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## Micro, Small and Medium-Sized Enterprises participation in public procurement: challenges and creative alternatives—a systematic literature review.

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**Abstract**

This article provides a systematic review of the literature on the participation of small and medium-sized enterprises (SMEs) in public procurement in the context of the digitization of procedures. The methodology adopted is based on the PRISMA guidelines. A corpus of 61 scientific articles published between 2015 and 2025 was selected and analyzed. Bibliometric analysis was performed using VOSviewer software to identify thematic trends and research networks, while qualitative content analysis was conducted using NVivo software.

The results highlight several major obstacles encountered by SMEs, including a lack of digital skills, the costs of technological adaptation, the complexity of the regulatory framework, and information asymmetries. At the same time, the digitization of public procurement offers significant opportunities, such as improved transparency, reduced transaction costs, and increased competition. However, the review reveals a lack of in-depth empirical studies, particularly concerning very small enterprises, as well as a lack of consideration of the specificities of local contexts, particularly in developing countries.

This article is part of doctoral research on SMEs access to public procurement, constraints, and innovative solutions, and contributes to identifying gaps in the literature, thus opening up prospects for future research.

In conclusion, this study shows that the digitization of public procurement serves both as a strategic lever for improving transparency and performance, and as a driver of transformation that requires targeted support for SMEs in order to reduce inequalities in access and promote their effective integration into public procurement systems.

**Keywords:** SMEs, public procurement, innovation, digitization of public procurement

## Résumé

Cet article propose une revue systématique de la littérature sur la participation des petites et moyennes entreprises (PME) aux marchés publics dans le contexte de la numérisation des procédures. La méthodologie adoptée s'appuie sur les lignes directrices PRISMA. Un corpus de 61 articles scientifiques publiés entre 2015 et 2025 a été sélectionné et analysé. Une analyse bibliométrique a été réalisée à l'aide du logiciel VOSviewer afin d'identifier les tendances thématiques et les réseaux de recherche, tandis qu'une analyse qualitative du contenu a été effectuée à l'aide du logiciel NVivo.

Les résultats mettent en évidence plusieurs obstacles majeurs rencontrés par les PME, notamment le manque de compétences numériques, les coûts d'adaptation technologique, la complexité du cadre réglementaire et les asymétries d'information. Dans le même temps, la numérisation des marchés publics offre des opportunités importantes, telles qu'une transparence accrue, une réduction des coûts de transaction et une concurrence accrue. Cependant, l'examen révèle un manque d'études empiriques approfondies, en particulier concernant les très petites entreprises, ainsi qu'un manque de prise en compte des spécificités des contextes locaux, notamment dans les pays en développement.

Cet article s'inscrit dans le cadre d'une recherche doctorale sur l'accès des PME aux marchés publics, les contraintes et les solutions innovantes, et contribue à identifier les lacunes dans la littérature, ouvrant ainsi des perspectives pour de futures recherches.

En conclusion, ce travail montre que la numérisation des marchés publics constitue à la fois un levier stratégique d'amélioration de la transparence et de la performance, et un facteur de transformation qui nécessite un accompagnement ciblé des PME afin de réduire les inégalités d'accès et favoriser leur intégration effective dans les systèmes de commande publique.

**Mots-clés** : PME, marchés publics, innovation, numérisation des marchés publics

## Introduction

In a global context marked by technological change, and with Morocco's opening up to the international arena, reflected in the signing of free trade agreements, particularly with the EU, Turkey, and the United States... The latter has put forward several strategies and reforms aimed at modernizing public administration in order to guarantee a high-quality public service while following a well-developed management system based on the development of e-government and the use of the latest technical and technological advances to ensure fairness in the processing of user files, while improving transparency and fluidity in management, not to mention introducing a number of measures to combat corruption, while maintaining effective and efficient management of public resources and expenditure.

Public procurement management is one of the pillars of good governance, as it is considered by **Burton (2005) and Thai (2001)** to be a basic element for the optimal allocation of public resources.

Thus, the digital transition of public procurement is a major change for small and medium-sized enterprises (**Mwale and al., 2025**), offering both considerable opportunities and complex challenges. Even though micro- enterprises and SMEs are frequently under-represented in these processes, resulting in significant economic losses (**Schmitz & Wimmer, 2024**).

Despite the announcement of a budget of MAD 340 billion for investments in the 2025 finance bill, small and medium-sized enterprises (SMEs) will not be able to benefit from this sum. This is due to the non- application of the 2013 law, which stipulates that 20% of public contracts should be awarded to these companies, and which has still not been implemented in the absence of an implementing decree. This gap is a lost significant amount of money Africa businesses in Morocco spend. (**www. ecoactu. ma**).

However, the reform aimed at digitizing public procurement procedures could be a lever for change by improving transparency, enhancing traceability, and making access to contracts more equitable. Indeed, the digitization of public procurement and the existence of digital platforms reduce administrative burdens on the one hand and limit discriminatory practices on the other. In addition, these solutions offer SMEs a real opportunity to compete for public contracts on fair terms.

Thanks to digitization, micro-enterprises and SMEs can not only benefit from fairer and more inclusive public procurement rules (**Hoekman and Taş, 2020, 2022**), but also take advantage of access to markets that were previously closed to them thanks to e-commerce platforms (**Ballerini and al., 2023**).

However, they face organizational and technological challenges and must be able to allocate the necessary resources. They face organizational and technological challenges, not to mention significant resource requirements (**Khan & Hinterhuber, 2024**).

In addition to digitization as a means of facilitating equitable access to public procurement, it very rarely translates into equal adoption and exploitation of its benefits. In fact, large companies are the primary beneficiaries of these innovations, while SMEs, and especially micro-enterprises, remain on the sidelines (**Zeller & Drescher, 2017; Gunasekaran and al., 2009; Archer and al., 2008**).

With this in mind, the main objective of this article is to conduct a systematic review of the literature on the influence that the digitization of public procurement would have on micro, small, and medium-sized enterprises (MSMEs). More specifically, this research aims to conduct a structured analysis of the opportunities offered by digitalization, as well as the constraints that limit the effective integration of MSMEs into public procurement systems.

This article attempts to highlight the concrete impacts of this digital transformation by centralizing and organizing existing information on the opportunities available (expanded access to public procurement, optimization of administrative processes, enhanced competitiveness) and on the persistent obstacles faced by microbusinesses and SMEs (technological issues, limited organizational capacity, resource shortages, etc.).

This article focuses solely on academic literature on the topic of SMEs and the digitization of public procurement. The guiding research question is: In a new public management approach, How can innovative solutions help make public procurement accessible to micro and small businesses by overcoming structural barriers?

In order to present a thorough and structured analysis, this document is divided into several parts: the first part sets out the theoretical and conceptual framework of the research. The second part describes in detail the methodology of the systematic literature review, specifying the data sources and study selection criteria. The third part presents the main results of the research, focusing on the advantages and challenges of electronic procurement for micro, small, and medium-sized enterprises. Finally, the last part concludes the study, identifies gaps in the research, and proposes an appropriate analytical framework, which will be the subject of our next empirical article.

