platforms

Article

Mapping of Digital Platforms and e-Commerce Emergence in Africa: Evidence from Senegal

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Abstract: A global trend regarding the "platformization" of the internet has been, for years, emerging roughly across all traditional industries. It is reflected in the proliferation of digital platforms (DPs) based on the creation of new activities or the online expansion of offers traditionally available only physically (e.g., boutiques, supermarkets). Thus, digital platforms are a new springboard of development opportunities for all businesses, and Africa, with demographic (more than 1.2 billion customers), economic (middle-class boom), and technological (internet and smartphone penetration) dynamism, represents a huge potential market for the DP industry. This exploratory research is based on a qualitative approach applied to the case of Senegalese DPs. From its finding, we have a mapping of DPs and a classifying typology of the types of actors involved, according to their specialization and their paradigmatic orientation. New insights into how DP organizations and the firms within them operate and create value are proposed as well as a new conceptual framework for the articulation of DPs, specifically those particularly adapted to the African context. This work opens avenues for future research linked to the scale of the new challenges related to marketing and managerial issues and the new business models that have recently been developed by innovative local actors (TukkiJamm, ShopMeWay, etc.).

Keywords: digital platforms; e-commerce; digital marketing; consumers behavior; Africa; Senegal

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1. Introduction

In the current digital revolution era and in the context of its effects on the economy, organizations find themselves forced to adapt by reviewing ways of organizing activities and approaching markets as well as their customers and consumers. In the past, companies were designed to evolve within a classic, linear commercialization system based on the purchase of inputs (raw materials for instance) that were then converted into product or service offerings for resale to customers via traditional sales channels. Today, the quest for a competitive advantage [1] leads these companies to integrate or create digital platforms (DPs) to secure a prime position in the value chain of their activity sector. The fundamental difference between these two business models lies in the non-linearity of value chains and the strengthening of their usefulness, in the second case, thanks to the possibility for innovation and the interaction between individual and organizational stakeholders.

In this article, we take a general look at e-commerce platforms, with a particular focus on Africa and, more precisely, Senegal. These are platforms specifically designed to enable, through digital technologies, interactional commerce transactions between authorized users (e-consumers and e-merchants). From a global perspective, this form of e-commerce has been around for almost thirty years, with the advent of the American giant Amazon (since 1994) and then eBay (since 1995), Cdiscount (since 1998), and others. While some DPs function as marketplaces (Amazon, Cdiscount, etc.), others take the form of a digital (online) transposition of traditional (physical) commercial channels and are not open to other independent suppliers of goods and services. To illustrate this, we can refer to the Amazon e-commerce platform, which enables nearly two million independent suppliers to interact with more than one hundred million potential Amazon-affiliated and non-affiliated customers via its Prime Service. Therefore, this platform is a marketplace. Meanwhile, Apple, for example, has strengthened its traditional offering by making its products, technological solutions, and services available online for consumers. Hence, Apple is a hybrid company, offering its services both online and in physical stores (the Apple Stores).

In Africa and, more precisely, in Senegal, the development of electronic commerce by local actors is much more recent [2,3]. In Senegal, the sector is dominated by Jumia (2012), which is also located in Morocco [4,5], other African countries, and the West African sub-region. Based in Nigeria, Jumia operates in fourteen countries across the continent and has already raised over 760 million dollars. Today, more than 80,000 e-merchants work via its platform, with an ever-increasing number of visits (over 750 million). Other actors, some of which are Jumia's competitors (Copia and Kilimall in Kenya; Konga in Nigeria; Bidorbuy, Takealot, and Zando in South Africa; and Noon in Egypt), and others with more modest sizes, have also emerged in recent years but with less significant growth dynamics. Similarly, companies with varying degrees of success are adapting themselves to this phenomenon by opening online stores alongside their traditional physical sales channels. Examples from Senegal include Orca (furniture and decoration) and 4 Vents (bookshop).

However, beyond e-commerce (buying and selling products or services online), platforms represent a generic category of online devices offering digital services to facilitate exchanges between independent users interconnected via the internet (professionals and/or private individuals). As such, they cover virtually all possible exchanges within the framework of socio-economic activities (employment and all sectors of activity combined). For the sake of simplicity, two forms of platforms can be considered: profit-oriented or digital commercial platforms (DCPs) and non-profit or philanthropic digital platforms (PDP).

So, what are the particularities of Africa's digital e-commerce platforms and related activities?

By raising this issue, our work sets out to establish a mapping of existing types of DP in Senegal to analyze the related development prospects for e-commerce activities in the country and in Africa. The aim of this purely exploratory research is to study a new phenomenon in the management science literature in the Senegalese context and from an African perspective. Indeed, while the literature on the concept of digital platforms is already abundant [6–8], it obscures the specific case of African and Senegalese actors. This research is based on a case study examining specifically Senegalese DPs. It was carried out using a *qualimetric* methodology [9], i.e. a qualitative study (semi-structured interviews and secondary data) supported by a quantitative approach (consumer questionnaires). Hence, data collected were analyzed using Nvivo software, and the quantitative ones mathematically processed.

By adopting a theoretical position of conceptualizing DPs, we base our analysis on the consideration of the postulates of contingency theory [10–12], the economic function associated with online digital service devices, and the consideration of theories explaining e-consumer purchasing behavior. From a strictly theoretical point of view, other theories, particularly those with marketing connotations, could also be mobilized. Indeed, the phenomenon of "forced" migration of organizations towards digitalization, seeing DPs as meeting points with consumers, is in line with the postulates of socio-economic marketing theory [13]. This theory stems from the generic concept of socio-economic management of organizations, which has implications to strategic management practices, management control, sales and marketing strategy, human resource management, etc. [14,15].

In this piece of work, our ambition is to propose a new conceptual framework for the articulation of DPs specifically adapted to the African context. We particularly focus on strategic, organizational, and managerial aspects.

2. Digital Platforms: Typology and Main Theoretical Meanings

Our world is constantly evolving, and it is doing so at breakneck speed. This evolution is driven by the pace of technological renewal and innovation (which is particularly disruptive). At the same time, these changes in society are also reflected in shifts in consumer behaviors, forcing the suppliers of goods and services to respond by transforming themselves. As a result, companies that have failed to adapt to new realities are disappearing and being replaced by bold newcomers. Likewise, entire industries have gone off-course, out-of-phase, have fallen prey to uncertainty, and are now occupied by intrepid new actors, seizing on the complexity of the situation in a no-holds-barred way, betting on innovation and creativity. By way of illustration, Uber, in the transportation sector, or "Air b and b", in the hotel and accommodation services, are striking cases of this. In their respective sectors, these newcomers are "writing the movements of a global dance, to which everyone must now adjust their steps" [16].

Today's world is one of turbulence and changing rules, a "laboratory of change" marked by the emergence of innovative ideas, inventors, innovators, and experimenters.

In this context, consumer behavior has a lot to do with the way in which companies act and, consequently, opt for organizational formats designed to adapt to new conditions. The new behaviors adopted by consumers bear witness to the transmutations that modern society is undergoing. Today, consumers are present online. As a result, companies organize themselves accordingly to join them there and offer their products and services. This testifies the end of the cycle for typically traditional physical-based business formats in favor of modern forms of enterprise, taking advantage of the "online" benefits in vogue in virtually every business sector. Thus, over the past 30 years, hybrid business formats have emerged, and, thanks to the development of the internet network and the rapid spread of the access to it, they have both a physical and an online presence. Similarly, other types of companies have emerged, founded only on online access via the internet. These forms of enterprise are now beginning to have a certain historicity in developed countries and have already been the subject of attempts at conceptual delimitation in the management science literature. However, the definitions given remain heterogeneous, and the conceptualizations obscure the case of platforms specific to the African context and those in less developed countries. Nevertheless, are the digital platforms operating in Africa and conceptualized in Africa any different from their Western counterparts? Here, we look at some of the theoretical meanings already discussed in the management science literature to clarify the notion of DPs and then establish a typology of their forms. This will enable us to classify the actors involved in their ecosystem in Senegal and then identify their intrinsic particularities.

