



Research Article

Stakeholder Analysis and Management for Promoting Small and Medium-Scale Vegetable Processing Technology in Nepal

Prateek Joshi^{1*} , Sanjeev Kumar Karn¹, Pramod Koirala¹ 

¹Ministry of Agriculture and Livestock Development, Singhadurbar, Kathmandu, Nepal

Article Information

Received: 13 February 2024

Revised version received: 20 March 2024

Accepted: 23 March 2024

Published: 31 March 2024

Cite this article as:

P. Joshi et al. (2024) *Int. J. Appl. Sci. Biotechnol.* Vol 12(1): 19-28. DOI: [10.3126/ijasbt.v12i1.62737](https://doi.org/10.3126/ijasbt.v12i1.62737)

*Corresponding author

Prateek Joshi,

Ministry of Agriculture and Livestock Development,
Singhadurbar, Kathmandu, Nepal

Email: prateeklokanthali@gmail.com

Peer reviewed under authority of IJASBT

©2024 International Journal of Applied Sciences and
Biotechnology

OPEN ACCESS



This is an open access article & it is licensed under a Creative
Commons Attribution Non-Commercial 4.0 International
(<https://creativecommons.org/licenses/by-nc/4.0/>)

Abstract

This article explores the intricate landscape of stakeholder analysis and management within the framework of promoting small and medium-scale vegetable processing technology in Nepal. Given that agriculture engages a substantial 66% of the country's workforce, the escalating demand for vegetables has been met with challenges stemming from the lack of support for vegetable processing industries, resulting in food waste and financial setbacks for farmers. Addressing these issues, the article advocates for holistic backing and promotion of vegetable processing industries in Nepal. The methodology section delineates a mixed-methods approach for stakeholder analysis, employing documentary reviews, key informant interviews, and surveys to get information. It further explores the constitutional roles of different government levels and details the initiatives by the Ministry of Agriculture and Livestock Development (MoALD) and other government agencies in propelling food processing technology. The stakeholder analysis provides a detailed examination of both internal and external stakeholders, categorizing them based on their power and interest. The power/interest grid and influence mapping assist in prioritizing stakeholder engagement and managing their expectations effectively. The article concludes by asserting that effective stakeholder management is crucial for addressing the challenges and promoting the growth of vegetable processing industries in Nepal.

Keywords: Agriculture; Food processing; Small and medium enterprises; Stakeholder; Vegetable processing technology

Introduction

Nepal's agricultural sector, which employs about 66% of its workforce, is a key driver of economic growth and food security. Average farms cover limited land, with households owning 0.68 hectares on average. The country's three regions—Terai, Hills, and Mountains—offer diverse agro ecological niches for farming. Practices vary based on resources, environment, productivity, and access to infrastructure like roads and markets (Joshi *et al.*, 2021).

Nepal's demand for vegetables is rising annually, driven by changes in food habits, increased awareness, and income with 281,000 hectares of land producing 3,962,000 metric tons of vegetables in 2019/20, yielding 14.09 metric tons per hectare (MoALD, 2021). But still, the lack of promotion and support for vegetable processing industries has resulted in significant problems for the agriculture sector. Farmers are forced to throw away their produce on the road, such as tomatoes, cabbages, cauliflowers, because the imported produce from India is available at lower prices and people prefer to buy it. This problem not only causes financial loss

for farmers but also leads to food waste, which is a significant concern given the food insecurity challenges in Nepal.

One of the main reasons for this problem is the lack of appropriate processing techniques and the lack of investment by private sectors. The lack of knowledge and skills in processing vegetables has resulted in poor quality products that do not meet the standards of the market. As a result, farmers are unable to preserve their produce for an extended period, leading to decay and subsequent forced sale at low prices or disposal. The lack of appropriate processing and post-harvest handling techniques also increases post-harvest losses of vegetables. Moreover, this hampers the export potential of these products, as they fail to meet the quality standards of the international market (Kiaya, 2014; Ridolfi *et al.*, 2018; Verma and Joshi, 2000).

Moreover, the lack of support to promote small and medium scale vegetable processing industries is another significant challenge. In Nepal, there is a lack of access to finance, infrastructure, and technology to support the development and growth of these industries. Due to this, many small and medium scale farmers are unable to invest in the necessary equipment and resources to start processing their produce. This, in turn, results in low levels of value addition and lower income for farmers.

