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Development of a Decision Support Information System for the Regulation of Consumer Goods in the Agricultural Sector

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Abstract: *This research explores the requirements and operational dynamics of the regulatory system governing large-scale product consumption in the agriculture and consumer sectors. Through semi-structured interviews with ten key stakeholders — comprising producers, distributors, regulators, and consumers — the study identifies major challenges and opportunities for improvement within the system. A two-stage data analysis was conducted using semantic analysis and NVIVO software, which helped to uncover the primary concerns and priorities of these stakeholders. The findings highlight the critical need for a user-friendly, comprehensive, and collaborative digital platform that addresses current challenges. Such a platform should provide real-time stock tracking, demand forecasting, and efficient information sharing among stakeholders, ultimately fostering a more interconnected and responsive regulatory environment. Furthermore, it could enhance decision-making processes and help mitigate issues related to supply chain disruptions, overproduction, and waste. The research focuses specifically on the consumer potato sector, which presents a limitation in terms of its applicability to other high-consumption agricultural products, such as grains, fruits, and vegetables, which may have different regulatory needs. Moreover, the qualitative nature of the methodology, while providing depth and context, may not capture the full quantitative scope of the challenges faced. Future research should aim to broaden the scope by including additional high-consumption products and incorporating quantitative methods to further validate and expand upon these findings. Overall, the study offers actionable recommendations for the design and implementation of a collaborative digital platform, with the potential to significantly enhance the efficiency and effectiveness of the regulatory system, thereby benefiting all stakeholders involved in the large-scale consumption of agricultural products.*

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JEL Classification: M15, Q11.

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INTRODUCTION

In 2008, a crisis in the consumer potato market in Algeria was experienced, characterized by an oversupply compared to demand. Significant volatility in potato prices was subsequently observed, with producers being put at risk. This crisis persisted even after a reduction in subsequent production by producers, leading to higher prices for consumer potatoes and testing consumers' purchasing power. To address this crisis, a system for regulating consumer products, including several strategic agricultural products, was put in place by the Ministry of Agriculture, Rural Development and Fisheries. However, over the years, failures in this control system were observed. According to Benssaoud and Lefki (2018), one of the problems that contributed to its failure was the information system. The timely and accurate dissemination of market data was hampered by the lack of an effective information system, preventing regulators from making informed decisions and taking appropriate action to address the supply-demand imbalance.

The instability in the potato market was exacerbated by the lack of reliable information on production levels, market trends, and consumer preferences. Without access to real-time information, both producers and consumers found it difficult to anticipate market dynamics, resulting in sub-optimal decision making and potential economic losses (Lefki, 2018).

To address these problems, the development of an effective information system to support the operation of the regulatory system was deemed essential. By establishing a comprehensive and efficient information system, timely data on market conditions could be provided to policymakers and regulators, enabling them to take proactive action, anticipate imbalances and implement effective measures to ensure stability in the potato market (Aubry & Sow, 2021).

This study focuses on the consumer potato sector in Algeria, which is of strategic importance as an agricultural product (Lefki, 2018). The main objective of this research is to develop a collaborative digital platform that will bring together the various stakeholders involved in regulating the market for consumer potatoes in Algeria. The platform aims to facilitate real-time sharing of relevant information and provide decision support to decision makers.

As part of the platform design approach, the specific needs of stakeholders in the consumer potato regulatory system must be understood. By identifying and responding to these needs, it is aimed to create a platform that will improve the efficiency, transparency, and coordination of the entire system.

Stakeholders in the consumer potato sector may include, but are not limited to, producers, distributors, government regulators, trade associations, and consumers. Each of these actors plays a crucial role in the smooth functioning of the regulatory system and has specific needs in terms of information management, communication, and decision-making.

Therefore, it is essential to identify the expectations and requirements of each stakeholder in order to design a platform that adequately meets their needs. This may include features such as collection and dissemination of information on prices, quantities available, quality standards, government regulations, as well as analytical tools to make informed decisions about production, distribution and inventory management.

LITERATURE REVIEW

Information Systems' Role in the Logistical Chain

The performance of an organization's supply chain can be improved significantly with the use of information systems. Research has shown that the integration of these systems allows for improved coordination between the various links in the logistical chain, lowers the order processing times, provides increasing visibility into stock levels, and enhances the standard of demand projections (Oubba, 2022).

Within the Supply Chain context, Information Logistics Systems (ILS) are vital to optimize logistics operations, complete the supply chain, and minimize expenses (Merzoug & Bouzida, 2021). Additionally, technological innovation has made it possible to achieve operational and innovative benefits while emphasizing strategic alignment with the company's goals, as demonstrated by the use of software as a service (SaaS) (Loukis et al., 2018).

Furthermore, the adoption of information and communication technologies (ICT) in the Supply Chain function is influenced by contingent factors such as the company's size and industry (Amara & Abedou, 2021). An additional factor influencing the decision to use software solutions as a service is the direction's support Kuciapski et al., 2022).