2.1. Digital Platforms in the Literature: An Attempt at Conceptualization

Historically speaking, the issue of platforms from a digital perspective is recent. In the past, the presence of companies on the internet was evoked through the concept of the "digital environment". It is only recently that the notion of "platform" has been used conceptually to refer to this phenomenon, notably by a current of literature known as "platform studies." Some even speak of a "platformization" of the web [17,18]. Therefore, the notion of platforms is, clearly, polysemous and somewhat ambiguous [19,20]. Gillespie even considers it to be at the crossroads of four semantic domains: information technology (computational), political, figurative, and architectural. He, thus, asserts that the conceptual use of the term "platform" relates to understandings linked to computer science (an object for construction and innovation), politics (a space for speaking), figuration (an opportunity for both abstract and practical promise), and architecture (a device for expression which is open and accessible to all without restriction).

From these considerations emerge the ideas that a platform is a space for interactions between people (architectural), offering them the opportunity to speak to a public audience (political), relying on technological and computing infrastructure to support its operation (computer software, smartphone applications, online games, etc.), and enabling third parties to design and develop correlated applications [21]. By way of illustration, a platform such as Facebook, or even Google, enables third-party users to develop customizable modules within it, which can then be integrated and linked to another environment on a website or other platforms [19].

It is in this sense that the "platformization" of the web already evoked above [16] refers to the domination of platforms on the web. It results in forces of influence and in the integration of all the devices present on the internet. Today, different platforms (e.g., social networks) are interwoven with each other and with other mechanisms for competition and popularization of the activities of commercial and non-profit organizations (websites, applications). Thus, the internet offers platforms as many capabilities, firstly of producing quite varied data and, secondly, of exploiting them for commercial, marketing, interaction, and communication purposes [21]. Indeed, these functions of constant data collection offer a better understanding of audience profiles, practices, and habits, to then be able to target them with personalized offers and advertising campaigns.

A website is not necessarily a platform, but it can include functionalities that give it this status. Many of today's organizations have a website to publicize their activities, without exploiting the possibilities offered by the internet to carry out commercial transactions. In this case, these are static showcase sites offering information to visitors. However, as soon as functionalities for connecting with potential customers are made available or links are created with social networking pages for marketing purposes (Facebook, LinkedIn, Instagram, Tik Tok), they can fall within the definition of a platform. Indeed, rather than being social media in the traditional sense of networking with "friends" or acquaintances through the creation of a personal profile [22], today's social networks provide their members with several other development opportunities (activities, clienteles, and sales of products and/or services). For example, Facebook today presents itself as an integrative platform with other complete applications and solutions grafted onto it in the manner of an operating system (MacOS, Windows) but online [23].

So, since the advent of web 2.0 through the imposition of social networks [24,25] and the popularization of the term "platform" by O'Reilly [26] and its definition as a system with dynamic components (websites), the web is no longer just a means for publishing information (web 1.0) but, following an internet paradigm shift, a mechanism for designing interrelated applications and service offerings that go beyond the sole dissemination of information (web 2.0) [27].

In parallel with social networking, the worldwide imposition of e-commerce has also played a role in the transformation of companies wishing to adapt to it by finding consumers where they are (that is, on the internet). These irreversible transmutations have resulted in the advent of new business formats known as hybrids. These are companies continuing to carry out their traditional face-to-face activities, while, at the same time, digitizing themselves to run part of their business online or offer, there, customer service. For others, it is even a question of going "all online" for all their activities and services by adopting the form of virtual companies (not in the sense of companies structured as networks, outsourcing their activities, but direct and total "online" companies) [28].

2.2. A Typology of Digital Platforms

As mentioned above, DPs are online devices offering digital services to facilitate interactions between distinct users via the internet. According to the OECD [29], these services make convenient "exchanges between two or more distinct but interdependent sets of users (whether businesses or individuals) who interact through the service via the internet" [29]. Today, two main forms of platforms can be considered: profit-oriented DPs with commercial activities and non-profits and, sometimes, philanthropic DPs. While the latter tend to dwindle over time, the for-profit ones continue to grow [30]. Thus, in our analysis of platforms, we focus more on digital commerce platforms (DCPs) than on the second category. To strengthen DCPs, we also analyze the use of social networking platforms (SNPs) for trading activities and on the interaction between e-merchants and e-consumers. These three categories make up the generic category known as digital platforms (DPs).

In general, DPs offer companies new development prospects and access to potential customers from afar. They encourage them to broaden their targets and fields of business while minimizing risks through efficiency gains, reduced transaction costs, and information asymmetries.

When we think of DCPs, the first thing that springs to mind are marketplaces such as Amazon Marketplace (since 1996), the American giant, or its counterparts eBay, Cdiscount in France, Jumia in Africa, and so on. Indeed, one of the prerequisites for qualifying a website as a platform is the online connection between the buyer(s) and the seller(s). This is, intrinsically, the function of these platforms, which, moreover, do not necessarily own the products offered for sale within them. They play the role of intermediaries or coordinators of market transactions within their systems. However, over the last few decades, DCPs have developed additional business models that also give them the role of online retailers [31]. This assertion enables us to ensure a first point of demarcation between DCPs and online retail websites held by individual companies that are the sole owners of the goods and services sold on their sites. The latter activities do not fall within the definition of a DCP. These include JD.com, Pinduoduo, and Alibaba (China) as well as Shopee (Singapore), Mercado Libre (Latin America), and other platforms that, according to UNCTAD [32], also dominate the e-commerce market (Saudi Arabia and Egypt, for example). Regarding websites which directly sell to their end customers, we have Apple, for example, which, although it is not a real marketplace, nevertheless offers, through its website, products and services from other brands which are related to its offerings and complement them (Belkin [chargers and protection], STM and Lumen [bags and protective cases], Beats [headphones], etc.). This could widen the scope of marketplaces by including websites proposing offers from other brands.

DCPs give e-merchants greater visibility and access to a wide and varied customer base. Thus, they offer them mechanisms for reducing costs, simplifying informational transactions, and facilitating their contact with partners, potential customers, and so on.

Similarly, when interwoven with other digitized solutions (FinTech, customs, shipping, delivery, payments, customer service), DCPs consolidate their impact on the development of e-commerce because these services should become part of the set of activities supported by sellers themselves or outsourced by them to third parties [33]. As a result, other forms of platforms specializing in specific and complementary areas of activity, such as transport, finance, training, energy, employment services, recycling, advertising, delivery, etc., are developing alongside DCPs.

In addition, it is worth noting the widespread domination of the global DCPs mentioned above (Amazon, Alibaba, etc.), which reduced, for example, the development possibilities of typically African or Senegalese local DPs. Indeed, the control and power of the former and their strike force enable them to have a stranglehold on data, giving them unrivaled capacities for creating and capturing value. This is why there is a certain concentration of platforms, to the disadvantage of African and Senegalese actors, who are struggling to perform, whereas world-class platforms with substantial financial resources have their doors open to all markets.

As for social networking platforms (SNPs) used for trading purposes [34], they are more in use in developing countries (such as Africa) where the informal sector makes a major contribution to economic wealth creation. According to Roest and Bin-Humam [35], this involves e-commerce using social media platforms (Facebook, Instagram, or WhatsApp) in place of or alongside traditional commercial platforms (Amazon, Alibaba, and Jumia). Thus, "social media platforms initially designed for communication enable a new, more informal type of e-commerce" [36].

3. Research Methodology and Protocol

This research focused on a case study of DPs operating in Senegal, whether owned by local actors or created specifically to tackle domestic and sub-regional markets. The case study method seemed to be the most relevant to this focus, as it gives researchers an easier grasp of new phenomena, neglected or simply ignored by the literature [37]. Our choice of Senegal as a case study is explained by the current dynamism and progress of the local digital ecosystem as well as the gradual and constant increase in the number of DPs.

Indeed, Senegal is currently on track for a successful digital transformation, boosted by political initiatives such as the Senegal Digital Strategy 2016–2025 (SN2025) drawn up in 2016 as part of the "*Plan Sénégal emergent*" (PSE), the current development policy (since 2013 to present), and supported by the United Nations Development Program (UNDP). In Senegal, there has been a boom in startups operating in the digital and DP fields and a change in behavior in favor of the digital on the part of consumers, professional actors, and public authorities. Today, digital technology and its platforms affect almost every sector of the country's economy (commerce, transport, health, finance, agriculture, energy, media, training, employment, etc.). Yet, research in management science and marketing in particular seem to ignore this phenomenon.