To address this problem, there is a need for greater support and promotion of vegetable processing industries in Nepal. This includes the provision of appropriate hands-on training and education programs to develop the skills and knowledge of farmers in processing techniques. There is also a need to provide greater access to finance, infrastructure, and technology to support the growth of small and medium scale processing industries. By doing so, it is possible to increase the shelf life of fruits and vegetables, reduce food waste and post-harvest losses, and create new income opportunities for farmers.

To summarize, the lack of promotion and support to vegetable processing technology in Nepal is a significant challenge that hinders the growth and development of the agriculture sector. Addressing this issue will require a comprehensive approach and is one of the agricultural reform areas that needs immediate attention.

Methodology

In conducting a comprehensive stakeholder analysis, a mixed-methods approach was implemented to collect pertinent information. A thorough documentary review was undertaken, systematically examining literature, reports, and official documents concerning to small and medium-scale vegetable processing technology in Nepal. This review aimed to identify key stakeholders and delineate their roles in the sector. Additionally, key informant interviews were conducted with representatives from various sectors, including government agencies, farmers,

private entities, NGOs, and consumers. These interviews, structured in a semi-formal manner, sought to extract insights into their perspectives, interests, and influence within the vegetable processing domain.

Results and Discussions

Vegetable Based Processed Products and Nepalese Market

In recent years, Nepal, has experienced a noteworthy surge in the manufacturing and consumption of vegetable-based processed items. These vegetables not only constitute an essential component of the local diet but also serve as a significant source of income for numerous farming communities. As urbanization advances and lifestyles undergo transformations, a discernible shift in dietary preferences has taken hold among Nepali consumers. Notably, there is an increasing inclination toward processed vegetable products due to their convenience, extended shelf life, and ease of consumption.

In Nepal, the production of vegetable-based processed goods is primarily spearheaded by small and medium-sized enterprises (SMEs). These enterprises play a pivotal role in the nation's economy, offering employment prospects and contributing substantially to the comprehensive expansion of the agricultural and food sectors. There are different kinds of vegetable-based processed products available in the Nepalese market, as shown in Table 1. While only a few industries produce such products within Nepal, the majority are imported from other countries. There is significant potential for processing these products within the country.

Constitutional Roles in Nepalese Food Processing Sector Development

The Constitution of Nepal clearly outlines the powers and responsibilities of each level of government in promoting the development of food processing technology. On the federal front, the government assumes specific powers and obligations, with a primary focus on international trade and the formulation of legislative policies that pertain to food processing technology. This encompasses the development of regulations governing the import and export of food products and the establishment of a legal framework that facilitates the sector's nationwide expansion. Meanwhile, at the provincial level, governments primarily concentrate on fostering the growth of food processing technology within their respective regions. Their responsibilities encompass initiatives geared towards nurturing food processing businesses, spearheading research and development endeavors, and facilitating collaborative ventures between local producers and technology providers. Provinces serve as pivotal hubs for driving innovation and the assimilation of cutting-edge technology within the food processing domain. At the grassroots level, local governments shoulder the vital task of supervising food production and the intricacies of food product marketing. Their role is pivotal

in ensuring that processed food items are efficiently distributed to local and regional markets. Local governments also forge close partnerships with farmers and small-scale food processors to streamline production

procedures and stimulate local entrepreneurial efforts (Bishwakarma *et al.*, 2021; Kyle and Resnick, 2016; Secretariat and Durbar, 2015).

Table 1: List of Vegetable Processed Products Available in the Market

S.N.	Product category	Products
1.	Fresh vegetables -cleaned and plastic packed	Plastic packed vegetables (brinjal, potato, cucumber, tomato, chillies, peas, and other vegetables according to production season)
2.	Dried products	Dried mushroom, Dried peepers, Gundruk, Sinki, Masyura, dried leafy vegetables
3.	Traditional products	Gundruk, sinki, Mesu-bamboo slices/shoots in brine, Bamboo shoots, Masyura, Tिताura
4.	Pickles	Vegetable mixed pickles packed in glass bottles and plastic materials (bamboo pickle, bitter gourd pickle, radish pickle etc.), Kimchi, Sauerkraut
5.	Juice	Tomato juice, Alovera juice
6.	Sauce/ketchup	Tomato ketchup/sauce, Chilli sauce, Tomato puree, Mustard sauce, Vegetable sauce
7.	Snacks	Potato chips, Salted peas and other pulses
8.	Intermediate products	Potato slice for chips, Panipuri slice
9.	Powdered vegetables	Powdered onion, Ginger, Tomato, Peppers, Potato, Sisno
10.	Canned products	Canned tomato sauce, green peas, mushroom, tomato slice
11.	Bottled products	Asparagus
12.	Paste products	Ginger, garlic, ginger-garlic paste,
13.	Frozen products	Frozen spinach, French fries
14.	Miscellaneous	Mayonnaise, Kuvindo candy