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Agriculturalists have obstacles in using technology, including inadequate training, financial resources, and suitable infrastructure (Bouzid et al., 2020). Last but not least, the systems of information on agricultural markets (AMIS) provide benefits including increased market transparency, better production planning, and effective risk management for producers (Galtier, 2014).

Digital Transformation and Digital Platforms

The terms "numerization" and "informatization" refer to the recent phenomenon known as "digitalization." Significant changes are brought about in a number of different areas of activity, challenging historical actors and generating new economic dynamics in the process. The magnitude of the changes, the scope of informational transactions, the speed of the changes, and the sources of the changes are the key dimensions of this transition. Digital platforms are essential tools for this transformation, enabling businesses to increase productivity, provide a better customer experience, and maintain their competitiveness. These platforms can take many different forms, including exchange platforms, media platforms, software platforms, and transaction management platforms. Combining these platforms allows businesses to develop innovative business models and diverse interactions (Aubry & Sow, 2021). The digital transformation has also been examined in the context of a French cabinet of auditing firm, where it has resulted in reduced processing times, improved data quality, increased customer satisfaction, and a notable improvement in team collaboration (Nafzaoui & El Adib, 2020). These developments highlight the critical importance of the digital transformation in the present business world (Lahchame & Djilali, 2021). In light of the significant and positive effects of information systems within organizations (Baah, et al., 2022; Ghouri & Mani, 2019; Houagaba Garba et al., 2023; Ferhat, 2021); their contribution to this last's performance (Loukis et al., 2018) and the role they have (Ferhat, 2021), the research question to which this study aim to provide an answer is as follows: What are the needs of stakeholders involved in the regulation of the potato chip in terms of the conception of an information system that aids in decision-making?

Regulation of High-Consumption Products in Algeria

In order to protect public health, consumer safety, and the avoidance of dishonest business practices, Algeria regulates large-scale consumer products through the use of regulatory bodies and specialized systems. Among these organizations, the Post and Electronic Communications Regulatory Authority is important for fostering competition in postal and electronic communications markets, managing frequencies, overseeing authorization procedures, and resolving disputes. She works to uphold a competitive environment and defend subscribers' rights.

The 2008 establishment of the System of Regulation of Large Consumption Agricultural Products is a crucial mechanism for maintaining equilibrium between the supply and demand of agricultural products like potatoes. This system aims to maintain consumer price stability and agricultural income stability by adjusting the supply of potatoes in accordance with seasonal fluctuations (Hitouche, 2021). These regulations are necessary to ensure a fair and balanced environment in the relevant sectors, support economic growth, and safeguard public interests. Studies (Benssaoud & Lefki, 2018) have found two factors that are accountable for the malfunctions in Algeria's production and distribution regulatory system. First, an organizational failure has been revealed, characterized by difficulties such as seasonal swings in production, price volatility, unethical business practices, and subpar product quality. The lack of transparency and effectiveness in the regulatory system makes it difficult to monitor and control the production and distribution of agricultural products.

To address these issues, it is advised to raise the standard of the products, implement efficient control mechanisms, use information and communication technologies to monitor and track production and distribution and encourage cooperation among market participants. Secondly, the information system that is used to monitor and control the production and distribution of agricultural products needs to be improved by utilizing information and communication technologies (TICs). A more effective regulation may result from a real-time information system based on data and key indicators, as well as an online platform that facilitates information sharing and communication among market participants. To ensure the effectiveness of the information system, it is crucial to consider the needs and preferences of the involved parties during its creation and implementation (Benssaoud & Lefki, 2018; Lefki, 2018). Implementing these recommendations is essential to maintaining the nation's food security and fostering efficient and sustainable agricultural output in Algeria.