By adopting a theoretical posture of conceptualizing DPs, we based our analysis on the consideration of the postulates of contingency theory [10–12], the economic function allocated to online digital service devices, and the consideration of theories explaining consumers online purchasing behavior. Considering theories in marketing, other concepts could also be mobilized. Indeed, organizations have the habit to constantly seek to understand consumer behavior and then adapt to their changes. And this led them to join consumers on the web and social networks and to digitalize their offers through the design of DPs. This tendency is in direct line with certain marketing theories considerations, particularly those linked to the socio-economic analysis of organizations [13–15]. The technological, political, economic, and demographic changes characterizing modern societies condition the supplies expected by the society and define sociocultural evolution by modifying the consumer's vision and expectations. Thus, social demand has a permanent and iterative influence on the world's socio-economic structuring (technologies, politics, etc.). These social changes and the resulting apprehension of the social object of our modern age largely explain consumer logics and the need for organizations to integrate them into their offers and marketing strategies.

Hence, socio-economic theory recognizes the eminent systemic dimension of organizations. Similarly, the major strategic choices made by organizations, including the phenomenon of platformization as a strategic innovation, are a response to the need for companies to adapt to changes in their environment. This is why we have chosen to refer to the postulates of contingency theory. In fact, according to this theory, the structure of an organization (considered in the broadest sense, including its coordination and communication mechanisms, the layout of its activities, and the deployment of its services) corresponds to a form of "response" to a changing external and internal environment. It is an adjustment to the realities of the period and its prevailing system of service production and deployment [10]. This is the case when organizations adopt digital approaches to meet the demands of the digital revolution and, thus, of today's world of platforms. Similarly, it is a response to the need to adapt to consumers' changing trends and behaviors as well as changes in their decision-making mechanisms that are strongly linked to transmutations in the socio-economic environment [38–41].

Our study enabled us to rank e-commerce platforms in Senegal based, firstly, on data collected through the preliminary study supplemented by our survey (see appendices) but also through the analysis of statistics from two global data and business intelligence platforms (Statista and Similarweb). The indicators selected were, first and foremost, the number of visits to the platforms but also the description of the e-tailers' activities and the opinions and ratings given by users. For reasons of exclusivity to the Senegalese context, this study did not consider platforms not explicitly targeting its market. For example, we did not consider exporters, platforms based outside the country, or those with no factually measurable user traffic to be relevant to our study. Thus, only the platforms of companies with a productive activity in Senegal and those with proven business models and customers were included in our research.

To answer our research question, we opted for an exploratory qualitative research methodology, deployed in two phases: a dominant phase of exploiting secondary information [42,43], and a complementary phase of primary data collection through a survey of actors in the Senegalese DP ecosystem. Indeed, despite their richness, secondary data cannot suffice for such an analysis and are very often incomplete, partial, ambiguous, or sometimes contradictory. This explains the need to supplement them with primary data in order to achieve a successful and productive research process. Thus, all the data collected were cross-referenced to reduce certain biases and asymmetries in information and optimize the depth of their scope. On the one hand, when it comes to identifying existing platforms, secondary data alone are sufficient. On the other hand, knowledge of the specific features of each platform, the objectives of their managers and creators, and their related business models and strategic orientation requires us to go further. This was the aim of the individual interviews conducted. They gave us access to a wealth of information about the platforms and their unique, detailed experiences, which would not have been possible with secondary public data alone.

In addition, we opted for a remote administration method to broaden our target and not limit it to Dakar-based actors only. Indeed, some of the included platforms have founders belonging to the Senegalese diaspora from Europe and the American continent (Canada and the USA in particular). Finally, the interviews were recorded, transcribed, and then imported into the Nvivo 14 software for thematic coding as part of a content analysis. In addition to this content analysis, data collected via e-consumers questionnaire and secondary data considered (Statista, Simi-larweb, etc.) were mathematically processed to bring out their intrinsic meanings.

4. Mapping of Digital Platforms in Senegal

An analysis of the data collected and then processed enabled to identify three categories of actors making up the DP ecosystem in Senegal (Section 4.1). The large number of platforms observed in the Senegalese digital landscape (see Appendix A), reveals an ecosystem made up of actors with a wide range of statuses and typologies as well as disparate actions and practices (Section 4.2). Finally, their classification provides information about their quality and number according to the different classes of actors identified (Section 4.3).

4.1. Proposal of a Typology of Digital Platforms

The DP ecosystem in Senegal is made up of organizational actors of varying sizes and scopes of activity. Three categories of actors can be considered, each with distinct intrinsic characteristics. These are, on the one hand, integrative digital platforms (IDPs) and specialized digital platforms (SDPs) and, on the other hand, digital platforms for related services that are acting as intermediaries (digital platforms dedicated to intermediate services—DPDIS). Figures 1–3 below provide a synthetic representation of these platforms as well as a clear overview of their mapping.

IDPs are online devices that exploit the interactions of their users to offer service integration solutions for the benefit of the suppliers of goods or services (e-merchants) and the demanders of such things (e-consumers). This category of platforms includes marketplaces, ad sites, retail store sites, and generalist platforms. Generally speaking, marketplaces are places (physical or virtual) where the suppliers of products or services meet solvent buyers. Meanwhile, according to the definition specific to platforms, these are electronic or digital marketplace platforms (DMP). Instead, ad sites refer to online platforms containing a range of information designed to sell or buy products and services. In other words, they are virtual spaces in which buyers and sellers interact and communicate with ease. In the same way as marketplaces, users of ad sites need to have an account to access the services on offer and connect with the community created by the platform. In the same way, ad sites offer extended visibility and access to a wider potential clientele. For e-tailers, they provide a wide choice of product or service ranges that can be accessed instantly and facilitate the availability of information on the offerings and on the suppliers themselves.

Figure 1. Mapping of Senegal's integrative digital platforms (IDPs).

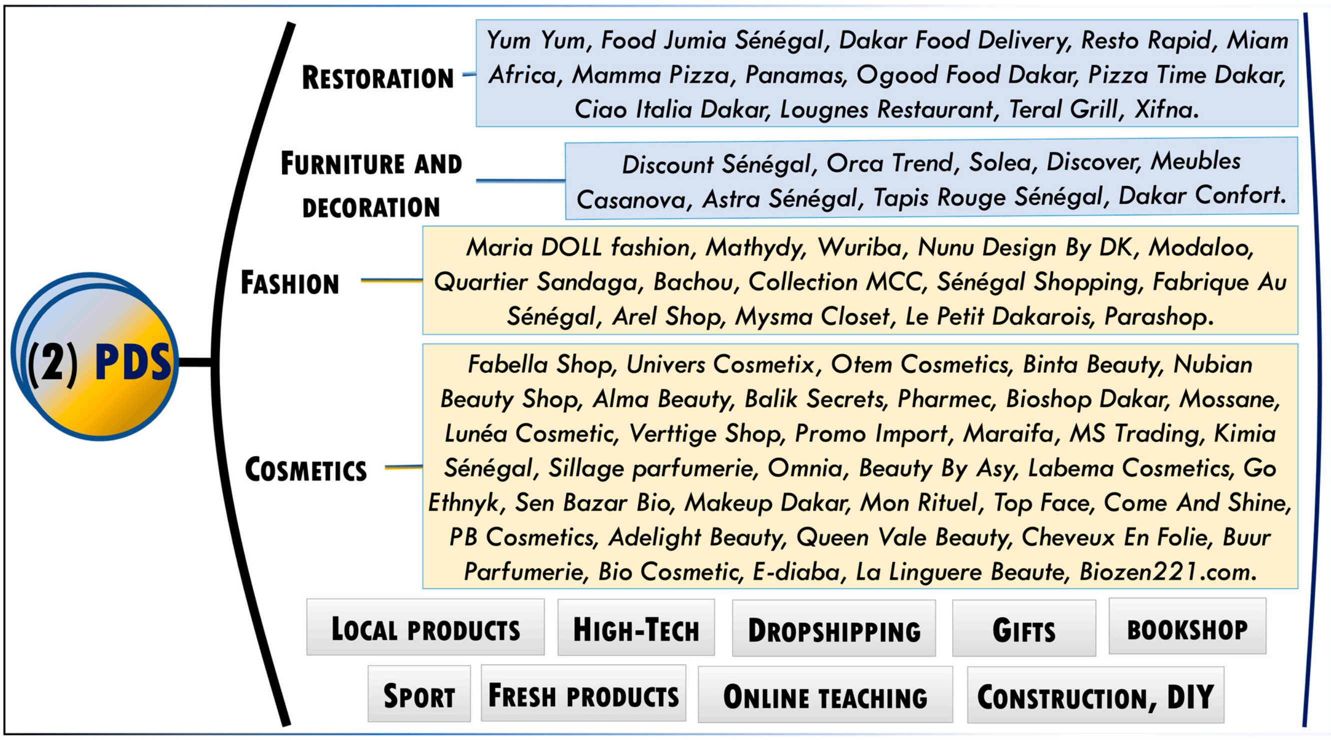

Figure 2. Mapping of specialized digital platforms (SDPs) in Senegal.

