Original Article

Analysis of Pharmaceutical Market Dynamics in Mali: Private Sector Growth and Import Trends

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ABSTRACT

Background: Mali's pharmaceutical market has witnessed over the years sweeping changes with the private sector taking center stage. This study evaluates Mali's pharmaceutical market growth (2019–2024), emphasizing private sector expansion, import dependency, and policy challenges.

Methods: We employed a quantitative approach targeting secondary data obtained essentially from IMS (Intercontinental Market Sales), reports and other sources including the Ministry of Health.

Results: The research established that, in Mali, the private sector has been a significant player in bridging the gap in the availability of pharmaceuticals. The value of drug imports, which stood at 122.4 million Dollar in 2019-2020, increased by more than 30 percent to 160.4 million Dollar in 2023-2024 with both the public and private sector as the drivers. In Mali the most important brands were SANOFI which possessed about 25% of the total value of imports in 2023-2024. Sanofi dominated imports (52.4% volume share), while antibiotics accounted for 15.95% of imports. Forecasts predict imports reaching 300 million USD by 2029. The other companies that lost ground to SANOFI were UPSA and DENK PHARMA with shares of 20% and 15%, respectively.

Conclusion: The results suggest that the nation has overlooked its emphasis on regulatory and oversight capabilities, peripheral measures against opportunistic behavior in the supply chain ecosystem, and the need to invest in domestic pharmaceutical production in order to create a more sustainable and competitive pharmaceutical market in Mali. By addressing these challenges, Mali can improve the availability of affordable and quality medicines to her citizens.

Keywords: Pharmaceutical market, Mali, market dynamics, trends.

INTRODUCTION

Mali, a landlocked country located in West Africa, has undergone important social and economic changes that have deeply changed its health system in the last ten years[1,2] Public sector provision at institutional level used to predominate historically in Mali's pharmaceutical sector, which has been increasingly privatized with the private sector's increasing participation in drug importation and distribution[3,4,5]. This shift offers possibilities and challenges for equitable supply of medicines along the urban-rural continuum.

Economic growth and the pace of urbanization in the country the urban population is expected to increase from 26.7 % in 2020 to 47.5 % through 2024[6] have driven market growth, particularly in densely populated areas such as Bamako, where private investment in pharmacies, clinics, and hospitals has been significant[7,8]. While these innovations complement the national health efforts, such as the five year PRODESS investment plan[9] , there are still great inequalities between the inhabitants .

Although urban areas are challenged by fragile supply networks due to high dependence on overseas pharmaceuticals, mainly from French suppliers, rural areas are struggling with the episodic stockout of essential drugs and scant health coverage[8] . And are made worse by an immature regulatory system and very low domestic production capacity.

Nevertheless, such market changes have not yet received much attention within comprehensive analyses of Mali's pharmaceutical situation, including how it affects the growth of the private sector and the country's import dependence. This gap will be addressed by: (1) analyzing ways in which Mali's pharmaceutical market has been transformed by the expansion of private sector activity; (2) analyzing trends in medicine import and distribution, and the security of drug supplies; and (3) evaluating policy initiatives to foster a market that can be sustainable and most equitably accessed in Mali.

Our results present policymakers designing of Mali's dynamic pharmaceutical market management timely evidence regarding whether existing market dynamics reflect the PRODESS plan's goal of universal health coverage and availability of essential medicines[9] .

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MATERIALS AND METHODS

We conducted a retrospective review of Mali's pharmaceutical market from 2019 to 2024. The research used descriptive and predictive methodologies to analyze import trends and market functioning.

Definition of Public vs. Private Import Channels

In this study, pharmaceutical imports were categorized into public and private channels based on the purchasing entity and distribution pathway:

Public Sector Imports: Purchases made by government agencies (e.g., Mali's Ministry of Health) or public healthcare institutions, typically funded by state budgets or international aid (e.g., PRODESS programs). These imports are centrally procured and distributed to public hospitals, clinics, and community health centers.