Thus, the structure of the article allows for a step-by-step exploration of the issue at hand, integrating a theoretical framework, an empirical analysis of the literature, and research perspectives.

## 1. The theoretical conceptual framework

To understand the impact of the digitization of public procurement on micro-enterprises and SMEs, it is essential to base the analysis on a solid theoretical and conceptual framework. Indeed, the digital transition, and in particular the dematerialization of public procurement, is much more than a simple technological change: it aims to create public value, reduce transaction costs, and ensure transparency and equal access to economic opportunities. However, small and very small enterprises, which are generally the most vulnerable due to their lack of financial, technological, and organizational resources, are disproportionately affected by these transformations.

This section provides an in-depth analysis of the fundamental theoretical concepts underlying this dynamic, drawing on innovative research and its relevance in various contexts.

### 1.1. Public procurement

Public procurement is considered a strategic tool for promoting productive development **(Special Commission on the Development Model, 2021)**.

It refers to all the procedures through which public entities obtain goods, services, or works from private suppliers, under the aegis of legal regulations designed to ensure transparency, fair competition, and economic efficiency **(Thai, 2001)**.

In Morocco, public expenditure is implemented in four consecutive stages: commitment, liquidation, authorization and payment.

**Commitment:** refers to the action by which the public entity (the State, local authorities, their institutions and their groupings) establishes or recognizes an obligation that is likely to generate a cost. It must operate within the framework of budgetary authorizations and remains subject to the decisions, advice, or approvals stipulated by laws or regulations **(Article 33 of the Royal Decree of April 21, 1967, concerning the general regulations of public accounting)**.

**Settlement:** The purpose of settlement is to verify the existence of the debt and determine the amount of expenditure. It is carried out by considering the securities that confer rights on creditors (Article 34 of the Royal Decree).

**Authorization:** Depending on the results of the liquidation, authorization is the administrative action that allows the public entity's debt to be settled.

**Payment:** This is the payment of the sum by which the public entity settles its debt.

**(Grandia, J. and al., 2023)** explained that researchers and practitioners have presented the public procurement process in different ways. Some authors suggest specific models, some linear in nature, others circular. Although there are differences, there are no clear contradictions between the different models.

If we take the circular process model (3 P model: Preparation, Purchase, Execution) developed by **Schotanus (2022)**, it is based on three essential steps to illustrate the public sector procurement process, namely: preparation, purchase, and execution.

The circular dimension of the process influences the procurement actions that underpin purchasing decisions, such as reducing consumption, extending the life of products, or reusing them rather than resorting to disposable items. Although public procurement and private purchasing differ, the stages of acquiring and using goods and services remain similar. However, this model incorporates concepts such as policy objectives, the procurement process, the social contract, and components of the circular economy, which involve the specificities of public procurement (**Grandia, J. and al., 2023**).

Public procurement procedures, while necessary to ensure rigor and transparency, constitute barriers for micro-enterprises and SMEs. This problem was identified as early as 2005 by Loader in his study on the structural difficulties encountered by small businesses in the context of UK public procurement. (**Loader, 2005**)

highlighted administrative complexity, high documentation requirements, and lack of resources as significant barriers for this type of business.

The adoption of digital technologies in management in general, and in public procurement in particular, improves organizational efficiency, especially in terms of administrative complexity and, above all, management costs. This simplification offers micro-enterprises and SMEs the opportunity to better integrate into public procurement procedures.

According to a study by (**Pavic, and al., 2007**) on the effects of digitization on small businesses, the digital transition of public procurement brings considerable benefits to SMEs: reduced operating costs, easier access to markets, and increased competitiveness. However, according to (**Hellwig, and al.,2021**), this transition requires a variety of skills, including technical, analytical, and managerial skills, in order to be successful. (**Mwale & Mutono-Mwanza 2025**) point out that the level of digital literacy within organizations is a major obstacle in developing countries, thus slowing down the integration of digital technologies.

In summary, public procurement, once seen as a simple purchasing mechanism designed to meet administrative needs, is now a strategic factor in public policy. Indeed, it is no longer limited to budget management or transactional operations, but represents a procedural lever that can guide economic, social, and technological progress.

In this regard, (**Demircioglu & Vivona 2021**) explain that public procurement is not limited to efficiency and transparency; it can also be used to stimulate innovation and support collective priorities such as sustainable development or inclusion. Their empirical study demonstrates how public procurement can be an important procedural tool, particularly in the field of

innovation. Based on data from the 2010 Inno-Barometer, which covers 4,063 public organizations in 29 countries, the study details how public procurement, as a public policy instrument, can guide the implementation of innovations in the public sector.

Therefore, by integrating public procurement into a procedural rather than exclusively economic governance framework, it is easier to understand its role in the digital transition. The automation of tendering procedures is part of this trend, as it aims to simplify processes, thereby reducing participation costs and improving equitable access, which is particularly beneficial for SMEs and micro-enterprises.

## 1.2. Microbusinesses and SMEs

Small and medium-sized enterprises play a key role in various economic sectors such as services, agri-food, construction, retail and wholesale trade, manufacturing, real estate, and import-export (Aguilar, 2016; Akenroye and al., 2020; Mingming, 2016).

Based on an analysis of the literature reviewed, it appears that there is currently no comprehensive review available on the involvement of VSEs and SMEs in public procurement. It is therefore very important to conduct this research, emphasizing the crucial role that VSEs and SMEs play in economies. The initial investigations have aimed at different aspects of the participation of SMEs in public procurement, such as policies (Kidalov, 2013; Flynn & Davis, 2016), obstacles (Saastamoinen and al., 2017; Akenroye & Aju, 2014), accessibility (Abdellatif & Zaky, 2015; Loader & Norton, 2015), capacities (Flynn & Davis, 2017; Akenroye and al., 2020) and success factors (Glas & Ebig, 2018). These studies have relied on qualitative and quantitative approaches.

According to Storey (1994), SMEs, characterized by fewer than 250 employees and limited resources but a high capacity for innovation, play a central role in the local and global economy. Digital technology brings both challenges and opportunities to small businesses and startups. On the one hand, the use of digital technologies can help these entities overcome the traditional limitations imposed by a lack of resources, improve their operational efficiency, and strengthen their competitiveness.

It is very important to promote the participation of SMEs in public procurement in order to generate inclusive economic growth and develop a dynamic entrepreneurial ecosystem, as they are major players. By responding to calls for tenders, SMEs can obtain larger contracts, establish lasting partnerships, and improve their competitiveness in the market. Beyond that, the presence of SMEs in public procurement through contracts will not only provide them with profits but also with the means to develop (Glas & Ebig, 2018; Kidalov, 2013; Loader, 2013).

Ancarani, Di Mauro, and Hartley (2019) have shown that digital technology facilitates SME participation in public procurement, thereby reducing barriers to entry. This gain is fundamental in a context where resources are limited.