The other two categories of actors are retail platforms such as Auchan Senegal (auchan.sn), Taf Taf (taftaf.sn), and Super Deals (superdealsn.com). These are both Click and Mortar and Pure Players. Click and Mortars are companies investing in the e-commerce market while retaining a physical presence and continuing to sell products in their traditional stores. Pure Players, on the other hand, are e-merchants present solely online and, therefore, virtual companies without physical stores [28]. For example, Auchan Sénégal, Orca Trend, Librairie 4 vents, Master Office Deco, and Mburu boulangerie are "Click and Mortar", unlike Pure Players Taf Taf, Super Deal, and Niokobok. Niokobok also falls into the category of generalist platforms, offering a wide range of products and services to a broad customer base. Like Nova, Soumari, Jaba, Gstore, Feugjay, and others, these platforms are not specialized and target a much larger audience than specialized platforms. However, the latter give e-consumers access to suppliers with greater expertise, quality of service, and mastery of their field and enable e-merchants to reach a more qualified audience who is more likely to know what it wants.

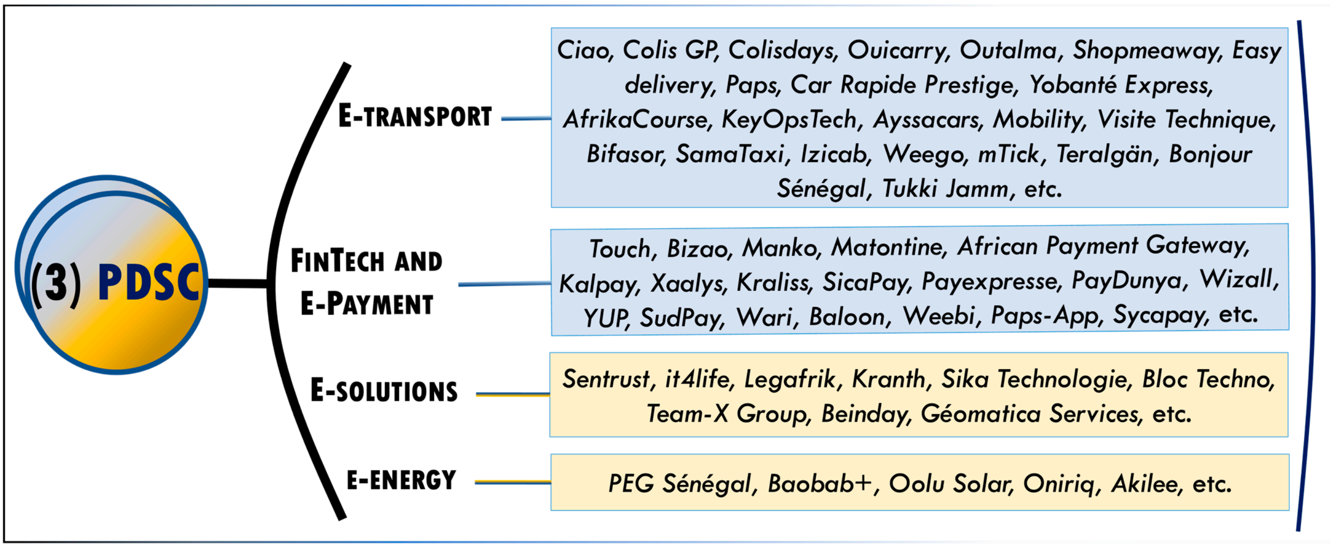

Figure 3. Mapping of Senegal's digital platforms dedicated to intermediate services (DPDIS).

Specialized digital platforms (SDPs) such as Rekfi (music and sound), Medcom Plus (medical equipment), Yum Yum (catering), Fabella Shop (cosmetics), Discount Senegal (furniture and decor), Mathydy (watches), and others have chosen to specialize in a specific field. They have a limited scope of action, to avoid going too deeply into the subject, which, if they were to depart from it, would reduce the finesse of their expertise. As a result, they focus on a specific defined specialties and generally target a convinced clientele. In this context, the current study reveals a new trend among Senegalese consumers towards a local preference and priority consumption of made-in-Senegal products. Platforms aligned with this trend are developing in parallel: Sunu Produits Locaux, Africnature, Sooretul, Passion Nature, Le Lionceau, Mlouma, Senar delices, Diobass Agroalimentaire, and Miels du Monde. In addition to these specializations, other platforms are active in the fields of sports (local content), high-tech (IT, cell phones, and smartphones), online education, bookselling, construction, and dropshipping.

Along the same line, other forms of platforms also exist in Senegal, acting as intermediaries or business complements. We call them "digital platforms dedicated to intermediate services" (DPDIS). They complete the value chain of other platforms by positioning themselves in the middle or at the end of the circuit. These include delivery and transport specialists such as Colisdays (colisdays.com), Ouicarry (ouicarry.com), Paps (paps.sn), Car Rapide Prestige (carrapideprestige.com), Yobanté Express (yobanteexpress.com), Weego (weegolife.com), Teralgän (teralgan.com), Bonjour Sénégal (bonjoursenegal.com), and others. They can be considered support platforms for the two preceding categories, i.e., integrative digital platforms (IDP) and specialized digital platforms (SDP).

4.2. Specializations and Paradigmatic Orientations of Actors in the Digital Platform Ecosystem

The analysis of the practices of DP actors according to the previous typology (IDP, SDP, and DPDIS) reveals two classes of related main actors. They are differentiated according to their specialization in terms of targets and activity and according to their paradigmatic orientations. Firstly, generalists (IDPs) and, secondly, specialists (SDPs). With DPDISs, a third category can be considered, namely, that of intermediaries or support service providers (e-finance or FinTech, e-transport, e-logistics, and delivery). While the majority of e-tailers specialize in a specific business sector, others have chosen to remain open to several sectors, covering a wide range of professions and activities. In this way, specialized platforms are attacking unoccupied market spaces, i.e., new niches offering interesting prospects for development and innovation. Subsequently, most new actors attempt to target new markets either by creating original offerings or by disrupting existing business sectors, disrupting conventional practices [44]. By way of illustration, the startup Tukki Jamm has entered the transportation and car-sharing market by partnering with major companies such as Majorel Africa to "facilitate home-to-company travel for their employees" (TukkiJamm) through its platform.

Similarly, in the field of e-commerce in general, ShopMeAway (shopmeaway.com) has set itself the mission of simplifying online purchases on foreign DPs that were previously inaccessible to Senegalese consumers for a variety of reasons. In the words of its president, Mr. Racine Sarr, "In Senegal, people want to buy from sites like Amazon, Zara, and H&M, but these sites don't deliver in Senegal and very often don't accept payments from Africa. This problem extends to all of Africa, but also to Latin America and South-East Asia." Beyond this intermediary role, ShopMeAway "also gives local producers a virtual space on its platform", so that they can offer "Made in Senegal" products, which are currently very much in vogue.

4.3. Ranking of Digital Platform Actors in Senegal

The result of these analyses is a ranking of DPs in Senegal, presented in the form of summary tables. Table 1 gives an overview of the ranking of actors in the digital platform ecosystem, providing information on their numbers and grouping them according to the three classes defined above (generalists, specialists, and intermediaries) and their category.

Table 1. Ranking of digital platform actors in Senegal (e-commerce).