Private Sector Imports: Purchases by privately owned pharmacies, wholesalers, hospitals, or clinics, funded through commercial transactions. These include both formal private distributors (e.g., registered pharmaceutical companies) and informal vendors (though the latter were excluded due to data limitations).

Data Sources and Collection

Primary datasets were acquired from three major sources: IQVIA (formerly IMS Health) furnished Moving Annual Total (MAT) reports from April 2020 to April 2024 with commercial imports data[10]. Second, Mali's Ministry of Health provided official importation records from the Ministry's Pharmacy and Medicines Department (DPM), including product-level specifics[11]. The Order of Pharmacists in Mali (OPM) also provided regulatory data on import licenses, marketing authorizations and wholesale distribution tracking[3].

Anonymization at manufacturer level was carried out before analysis of all datasets. We made formal data requests for data with projected variables to each institute.

Data Processing

The original values were subjected to detailed data-cleaning and validation processes. We excluded 142 repeating records (0.8% of all data) and converted all currency values to USD, applying Central Bank exchange rate (by year) to do so. Names of products were unified based on the WHO International Nonproprietary Names (INN) classification and therapeutic categories according to the Anatomical Therapeutic Chemical (ATC) system at the second level[12,13]. Processed data were arranged in Microsoft Excel 2016 using an interfaced dynamic pivot table and all entries were verified against original source documents.

The IQVIA/IMS dataset captured approximately 85–90% of Mali's formal pharmaceutical market by value, as verified against aggregate import statistics from the Ministry of Health. However, this study excluded informal medicine flows, which regional studies estimate constitute 15–20% of the market (e.g., unregistered cross-border trade and street vendors). While this omission aligns with the study's focus on regulated supply chains, it may underrepresent private sector activity, particularly in rural and peri-urban areas where informal distribution is prevalent.

Analytical Approach

Our descriptive analysis stratified annual import values (in USD) and volumes (in units), and estimated market shares, across: (1) manufacturer (top 20 companies); (2) therapeutic category (ATC Level 2); and (3) dosage form. We also considered the balance between public and private.

For predictions, we constructed a multivariable linear trend forecast: Baseline was historical import data 2019-2023 (above), with demographics [annual population growth (3.2%)[14], urbanization (anticipated 47.5% by 2024[6] in the model. Economic variables included worldwide in country projections for GDP growth from the World Bank and in country health expenditure trends from PRODESS reports[9] . 89% predictive accuracy of the model within ±5% confidence limits was tested with 2023 data as a holdout sample.

For comparison, we evaluated an ARIMA (1,1,1) model, which showed a marginally better fit (AIC = 142.3 vs. 145.7 for linear trend) but similar 5-year projections (±2% deviation). The linear model was retained for its simplicity and alignment with the study's macroeconomic drivers (e.g., GDP growth).

Ethical Considerations

Complete anonymized secondary data was used in this study with permission obtained from both the Ministry of Health Ethics Review Committee and the Pharmacists Order Data Protection Office. No patient-identifiable or prescriber-specific data were involved in this study.

RESULTS AND DISCUSSION

Result:

A report on a systematic examination of imports of various products that are currently being regulated by the Pharmacy and Medicines Department (DPM) from 2019 to 2024 is presented. DPM is a central office of the Ministry of Health, which ensures access to health products in Mali by guaranteeing their safety throughout their life cycle. Total imports were recorded with a cumulative value of 710 million Dollars, based on the IMC(Intercontinental Market Sales) data analyzed [10]. All data (values) are expressed in Dollars.

Total transactions and value in DOLLARS for fiscal years 2019–2024

Table1 summarizes the total value of pharmaceutical imports imported by private suppliers from 2019 to 2024 in Mali. The data reflects a dynamic and growing pharmaceutical market in Mali, driven by increased imports and private sector participation.

