS (Figure 9). Four types of challenges stand out. Firstly, the modernization of business processes; secondly, staff capabilities; thirdly, capacity of technologies to meet government needs and quality of IT service providers; and finally, data challenges.

Figure 9. FMIS development and replacement challenges in OECD countries, 2022



Note: Referring only to countries currently undertaking major developments, upgrades or replacements of their central FMIS (18 countries). Ratings present the average challenge level assigned by all respondents. Data for Chile, Colombia, Israel, Mexico, Slovenia and the United States are not available.
Source: OECD (2022), OECD Financial Management and Reporting Survey, Q25.

34. The most significant challenge is in relation to business processes. Indeed, when implementing an FMIS, countries may automate existing processes; streamline existing processes (i.e., by simplification of tasks, or elimination of unnecessary steps); or re-engineer processes (i.e., a radical redesign of processes to respond to changing business and user needs). In the latter case, because of the required profound changes in work practices, tasks and functions, reforms may be met with resistance.

35. It is unsurprising that modernization stands out as a major challenge, given governments' plans to introduce of transformative new technologies. For instance, RPA automates routine tasks such as data entry and transaction processing. While this automation is expected to allow staff to focus on more strategic activities, boost productivity and minimize errors, it could also encounter resistance due to job displacement and changes to work routines. Successfully integrating RPA requires addressing these concerns through effective communication, training, and reassurances of job evolution rather than elimination.

36. The availability of staff with the technical skills and expertise to operate the FMIS was rated as the second most important challenge. Investment in in-house digital capabilities is needed for all software solutions. Failure to anticipate these needs, coupled with sometimes complex hiring and assignment processes in the public sector, has created significant problems in the past. Going forward, managing skills issues will be key for realizing the potential of the new technology.

37. In particular, addressing the skills challenges associated with implementing transformative technologies like data analytics and RPA will require a strategic approach to workforce development. This necessitates not only investing in recruiting individuals with digital capabilities, which most OECD countries are already actively addressing (OECD, n.d.[3]), but also creating multidisciplinary teams and enhancing the training and development of current staff with programs focusing on upskilling and reskilling employees to handle new software and hardware, emphasizing areas like data analytics, cybersecurity, and process management. (OECD, 2021[4])

38. Technologies and service providers are another issue. Previous waves of reforms have highlighted challenges relating to unforeseen costs, including for maintenance and upgrades, complexity of implementation, due to lack of adaptability to government needs, but lack of flexibility in the implementation phase. In response to this, countries are exploring new approaches, including investing in in-house capabilities to develop and manage new technologies. An example of this is France's creation of a vast unit (DTNUm) within the ministry of finance to drive the digital transformation, including developing technical solutions and piloting use cases of new technologies.

39. Finally, data-related challenges – in particular quality and management standards – are also commonly identified. Different departments or units might have developed their own data handling practices over time, generating challenges for ensuring the accuracy, completeness and consistency of data used as part of the PFM cycle. Such challenges are particularly prevalent with regards to performance data, which is an important component of modern performance-based budget frameworks.

40. In many OECD countries, establishing a uniform standard for financial non-financial data across all government is needed, which will require that several actions be taken including establishing a data governance framework, greater coordination and in many cases a significant cultural shift.[6] Further, some countries could consider the integration of functions and data in relation to performance management in the main FMIS, which is as noted above currently very low.

41. Addressing data challenges will require tight coordination with the agency overseeing the government's digital strategy. Such alignment ensures that FMIS development not only complements but also reinforces the broader digital government strategy, the data governance framework, and other digitalization initiatives. This holistic approach is essential to harness the full potential of technological advancements in public financial management.

[6] Data governance refers to the set of policy instruments that secure timely, effective and trustworthy access, sharing and use of data across the public sector (OECD, 2019[8]).This includes "diverse arrangements, including technical, policy, regulatory and institutional provisions, that affect data and their creation, collection, storage, use, protection, access, sharing and deletion, including across policy domains and organisational and national borders" (OECD, 2022[7])

4 Conclusion

42. OECD countries have implemented significant and innovative IT reforms in the past, which have underpinned the development of strong and modern public financial management frameworks in most countries. Their experience tend to show that no FMIS design or software choice is intrinsically superior to another. Rather success of an FMIS hinges significantly on policy decisions that consider:

43. The wider legal and public financial management frameworks, and related opportunities and challenges including relationships between different levels of government and the level of autonomy of the various entities within central government, which in turn shape administrative responsibilities or reporting requirements.

44. Key objectives for the digitalisation of financial management functions and need for standards and guidance, such as government-wide criteria for FMIS procurement, a unified framework for charts of accounts, and standardized risk assessments for cloud-computing services. Therefore, the effectiveness of an FMIS depends on well-considered policy choices that support its implementation.

45. Despite undeniable early successes in rolling out FMISs, many governments now find themselves locked into legacy technologies that are insufficiently responsive to changing financial management needs and new expectations of internal and external users. Accordingly, a large number of OECD countries plan major changes or upgrades to their system. This accumulated experience from the successes and challenges encountered in previous waves of FMIS rollouts has equipped them with better insights and strategies for these upcoming reforms. They have learned valuable lessons in particular in areas such as approaches to system integration, user training, and balancing customization with standardization.

46. While historical lessons are invaluable, they may however not be enough for implementing successful reforms as OECD countries navigate the frontier of recent technological advances that set the stage for a potential revolution in digitalisation of financial management functions, likely even more transformative as the earlier widespread adoption of ERP systems. The integration of cutting-edge technologies into FMIS will introduce new complexities requiring that ministries of finance identify where new challenges may arise and appropriate ways to prevent or mitigate them.

47. In doing so, ministries of finance need to acknowledge a paradigm shift, which is that:

- FMIS reforms will probably have to be implemented at quicker speed going forward, possibly through continuous transformation plans, to keep up with technological advancements.
- FMIS reforms will take place in the wider context of government's digital transformation strategies which set new and ambitious government-wide objectives including bringing governments closer to citizens and businesses (OECD, 2014[5]).

48. Future FMISs should not aim only to improve financial management efficiency but also be able to evolve quickly and support effectiveness of policies and create more open, transparent, innovative, participatory and trustworthy governments. More than ever, a "business as usual" approach to FMIS that reinforces existing internal government processes would likely lead to disappointing outcomes and public criticism.

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