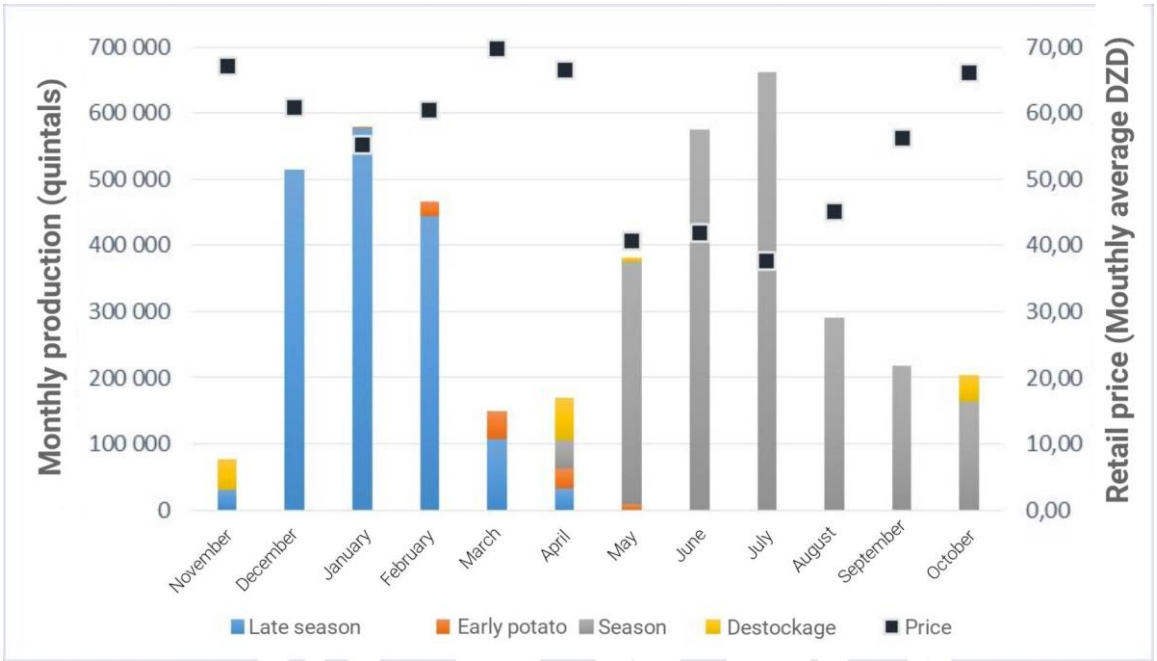

Figure 1. Impact of the Potato Regulatory Mechanism on the Price

Source: Benssaoud, O., & Lefki, K. (2018) based on MADRP-DRDPA data.

METHODOLOGY

This research is grounded in a constructivist perspective and employs a research-action approach based on the same-named research methodology. This approach entails a thorough analysis of user needs, which is followed by the modeling of those needs using a conceptual data schema in order to create a data store. As the vision was centered on the analytical needs of the users, it was decided to conduct this research using a qualitative approach, which calls for the extensive collection of data necessary for the development of the decision-aid information system. This research tries to construct meaning according to the analytical needs of users. The constructivism paradigm leads researcher to define how phenomena are organized, perceived, and construct by individuals (Weick, 1995).

Interview Guide

The purpose of the interview guide is to interview the stakeholders involved in the large-scale product regulation system, with a particular focus on the consumption point. It consists of two main sections:

1. Operation of the consumption-based land regulation system: This section aims to gather information on the current operation of this last system of regulation by examining the mechanisms, policies, and players involved in this file's regulation.
2. Interviewees' opinions about the information system that supports decision-making and their level of adherence to its use: This second section aims to comprehend the particular needs of the involved parties regarding a collaborative digital platform for the regulation of the point of consumption. Additionally, it wants to gauge how interested and accepting they are of using a digital tool within the confines of regulation.

These two sections were designed in a way that responds to the problem raised in this article. The platform can be developed only after understanding the operation of the regulation system and knowing the needs of users. According to O'Brien (2001), action research is used in experimental studies focusing on solving real problems. And according to Yin (1994, p. 13), the case study is *"an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident…[and] relies on multiple sources of evidence."*

Selection of Interviewees

The interviewees listed below were chosen based on their standing within the system of regulating high-consumption products.

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Table 1. Selection of Interviewees

Structure	Department	Initial	Post	Duration
National Interprofessional Office for Vegetables and Meats	Executive management	B. K.	Executif Manager	1:30 min
	Directorate of Administration and Finance	B. F.	Director of Administration and Finance	1:00 min
		S.	Chief Mandate	45 min
	Department of Markets and Prices Regulation	A. K.	Chief of office potatoes	35 min
		H. M. L.	Head of Control and Arrangement Service	40 min
	West Zone	K.D. T.	Area Head	1:15 min
			Controller	15 min
Directorate of Agricultural Services	Production organization and technical support service	S. H.	Head of Production Service Organization and Technical Support	1:00 min
Economic operators	FRIGOMEDIT*	H. F.	Quality control	45 min
	Farmers	K. M.	Farmers	30 min

Source: created by authors.
*Notes: *FRIGOMEDIT is a company specializing in the import/export and marketing of fresh fruit and vegetables, as well as all agri-food products (FRIGOMEDIT, 2024).*

In order to handle the findings from this study, which were conducted with the assistance of an interview guide, it was decided to use Nvivo 14 software for the second half of the guide and a semantic analysis process for the first. Nvivo 14 is a helpful tool to understand the field data by a textual analysis. In addition, the Word Frequency query of Nvivo 14 was used to find the most frequently occurring words.

RESULTS

Scheduling of Interviews

A qualitative study based on semi-direct interviews with participants in the consumption system regulation of potatoes within the National Interprofessional Office of Vegetables and Meet (NIOVM) was conducted in Ain Benian and the Directorate of Agricultural Services (DAS) of the Chlef Wilaya.

Semi-directive interviews were conducted with seven (7) NIOVM's employees, one (1) DAS of Chlef employee, and two (2) public and private economic operators. Five (5) questions have been addressed to them.

Profiles of the Interviewees

The interviewees have ten to fifteen years of experience in regulation of consumer goods, each with a unique profile and many years of combined experience in the agricultural industry. The profile of the interviewees is summarized in the following table, and the interviewees were given initials in order to respect their anonymity.