On the other hand, the use of e-commerce platforms could be beneficial to small businesses and startups in order to multiply their sales channels, generate revenue from different sources, and increase their productivity. These organizations can take advantage of digital channels, which have a wide reach and are easily scalable, to transcend their geographical boundaries and compete at a much higher level. **(Korhonen, JJ & Halen, M, 2017).**

However, **(Babica and al 2019)** have pointed out that difficulties such as initial implementation costs, insufficient digital skills, and inadequate infrastructure still exist, and that the transition from theory to practice still requires a great deal of effort.

Therefore, SMEs very often face multiple significant problems, such as limited access to business opportunities and markets, low production capacity, weak competitive advantage, and unreliable markets **(Asgary and al., 2020; Mauro and al., 2020)**. According to statistical data from the National Bureau of Statistics (NBS) and the World Trade Organization (WTO) in 2020, only 20% of small and medium-sized enterprises (SMEs) have secure access to sustainable markets and business opportunities. In addition, large companies dominating public markets benefit from their vast resources, experience, and more extensive networks **(Flynn & Davis, 2017; Glas & Ebig, 2018)**.

Indeed, the effective use of digital marketing and online sales techniques often requires the acquisition of digital skills and know-how within the organization. Thus, small businesses and startups must not only train their staff but also provide them with ongoing professional development so that they are able to use digital tools and platforms effectively. **(Voorneveld, M, 2023)**.

In addition, government actors and industry support entities can play a pivotal role in the creation of collaborative networks and the building of digital ecosystems by setting appropriate regulatory frameworks, incentives, and support measures. This may include innovation hubs, networking events, and crowdfunding programs that increase cooperation between small businesses and startups with a broader range of partners in the ecosystem. **(Santos, AR, 2023)**. It should be noted that quantitative research exploring the effect of barriers to entry in public markets for Small Businesses is less significant **(Flynn & Davis, 2016; Flynn, and al., 2015)**. Hence, most of the articles focus on the ex ante factors of the involvement of SMEs in the reform of the digitalisation of public procurement, emphasising issues such as systemic barriers, the capacity of SMEs to respond to tenders, and the political actions and initiatives aimed at facilitating their participation. The post-event aspects of the participation of SMEs, such as the

effects on expansion and innovation for SMEs or the sustainability of the public sector, are less frequently taken into account. **(Anthony Flynn 2025)**. This will give us important research leads to delve deeper into the research on this topic.

### 1.3.The digitization of public procurement

Improving the quality of public procedures and services has become an essential practice today **(Bartoli, Blatrix, 2015)**.

With this in mind, governments are very aware of the contribution of digitization to their management systems. Whereas previously, digitization and dematerialization were concerns of the private sector, today this progress has also become a strategic issue for public organizations **(Sebai, 2021)**.

The digitization of public services (e-government) refers to any use of new information and communication technologies (NICT), based mainly on the use of the internet, for the purpose of ensuring quality public services for users.

According to the **OECD (2020)**, the digitization of public procurement is an IT tool that enhances management transparency and facilitates the participation of small and medium-sized enterprises (SMEs).

Therefore, in order to reap the benefits of digitization, a comprehensive strategy should be developed that takes into account the satisfaction of all stakeholders **(Mergel and al. 2019)**.

**(Hardy & Williams, 2008)** explained this approach by demonstrating how digitization reduces transaction costs, speeds up procedures, and improves access to opportunities. These benefits are particularly appreciated by SMEs.

This observation has been confirmed by **(Ancarani, and al., 2019)**. According to these authors, the digitization of e-procurement makes it easier for small and medium-sized enterprises to bid, thereby reducing barriers to entry. This is a significant advantage in economies where resources are scarce and limited.

The digitization of public procurement therefore makes it possible to circumvent the cumbersome nature of traditional bureaucracy by automating procedures, reducing the need for paper, and allowing for the control and monitoring of transactions. In this way, it enables easier, faster, and more objective management of public procurement processes. Therefore, according to transaction cost theory, digital control of bureaucracy results in reduced management and transaction costs for investors, which, in turn, is one of the possible factors contributing to a region's attractiveness and its ability to attract foreign investment **(De Beule, and al., 2022)**.

However, **(Halonen, K. 2019)** confirmed that despite one of the main objectives of the public procurement digitization strategy being to encourage SME involvement by simplifying tendering processes, these processes remain highly bureaucratic.

It can be complex for economic actors to find the "right" contracts, as this requires specific experience not only in detecting but also in analyzing contract notices. In addition, the impacts of digitization remain confined to specific areas due to language barriers; for example, in Finland, the majority of tender documents are written in Finnish.

According to this author, small and medium-sized enterprises often struggle to be competitive in terms of price, while the use of digital procurement systems focuses solely on price (rather than value for money), which automatically excludes this type of company.

**(Costa, and al., 2013)** also explain other technical and technological problems. According to these authors, although the digitization of public procurement aims to achieve transparency and equality between different players, in reality there are technical and organizational barriers to entry that hinder the participation of certain suppliers, especially small ones (SMEs and VSEs), which do not have the necessary and sufficient resources and skills to meet market requirements.

**(Babica and his colleagues, 2019)** summarized the major problems faced by micro-enterprises and SMEs, which are related to initial implementation costs, insufficient digital skills, and a lack of adequate infrastructure.

Thus, there are authors such as **(Setia, and al., 2013)** who take a realistic approach to criticizing those who highlight the benefits of digitizing public services. They believe that these arguments are overly optimistic and enthusiastic, and do not correspond to reality.

These authors believe that we should not only focus on the virtues of e-procurement, such as transparency, efficiency, and traceability, while ignoring the conditions that will enable them to be achieved and established. These conditions relate to structural and organizational mechanisms, technical mechanisms, and individuals. Without them, no reform is possible. But the problem is that there will be a huge gap between projections and reality. It will cost more and significantly slow down the implementation of public procurement dematerialization policies.

According to a research study **(MECHOUH, and al., 2024)**, the authors prepared a field survey in the form of a questionnaire addressed to a sample of civil servants composed of 84% men and 16% women, of whom 40% are executives, 31% held positions as division heads or department heads, and 26.4% were directors, to determine the impact of the implementation of electronic public procurement on the performance of the administration. According to these authors, the interviewees expressed that despite the great efforts made in the digitization of public procurement, the issues of transparency and strengthening the accountability of stakeholders had not improved.

Given this situation, it could be argued that the digital revolution offers encouraging prospects, but *it should not be approached naively* (Carlos Santiso, 2019). All the challenges associated with this revolution must therefore be taken into account in order to overcome them.

## 2. Methodology

This article is based on a systematic literature review, as defined by (Tranfield and al., 2003), which is a fundamental step in any management science research. This method aims to examine the extent to which the scientific evidence published in the literature is sufficient to accurately answer a research question.

As part of this review, we first conducted a structured literature search to identify articles dealing with SMEs and the topic of public procurement digitization that had been published in peer-reviewed academic journals.

From an epistemological point of view, we opted for a positivist approach. This choice was motivated by the objective of our research, which aims to systematically analyze the impact of the digitization of public procurement on the performance of SMEs. The aim is not only to capture the perceptions of stakeholders, but above all to identify, analyze, and evaluate, based on previous work, the tangible impacts of digitization in terms of transparency, efficiency, cost reduction, access to opportunities, and the improvement of companies' competitive , without forgetting the negative impacts and difficulties encountered by these companies in the face of the reform of public procurement digitization. Thus, the positivist approach allows us to rely on published empirical data, establish causal relationships, and produce a methodical and generalizable synthesis of results, in accordance with the criteria of systematic literature reviews.