<table>
<tr><th>Platform Categories</th><th colspan="3">Number of Platforms</th><th>Platforms Categories</th><th colspan="3">Number of Platforms</th></tr>
<tr><td>Marketplaces</td><td rowspan="4">Generalists</td><td>12</td><td rowspan="4">82</td><td>Restoration and catering</td><td rowspan="13">Specialists (SDP)</td><td>20</td><td rowspan="13">94</td></tr>
<tr><td>Generalist websites</td><td>31</td><td>Fresh products</td><td>15</td></tr>
<tr><td>Consumer goods</td><td>20</td><td>Gifts</td><td>8</td></tr>
<tr><td>Advertising sites</td><td>19</td><td>Gadgets</td><td>9</td></tr>
<tr><td>Cosmetics</td><td rowspan="9">Specialists (SDP)</td><td>35</td><td rowspan="2">42</td><td>Local products</td><td>10</td></tr>
<tr><td>Cosmetics brands</td><td>7</td><td>Construction, DIY</td><td>9</td></tr>
<tr><td>Fashion</td><td>14</td><td rowspan="3">24</td><td>Furniture & decoration</td><td>8</td></tr>
<tr><td>Jewelry</td><td>6</td><td>Bookshop</td><td>6</td></tr>
<tr><td>Shoes</td><td>4</td><td>Dropshipping</td><td>5</td></tr>
<tr><td>High-Tech</td><td>27</td><td rowspan="3">47</td><td>Sport</td><td>5</td></tr>
<tr><td>Smartphones</td><td>11</td><td>Musical Instruments and Sound Systems</td><td>1</td></tr>
<tr><td>Computer science & IT</td><td>9</td><td>Hardware</td><td>1</td></tr>
<tr><td>Other specialist sites</td><td>13</td><td>13</td><td>Printing</td><td>3</td></tr>
<tr><td colspan="7">Number of Senegalese e-commerce platforms, in total</td><td>302</td></tr>
</table>

This ranking identifies 302 platforms meeting the classification criteria adopted (see part 3—Research Methodology and Protocol). Specialized platforms predominate. These are primarily in the high-tech (47 platforms), cosmetics (42), fashion (24), and catering (20) sectors. Other smaller specializations are also represented (fresh produce, gifts, gadgets, local products, construction and DIY, furniture and decoration, bookselling, dropshipping, sports, musical instruments and sound, hardware, and printing).

It is also important to note that today's DP ecosystem is progressing at a very rapid pace. As a result, the least profitable platforms are disappearing in favor of those investing heavily to grow and attract the maximum number of consumers, who, benefiting from a constant improvement in the products on offer and control over the choice of their service preferences, are now further enabling such a competition [45].

There are 82 general e-commerce platforms, represented first and foremost by marketplaces (12), followed by "general" e-merchant sites by name (31), mass-market retailer platforms (20), and ad sites allowing commercial transactions (19).

As for the intermediary platforms located between the above-mentioned platforms and e-consumers, 175 can be considered (see Table 2). They operate in the fields of transport and delivery services (21), FinTech and payment services (16), and other related sub-activities (138).

Table 2. Ranking of Senegalese digital platform actors (intermediaries, facilitators, and other related or intermediary services).

<table>
<tr><th>Digital Platforms for Related Services (DPRSs)</th><th colspan="3">Number of Websites</th></tr>
<tr><td>E-Transport—Logistics & delivery platforms, E-Transportation & Delivery</td><td rowspan="13">Intermediates (SDP)</td><td>21</td><td rowspan="7">117</td></tr>
<tr><td>E-Solutions</td><td>9</td></tr>
<tr><td>E-Health—E-Health platforms</td><td>8</td></tr>
<tr><td>E-Finances—FinTech, Digital Payment platforms, Crowdfunding platforms</td><td>16</td></tr>
<tr><td>E-Agriculture</td><td>1</td></tr>
<tr><td>E-Recycling—Recycling services</td><td>61</td></tr>
<tr><td>E-Energy—E-Energy solutions platforms</td><td>1</td></tr>
<tr><td>E-Medias—</td><td>14</td><td rowspan="2">27</td></tr>
<tr><td>E-News—Search & information platforms</td><td>13</td></tr>
<tr><td>E-Ad—Online advertising platforms</td><td>9</td><td rowspan="4">29</td></tr>
<tr><td>E-Learning—E-Learning & training platforms</td><td>9</td></tr>
<tr><td>E-Emploi—Digital labor platforms</td><td>7</td></tr>
<tr><td>E-Ecosystem</td><td>4</td></tr>
<tr><td></td><td></td><td>Total platforms</td><td>173</td></tr>
</table>

Furthermore, even though some platforms managed to stay the course and sustain their activities in a profitable way, the number of the disappeared ones, sometimes even during their launch phase, is numerous. To the growth difficulties linked to the weakness of the market and fierce competition is added the risk of platforms being forced out of business by successful companies and e-commerce giants, as was the case, for example, in other countries like France. Indeed, several French platforms have been swallowed up by the competition in recent times. This is particularly the case of search platforms Voila and Lycos, "crushed" by Google, and disappeared internet service-offering platforms such as Wanadoo, Club internet, Neuf Telecom, and Infonie as well as Ibazar, the former "king" of e-commerce and online auctions. The latter had failed to adapt to new economic realities and was bought by the American E-Bay (since 2002), like the e-commerce platform Priceminister, which was bought by the Japanese brand Rakuten (since 2010). Certainly, the internet, therefore, offers prospects for very rapid growth for platforms managing to maintain an attractive user acquisition rate. However, it can also easily and quickly become a cemetery for the platforms unable to adapt to the evolution of digital technologies and the socio-economic context.

Our study shows that the downfall scenario that happened in France in the early 2000s is currently being observed in Senegal, where several platforms have disappeared from the digital ecosystem and others have been forced to abandon an internet presence in favor of offline offerings only (see Figure 4). Likewise, the potential arrival in Africa of global e-commerce giants like Amazon and Alibaba may worsen this trend.

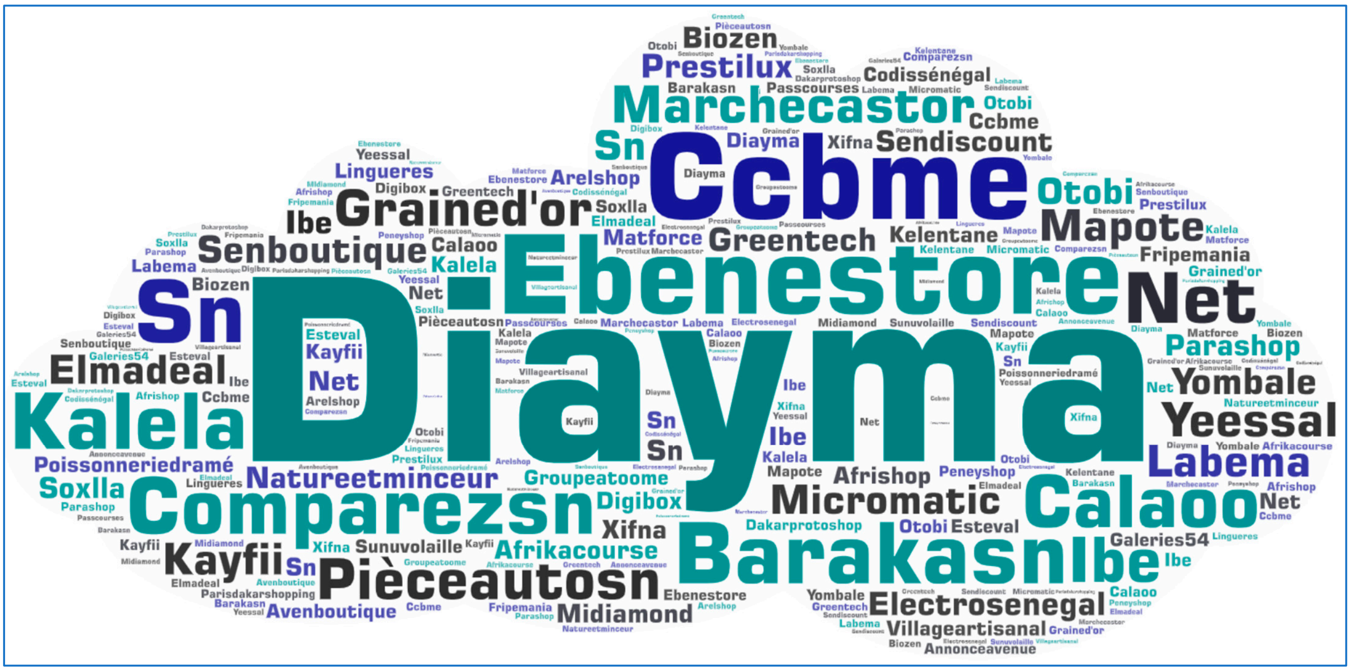

Figure 4. List of disappeared Senegalese digital platforms.