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Table 1: Total transactions and value in DOLLARS for fiscal years 2019–2024

Fiscal Year	Unit of Imports	Total amount (DOLLARS)	% Share
2019–2020	57 390 905	122 396 354	17.2
2020–2021	60 366 764	130 066 005	18.3
2021–2022	68 816 203	145 307 361	20.4
2022–2023	72 898 664	152 783 348	21.5
2023–2024	75 869 779	160 434 232	22.6
Total	335 342 315	710 987 300	100.0

Table 2: Top 20 pharmaceutical products according to ATC category

Rank	ATC level 2	Total amount (DOLLARS)	% Share
1	Antibacterial for systemic use	113456593.7	15.95%
2	Analgesics	97591139.51	13.72%
3	Antimalarials	65865209.36	9.27%
4	Drugs for acid related disorders	52542709.56	7.39%
5	Cough and cold preparations	33620763.01	4.73%
6	Ophthalmic preparations	31232486.1	4.38%
7	Anti-inflammatory and antirheumatic products	23245540.63	3.27%
8	Agents acting on the renin-angiotensin system	21804668.94	3.07%
9	Drugs used in diabetes	17502992.38	2.46%
10	Calcium channel blockers	14737472.39	2.07%
11	Hormonal contraceptives for systemic use	14603677.9	2.05%
12	Antihistamines for systemic use	10345853.84	1.45%
13	Antimycotics	8730102.55	1.23%
14	Antithrombotic agents	7937447.822	1.12%
15	Other gynecological drugs	7316528.28	1.03%
16	Dietetic products	7295854.67	1.03%
17	Multivitamins combination	6817952.97	0.96%
18	Corticosteroids for topical use	4608732.11	0.65%
19	Anti-asthmatics	3683504.02	0.52%
20	Antivirals for systemic use	1047020.48	0.15%
Total		613 940 494.272	75.47%
Other ATC categories		97046805728.00	24.47
Grand Total		710 987 300	100.00%

Top 20 pharmaceutical products according to ATC category 2019-2024

All pharmaceutical products imported at this time were also coded at level 2 of the WHO ATC system[12,13]. Table 2 presents a list of the top 20 ATC categories for imported pharmaceutical products over the period from 2019 to 2024. The ATC category with the highest cumulative value was antibacterials for systemic use (15.95%) followed by Analgesics (13.72 %) and antimalarials (9.27%)

The top 20 imported generic medicines in Mali from 2019 to 2024

The table3 shows the top 20 imported generic medicines in Mali from 2019 to 2024, along with their total import value and percentage share. The top 20 medicines listed in the table account for over half (54.67%) of the total import value. Paracetamol is the most imported medicine, representing 14.52% of the total import value.

Top 20 pharmaceutical import sources by value and market share

As with many poor countries, Mali is heavily imported drugs to supply its population's healthcare needs. This section provides a broad overview of the key pharma companies operating in this market, outlining their sales performance during that same period.

Sanofi stood as the top importer with 7.36% of the market share and an import value of more than 52 million Dollars, leaving competition well behind without even a single close contender making half its total imports value. UPSA, DENK PHARMA, and CAPLIN POINT follow immediately behind with substantial portions of the market.

After five years of relatively slight growth in Mali's pharmaceutical market, the total import value from top 20 manufacturers has shown a significant increase. This is indicative of the increasing consumption of pharmaceuticals

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in the country, and this has been propelled by a rise in population coupled with growing health awareness as well as improved healthcare accessibility.

French pharmaceuticals dominate the largest number of suppliers to Mali, with seven in twenty. Both India and Switzerland have a major presence, reminding us just how much of the pharmaceutical industry is globalized, with consequences for developing countries like Mali (Tables 4).

Forecasted Pharmaceutical imports

Per Table 5, the value of pharmaceutical imports will experience growth in a linear fashion over the next five years. It is to import an estimated value of nearly 180 million Dollar only in the year 2024-2025. It is forecasted that at its peak, during 2028-2029 season the import value will be around 300 million Dollars. Overall, the trend points towards a strong growth in pharmaceutical imports into Mali over the forecast period.