The digitization of public procurement is seen as an opportunity to improve the transparency, accessibility, and efficiency of procedures. However, there is still little research on its impact on small and medium-sized enterprises (especially very small enterprises), particularly with regard to simplifying access to public procurement, reducing administrative costs, and increasing competitiveness. This review therefore aims primarily to outline the real impacts of digital innovations on microbusinesses and SMEs by identifying the opportunities they can derive from digital technologies as well as the obstacles they may face, in order to better understand the extent to which digital technology can help them to better position themselves in public procurement markets and, more broadly, support them in their growth and economic development.

This study therefore focuses primarily on the issue of the digitization of public procurement and its impact on microbusinesses and SMEs, a highly topical subject.

### 2.3.Documentary research protocol:

Our systematic literature review is based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method, which is an indispensable approach for high-quality systematic reviews and meta-analyses. It improves the transparency and reliability of the research.

Using this approach, we followed a research protocol that began with a keyword search for articles in academic databases such as Scopus, Sciences Directes, and Google Scholar. These databases were selected for their multidisciplinary scope and the value of the publications indexed in the fields of management, economics, and digital technologies.

We used **Boolean** operators (AND, OR, NOT) and, where necessary, **truncation** (\*) to broaden the search. The keywords for our research were as follows:

- **Digitalization:** digitalization, digital transformation, e-procurement, electronic procurement.
- **Public procurement:** public procurement, public tendering, public purchasing.
- **SMEs/VSEs:** SME, SMEs, small and medium enterprises, small business, small firms, micro- enterprise, very small business, VSE, SME.
- **Performance/impact:** performance, impact, efficiency, effectiveness, competitiveness, transparency, access, adoption, barriers, challenges, opportunities.

The majority of the articles selected are in English, a predominant language in global scientific publishing, which allows access to a wide range of resources created by researchers from different countries. These decisions broaden the scope of the study and ensure a comprehensive and representative overview of research on the digitization of public procurement and small and medium-sized enterprises.

#### 2.3.1. Criteria for including and excluding articles

We focused on the period between 2015 and 2025, with a total of 196 articles returned from the SCOPUS, GOOGLE SCHOLAR, and SCIENCES DIRECTS databases. The articles were imported in CSV format for processing. We examined and analyzed the title and abstract of each article to verify whether or not they were eligible based on article inclusion and exclusion criteria (see **Table 1**). The articles had to deal, in whole or in part, with the digitization of public procurement in relation to microbusinesses and SMEs. The preliminary selection stage led to the elimination of 110 articles that did not meet this criterion.

Some summaries (25 articles) referred to SMEs and the public sector, but did not link them to public procurement, while others mentioned SMEs and public procurement without linking them to the public sector. This led to their elimination, leaving 61 articles after deduction.

**Table N°1: Criteria for including and excluding articles**

Inclusion criteria	Exclusion criteria
<p><b>Date:</b> Articles published between 2015 and 2025.</p> <p><b>Thematic relevance:</b> Articles containing relevant keywords, either in the title, abstract, or body of the article, relating to the effect of e- procurement on microbusinesses and SMEs.</p> <p><b>Languages:</b> English and French are the predominant languages in relevant scientific research.</p> <p><b>Fields:</b> Articles from journals related to the specified research fields (social sciences, business, management, etc.).</p> <p><b>Quality:</b> Robust empirical or theoretical methods (quantitative, qualitative, mixed).</p>	<p><b>Duplicates:</b> Similar articles detected in various databases.</p> <p><b>Date:</b> Publications prior to 2015, with a few important theoretical exceptions.</p> <p><b>Relevance:</b> Articles that do not contain keywords in the title or abstracts, or keywords that are not relevant.</p> <p><b>Quality:</b> Non-scientific works (e.g., articles from regular newspapers) or those lacking a solid methodology.</p>

**Source: Produced by us**

Taking these criteria into account, articles that were not relevant to the subject matter were set aside. Relevant articles were then selected based on the content of their abstracts and the conclusions of their contributions. This resulted in a selection of articles that were read in their entirety in order to make a final decision.

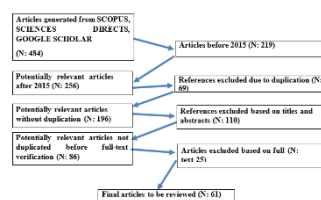
### 3. Results

This section presents the results of the systematic literature review and describes some major trends in studies on the consequences of the digitization of public procurement on microbusinesses and SMEs. It is based on rigorous methodological choices, synthesizes and links the contents of the studies to present the changes, issues, and practices addressed in recent research.

This work of identifying and analyzing the literature allows us to consider the best practices to be promoted and to guide future work on the subject of the dematerialization of public tenders aimed at VSEs and SMEs.

#### 3.1.PRISMA diagram results

**Figure N°1: Article search and selection process**



**Source: Compiled by us**

This summary figure (**Figure 1**) illustrates and recaps the procedure of finding and picking articles. The model makes sure that the literature review is conducted in a way that is both systematic and methodical, thus, the validity and importance of the findings are assured. It was through this process that we were able to gather 61 articles which were highly relevant to our research topic.

### 3.2. Characteristics of the articles obtained

#### 3.2.1 Evolution of the number of publications over time

Research on the digitalization of public procurement and on small and medium-sized enterprises has been gradually developed over the past decades with the aim of meeting the public procurement need for the integration of SMEs.

By figuring out the changes in the number of articles shown in **Figure 2**, which are related to the digitization of public procurement and SMEs between 2015 and 2025, we can distinguish several different stages.

The first one comes 2015-2020, a period marked with a sharp increase in publications. This development is a manifestation of the researchers' deepening concern about the impacts of small businesses' incorporation into the digitization of public procurement. (**Rejeb and al., 2024**) concluded that 2009 was a breakthrough year for public procurement studies as it is characterized not only by the steady increase of articles publication pace but also by the change in the research trend.