Source: Market survey by study team, 2023.

Table 2: Subject of the power as per Constitution of Nepal

Particulars	Local Government	Provincial Government	Federal Government
Subject of the power (As per Constitution of Nepal, 2015)	<ul style="list-style-type: none"> Local Market management Local Trade/commerce, demand/supply, market management and inspection; implementation and regulation of policy Inspection and regulation of price and quality of locally produced goods and services Registration, permits, renewal, revocation and regulation of commercial firms in the local level Promotion, facilitation and regulation of local business Consumer awareness, data management of targeted consumers and quality testing of locally produced goods and services 	<ul style="list-style-type: none"> Implementation and regulation of provincial agriculture, livestock and food nutrition related policy, legislation and standards Agricultural industrialization development and promotion of livestock based industries and trade Provincial food security, food right and food sovereignty Agriculture, livestock and food technology related study, research development and promotion Development and management of Provincial Labs for agriculture, livestock and food sector 	<ul style="list-style-type: none"> Policy, legislation and standards related to consumer rights and protection Implementation and regulation of quality and safety related to food quarantine

Some Initiatives by MoALD and Other Government Agencies under MoALD to Promote Vegetable Processing Technology

MoALD Effort in Promotion of Vegetable Processing Technology

At MoALD, under the PMAMP project, recent initiatives have been taken to promote the vegetable processing industry. MoALD has initiated two procedural manuals: the "Canning and Packaging Industry Promotion Procedural Manual 2075 BS" and the "Agricultural Produce Processing Factory Establishment Grant Procedural Manual 2075" (www.moald.gov.np). According to the provisions, subsidies of up to 70-85 percent are granted by the PMAMP project for the promotion of agro-industry, including the processed vegetable industry.

Department of Food Technology and Quality Control (DFTQC)

DFTQC's one of the mandates is to promote food processing technologies. In this connection, DFTQC central office usually carry out R & D for product development for tentatively 20 trails every year. DFTQC processing trails are helpful for technology promotion. Based on the trail result and demand from the training participants, processing technology trainings are conducted. Nearly, 15 trainings are conducted from central and provincial office, where 300 potential entrepreneurs gets training every year. Training contents focuses on principles of food processing, product development, legal requirement and maintenance of hygiene and sanitation in the factory. Mostly, the training focuses on fruits and vegetables processing.

National Center for Potato, Vegetables and Spice Crop Development

The center focuses on promoting potato, vegetables and spice crops by providing program and policy direction to related farm centers. It identifies problems and offers policy suggestions to the Department of Agriculture, while implementing special production programs and extending new technologies. The center also offers specialist services for these crops and provides plant propagation materials, as well as consultancy services for farm center management. Additionally, the center carries out other activities as directed by the government in this field.

Vegetable Crop Development Centre (VCDC)

The Vegetable Crop Development Centre in Nepal promotes vegetable cultivation and development through the introduction of new varieties, production of high-quality seeds, certified seed production at the farmer level, and the establishment of seed processing plants. It also focuses on developing fresh vegetable and vegetable seed markets and providing human resource development for production, processing, and seed production technology. These functions are aimed at improving the quality and

productivity of vegetable crops in Nepal and promoting local economic growth and self-sufficiency.

Nepal Agriculture Research Council (NARC)

The Nepal Agricultural Research Council (NARC) plays an important role in the country's agricultural sector by conducting qualitative research to support national agricultural policies. Its functions also include prioritizing research on vegetable production and processing, providing research and consultancy services as required, coordinating and monitoring agricultural research activities, and documenting research activities related to various horticultural crops at local, national, and international levels. These functions enable NARC to contribute to the development of the agricultural sector in Nepal and ensure that research outcomes are shared widely for the benefit of farmers and other stakeholders in the sector. NARC food section also carry out R & D for product development and provides the food processing trainings based on the demand of others program offices of NARC.