Table 2. Profile of Interviewed Persons

Structure	Initials of interviewees	Profession
National Interprofessional Office for Vegetables and Meats	B. K.	Director General
	B. F.	Head of Department of Administration and Finance
	A. A.	Chief of office potatoes
	G. H.	Controller
	H. S.	Chief of mandate
	T. D. K.	Head of West Zone
	R. M.	Chief Control and Environmental Services (interim)
Directorate of Agricultural Services	S. H.	Service Support Products Organization Potato Technician
Economics operator	H. F.	Stock manager at FRIGOMEDIT Chlef
	K. M.	Farmer

Source: created by authors.

Qualitative Data Analysis and Interpretation

The purpose of the first section of the interviews is to learn about the operation of the consumption point regulation system based on the respondents' answers.

Figure 2 shows the functioning of the consumer potato regulation system.

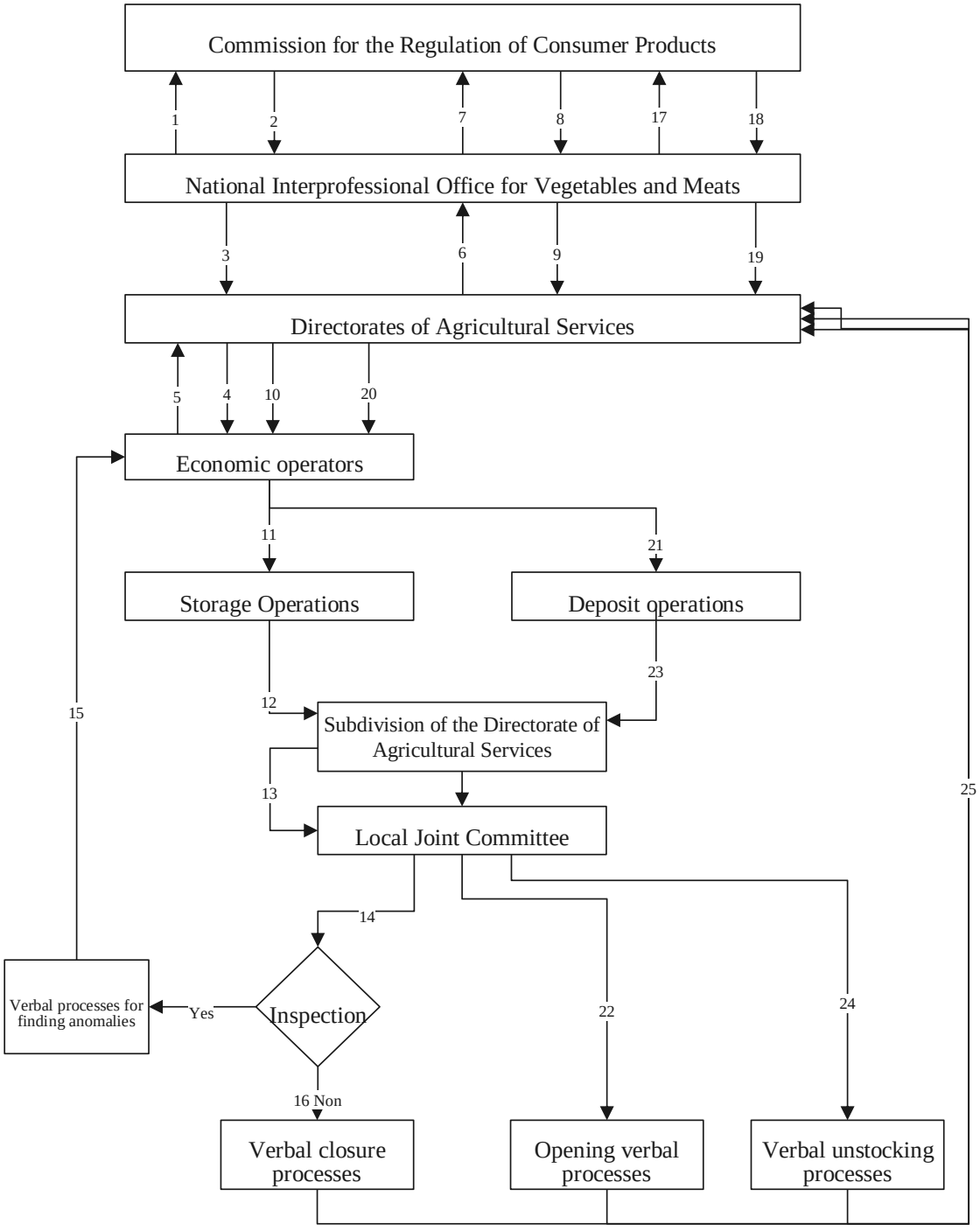

Figure 2. Functioning of the Consumer Potato Regulation System

Source: done by researchers.