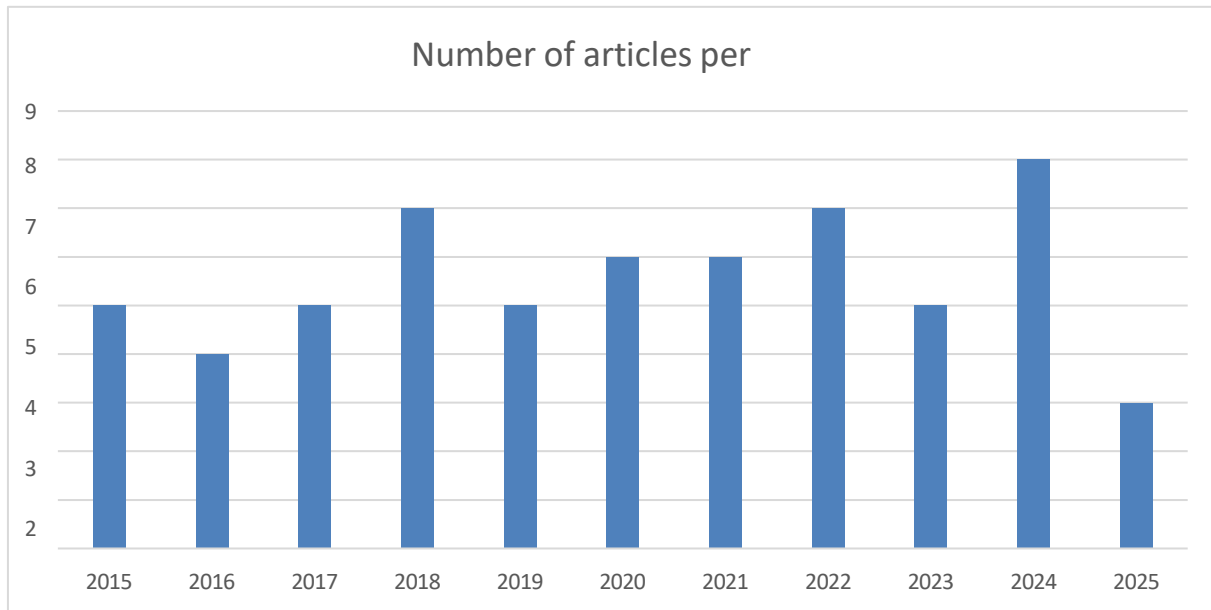
One plausible argument for the boom in policy implementation such as the European Code of Best Practices to Facilitate Access by SMEs to Public Procurement (**European Commission, 2008**), which has thus been marked by an increase in academic interest in this field. It is worth mentioning also that this growth has been heavily affected by the COVID-19 pandemic, that has fostered the use of digital technologies in the public procurement management.

Moreover, academics and practitioners have acknowledged that the involvement of SMEs in the public sector supply chains generates organizational and societal benefits (**Harland and al., 2021**).

From 2021 to 2025, there are significant variations in the evolution of publications on the digitization of public procurement and microbusinesses/SMEs. This indicates a stabilization of scientific interest in the subject. This is in line with post-COVID discussions on digital transformation and the integration of small businesses into public procurement.

We must also consider the increase in research production on the role of SMEs in public procurement during this period, compared to the general increase in research production on public procurement.

**Figure N° 2: Evolution of the number of publications over time on the subject of the digitization of public procurement and small and medium-sized enterprises (between 2015 and 2025)**



Source: Produced by us

### 3.2.2. Presentation of the main authors of articles related to our topic

**Table N°2: Main authors of articles in the field of public procurement digitization in relation to small and medium-sized enterprises:**

Author	Number of contributions	Last year of publication	Publication medium	Country of publication	Publication category
<b>T. Tammi</b>	7	2022	Scopus	Finland	Journal article, quantitative research (questionnaire, survey), case study on SMEs & public Procurement
<b>H. Reijonen</b>	6	2022	Scopus	Finland	Journal article, quantitative research (questionnaire, survey), case study on SMEs & public Procurement
<b>P. Davis</b>	7	2017	Scopus	United Kingdom, United States, Australia, Canada	Journal article, quantitative research (questionnaire, survey), case study on SMEs & public Procurement

<b>A. Flynn</b>	8	2025	Scopus	United Kingdom, Ireland, United States	Journal article, quantitative research (questionnaire, survey), case study on SMEs & public Procurement
<b>J. Saastamoinen</b>	7	2022	Scopus	Finland	Journal article, quantitative research (questionnaire, survey), case study on SMEs & public procurement
<b>D. McKeivitt</b>	5	2015	Scopus	United Kingdom, Ireland	Journal article, case study, mixed research (qualitative + quantitative method)
<b>K. Loader</b>	4	2018	Scopus	United Kingdom	Journal article, case study, mixed research (qualitative + quantitative method)
<b>A. Rejeb</b>	4	2024	Scopus	Hungary, Italy, Tunisia	Journal article / bibliometric study / literature review
<b>S. Seuring</b>	3	2024	Scopus	Germany	Empirical journal article, quantitative research (questionnaire, survey)

Sources: Compiled by us

### 3.2.3. The contribution of the main authors to our research topic

-**T. Tammi** showed that public procurement is not limited to a purchasing function but can also be used as a public policy tool to support SMEs, innovation and, more broadly, the economy and society. However, he emphasizes that policies in favor of SMEs only have an impact if they are well established: formal reforms may remain nothing more than announcements if they are not accompanied by real organizational changes.

-**A. Flynn** offers a complementary analysis by examining the causes of low SME participation in public procurement. He shows that the size of contracts, administrative complexity, and public purchasers' practices are all factors that contribute to exclusion. He places particular emphasis on the role of public purchasers: their skills, their discretionary power, and their attitude to risk are all factors that influence the reality of SME-friendly policies.

-For his part, **J. Saastamoinen** takes a more economic view of the situation. He examines the consequences of the structure of calls for tenders on the degree of competition and on SME

participation. He shows empirically that participation costs and excessive market size disadvantage SMEs, while lot division tends to integrate them without sacrificing economic efficiency. His contribution is important in demonstrating that economic performance and the inclusion of SMEs are not necessarily incompatible.

**-P. Davis** points out that the regulatory framework does not necessarily lead to greater transparency or security for businesses. If that is the objective, the consequence is that we are faced with a complex system and therefore the de facto exclusion of those who are less well equipped. The rules favor large groups that have substantial legal teams and can afford to engage in lengthy litigation procedures. For small businesses, it is often better to give up. But Davis stresses that, in order for companies to have the courage to engage in regulated procedures in complete safety, the professionalization of public purchasers is an essential condition, and the latter must also dare to radically change their practices.

**-A. Rejeb's** work on digitization and public procurement also illustrates the limits of SMEs' access to public markets. According to him, the digitization of procedures and electronic platforms, as well as the development of blockchain technology, can offer solutions to reduce transaction costs, improve transparency, and facilitate SME access to public procurement. However, this does not take into account the fact that not all companies have the same level of digital skills and equipment, nor the same level of importance they place on public procurement in their business practices.

**-Finally, D. McKevitt** opens up another avenue, one that is more behavioral and organizational in nature, analyzing that the exclusion of SMEs is often linked to transaction costs, lengthy and complex procedures, etc. This leads to placing even more emphasis on changing mindsets and practices, whether through learning or continuous training.

#### **3.2.4. The network between authors**

Analysis of the authors' network reveals a well-structured scientific community, consisting mainly of researchers specializing in public procurement. It is characterized by central hubs, strong cooperation between authors, and an evolution in the main features of the theme and methodological practices.

##### *Central core of the network: the Northern European school*

Among Finnish authors, three names stand out: T. Tammi, H. Reijonen, and J. Saastamoinen. These three researchers form a central core of the network. These three authors share several characteristics:

- ✓ High productivity: they have each published between 6 and 7 articles;
- ✓ Temporal proximity: they were still active in 2022;

- ✓ A quantitative focus: they often produce case studies and articles based on the results of surveys or questionnaires.