Stakeholder Analysis and Management

The promotion of small and medium-scale vegetable processing technology in Nepal is a complex initiative that involves various stakeholders both internal and external. Internal stakeholders refer to individuals or groups or organization who have a direct interest or involvement in the operations or outcomes of the initiative. External stakeholders are those outside of the organization or country who have an interest or impact on the organization's operations or outcomes.

Internal stakeholders in the promotion of small and medium-scale vegetable processing technology in Nepal may include:

- Federal Government Ministries:
 - Ministry of industry, commerce and supplies
 - Ministry of Finance (MoF)
 - Ministry of Land Management, Cooperatives and Poverty Alleviation
 - Ministry of Foreign Affairs (MoFA)
- Sections and other divisions of MoALD:
 - Food Security and Nutrition Section
 - Food Safety and Food Technology Section
 - Agricultural Development Division
 - Agriculture and Livestock Business Promotion Division
 - Planning and Development Cooperation Coordination Division
- Federal departments and other government agencies:
 - Department of Food Technology and quality Control (DFTQC)
 - Nepal Bureau of Standards and Metrology (NBSM)
 - Department of Agriculture (DoA)

- Department of Customs (DoC)
- Department of Industry (DoI)
- Department of Commerce, Supplies and Consumer Protection (DoCSCP)
- National Center for Potato, Vegetables and Spices Crop Development (NCPVSCD)
- Vegetable Crop Development Center (VCDC)
- Nepal Agriculture Research Council (NARC)
- National Farmers’ Commission (NFC)
- National Planning Commission (NPC)
- Banking Sectors
- Educational Institutions
- Private Laboratories (accredited)
- Development Agencies/ Partners
- Food Processing Industries
- Agricultural knowledge center (AKC)
- Business service Providers
- Farmers & Farmers Association
- Mediators/ agents
- Media

External stakeholders may include as below:

- Provincial Government
- Local Government
- Nepal Consumer Societies/ Organization
- Federation of Nepalese Chambers of Commerce and Industry (FNCCI)
- Nepal Food Scientists and Technologists Association (NEFOSTA)

Effective stakeholder management is critical to addressing the issue of lack of support and promotion to small and medium fruits and vegetable processing industries in Nepal. The government needs to work closely with all stakeholders to ensure that their concerns are heard, and their needs are met to promote the growth and development of vegetable processing industries in Nepal. A detailed representation of internal and external stakeholder analysis involved in this reform initiative is presented in Table 3.

Table 3: Analysis of needs and roles of stakeholders in promotion of vegetable processing technology in Nepal

Stakeholder	What stakeholders want?	Possible long-term strategy to manage stakeholders	Roles of Stakeholders
Federal Government Ministries: - Ministry of industry, commerce and supplies - Ministry of Finance - Ministry of Land Management, Cooperatives and Poverty Alleviation - Ministry of Foreign Affairs -Ministry of Agriculture and Livestock Development	(Increased economic growth, Improved employment opportunities, Increased export earnings, Improved food security, Increased agricultural productivity, Improved utilization of agricultural resources, Improved access to markets, Increased value addition to agricultural products, Improved competitiveness of the agricultural sector, Improved livelihoods of small and medium farmers)	(Communication, Involvement, Collaboration, Policy frame)	Support, Facilitation, Ownership, Planning, Funding, Implementation, Regulation, Evaluation
Sections and other divisions of MoALD: (Food Security and Nutrition Section - Food Safety and Food Technology Section - Agricultural Development Division - Agriculture and Livestock Business Promotion Division - Planning and Development Cooperation Coordination Division	(Increased productivity, innovation and entrepreneurship, value chains and market linkages, Technical facilitation)	(Capacity develop, Acceptance, Clear mandate)	Proactive, Support, Facilitation, Acceptance

Table 3: Analysis of needs and roles of stakeholders in promotion of vegetable processing technology in Nepal