5. Conclusions

Digital platforms offer all types of businesses new possibilities and prospects for their development and for addressing markets and consumers with greater efficiency while minimizing the costs and risks. However, success in this reality cannot be commanded, and, despite the enormous trade and employment potential in Africa, the African digital platform industry is struggling to take off and grow exponentially. Indeed, while actors in this industry are trying to take advantage of the digital potentialities available, they are facing pitfalls linked to inequalities vis-à-vis to their international counterparts, particularly marketplaces and major brands.

Nevertheless, Africa has its realities, and, in a certain way, local consumers have their contextual particularities. These consumers do not have access to the same basic infrastructure and living facilities as their Western counterparts (technologies, banking services, city planning and addressing of municipalities, etc.). Therefore, these are also a lot of possibilities for the differentiation and disruption of what currently exists on the market.

This research on the case of African digital platforms focused on the example of Senegal. Through the application of a qualitative methodological approach, it made it possible for us to arrive at a mapping of the different categories of digital platforms based and carrying out their activities in Senegal. It also proposes a classification of the types of actors in this field according to their specialization as well as their paradigmatic orientation.

Thus, the Senegalese digital landscape is made up of three categories of platforms. First, integrative digital platforms (IDP) and specialized ones (SDPs) and then, secondly, those offering intermediate services (DPDIS). Respectively, these are both generalist and specialized platforms as well as platforms playing the role of intermediaries, offering support services located either in the middle or at the end of transactions and processes and industrial value chains (FinTech and digital payments, crowdfunding, transport, logistics management and delivery, e-energy, dropshipping, etc.).

After the current work, several future research perspectives are possible to continue investigations into the ecosystem of African digital platforms. They are mainly related to the broadening of the issues related to this topic as well as the analysis of original business models that have recently been developed by innovative local actors who are new to the market (TukkiJamm, ShopMeWay, etc.).

Our contribution to the research stream on platform architecture and the e-commerce ecosystem, in conjunction with the mechanism of contingency theory postulates [10–12], offers new insights into how DP firms and the firms within them operate and create value. It also provides a new conceptual framework for the articulation of DPs, specifically those particularly adapted to the African context, focusing on their strategic, organizational, and managerial aspects. Future research will be able to delve deeper into the subtleties of African platform architecture, analyzing the properties of their resulting business models, market specificities, and the marketing and strategic implications which follow them. It would also be very interesting to explore the new realities of the marketing discipline in light of these digital platforms, including the impacts of Big Data, blockchain and artificial intelligence technologies [46–49] as well as the development of consumer-to-consumer transactions [50,51] and the concept of distribution 4.0. Beyond the literary aspects, these clarifications will also be useful for practitioners in choosing the appropriate business model and adopting relevant marketing strategies for their companies.

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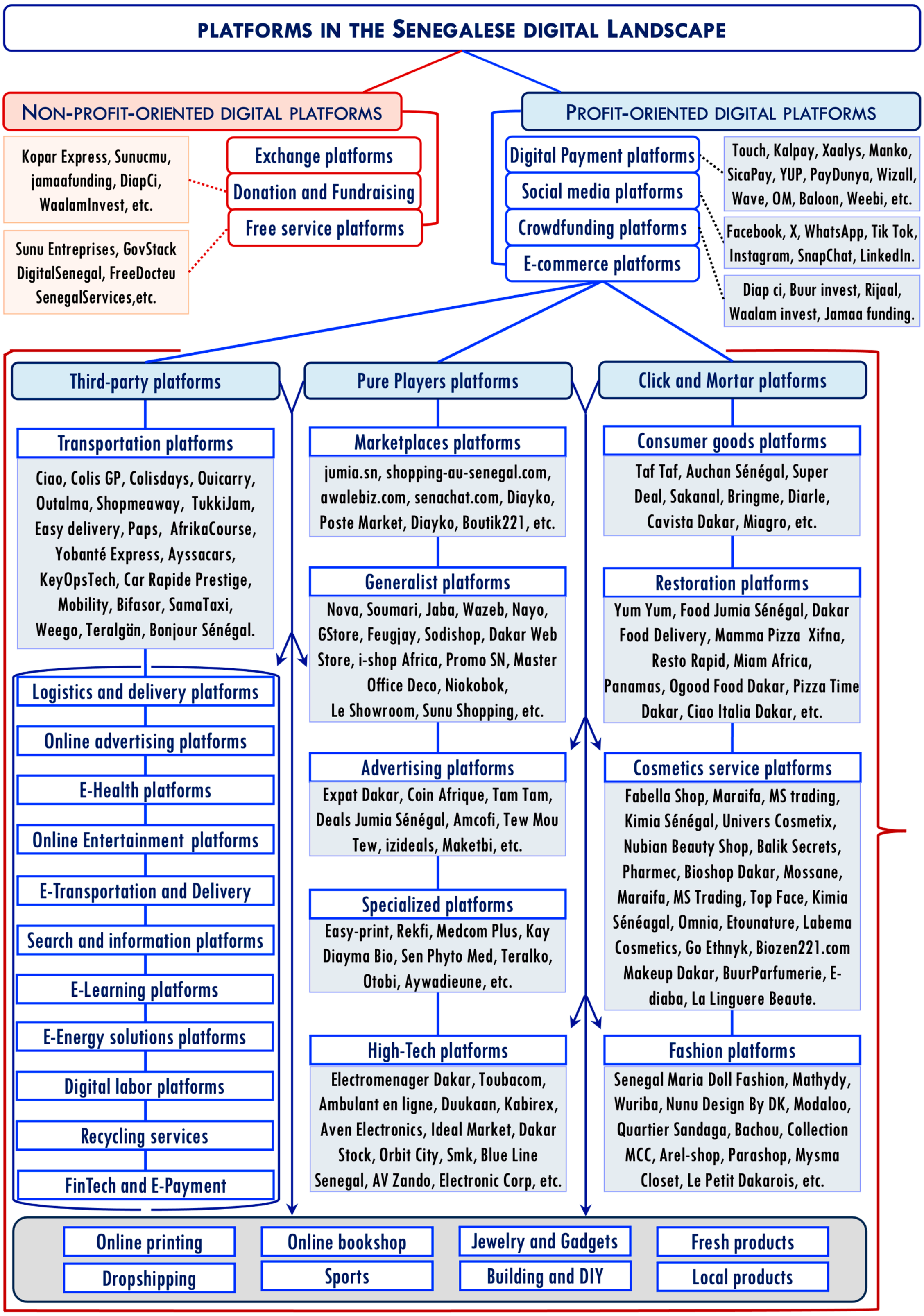
Data Availability Statement: All the data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A. Platforms in the Senegalese Digital Landscape



Appendix B. Senegalese Digital e-Commerce Platforms

Overview of e-commerce platforms in Senegal (1/3)

Marketplaces (12)

- jumia.sn
- shopping-au-senegal.com
- awalebiz.com
- senachat.com
- produitdusenegal.com
- cosec.sn
- postemarket.com
- consommonslocal.net
- diayko.com
- ecommerce-covid.sn
- boutik221.sn
- kaynoo.sn

Generalist platforms (31*)

- nova.sn
- soumari.com
- soumari.com
- dakarwebstore.com
- masterofficedeco.sn
- jaba.sn
- gstore.sn
- feugjay.com
- sodishop.sn
- i-shop.africa
- leshowroom.tv
- sunushopping.com
- nayo.sn
- jouanecain.com
- wazeb.com
- dioula.sn
- omadra.com
- limarketsn.net
- itemsenegal.com
- senegalblackbusiness.com
- sensouq.com
- samashopping.com
- promo.sn
- niokobok.com
- senboutique.com
- soxlla.com
- Kanje.sn
- DakarWebStore.com
- bakhbade.com
- shop.sooretul.com
- wanter.sn

*Number of platforms for each group.