The process of regulating the storage of potatoes begins with the proposal of a programme by the National Interprofessional Office for Vegetables and Meats (NIOVM), followed by a review and treatment by the Consumer Products Regulatory Commission. Once validated, a schedule is established. NIOVM then notifies the Directorates of Agricultural Services (DAS), which launch an appeal to economic operators.

The latter apply for membership in the regulatory system, and the DAS develops a database of applicants. Applications for membership are forwarded to NIOVM for processing by the Regulatory Commission, which selects the operators. A new notification is sent to the DASs, who then inform the selected economic operators.

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The storage campaign starts with the operators, who report daily on the status of the storage. A cold-chamber completion record is drawn up by the DAS subdivision. Next, a joint committee meets with the operators to inspect the stored potatoes and develop a cold-chamber closure PV. In the event of an anomaly, it shall be notified to the economic operator, otherwise the Joint Committee shall draw up a closure report.

The process continues with NIOVM proposing a disposal plan to the Regulatory Commission, which examines and validates it. DSAs are re-notified, and they inform economic operators of the disposal plan. The unstocking campaign begins, and a joint commission meets with the operators for the opening of the cold chambers and the drafting of the opening PVs. Operators provide daily information on unstocking until the end of the campaign. Finally, the joint committee meets with the operators to inspect the stored potatoes and develop a cooling chamber disposal plan. The three PVs (closure, opening and unstocking) are transmitted by DASs to NIOVM.

The initial segment of the interviews facilitated the comprehension of the Interprofessional Office of Vegetables and Meat's internal operations, as well as the many procedures initiated within the regulatory framework. The economic operators' payment procedure at the conclusion of the storage and destocking campaign is depicted in Figure 3 below.

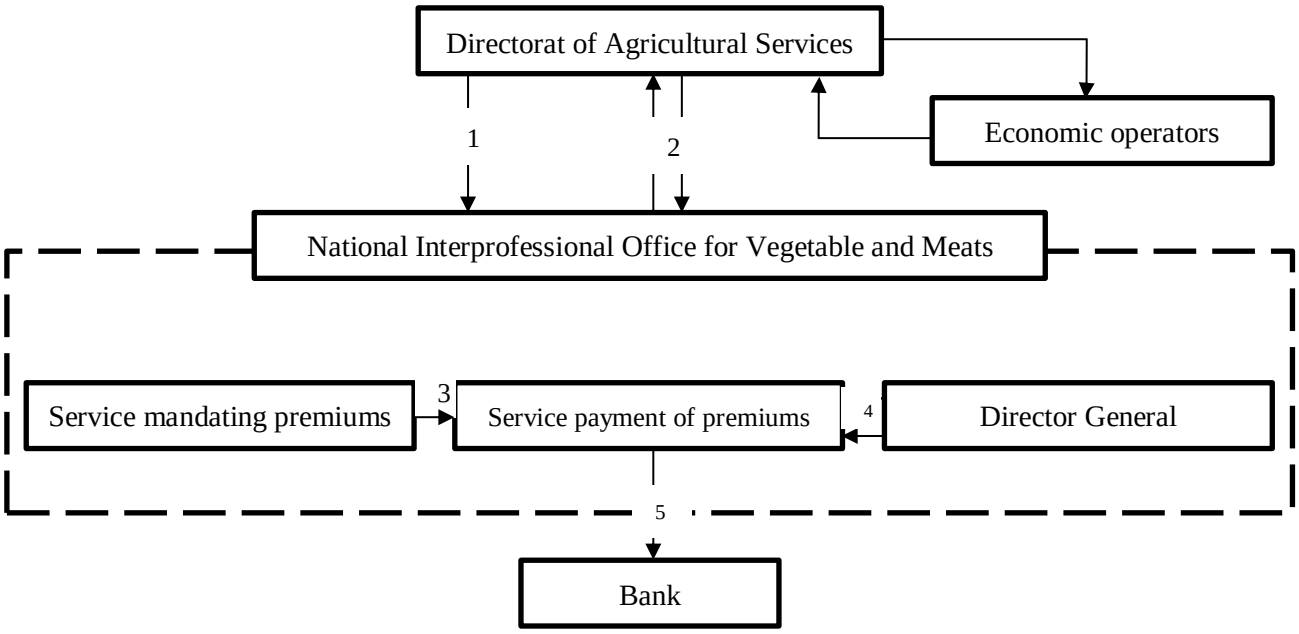

Figure 3. Log Chart of the Premium Payment Process

Source: Done by researchers.

Upon completion of the regulation process, the Directorates of Agricultural Services transmit the 3 PV (closure, opening and unstocking) to the mandate department of NIOVM.

In parallel, NIOVM prepares a specific statement for each economic operator, send to the DAS for signature by the Director General, the Director of DAS, and the economic operator.

Subsequently, the mandate department prepares a payment request, which is transmitted to the premium department.

The latter drafts the payment order, submitted to the Director-General for signature and visa of the accounts.

At the end of the process, the order for the transfer of funds to economic operators is forwarded to the bank, thus completing the remuneration procedure and closing the financial management cycle of regulation.