Stakeholder	What stakeholders want?	Possible long-term strategy to manage stakeholders	Roles of Stakeholders
Provincial Government	(Agricultural growth, Resource utilization, Livelihood improvement, Guidelines, Resources)	(Coordination, Communication, Involvement, Collaboration)	Regulation Promotion Planning Funding Coordination Implementation Monitoring Evaluation Facilitation Ownership
Local Government	(Increased revenue generation, Improved local economic development, Enhanced utilization of local resources, Improved infrastructure development, Improved standard of living of local communities, Resources, Guidelines)	(Coordination, Communication, Involvement, Collaboration)	Facilitation Mobilization Monitoring Advocacy Support Leadership Facilitation Ownership
Federal Departments and other Government agencies: DFTQC DoA Department of Customs Department of Industry Department of Commerce, supplies and consumer protection NBSM	(Improved quality standards, Standardization of measurement units and equipment used in the processing industry, Resources, Guidelines, Technical facilitation, Training)	(Communication, Involvement, Collaboration)	Certification Standardization Testing Inspection Accreditation Enforcement Training
Other Government agencies: NCPVSCD VCDC NARC NFC	(Resources, Guidelines, Technical facilitation, Research facilities)	(Communication, Involvement, Collaboration)	Research Testing Innovation Ownership
	(Increased income and livelihood, Sustainable farming practices, collaboration and partnership, Resources, commitment of Government)	(Coordination, Communication, Involvement, Collaboration)	Support, Facilitation, Ownership
Nepal Consumers Societies/ Organization	(Reasonable and affordable prices, Improved quality and safety standards, Availability of information on nutrition and quality, Protection of consumer rights and interests)	(Communication)	Awareness Education Advocacy Feedback Representation Empowerment
FNCCI	(Competitive Vegetable processing industries, access to finance and credit, strong value chains and market linkages, Sound policies, guidelines)	(Coordination, Communication, Involvement)	Facilitation Advocacy Support
Nepal Food Scientists and Technologists Association (NEFOSTA)	(Innovative processing techniques, Access to technology and modern equipment, Funding for small and medium enterprises, Collaboration with academia and research institutions, Increased awareness and education on food science and technology)	(Communication, Involvement, Collaboration)	Research Innovation Development Training Consultancy

Table 3: Analysis of needs and roles of stakeholders in promotion of vegetable processing technology in Nepal

Stakeholder	What stakeholders want?	Possible long-term strategy to manage stakeholders	Roles of Stakeholders
			Collaboration
Educational Institutions	(Increased collaboration with the industry to provide practical training, Improved curriculum to meet industry needs)	(Consultation, Communication, Involvement, Collaboration)	Curriculum Training Research Innovation Partnership Networking
Private laboratories (Accredited)	(Increased demand for testing and quality assurance services)	Collaboration	Testing Analysis Accreditation Certification Consultancy Training
Development Agencies/partners	(Investment opportunities, Sustainable growth, Poverty reduction)	(Engagement, Communication, Involvement, Collaboration)	Funding Technical assistance Capacity building Advocacy Monitoring Evaluation
Food Processing Industries	(Value addition, Market access, Quality control)	(Participation, Co-operation)	Innovation Investment Collaboration Compliance Quality control Marketing
Agricultural Knowledge Centre	(Technical assistance, Farmer education, Innovation support)	(Communication, Involvement, Collaboration)	Education Extension Training Advisory Research Information
Business Service Providers	(Market access, Capacity building, Business support)	Involvement	Consulting Advisory Facilitation Training Networking Referral
Farmers	(Technology access, Market linkage, Yield increase)	(Integration, Participation)	Production Adoption Collaboration Compliance Feedback
Mediators / Agents	(Effective vegetable supply chain, Improved market access, policy reforms and regulatory changes)	Communication	Support, Acceptance, Facilitation

Mapping Power Vs Interest of Stakeholders

The power/interest grid offers a holistic perspective on all stakeholders, aiding in prioritizing stakeholder interests and determining the level of engagement intensity (Silvius and Schipper, 2019). Stakeholders with high power and high interest are likely decision-makers with significant impact on project success. It is crucial to maintain close

communication with them to effectively manage their expectations. Those with high power but low interest should be kept informed about project developments, as they possess influential power and may use it negatively if dissatisfied. Stakeholders with low power but high interest should be adequately informed, engaging in discussions to address any emerging issues, as their insights can be

valuable. For stakeholders with low power and low interest, monitoring is sufficient, and excessive communication is not warranted (Newcombe, 2003; Olander and Landin, 2005; Slabá and Fiala, 2014). The power vs interest diagram and influence mapping of the relevant stakeholders is shown in Fig. 1 and Fig. 2 respectively.