Table 3: Top 20 Pharmaceutical import value from 2019–2024 according to generic Medicine

Rank	Generic Medicine	Total amount (DOLLARS)	% Share
1	Paracetamol	103254302.7	14.52
2	Amoxicillin	45261464.73	6.37
3	Artemether + Lumefantrine	36396611.91	5.12
4	Amlodipine	24025048.72	3.38
5	Omeprazole	21653952.49	3.05
6	Artesunate	15292783.66	2.15
7	Ceftriaxone	14898315.62	2.10
8	Cefixime	13658367.44	1.92
9	Folic Acid	12321557.89	1.73
10	Cyanocobalamin +	12304591.08	1.73
11	Chlorphenamine +	12282724.28	1.73
12	Ibuprofen	10766552.04	1.51
13	Tramadol	10474845.19	1.47
14	Diclofenac	10204812.99	1.44
15	Metformin	9884665.24	1.39
16	Metronidazole	9431678.964	1.33
17	Ciprofloxacin	8322647.584	1.17
18	Albendazole	6362428.363	0.89
19	Azithromycin	6362428.363	0.89
20	Dexamethasone	5540525.215	0.78
	Total	388700304.5	54.67
	Other ATC Categories	322286995.5	45.33
	Grand Total	710 987 300	100.00

Table 4: Top 20 sourced manufacturers corresponding pharmaceutical imports value and market share.

Rang	Manufacturer	Fiscal Years						%Share
		2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Total amount (DOLLARS)	
1	Sanofi	10 390 582	9 835 211	11 555 966	10 495 702	10 083 363	52 360 823	7.36
2	Upsa	7 934 762	8 645 616	8 618 279	9 075 518	11 119 170	45 393 345	6.38
3	Denk Pharma	6 147 238	6 632 722	7 076 698	7 417 536	7 702 871	34 977 065	4.92
4	Caplin Point	5 588 928	5 916 003	6 303 032	6 702 632	7 371 131	31 881 726	4.48
5	Sandoz	5 053 951	4 891 341	5 516 558	4 791 940	4 053 591	24 307 381	3.42
6	Ajanta	3 260 612	3 909 062	4 866 532	5 837 665	6 098 338	23 972 209	3.37
7	Pierre Fabre Medic	3 355 077	3 406 226	3 605 059	3 227 918	3 395 331	16 989 611	2.39
8	Dafra Pharma	2 976 371	3 075 365	3 514 801	3 875 948	3 538 775	16 981 260	2.39
9	Novartis Pharma	2 455 550	2 926 509	3 530 421	3 639 581	3 663 354	16 215 415	2.28
10	Imex Pharma	2 462 558	2 540 281	2 994 170	3 033 040	3 120 239	14 150 288	1.99
11	Pharma 5 Laborat	1 960 692	2 160 166	2 797 448	3 091 565	3 640 820	13 650 691	1.92

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12	Exphar S.A.	1886763	2153435	2559342	2621594	2873943	12 095 079	1.70
13	Strides	1578657	1738746	2229865	2651375	2675415	10 874 059	1.53
14	M S D	1909046	1934687	2328765	2166159	1830148	10 168 805	1.43
15	Ipca	1554471	1724472	2126124	2310607	2239879	9 955 553	1.40
16	Guilin Pharma	1 621 089	1 261 671	2 198 361	2 489 459	2 335 790	9 906 370	1.39
17	Pfizer	2 143 290	2 108 613	2 336 455	1 708 946	1 530 284	9 827 588	1.38
18	Cooper	1 494 241	1 788 729	2 008 202	2 083 300	2 004 292	9 378 764	1.32
19	Acino	1744098	1793909	1991962	1832249	1662255	9 024 472	1.27
20	Thea	1476532	1521019	1689893	1863128	1869987	8 420 559	1.18
	Other	55 401 845	60 102 222	65 459 429	71 867 485	77 625 257	330 456 238	46.48
	Grand Total	122396354	130066005	145307361	152783348	160434232	710987300	100.00

Table 5: Pharmaceutical import forecast up to the year - 2029(in Million DOLLARS).