After making the transcription of the interviews of the second part of the interviews, which is to get acquainted, based on the responses of the people interviewed, their adherence to a solution in the form of a digital tool and what they need if the latter will exist, and with the use of the NVIVO software Figure 4 below obtained.

Figure 4. Word Cloud of Interviewed Membership for Digitized Solution for Consumer Potato Regulation System Management

Source: created by the authors with NVIVO 14.

The keywords that respondents most commonly use when responding to questions about their participation in a communal digital platform for the administration of the consumer potato regulation system are shown in Figure 4 as a word cloud. The most often occurring phrases in the responses gathered were "yes," "familiar," and "facilitate," followed by "tools," "database," and "time." It can be concluded from the analysis of the second part of the semi-directive interview that the speakers support the administration of the consumer potato regulation system via the use of a collaborative digital platform.

Analysis of Needs

After discussions with the various stakeholders in the regulation of consumer potatoes, the latter's needs were collected as a result. Table 3 shows the needs of stakeholders in the regulation of consumer potatoes.

Table 3. Needs of Stakeholders in the Regulation of Consumer Potatoes

Structure	Post	Needs
National Interprofessional Office for Vegetables and Meats	Director General	A detailed summary of the required information; Daily quantity sold on the wholesale market; Wholesal market daily price; Weather forecast; Rainfall data; Quantity to harvest before rainfall; Health warning bulletin; Water transfer and underground availability; National and international market statistics.
	Director of Administration and Finance	Dashboard; Folder Processing; Monthly statement. Helps information control; Eliminate those who think they are essential; Availability of information
	Chief Potato Office	Daily storage and disposal monitoring; Creation of a long-term database; Automatic calculation of premiums Auto folder consultation and processing
	Chief Control and Environmental Services (interim)	Retrieving data from controllers; Automated Canevas
	Chief of mandate	Automated calculation of amounts; Assistance in the audit of accounts; Automatic quarterly balance sheets.
	Area Head	Application for the upgrading of the PVs of the cold chambers and for the census of prices in the markets.
Economic operators	Private	A tool for daily reporting of storage and disposal operations
	Public	

Source: created by the authors.

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The Platform Proposed

The architectural design of the digital platform is based on a systematic approach to maximizing the regulation of consumer products. Each part of the architecture contributes considerably to the gathering, processing, and distribution of critical information among the numerous actors involved. Here is a full summary of the platform architecture:

1. ***Centralized Dashboard*:** At the heart of the platform is a centralized dashboard that acts as a convergence point for all data and interactions. This dashboard has an easy user interface, providing in real-time critical information on storage/destroy levels, market pricing, and meteorological data. The dashboard design offers simple accessibility for all users, from the economic operator to the CEO.
2. ***Account Management*:** Economic operators are incorporated into the system through a membership and account creation procedure. These accounts are subject to clearance by the Department of Studies, thereby providing full traceability for stakeholders in the system. Account management provides the security and confidentiality of information while permitting the unambiguous identification of each organization engaged.
3. ***Real-time Monitoring*:** The Department of Studies provides real-time monitoring of economic operators' storage and destruction levels. This feature enables quick decision-making in reaction to market swings. Real-time indicators are vital for changing plans to meet market needs and operating situations.
4. ***Geolocation and Census*:** The inspectors contribute to the platform by geolocating warehouses and capturing prices in the wholesale and retail sectors. These geospatial and economic data feed the consolidated scoreboard, offering a full perspective of the regional distribution of items and pricing patterns. In addition, the auditors draft up minutes of the sessions of the Joint Committee, thereby recording crucial decisions and critical events.

This integrated design provides easy communication and effective coordination between the numerous players, therefore permitting the appropriate regulation of consumer products. Each aspect is meant to help inform decision-making and operational efficiency in a changing regulatory environment.

DISCUSSION

The study's goal is to understand the needs of the interested parties within the framework of the regulation of large-scale products, namely for the consumption basket. In order to do this, interviews with the system's interveners were conducted to better understand and be aware of how the regulatory system operates as well as the needs of the interveners in the event that there is a decision-supporting information system.

The findings of this research have made it possible to gain a better understanding of how the large-scale product regulation system functions within its consumer-facing industry, as well as the requirements of stakeholders for the development of a numerical platform that facilitates the efficient management of this system. Interviews have shown that the current regulatory framework is opaque and complicated, which presents challenges for those involved in stock management and decision-making.

Participants talked about how important it is for the many players in the regulatory system to work together. They have emphasized the significance of setting up a platform that enables the many actors in the regulatory system to collaborate more effectively and share information in real time. This would strengthen the coordination between the various regulators in the system and make it easier to achieve the regulatory goals, as indicated by the studies cited in the literature (Merzoug & Bouzida, 2021; Oubba, 2022; Zeroual & Zerouali Uariti, 2021; Ferhat, 2021; Baah, et al., 2022).