In the stakeholder analysis presented in Figure 1, various stakeholders are categorized based on their power and interest in the context of promoting small and medium-scale vegetable processing technology in Nepal. Stakeholders identified as "players," possessing both high power and high interest, include Federal Government ministries, sections and divisions of MoALD, banking sector, local and provincial governments, and the Agricultural Knowledge Centre. On the other hand, stakeholders labeled as "subjects," characterized by high interest but relatively low

power, include entities such as DFTQC, NBSM, NEFOSTA, DoA, Department of Customs, Department of Industry, Department of Commerce, Supplies and Consumer Protection, NCPVSCD, VCDC, NARC, development agencies, farmers, business service providers, NFC, and food industries.

In this analysis, stakeholders classified as "context setters" wield high power but exhibit relatively low interest. This category features Nepal Consumers Societies/Organizations, FNCCI, and the Ministry of Finance. Lastly, the group identified as the "crowd" comprises stakeholders with generally low power and low interest. This category include educational institutions, accredited private laboratories, mediators/agents, and the media. Understanding the dynamics and roles of these stakeholders is pivotal for effective stakeholder management in advancing vegetable processing technology in Nepal.

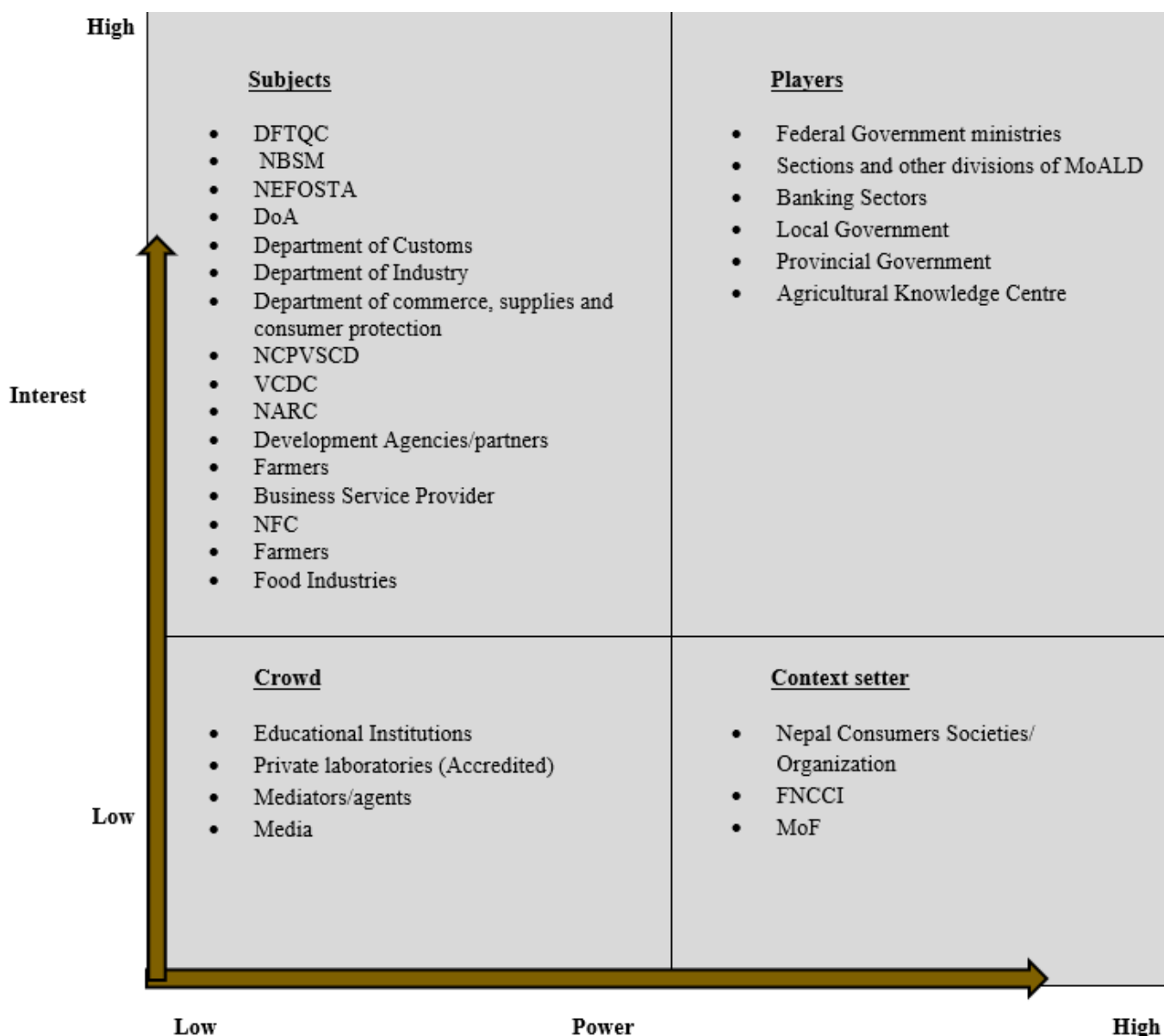


Fig. 1: Mapping power Vs Interest.

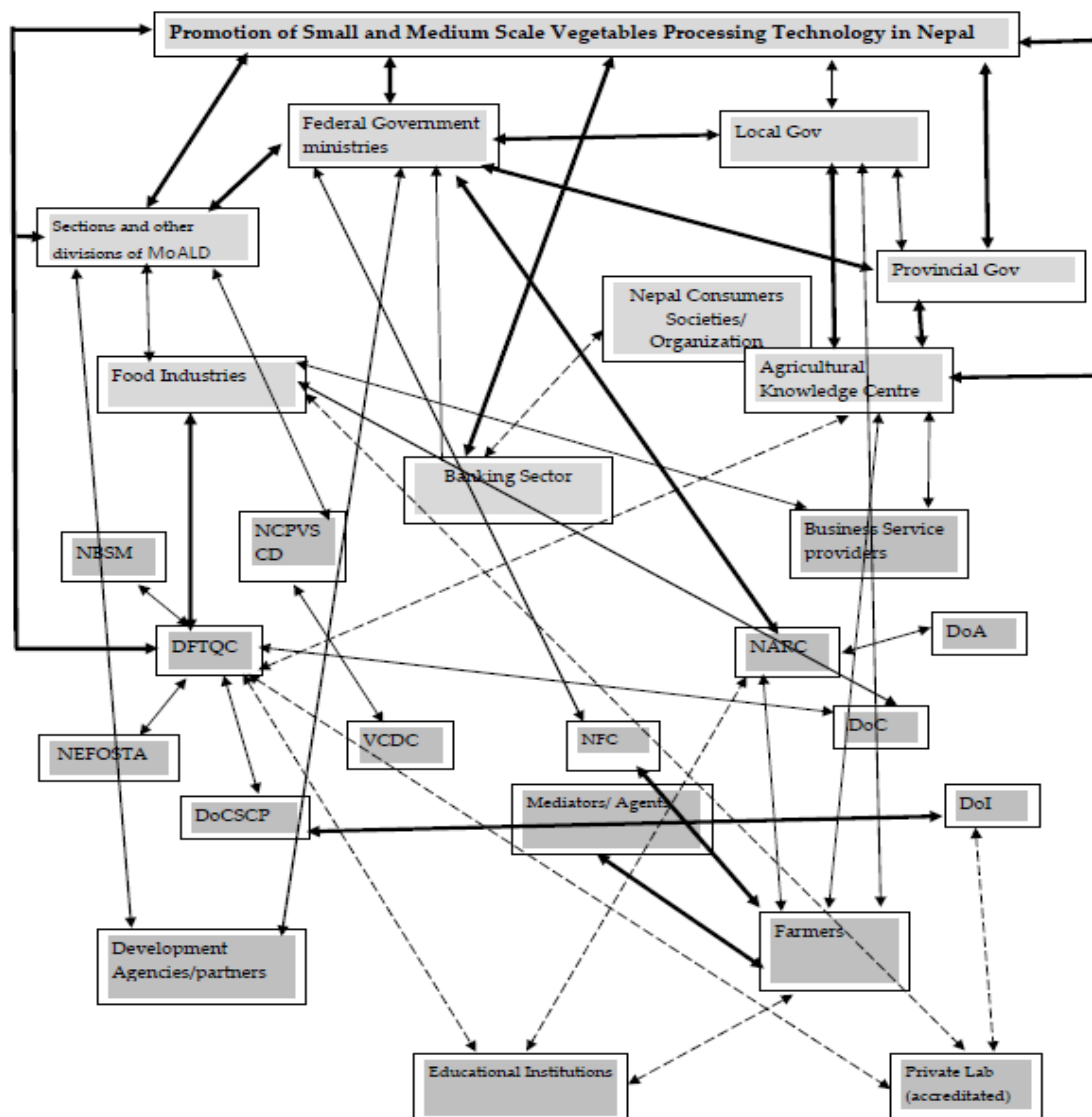


Fig. 2: Influence mapping of various stakeholders involved in promotion of vegetable processing technology in Nepal.