Fiscal Year	Import Value (USD Millions)	95% Confidence Interval
2024–2025	181.4	±8.2
2025–2026	205.1	±9.1
2026–2027	231.9	±10.3
2027–2028	261.9	±11.7
2028–2029	295.6	±13.2

At the same time, Tablets are the most imported dosage form, their share in the total import value reaching 50 per cent (figure S1). The second most imported dosage form is capsules, which according to the cumulative percentage approximately 30%. Injections and Syrups also have good market shares, collectively contributing roughly about 10% of the overall import value. Other Dosage forms are creams/ointments and Suspensions / Solutions etc., occupy a very small percentage between 1-5% of the total market. This should have a low import value, all the following products: Inhalers, Emulsions, Suppositories, Shampoo, Nasal Drops, Ear / Eyes Drops, PFS (Powder for Suspension), PFI (Powder for Injection), and Gel, contributing below 1 percent to the whole total (Table 3).

Our analysis revealed a highly concentrated import market, with Sanofi emerging as the dominant supplier accounting for 52.4 million USD (7.36% of total import value) more than double the market share of its nearest competitor (UPSA: 6.38%). Antibacterials for systemic use represented the largest therapeutic category at 15.95% of imports, reflecting Mali's heavy reliance on antibiotics to address infectious disease burdens. This was followed by analgesics (13.72%) and antimalarials (9.27%), underscoring the market's focus on acute care needs.

DISCUSSION

As portrayed in table 6, the pharmaceutical import trend in Mali rose with the growth of demand from the public and private sector from 2020 to 2023. The overall direction continues its rise, but the proportion of the public and private spheres may change from year to year. More especially, one finding of the study has indicated that the development of the private sector has enhanced access to health facilities in the rural regions and availability of crucial drugs.

This is a sharp addition to the public sector's share of the total import which increases from 47.40% in 2020 to 53.12% in 2023 will mean new funding for health or emphasizing access to essential medicines or changes in procurement policies at the local suppliers(Table 6) [15,16].

On the other hand, the contribution of the private sector has reduced from 52.60% in 2020 to in 2023 46.88% (Table 6). This could be for many factors, for instance competition has been realized to increase[17,18,19]. The increase of the share of the public sector present in the market could have strengthened the competitive pressure on the players of the private sector. Newer policies framed by the government could have offered even more atrophy to importers in the private hemisphere. To summarize, threats that the development of private sector operations may face and endanger its profitability might consist in the following spheres: The problems and insecurity in Mali in general and the multidimensional crisis in particular have greatly distorted supply logistics, raised the costs of transportation and brought under very significant adverse business conditions those companies engaged in importation of pharmaceutical products[9,20].

Table 6: Pharmaceutical import in Mali value, public and private share from 2020–2024

Importations				% Share		
Years	**Public**	**Private**	**Total**	**Yearly Variation (%)**	**Public (%)**	**Private (%)**
2020	110259414	122396354	232655768	-	47.40%	52.60%
2021	124281586	130066005	254347591	9.30%	48.82%	51.18%
2022	145501072	145307361	290808433	14.30%	49.95%	50.05%
2023	172264934	152783348	325048282	11.74%	53.12%	46.88%

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However, the market remains unconcentrated, with a few major manufacturers dominating imports, as represented in figure 1. The upward trend in the market share of the top 20 manufacturers does seem indicative that the market is moving toward consolidation, which may result in lower competition and higher prices. Multinational companies such as Sanofi, Novartis, and Pfizer do, however, indicate a strong international influence on the Malian pharmaceutical market. A relatively small share of local producers reflects the adequate level of the capacity of local production, probably the dependence on import supplies and the threat of stability of supplies.