This group plays a very important role in defining and establishing the empirical and theoretical foundations on the subject of SME access to public procurement.

Anglo-Saxon group: buyer practices and public policy

A second group of authors is formed by A. Flynn, P. Davis, D. McKeivitt, and K. Loader, mainly based in the United Kingdom, Ireland, and other Anglo-Saxon countries. Four main characteristics define this group:

- ✓ A strong focus on the study of public policy,
- ✓ A marked preference for analyzing public buyer practices,
- ✓ The use of mixed methods (qualitative and quantitative),
- ✓ A high level of activity among one of the four members: A. Flynn has produced eight articles and published up to 2025.

A. Flynn's high productivity (eight contributions, publications until 2025) and international influence make him a key player linking several sub-networks.

Bridge authors and thematic diversification

Certain authors play an ingenious bridging role in the network:

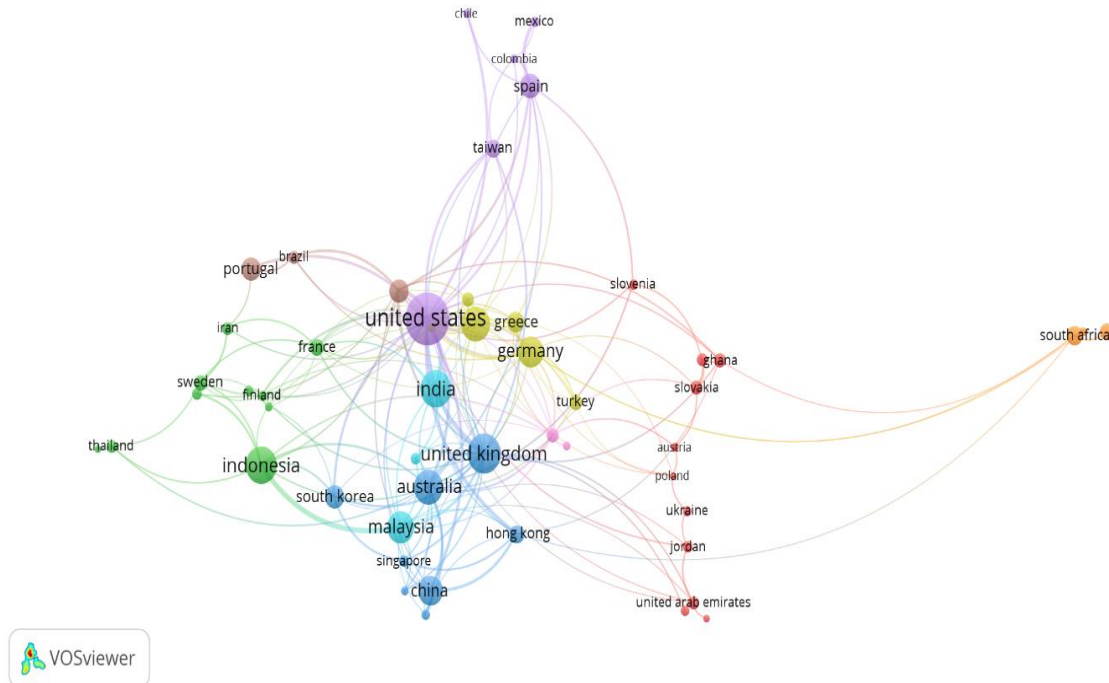
- ✓ European and North American perspectives: P. Davis, through his collaborations (United Kingdom, United States, Australia, Canada), opens up new possibilities.
- ✓ Rejeb has recently diversified the network by directing research towards digitization, emerging technologies, and bibliometric analysis, with an opening towards Southern Europe and North Africa (Italy, Hungary, Tunisia).

Methodological deepening and specialization

Although S. Seuring has published little or nothing on this topic, he has had the opportunity to take part in several empirical and quantitative studies related to public procurement. His presence highlights a link between the literature on public procurement, performance, and broader frameworks related to management and sustainability.

### 3.2.5. Countries most frequently mentioned in publications on our topic

**Figure N°3: Map showing collaboration between different countries in terms of publications on the digitization of public procurement and the participation of SMEs**



**Sources : Produced by us using VOSviewer software**

This bibliometric map produced by VOSviewer software illustrates the countries in which scientific articles related to our research topic (digitization/public procurement/SMEs and microbusinesses) are published, as well as the co-publication and collaboration relationships between countries.

#### Leading countries and drivers of scientific production

The size of the nodes corresponds to the number of publications. The United States occupies a central and dominant position, making it the leading center of scientific production on these topics. Its strong connectivity also makes it a major player in international collaborations. Certain countries such as the United Kingdom, India, Germany, Australia, and China are also research hubs, reflecting the interest of developed and emerging economies in the digitization of public procurement and the inclusion of SMEs.

#### Geographical clusters

The colors represent collaboration clusters and allow us to identify geographical patterns and/or patterns based on the types of actors involved:

- The European cluster (Germany, France, Spain, Italy, Nordic countries, Eastern Europe) is dense: there is a great deal of research on public procurement reforms, whether or not they are related to European directives.
- The Asia-Pacific cluster (China, India, Malaysia, Indonesia, South Korea, Singapore, Australia) is active: administrative office automation and digital transformation are fueling research.
- Latin American countries (Brazil, Chile, Colombia, Mexico) are more peripheral but connected to the European and North American clusters.
- African and Middle Eastern countries (South Africa, Ghana, Jordan, United Arab Emirates) are underrepresented and poorly connected.

#### Geographic inequalities/same research topics

The map illustrates the very high concentration of publications from Northern countries on these topics, while African and developing countries are underrepresented. This raises the question of whether the literature is predominantly influenced by specific institutional and economic contexts, which limits the generalizability of the results to Southern countries.

#### Issues related to your research topic

This bibliometric landscape shows a significant underrepresentation of case studies on Africa in general and on countries such as Morocco in particular. There was therefore a real need for your research to fuel debates on the role of SMEs in public procurement and the impact of digitalization in a country or institutional-structural context that has been little or not at all studied by international research.

### **3.3. Research topics**

To identify the predominant themes in a study on the digitization of public procurement and SMEs, it is necessary to perform a textual analysis using NVIVO, following this process:

- **Word Frequency Extraction**: Determine the most common words related to public procurement, e- procurement, and small and medium-sized enterprises.
- **Development of a Map of Predominant Themes**: Examine comparable occurrences of terms to identify thematic groupings.
- **Summary of Ideas**: Develop a summary of current opinions, suggestions, and challenges.