Conclusion

In conclusion, addressing the challenges faced by small and medium-scale vegetable processors in Nepal is crucial for sustainable growth of vegetable processing technology. Additionally, it is imperative to recognize the significance of effective stakeholder management in overcoming obstacles such as food waste, financial setbacks, and inadequate processing techniques. Likewise, comprehensive support and promotion are needed, emphasizing collaboration with various stakeholders, both internal and external. Utilizing a stakeholder analysis that categorizes stakeholders based on power and interest, employing a power/interest grid and influence mapping, will prioritize engagement and manage expectations effectively. In summary, effective stakeholder management is critical in tackling challenges and fostering the growth of vegetable processing industries in Nepal as it provides a framework for comprehending and actively involving various stakeholders in this initiative.

Authors' Contribution

All authors conceived and designed the paper. All authors wrote and revised the manuscript. All authors approved the final version of the manuscript and agree to be held accountable for the content therein.

Conflict of Interest

The authors declare that there is no conflict of interest with present publication.

References

- Bishwakarma BK, Upreti BR, Devkota D and Devkota NR (2021) Agricultural Functions, Institutions and Policies in the Context of Sectoral Restructuring in Nepal. *International Journal of Agricultural Extension and Rural Development Studies* 8(2): 12-28.
- DFTQC (2023). Department of Food Technology and Quality Control. Website: <https://dftqc.gov.np/np-home#>
- Joshi DR, Ghimire R, Kharel T, Mishra U and Clay SA (2014) Conservation agriculture for food security and climate resilience in Nepal. *Agronomy Journal* 113(6): 4484-4493. DOI: [10.1002/agj2.20830](https://doi.org/10.1002/agj2.20830)

- Kyle J and Resnick D (2016) Nepal's 2072 federal constitution: Implications for the Governance of the agricultural sector. *Intl Food Policy Res Institute*.
- MoALD (2021) Statistical information on nepalese agriculture 2076/77 (2019/20). Ministry of Agriculture and Livestock Development, Planning and Development Cooperation Division, Statistics and Analysis Section, Singha Durbar Kathmandu, Nepal.
- MoALD (2023). Ministry of Agriculture and Livestock Development. Website: <https://moald.gov.np/>
- NARC (2023). Nepal Agriculture Research Council. Website: https://opac.narc.gov.np/opac_css/index.php?lvl=publis her_see&id=3257
- Newcombe R (2003) From client to project stakeholders: a stakeholder mapping approach. *Construction management and economics* **21**(8): 841-8. DOI: [10.1080/0144619032000072137](https://doi.org/10.1080/0144619032000072137)
- Olander S and Landin A (2005) Evaluation of stakeholder influence in the implementation of construction projects. *International journal of project management* **23**(1): 321-328. DOI: [10.1016/j.ijproman.2005.02.002](https://doi.org/10.1016/j.ijproman.2005.02.002)
- Ridolfi C, Hoffmann V and Baral S (2018) Post-harvest losses in fruits and vegetables: The Kenyan context. *Intl Food Policy Res Institute*.
- Secretariat CA and Durbar S (2015) Constitution of Nepal 2015. *Kathmandu: Constituent Assembly Secretariat*.
- Silvius G and Schipper R (2019) Planning project stakeholder engagement from a sustainable development perspective. *Administrative Sciences* **9**(2): 46. DOI: [10.3390/admsci9020046](https://doi.org/10.3390/admsci9020046)
- Slabá M and Fiala R (2014) Application of power-interest matrix and influence-attitude matrix in stakeholder mapping of universities.
- Verma L and Joshi V (2000) Post-harvest technology of fruits and vegetables. *Post harvest technology of fruits and vegetables*. **1**(1): 1-76.