The review of the literature indicates that setting up a digital platform to manage the regulatory system is essential. According to Lefki (2018), among the requirements of the interviewees, these last have highlighted the need for a real-time stock monitoring system. Additionally, they expressed the need for an easily navigable platform with integrated communication features to facilitate cooperation amongst the many actors in the regulatory system, in line with Benssaoud & Lefki's (2018) findings. After conducting the study, an easy-to-use interface was implemented, featuring search and filter functions that made it possible to quickly locate the necessary information. Additionally, make public the real-time information availability on regulation stocks, which would enable the various players in the regulatory system to plan their activities more effectively.

The interviewees emphasized the significance of cooperation and communication amongst the many system actors, such as producers, regulators, and consumers. Regarding this, the platform ought to have integrated communication features that enable better coordination and collaboration amongst these many actors. Additionally, they have demonstrated the confidentiality of information and data security.

Furthermore, some similarities were found with the research of Bouzid et al. (2020) in addition to the conducted investigation. The interviews with farmers and stockers revealed a limited level of knowledge regarding advanced agricultural technologies. The interviewees were frequently unfamiliar with numerical platforms and tools, which may have affected their adoption of technological solutions in their agricultural practices. In spite of this, producers and farmers have acknowledged the significance of a collaborative digital platform to enhance the management and regulation of the large-scale product system.

Therefore, the findings are consistent with this study and highlight the significance of designing a digital collaborative platform that is both user-friendly and available to all regulators, even those with less technological knowledge. It is crucial to give farmers and stockers the right training and support to enable them to understand and implement cutting-edge agricultural technologies, particularly the offered digital platform. By moving forward in this way, greater platform acceptance and usage may be anticipated, which will enhance the administration of the large-scale product regulation system in the agriculture sector on a worldwide scale.

This research's contribution lies in gaining a deeper understanding of the requirements of those involved in the creation of a collaborative digital platform for managing high-consumption products in Algeria. The findings have significant practical ramifications, including the suggestion to develop a user-friendly platform that is available to all stakeholders in the regulatory system and includes real-time stock tracking and demand and production forecasting features.

However, there are several limitations to this study as well, one of which is that it only looks at one item — the consumption point — as a result of the regulation of high-end goods. It would be interesting for future research to expand the study to other products. Furthermore, because this study is based on a qualitative methodology, the results are restricted to the views and experiences of the interviewees. As a result, additional research methodologies should be used to supplement the findings.

CONCLUSIONS

The primary objective of this research was to comprehensively analyze the requirements and operational dynamics of the regulatory system for large-scale product consumption within the agriculture and consumer sector. By understanding the perspectives and needs of the various stakeholders involved, this study aimed to inform the design and development of a collaborative digital platform to enhance the efficiency and effectiveness of this regulatory system.

A qualitative study based on semi-structured interviews was conducted with ten (10) actors actively involved in the regulatory system. These participants represented a diverse range of stakeholders, including producers, distributors, government regulators, trade associations, and consumers.

A two-stage data processing plan was employed. In the first stage, a semantic analysis of the initial section of the interview guide was conducted to trace the schematic representation of the consumption potato regulation system's operations. This analysis involved identifying key concepts, relationships, and processes within the system.

In the second stage, the Nvivo software was utilized to analyze the second section of the interview guide. This software generated a word cloud, visually representing the most frequently used terms and phrases by the interviewees. This word cloud provided valuable insights into the key concerns and priorities of the stakeholders involved in the regulatory system.

This research significantly advanced understanding of the concerns and requirements of stakeholders in the design of a collaborative digital platform for managing high-consumption goods. The findings highlighted the need for a platform that is:

1. User-friendly and accessible: The platform should be easy to navigate and use, ensuring that all stakeholders can effectively interact with it.
2. Comprehensive: The platform should include features such as real-time stock tracking, demand and production forecasting, and a centralized information hub to facilitate efficient operations and decision-making.
3. Collaborative: The platform should foster collaboration among stakeholders, enabling them to share information, coordinate efforts, and make informed decisions collectively.

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While this study provides valuable insights, it is important to note that it has some limitations. One limitation is the exclusive focus on the consumer potato sector. Future research could expand the scope to include other high-consumption products within the agriculture and consumer sector.

Additionally, the qualitative methodology employed in this study limits the generalizability of the findings. While the interviews provide valuable insights into the perspectives of the stakeholders involved, quantitative research methods could be used to complement these findings and provide a broader understanding of the regulatory system's dynamics.

Overall, this research offers valuable recommendations for the design and implementation of a collaborative digital platform to improve the efficiency and effectiveness of the regulatory system for large-scale product consumption. By addressing the identified needs and limitations, future research can contribute to the development of innovative solutions that benefit all stakeholders involved.

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Conflicts of Interest

Authors declare no conflict of interest.

Data Availability Statement

Not applicable.

Informed Consent Statement

Not applicable.