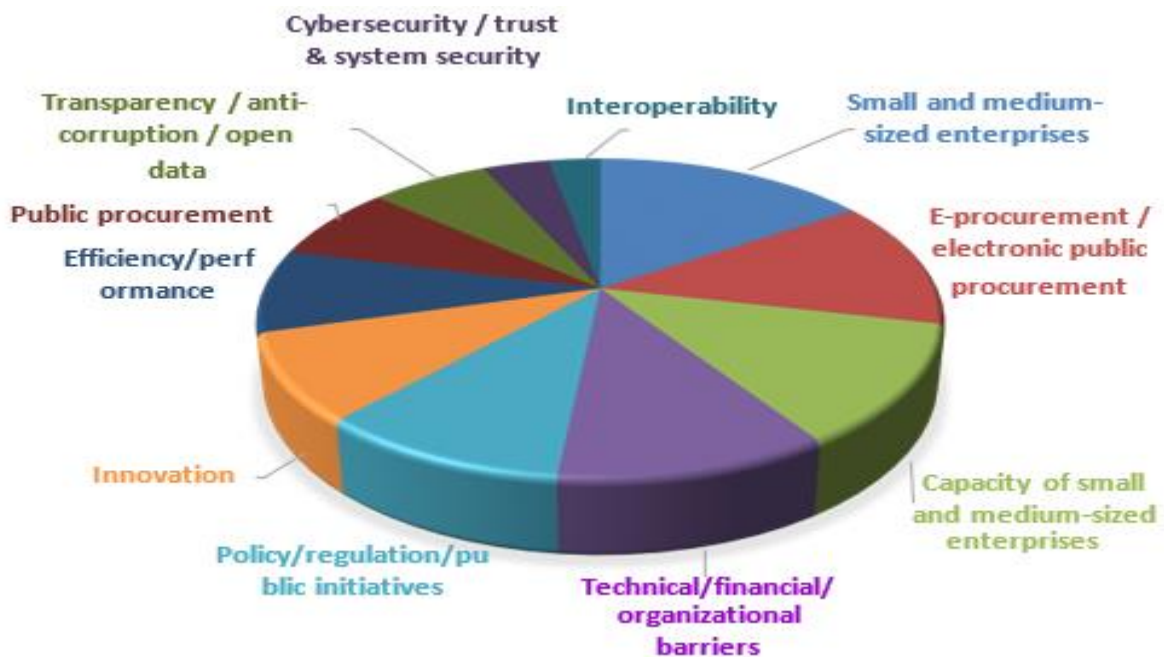
After reviewing the submitted documents, several key themes were identified in relation to public procurement, e-procurement, and small and medium-sized enterprises, as presented in **Table N° 3:**

**Table N° 3 : Keywords and concepts studied in the selected articles**

Rank	Keywords/concepts studied	Type of keywords	Number of articles
1	Small and medium-sized enterprises	Size of enterprises	53
2	E-procurement / electronic public procurement	Technology	49
3	Capacity of small and medium-sized enterprises	Performance indicator Theory	29
8	Technical/financial/organizational Barriers	Technology, finance, organization	26
9	Policy/regulation/public initiatives	Public policy	24
4	Innovation	Technological and economic development	21
5	Efficiency/performance	Performance indicator	20
6	Public procurement	Institutional domain, Public policy	18
7	Transparency / anti-corruption /open data	Governance indicator	16

Source: Produced by us

**Figure N°4: Graphical representation of the distribution of identified concepts**



Source: Produced by us

As shown in Table 3 and Figure 4, the results of the topic modeling analyses reflect the omnipresence of the theme “small and medium-sized enterprises.” This is indeed the most recurring topic in the literature on digitalized public procurement. We can deduce that the main concern is how SMEs can become involved in increasingly digitalized public procurement.

Micro-enterprises are generally included in research on small and medium-sized enterprises, but they are rarely the subject of specific studies. In most studies, micro-enterprises are grouped together with small and medium-sized enterprises in order to have a sample large enough to perform reliable statistical analyses. However, this limits our understanding of micro-enterprises and the issues they face in relation to the digitization of public procurement. This is one of the challenges of research. Specific research on micro-enterprises would help to better identify their needs, difficulties, and the mechanisms that could promote their participation in digitized public procurement, but also in public procurement in general.

Other concepts such as e-procurement, the capacity of small and medium-sized enterprises, obstacles, and public policies also feature prominently. The richness of this scientific research topic is mainly due to the high stakes involved in the issue of small and medium-sized enterprises' involvement in the digitization of public procurement. Prior to this question, researchers focused on the organizational and institutional factors that lead SMEs to participate in digital public procurement, win contracts, and benefit economically. This is illustrated in the study of systemic barriers and the public policies implemented to reduce them.

Other concepts, such as innovation, performance, transparency, etc., also stand out significantly, highlighting ex post aspects of the participation of small and medium-sized enterprises in digitized public procurement.

#### **4. Discussion:**

This review shows that there is a complex relationship between expectations related to the digitization of public procurement and the issues faced by SMEs. This work is therefore welcome. Indeed, the digitization of public procurement and its relationship with SMEs is an important topic, rich in lessons for both academia and practitioners.

Through this literature review, we can see that the impact of the participation of micro-enterprises and SMEs in digitized public procurement can be observed on both the supplier side and the customer side (public purchasers). On the supplier side, winning contracts allows companies to increase their turnover, and the impact on employment and growth in small and medium-sized enterprises in the short term seems real, even if this rapid impact is likely to fade (Lewis, 2017; Maksimov and al., 2017; Fadic, 2020; Srhoj & Dragojević, 2024).

In addition, the likelihood that companies will innovate and offer new products on the market also increases if they have the opportunity to win numerous public contracts **(Saastamoinen and al., 2018; Dai and al., 2021; Storz and al., 2022)**.

This is in line with the views of many decision-makers and stakeholders in the ecosystem, who believe that public procurement can be an important source of opportunities for a dynamic SME sector **(OECD, 2018; European Commission, 2019)**.

On the buyer side, targeting SMEs as suppliers is part of a sustainable development approach in the public sector, particularly with regard to local economic dynamics **(Walker Brammer, 2009; Cabras, 2011; Preuss, 2011)**.

Numerous studies, such as those by **(Mwale, and al., 2025)**, **(K. Selviaridis and al., 2022)**, **(T. Tammi and al., 2020)**, confirm that e-procurement improves access to tenders. This is consistent with theories of digital transformation **(Venkatraman, 1994)** and dynamic capabilities **(Teece and al., 1997)**, which emphasize the major role of new information and communication technologies in reinventing business processes and opportunities. According to **(Hardy & Williams 2008)**, reduced transaction costs and increased visibility can be beneficial to the SMEs, particularly in sectors where they are not usually well represented **(Schmitz & Wimmer, 2024)**.

Similarly, it has been found that small and medium-sized enterprises can use public procurement platforms to search for tenders that interest them, submit their applications, and track the progress of their bids **(Svidronova & Mikus, 2015)**. The implementation of these digital solutions increases transparency, accessibility, and efficiency, thereby making it easier for SMEs to participate in public procurement.

However, the implementation of the public procurement digitization reform presents multiple challenges and obstacles for small and medium-sized enterprises, mainly of a technical and technologic , organizational, financial, political, legal, and environmental nature **(See Table 4)**.