Consumer goods/distribution (20)

- taftaf.sn
- auchan.sn
- superdealsn.com
- sakanal.sn
- bringme.sn
- diarle.sn
- cavistadakar.com
- miagrosarl.com
- sedicom.sn
- doingmarket.net
- supermarche.idealmarket.sn
- yombouna.sn
- tongtong.sn
- monchezmoi.sn
- senteranga.sn
- darousalam.tech
- elydiastore.com
- marchecastor.com
- ambi.sn
- jaloshops.com

Advertising sites (19)

- expat-dakar.com
- coinafrique.com
- deals.jumia.sn
- tewmoutew.com
- dorgoo.sn
- maketbi.com
- dakarvente.com
- tamtam.sn
- Jokko-annonces
- Afrimalin
- jaayall.com
- izideals.sn
- senecommerce.com
- Dakar-auto.com
- gaaraas.com
- autosenegal.com
- amcofi.com
- dakar-annonces
- senemarket.sn

Online printing (3)

- helloprint.sn
- topoprint.com
- innaprintshop.com

Specialist platforms (13)

- easy-print.org
- rekfi.com
- medcom-plus.com
- kaydiaymabio.com
- senphytomed.com
- teralko.fr
- midiamond.sn
- faire-part-du-senegal.com
- senegal.natureminceur.com
- herbesbio.net
- tendanceceleste.com
- otobi.sn
- aywadieune.com

Restoration and Catering (20)

- yumyum.sn
- food.jumia.sn
- dakarfooddelivery.com
- restorapid.com
- mburu-boulangerie.com
- sfcdakar.com
- miamafrica.sn
- mammapizza.sn
- livrema.com
- francescaristorante.com
- panamas.sn
- ogoodfood-dakar.com
- pizzatimedkr.com
- ciaoitaliadakar.com
- food.adexexpress.net
- lougnesrestaurant.com
- maggyfast.com
- teralgrill.com
- prestigessas.com
- xifna.com

Furniture & decoration (8)

- discount-senegal.com
- orcatrend.com
- solea.sn
- discover.sn
- meublescasanova.com
- astrasn.com
- tapisrougesn.com
- dakarconfort.com

Overview of e-commerce platforms in Senegal (2/3)

Cosmetics

42

- fabellashop.com
- universcosmetix.com
- otemcosmetics.com
- bintabeauty.com
- nubianbeautyshop.com
- shopalmabeauty.com
- baliksecrets.com
- pharmec.sn
- bioshop-dakar.com
- mossane.com
- luneacosmetic.com
- verttige.shop
- promo-import.com
- maraifa.com
- mstrading.sn
- kimiasenegal.com
- sillageparfumerie.com
- omnia.sn
- beautybyasy.com
- labemacosmetics.com
- goethnyk.sn
- senbazarbio.com
- makeupdakar.com
- monrituel.shop
- topface.sn
- comeandshine.sn
- pbcosmetics.sn
- adelightbeauty.com
- queenvalebeauty.com
- cheveuxenfolie.com
- buurparfumerie.sn
- biocosmetic.sn
- e-diaba.com
- lalinguerebeaute.com
- biozen221.com
- etounature.com
- biobellech.com
- amfabeauty.com
- savonsdelola.com
- nature-traditions.com
- sentaar.fr
- theordinary-dakar.com

Fashion

14

- senegal.mariadollfashion.com
- mathydy.com
- wuriba.com
- nunudesignbydk.com
- modaloo.com
- quartiersandaga.com
- bachou.com
- collectionmcc.com
- senegalshopping.com
- fabrique-au-senegal.com
- arel-shop.com
- mysmacloset.com
- lepetitdakarois.com
- parashop.sn

Gifts

8

- terangabox.com
- verttige.shop
- laroseraie-senegal.com
- alyfa.co
- cadeo.sn
- ruby.sn
- terangarden.site
- carapiles.com

Fresh Produce

15

- clubtiossane.sn
- parknadio.com
- senefel.com
- senpoisson.com
- aywajieune.com
- sunu-gal.sn
- o-castor.com
- fermegandiole.com
- geejgi.com
- guinarshop.com
- senemusk.com
- freego.sn
- lemarchethiaroye.com
- lebalme.com
- lagroshop.com

Jewelry

6*

- dakaralliances.com
- sengold.sn
- nadoragifts.com
- sarabijouterie.com
- banaatu.com
- orionshopsn.com

Shoes

4

- fsdakar.com
- derbisn.com
- yakham.com
- topshopdakar.com

Gadgets

9

- chouetteetutile.com
- chelectro.com
- tech-access-dakar.com
- evitrine-dakar.com
- laboutiquesecrete.com
- shopoxy.net
- shopoxy.net
- dakardeal.com
- toubaboutique.com

bookshop

6

- librairienumeriqueafricaine.com
- labouquinerie.sn
- librairie4vents.com
- librairiedidactika.com
- tedmaster.org
- senlibrairie.com

Sports

5

- decathlon.sn
- senebasketshop.com
- maillotsenegal.com
- fit-athletics.com
- dakarsportstore.com

* Figures correspond to the number of platforms for each group.

Overview of e-commerce platforms in Senegal (3/3)

High-Tech

27

- electromenager-dakar.com
- toubacom.sn
- ambulantenligne.com
- syllart-shop.com
- duukaan.sn
- khoumaetfreres.com
- aven-electronics.com
- idealmarket.sn
- dakarstock.com
- orbitcity.sn
- keurarameinformatique.com
- smk.sn
- blueline-senegal.com
- ezoneretails.com
- electroniccorp.sn
- oumouexpress.com
- bht.sn
- kabirex.com
- csglobalbusiness.com
- aramebusinesstrading.com
- csb.sn
- digitalstores.sn
- maintech-senegal.com
- myoffice.sn
- leshowroom.sn
- micromatic.sn
- av-zando.com

Computers

9*

- shop.arc.sn
- lomultimedia.com
- dabakhinformatique.com
- tourecomputer.com
- mci.sn
- daboconnect.com
- 2arly.com
- lpdsenegal.com
- etechnologies.shop

Smartphones

11

- konnectek.sn
- gsmsenegal.com
- boutique.orange.sn
- iphonedakar.com
- ibt.sn
- kandjietfreres.com
- xiaomi-senegal.com
- dakar-android.com
- boutique.orangebusiness.sn
- box-tv-senegal.com
- serimat.com

Building and DIY

9

- siobati.com
- serco-senegal.com
- tdsc.sn
- energiesolairesenegal.com
- groupetqg.sn
- bricosen.com
- falamad-senegal.com
- keurmouride.com
- serco-senegal.com

Local products

10

- shop.sooretul.com
- sunuproduitslocaux.com
- passionnature.sn
- le-lionceau.com
- shop.mlouma.com
- senardelices.com
- africnature-senegal.com
- diobassagroalimentaire.net
- mielsdumonde.com
- ebenestore.com

Dropshipping

5

- shopmeaway.com
- market.rapidos.sn
- yoonema.com
- dakarmarket.sn
- market.outalma.com

* Figures correspond to the number of platforms for each group.