References

1. Amara, N., & Abedou, A. (2021). L'impact des facteurs de contingence sur l'introduction des TIC dans la fonction Supply Chain dans les entreprises Algériennes [The impact of contingency factors on the introduction of ICT in the Supply Chain function in Algerian companies]. *Revue des sciences humaines & sociales*, *7*(3), 467-482. [Link]
2. Aubry, M., & Sow, M. S. (2021). *La transformation digitale en entreprise [Digital transformation in business]*. (Ellipses, Ed.). [Link]
3. Baah, C., Oppku Agyeman, D., Acquah, I., Agyabeng-Mensah, Y., Afum, E., Issau, K., & Faibil, D. (2022). Effect of information sharing in supply chains: understanding the roles of supply chain visibility, agility, collaboration on supply chain performance. *Benchmarking: An International Journal*, *29*(2), 434-455. [CrossRef]
4. Benssaoud, O., & Lefki, K. (2018). *Diagnostic du système de régulation de la pomme de terre en Algérie [Diagnosis of the potato regulation system in Algeria]*. [CrossRef]
5. Bouzid, A., Boudedja, K., Bouchetara, M., & Mellal, A. (2020). *Facteurs influençant l'adoption de l'innovation en agriculture en Algérie. Cas de deux cultures stratégiques: le blé dur et la pomme de terre [Factors influencing the adoption of innovation in agriculture in Algeria. Case of two strategic crops: durum wheat and potato]*. [Link]
6. Ferhat, A. (2021). L'impact du système d'information sur la gestion de la chaîne logistique en amont. Cas: Échantillons de quelques entreprises Algériennes [The impact of information system on upstream supply chain management. Case: Samples of some Algerian companies]. *El-Wahat for Research and Studies Review*, *14*(3). [Link]
7. FRIGOMEDIT (2024). *Qui sommes-nous?* [Who are we?]. [Link]
8. Galtier, F., David-Benz, H., Subervie, J., & Egg, J. (2014). Les systèmes d'information sur les marchés agricoles dans les pays en développement: nouveaux modèles, nouveaux impacts [Agricultural Market Information Systems in Developing Countries: New Models, New Impacts]. *Cahiers Agricultures*, 23, 245-258. [CrossRef]
9. Ghouri, A., & Mani, V. (2019). Role or real-time information-sharing through SaaS: An industry 4.0 perspective. *International Journal of Information Management*, 49. [CrossRef]

10. Hitouche, S. (2021). *La politique de régulation des prix de la pomme de terre de consommation par le stockage: Recherche sur le comportement des établissements stockeurs adhérant dans le dispositif Syrpalac en Algérie [The policy of regulating the prices of consumer potatoes through storage: Research on the behavior of storage establishments adhering to the Syrpalac system in Algeria]*. [Link]
11. Houagaba, G. M., Daou, A., Harang, W., Diallo, B., Keita, L., Diallo, B., & Sylla, C. (2023). Impact du système d'information hospitalier sur la prise de décision à l'hopital Nianankoro Fomba de Ségou [Impact of the hospital information system on decision-making at Nianankoro Fomba hospital in Ségou]. *Revue Malienne de Science et de Technologie*, *3*(28). [Link]
12. Kuciapski, M., Lustofin, P., & Soja, P. (2022). *The Role of Management Support in Software-as-a-Service Adoption Decision: A Conceptual Model*. [CrossRef]
13. Lahchame, K., & Djilali, C. (2021). La digitalisation des entreprises: une opportunité pour leur performance économique [The digitalization of companies: an opportunity for their economic performance]. *Journal of Contemporary Business and Economic Studies, 4*(2). [Link]
14. Lefki, K. (2018). *Diagnostic dy système de régulation de la pomme de terre en Algérie, Système d'information [Diagnosis of the potato regulation system in Algeria, Information system]*. CIHEAM-IAMM, 38 p. [Link]
15. Loukis, E., Janssen, M., & Mintchev, I. (2018). Determinants of software-as-a-service benefits and impact on firm performance. *Decision Support Systems*, 117. [CrossRef]
16. Merzoug, S., & Belkacem, B. I. (2021). Impact of logistics information systems on supply chain optimization: Case of Group Bachir Rachid. [CrossRef]
17. Nafzaoui, M., & El Adib, M. (2020). L'impact de la mise en place du digital dans un cabinet d'audit [The impact of implementing digital technology in an audit firm]. *Revue Internationale du Chercheur, 1*(3), 66-90. [Link]
18. O'Brien, R. (2001). *An Overvie of the Methodological Approach of Action Research. Overview of Action Research Methodology*. [Link]
19. Oubba, O. (2022, 08). *Apport des systèmes d'informations intégrés à la performance de la chaîne logistique des entreprises [Contribution of integrated information systems to the performance of the supply chain of companies]*. [CrossRef]
20. Weick, K. (1995). What Theory Is Not, Theorizing Is. *Administrative Science Quarterly, 40*(3), 385-390. [Link]
21. Zeroual, L., & Zerouali Uariti, O. (2021). Les systèmes d'information comme leviers de la performance logistique. *Revue Internationale des Science de gestion* [Information systems as levers of logistics performance]. [*International Journal of Management Science*], *3*(2), 711-730. [Link]