**Table N°4: Challenges faced by small and medium-sized enterprises in implementing the reform of public procurement digitization**

Nature of problems encountered	Description of problem
<u>Technical and technological</u>	<ul style="list-style-type: none"> <li>• Insufficient technical skills in preparing proposals.</li> <li>• Limited knowledge of the public tender submission process.</li> <li>• Insufficient IT systems or skills.</li> </ul> <p><b>(Akenroye and al., 2020); (Mauro and al., 2020)</b></p> <ul style="list-style-type: none"> <li>• The system is complicated and unable to attract suppliers</li> </ul> <p><b>(Moe, and al., 2013)</b></p>
<u>Organizational</u>	<ul style="list-style-type: none"> <li>• Insufficient adoption of technology across the organization.</li> </ul> <p><b>(Magaireah, and al., 2019)</b></p> <ul style="list-style-type: none"> <li>• Resistance to the use of emerging technologies</li> </ul> <p><b>(Walsh, and al., 2021)</b></p> <ul style="list-style-type: none"> <li>• Lack of well-trained and qualified personnel</li> </ul> <p><b>(Mohungoo, and al., 2020)</b></p>
<u>Financial</u>	<ul style="list-style-type: none"> <li>• Small and medium-sized enterprises lack the resources needed to implement digital transformation.</li> </ul> <p><b>(V. Stich, and al., 2020); Garzoni, and al., 2020).</b></p> <ul style="list-style-type: none"> <li>• Small and medium-sized enterprises (SMEs) face financial constraints, which hinder their ability to meet these requirements and therefore marginalize them from the procurement process.</li> </ul> <p><b>(McKevitt &amp; Davis, 2013; Mphela &amp; Shunda, 2018)</b></p> <ul style="list-style-type: none"> <li>• <b>Konno (2014)</b> observed that SMEs in good financial health were less likely to withdraw from the public construction contract sector in Japan.</li> </ul>
<u>Legal and regulatory</u>	<ul style="list-style-type: none"> <li>• Insufficient legal expertise within SMEs to understand regulations.</li> <li>• Increased fixed costs for SMEs due to required compliance measures.</li> </ul>

<p><u>Policy</u></p>	<ul style="list-style-type: none"> <li>• Policies are not designed to ensure the inclusion of SMEs. <b>(Flynn, 2018)</b></li> <li>• Policies supporting SMEs are not properly implemented in practice. <b>(CA Hardy, &amp; SP Williams, 2008)</b></li> </ul>
<p><u>Environmental</u></p>	<ul style="list-style-type: none"> <li>• Research shows that small and medium-sized enterprises frequently find it difficult to compete with larger, well-established companies in the public procurement sector. <b>(Abdellatif &amp; Zaky, 2015; Israel, 2022; Loader, 2013)</b></li> <li>• Small and medium-sized enterprises struggle to secure contracts, despite their potential to offer innovative and profitable solutions. <b>(Manu and al., 2019; Mphela &amp; Shunda, 2018; Sanusi &amp; Connell, 2018)</b></li> </ul>

Source: Produced by us

## 5. Research gaps and perspectives

### 5.1. Research gaps

The review of literature brings out that the participation of small and medium-sized enterprises in public procurement is a crucial field of research, full of valuable insights for scholars and practitioners. Although research has been done on the topic, there still exist gaps in literature in terms of the use of theory, empirical investigation, and the gathering of concrete evidence.

The gaps identified are summarized as follows:

- Most studies describe the obstacles but do not test their effect on the participation of SMEs in digitalized public procurement.
- There are a limited number of studies on the effect of public procurement digitization on the performance of SMEs. In summary, even if public procurement temporarily stimulates the productivity and growth of SMEs, further empirical testing is needed to determine whether the digitization of public procurement leads to sustainable improvements in the growth of SMEs.
- Current research has not sufficiently taken into account how SMEs are differently impacted by barriers based on characteristics such as size, age, owner characteristics, sector of activity, etc. **(Anthony Flynn, 2018)**. Thus, not all studies take into account how resources, capabilities, and competitive orientations vary among micro, small, and medium-sized SME subgroups. **(Anthony Flynn, 2018)**. This means that most research

focuses on SMEs in general, with very little focusing specifically on VSEs or microenterprises.

## 5.2. Research perspectives

Despite growing interest in the topic of public procurement digitization, research on this subject remains relatively limited, particularly in the Moroccan context.

There is therefore a clear need for in-depth, cross-disciplinary, and contextualized research to fill the current gaps and inform public decision-makers in the implementation of more effective strategies for the digitization of public procurement. With this in mind, we propose empirical studies on the impact of public procurement digitization, focusing specifically on Moroccan micro-enterprises, as it is unlikely that all small and medium-sized enterprises are uniformly impacted by the advantages and limitations of public procurement digitization strategies. As pointed out by (Uyarra and al., 2014), the impact of obstacles depends on the size of SMEs, their field of activity, their level of investment in research and development (R&D), etc. Thus, data from Flynn (2017) indicate that micro-enterprises have fewer resources and capabilities than small enterprises, while small enterprises have fewer resources and capabilities than medium-sized enterprises.

Therefore, each size of enterprise presents a specific case and a subject for further research on the impact of the digitization of public procurement.

## 6. Conclusion:

This literature review provides insight into the opportunities and constraints faced by SMEs in participating in public procurement between 2015 and 2025. It appears that factors such as lack of access to information, complex procedures, financial constraints, public policies such as the dematerialization of public procurement, insufficient resources and skills, and unfair competition between large groups and small structures are major obstacles to SMEs participation in public procurement. This research therefore also questions the importance for SMEs of knowing the opportunities that exist for them in order to overcome obstacles and increase their participation in public procurement.

Studies indicate that small and medium-sized enterprises possess many relevant resources and skills (**Karjalainen and Kempainen, 2008; Pickernell and al., 2011; Di Mauro and al., 2020**) as well as increased capabilities (**Woldesenbet and al., 2012; Flynn & Davis, 2017**), and have stronger competitive orientations (**Reijonen and al., 2016; Saastamoinen and al., 2020**), are more active in conducting research, bidding for, and winning public contracts. These organizational characteristics help small and medium-sized enterprises to accurately determine buyers' needs, respond competently to calls for tenders, and implement contracts effectively. For this reason, the strategy for digitizing public procurement in Morocco must focus on facilitating access for small and medium-sized enterprises in order to intensify competition among suppliers (**see European Commission, 1990**). This is because an increased number of SMEs competing for public contracts contributes to a competitive and diversified supply market, which is what every government wants in order to optimize value for money (**European Court of Auditors, 2023**). Experience shows that the success of this transition depends not only on the implementation of technologies, but also on considering other strategic dimensions and fundamental issues such as training and skills development programs on public procurement procedures , initiatives and policies promoting diversity with a preference for SMEs, simplified procedures for small and micro-enterprise public procurement, digital platforms and tender portals, intensified partnership and networking between SMEs and large companies, and the broadening of contract award requirements.

In conclusion, this literature review highlights the shortcomings of the existing literature, in particular the lack of detailed empirical research assessing the tangible effects of digitization on small and medium-sized enterprises (SMEs), especially micro-enterprises, and analyzing the specificities of local contexts. It would therefore be appropriate for future research to focus on quantitative and qualitative studies in order to assess the real impact of e-procurement on this category of businesses, identify best practices, and suggest models adapted to the specific contexts of developing countries.

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