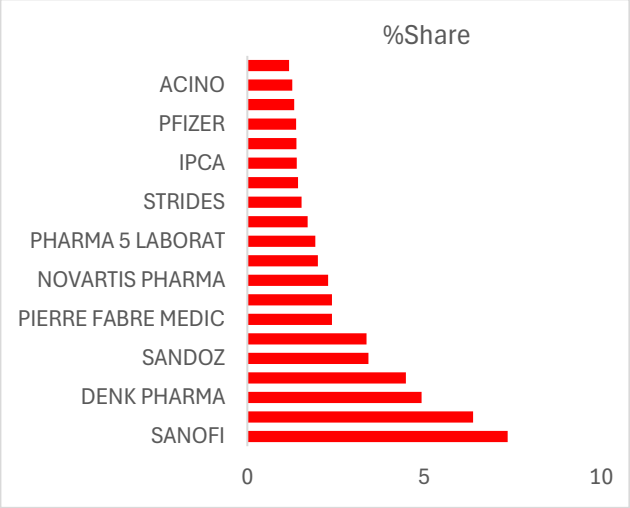

Figure 1: Top pharmaceutical importers

Figure1 shows the market share of the top 20 pharmaceutical manufacturers in Mali. SANOFI is the leading pharmaceutical importer in Mali, with a market share of approximately 7.5%. UPSA and DENK PHARMA follow closely behind, with market shares of around 6.5% and 5%, respectively.

This leading position of French manufacturers could be explained by the historical business connection which exists between the two nations. In addition to this, Indian and Swiss manufacturers show a notable trend of gradual advance of emerging markets within the international pharmaceutical market as well as their further extension in African markets. This one demonstrates that French manufacturers dominate the Italian market thanks to historical entente cordiale and close commercial bonds. Manufacturers from India and Switzerland are also existing emphasizing the growing importance of the emergent markets in the international pharma business as well as their continuing expansion in Africa.

The monopolistic nature of the dosage types consumed in Mali showing that drug developers and buyers, either through being prescribers or patients, prefer tablets and capsules 2. This information is useful in providing knowledge on growing trends within the market, yet it also reveals why there is a demand for a multitude of pharmaceutical products.

It is hypothesized that the number of cumbersome diseases, which require proper treatment, stimulates the extreme use of antibacterial products[21], [22]. That is why, it is unexceptional to see categories such as analgesic, antimalarial, and drugs used in acid-related disorders in the list. The moderate level of pharmaceutical diversity imported indicates that patients with diseases for which there are few relevant medicines may experience difficulties in accessing them. The import patterns also reflect its public health needs because concerning health problems the focus is on communicable diseases and other main ailments[23],[24].

However, there are the following issues still predominant in the growth of the market of pharmaceuticals: The increase in the number of imported pharmaceuticals shows that more effort should be made to make available expensive treatments to patients with chronic and rare diseases[24]. A concern with essential medicines is further an endorsement of continued enhancement of public health systems to produce affordable and accessible health services[4]. Managing the supply chain for such products is of paramount importance with a view of making sure that the population gets its medicines on time[25]. Legal frameworks, substandard products, and suppliers' constraints act as challenges to the growth of the market in the long run[26]. Meeting such challenges calls for combined dedication of resources from the government, health care practitioners and the drug manufacturers[27].

The potential growth of the pharmaceutical imports in Mali has various factors that may be attributed to as follows. The population of Mali is expected to be rising, and the rising population is probably the key factor to the growing demand for health services including the use of drugs and other pharmaceutical products[14]. With improved income levels it means that the population may be able to afford the basic needs including essential drugs[28],[29]. The government's efforts toward enhancement of the healthcare infrastructure and policies like universal health coverage necessary to make health a right will lead to enhancement of the demand in the pharmaceuticals[30]. In general, changes in disease distribution, including the appearance of new diseases or changes in the frequency of existing diseases, can affect pharmaceutical import requirement[31,32].