Appendix C. Senegalese Digital Related and Intermediary Service Platforms

Overview of related and intermediary service platforms (1/3)

Platforms number	Platforms for transport, logistics, and delivery services		
1	Colis GP	Crowd delivery	colis-gp.com
2	Colisdays	Crowd delivery	colisdays.com
3	Ouicarry	Import and home delivery	ouicarry.com
4	Outalma	Import and home delivery	outalma.com
5	Shopmeaway	Import and home delivery	shopmeaway.com
6	Easy delivery	Import and home delivery	easy-delivery.com
7	Paps	Home delivery	paps.sn
8	Car Rapide Prestige	Home delivery	carrapideprestige.com
9	Yobanté Express	Home delivery	yobanteexpress.com
10	AfrikaCourse	Home delivery	afrikacourse.com
11	KeyOpsTech	Home delivery	keyops.tech
12	Ayssacars	Car sharing	ayssacars.com
13	Mobility	Outsourced maintenance	mobility-sn.com
14	Visite Technique	Turnkey technical inspection	visitetechnique.com
15	Bifasor	Logistics exchange platform	bifasor.com
16	SamaTaxi	Online cab booking	samataxi.com
17	Izicab	Online cab booking	izycab.sn
18	Weego	Public transport	weegolife.com
19	mTick	Online bus ticket sales	mtick.sn
20	Teralgän	Solidarity tourism agency	teralgan.com
21	Tukki Jamm	Carpooling	pro.tukkijamm.com/
22	Bonjour Sénégal	Digital travel agency	bonjoursenegal.com
23	Ciao	Transport and delivery services	ciaosenegal.com

Platforms number	Platforms offering various solutions online (e-solutions)		
1	Sentrust	E-signature	https://sentrust.sn
2	it4life	ESN for NGOs	https://it4life.org
3	Legafrik	Legal online	https://legafrik.com
4	Kranth	Drones and data	https://kranth-africa.com
5	Sika Technologie	IoT solutions	https://sikatechnologie.com
6	Bloc Techno	IoT solutions	https://bloctechno.com
7	Team-X Group	Technologies for startups	https://teamxgroup.com
8	Beinday	free Wi-Fi connection	https://beinday.com
9	Géomatica Services	Drone mapping	https://geomatica-services.com
10	Yonutol	The local fruit and vegetable farmers' market	https://yonutol.com

Platforms number	Platforms offering e-health services		
1	E-Yone	Medical information system	http://eyone.net
2	Le Lionceau	Baby food	https://le-lionceau.com
3	Volo	Shared medical record	http://volotrust.com
4	JokkoSante	Health financing	https://jokkosante.org
5	ApiAfrique	Durable hygiene products	https://apiafrique.com
6	Samadoctor	Appointment scheduling	http://samadoctor.com
7	Hope	Blood donation support	http://sunuhope.com
8	Salamed	Medical devices	https://salamed.net

* Final figure for each group correspond to the number of platforms within it.

Overview of related and intermediary service platforms (2/3)

Platforms number	Platforms offering Fintech (e-finance) services		
1	Touch	Digital Payment Aggregator	https://intouchgroup.net
2	Bizao	Payment aggregator	https://bizao.com
3	Manko	Local banking on a scooter	http://manko.sn
4	Matontine	Group savings	http://matontine.com)
5	African Payment Gateway	Fintech	http://afripayway.com
6	Kalpay	Means of payment	https://kalpayinc.com
7	Xaalys	Fintech	https://xaalys.com
8	Kraliss	Online payment	https://kraliss.com
9	SicaPay	Online payment	http://sycapay.net
10	Payexpresse	Online payment	https://payexpresse.com
11	PayDunya	Online payment	https://paydunya.com
12	Wizall	Mobile money wallet	https://wizall.com
13	YUP	Mobile money wallet	http://yup.africa/fr/pays/senegal
14	SudPay	Payment solutions	https://sudpay.com
15	Wari	Money transfer	https://wari.com/fr
16	Baloon	Digital insurance broker	https://baloon.sn
18	Weebi	Mobile cash register/stock software	http://weebi.com
19	Paps-App	Technology-based logistics service, an end-to-end solution for all your logistics needs	https://papslogistics.com/
Platforms number	**Platforms offering online information services (e-news)**		
1	Pages jaunes du Sénégal	Professional directory	https://pagesjaunesdusenegal.com
2	Yaay	Digital community	https://web.facebook.com/yaay.sn
3	Livin Dakar	Community and recommendations	https://instagram.com/livindakar
4	dakarlives	Community and recommendations	https://instagram.com/dakarlives
5	NoterKo	Crowd evaluation	https://noterko.com
6	Les vieilles pirogues	Annual Music Festival	http://vieillespirogues.com
7	Wakh'Art	Cultural platform	http://wakhart.com
8	AvisJournaux	Tender inventory	http://avisjournaux.com
9	LAfricaMobile	Multi-channel marketing platform	https://lafricamobile.com
10	Firefly	Advertising network	http://fireflymedia.tv
11	Gramica	Advertising sales and management	http://gramica-africa.com
12	Deedo	Music streaming	https://deedo.io
13	Musikbi	Online music sales	https://musikbi.com
14	Work'D	Animated videos	http://workd-group.com
Platforms number	**Platforms offering online media services (e-media)**		
1	Seneweb	Online news	https://seneweb.com
2	Senego	Online news	https://senego.com
3	Leral.net	Online news	https://leral.net
4	Leral.net	Online news	http://xalimasn.com
5	Senenews	Online news	https://senenews.com
6	MetroDakar	Online news	https://metrodakar.net
7	Pressafrik	Online news	https://pressafrik.com
8	Dakaractu	People news	https://dakaractu.com
9	SenePeople	People news	https://senepeople.com
10	Xibar.net	People news	https://xibar.net
11	Galsen 221	People news	https://galsen221.com
12	wiwsport	Sports news	https://wiwsport.com
13	YamaTélé	Online TV	https://yamatele.sn

* Final figure for each group correspond to the number of platforms within it.

Overview of related and intermediary service platforms (3/3)

Platforms number	Platforms offering e-learning services		
1	Etudesk	E-learning	https://etudesk.com
2	mJangale	Training	http://mjangale.com
3	Edacy	Professional training	https://edacy.com
4	YSA Hub	Professional training	https://ysa-hub.com
5	Volkeno	Accelerated professional training	https://volkeno.com
6	Ateliers des génies	Children training	http://ateliersdesgenies.com
7	OwnLabs	VR laboratory	https://ownlabs.net
8	TéléEcole	Educational television	http://tele-ecole.tv
9	SunuEcole	Facility management	https://sunuecole.com

Platforms number	Platforms offering online energy solutions (e-energy)		
1	PEG Sénégal	Solar kits Distribution	https://pegafrica.com
2	Baobab+	Solar kits Distribution	https://baobabplus.com
3	Oolu Solar	Solar kits Distribution	https://oolusolar.com
4	Oniriq	Solar kits Distribution	https://oniriq.com
5	Akilee	Electrical optimization	https://akilee-by-ines.com

Platforms number	Platforms offering online employment services (e-employment)		
1	Noflaay	Domestic staff agency	https://noflaay.com
2	Talent2Africa	HR platform	https://talent2africa.com
3	AMNAjob	Job offers website	http://amnajob.com
4	Senjob	Job offers website	http://senjob.com
5	Digital In	Recruitment	https://digitalin.co
6	EmploiSenegal.com	job and recruitment website	https://emploisenegal.com
7	Wutiko	Job offers and training	https://wutiko.com

Platforms number	Online advisory and support service platforms (e-ecosystem)		
1	Jokalante	Rural communications agency	http://jokalante.com
2	Sékou	Consulting and support for startups	https://sekou.org
3	Concree	Online incubation	http://concree.org
4	Viamo	Field interconnectivity solutions	https://viamo.io

Platforms number	Platforms offering online recycling services (e-recycling)		
1	SetTIC	Electronics recycling	https://settic.sn
2	Kao-plast	Waste recycling	https://kao-plast.sn
3	Recuplast	Plastic waste recycling	https://recuplast.org
4	E-cover	Tire recycling	https://web.facebook.com/EcoverSenegal

Platforms number	Platforms offering online agricultural services (e-Agriculture)		
1	myAgro	Agriculture & fintech	https://myagro.org
2	Yeesal Hub	Agriculture & innovation	http://yeesalhub.org
3	Lifantou	School catering & agriculture	https://lifantou.com
4	Carvifood	Dried meat e-commerce	https://carvifood.com
5	La Ferme EcoLand	Agro-educational farm	https://web.facebook.com/pg/lafermeecoland
6	BayTech	Mobile farming advice	https://web.facebook.com/pg/BYTECHAF
7	Dictaf Corporation	Agricultural advice	http://dictafcorp.com
8	BaySeddo	Agricultural investment	https://bayseddo.com
9	Nano Air	IoT and AgriTech	http://nanoairtech.com
10	Tolbi	Connected objects for agriculture	https://tolbico.com
11	MLouma	Agricultural platform	http://mlouma.com

* Final figure for each group correspond to the number of platforms within it.

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