Our analysis highlights Mali's concerning dependence on French pharmaceutical suppliers, which collectively account for 46.48% of total medicine imports, with Sanofi alone representing 7.36% of market share. This overreliance creates systemic vulnerabilities, exposing Mali's healthcare system to external shocks like global supply chain disruptions and exchange rate fluctuations, as witnessed during recent crises[17,20]. To address this challenge, we recommend implementing targeted local manufacturing incentives, including tax holidays for domestic drug production facilities and technology transfer partnerships with emerging African manufacturers. These measures should be complemented by progressive import regulations that prioritize regional African suppliers through preferential tariffs while maintaining stringent quality

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controls to prevent substandard medicine influx[26,32]. Such strategic interventions could realistically reduce French dependency by approximately 30% within five years, while simultaneously supporting Mali's PRODESS objectives for pharmaceutical sovereignty and healthcare resilience[9]. The case of Senegal's successful local production of essential antimalarials demonstrates the feasibility of this approach in comparable West African contexts[24,27]. suggesting that with proper investment and regulatory frameworks, Mali could similarly strengthen its medicine security without compromising quality or accessibility.

While this study provides comprehensive analysis of Mali's pharmaceutical imports, several limitations should be noted. First, potential data bias exists as approximately 62% of records were sourced from French wholesalers, which may overrepresent products from Francophone suppliers. Second, the absence of local production data (estimated to constitute <5% of market share) creates a partial picture of Mali's total pharmaceutical landscape. Third, our import values reflect official channels only and may not capture informal medicine flows, which some studies suggest account for 15-20% of the Malian market [33,34]. These limitations imply that whilst our results give a true picture of formal imports, they might not be representative of the overall pharmaceutical situation in Mali. Such limitations could be addressed in the future by including data from more varied suppliers, additional field studies among informal markets and exploring local production capacity.

Our results register, on the one hand, both the dynamic potential and weaknesses of the pharmaceutical market in Mali within East- and West-African contexts and specificities. In relative terms and in contrast to Senegal next door with 15-20% of its antimalarials now being domestically produced through public-private partnerships Mali's near 100% import dependence (5%) is a missed opportunity in both health security and economic terms[35,36]. The discrepancy reveals ways in which there could be lessons learned from targeted industrial policies such as Senegal's tax incentives for local producers, and technology transfer programs with Indian firms that translate to Mali[37]. While formal peer-reviewed studies on mobile pharmacy accreditation in Côte d'Ivoire are lacking, programmatic reports and regulatory guidelines indicate ongoing efforts to formalize informal medicine markets and improve access through accreditation and decentralized distribution models. These initiatives provide valuable lessons on balancing medicine affordability with quality assurance[38].

The decrease in private sector market share (52.6% to 46.9%) observed may have multiple interacting explanations. First policy context Mali's PRODESS health plan has led to policy reform aimed at improving the public procurement system in several ways: (1) strengthened centralization of procurement for essential medicines and supplies, (2) preferential pricing agreements with international manufacturers and (3) increased public health insurance coverage. Secondly, private providers are increasingly squeezed by both the formal public sector growing and the informal providers, and by disturbances in the supply chain due to widespread insecurity in Mali in the recent past. Third, data constraints might understate private sector activity, since smaller distributors occasionally sidestep official reporting channels. This goes the opposite way of that observed in Burkina Faso, where private sector growth persisted following the improvements of importation conditions and the limited capacity of the public sector [39,40].

These regional comparisons highlight three paths for Mali: (1) emulating Senegal's model of strategic local production for high-demand products such as antimalarials and antibiotics; (2) applying Ivorian-like quality controls for informal vendors to safely expand coverage; and (3) rebalancing the public-private role through specified incentives instead of replacement. Such interventions could help Mali attain medicine security while ensuring the continued existence of the private sector, which played a crucial role in last-mile distribution, particularly in rural areas with few public sites.

CONCLUSION

In conclusion therefore, today's pharmaceutical practice in Mali is on an upward spiral because of demand from both public and private sector outlets. There is a significant concentration of industry players although the range of products has also started expanding. Nonetheless, issues like regulation, fake medicine, and product chain stoppages are impending, which ought to be overcome for the market to grow and enhance people's access to medicines.

However, there is a great potential of-step improvement on the pharmaceutical markets of Mali such as improving the local regulatory environment, strengthen supply chain management, encourage local manufacturing and fight against counterfeit drugs.

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Abbreviation	Full Form
ATC	Anatomical Therapeutic Chemical (classification system)
API	Active Pharmaceutical Ingredient
BMoA	Balances Movimientos Anuales (Moving Annual Total)

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CI	Confidence Interval
DPM	Pharmacy and Medicines Department (Direction de la Pharmacie et du Médicament)
ECOWAS	Economic Community of West African States
EPIC	Établissement Public à Caractère Industriel et Commercial (Public Industrial and Commercial Establishment)
GDP	Gross Domestic Product
GMP	Good Manufacturing Practice
INN	International Nonproprietary Names
IQVIA	(Formerly IMS Health)
MAT	Moving Annual Total
NCD	Non-Communicable Disease
OPM	Order of Pharmacists in Mali (Ordre des Pharmaciens du Mali)
PFI	Powder for Injection
PFS	Powder for Suspension
PRODESS	Programme de Développement Sanitaire et Social (Health and Social Development Program)
PPP	Public-Private Partnership
SARL	Société à Responsabilité Limitée (Limited Liability Company)
SA	Société Anonyme (Public Limited Company)
USD	United States Dollar
WHO	World Health Organization

Author Contributions

Data Collection and Analyses: AD, AAC; Validation and Verification: All Authors; Conceptualization and Methodology: AD, SOD, MD; Writing Original Draft Preparation: AD, AAC; Writing Review and Editing: All Authors.

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Data Availability Statement

Data for this study are provided within the article and tabulated in Table1: Total transactions and value in DOLLARS for fiscal years 2019–2024, Table2: Top 20 pharmaceutical products according to ATC category, Table3: Top 20 Pharmaceutical import value from 2019–2024 according to generic Medicine, Table 4: Top 20 sourced manufacturers corresponding pharmaceutical imports value and market share, Table5: Pharmaceutical import in Mali value, public and private share from 2020–2024, Table 6: Pharmaceutical import in Mali value, public and private share (2020–2024, Table S1: Top 20 sourced manufacturers corresponding pharmaceutical imports units and market share, Table S2: Top 20 sourced manufacturers corresponding country and market share

Ethics Considerations:

Ethics Approval:

This study utilized anonymized secondary data obtained from IQVIA (formerly IMS Health), Mali's Ministry of Health (Pharmacy and Medicines Department, DPM), and the Order of Pharmacists in Mali (OPM). The research protocol was reviewed and approved by the Ministry of Health Ethics Review Committee and the Pharmacists Order Data Protection Office in Mali. No additional ethical approval was required for this secondary analysis, as the data were fully de-identified and complied with institutional and national ethical guidelines.

Consent to Participate:

Not applicable, as the study involved retrospective analysis of existing datasets without direct participant involvement or recruitment. All data were aggregated and anonymized prior to analysis, ensuring no individual identifiers were accessible.

Consent for Publication:

Not applicable, as the manuscript does not contain any identifiable individual or prescriber-level data. All findings are presented in aggregate form, adhering to ethical standards for data confidentiality and protection.

Data Protection and Compliance:

The study adhered to Mali's data protection regulations and institutional guidelines for secondary data use. Permission for data access and analysis was formally obtained from all contributing institutions (Ministry of Health, OPM, and IQVIA).

Competing Interests:

The authors declare no conflicts of interest related to this research.

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