

Business Model Proposal for Agriculture and Tourism Business Sectors Supported by ICT System in Nepal through Systematic Business Analysis Process

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Abstract

Nepal is the least developed country in the world. Most people live in rural areas that have poor economic conditions. With limited job opportunities within the country, there is a massive outflow of labor overseas, and we must depend on remittances for our daily lives. To resolve this problem, an effective business model is needed to create sufficient job opportunities and improve the economic situation. Many researchers suggest that improvement of the agricultural sector and investment in tourism would facilitate job opportunities and assist the importance of an ICT-based business model; however, none of them proposed a model with a systematic methodology. Therefore, a series of business analyses were conducted to investigate the overall scenario. First, we conducted an (i) PESTLE analysis, (ii) SWOT analysis followed by case studies, and (iii) 3C analysis. The following results were obtained: (i) PESTLE analysis and (2) SWOT show major strengths in “Agriculture and Tourism”; a massive mobile connection rate exceeding the total population and a high primary education completion rate, indicate the possibility of agribusiness and tourism businesses, but the demand and supply chain is fragmented due to a lack of information. To understand the actual situation, I investigated two specific areas Dang, which is known as the grain basket of Nepal, and Pokhara City, a melting point of tourist destination for mountaineering and adventures activities along with enormous trekking sites holding massive consumption agricultural product (iii) 3C analysis helped to figure out the key success factor of ICT businesses to link production and consumption sites. Therefore, I proposed a mobile application-based business model using the business model canvas. Our goal is to link the demand of tourists and farmers food supply and connect them to technical support for modern farming techniques for mass production and cultivation by using ICT technology such as mobile applications.

Keywords: Business Model, Systematic Business Analysis, Developing Country, Nepal

1 Introduction

Nepal is a landlocked country located on the southern slopes of the Himalayas. With an area of 1,47,181 sq. km, its territory faces India to the east, south, and west and China to the north. The country is home to 29 million people, of whom 79% live in rural areas and 17.8% are classified as vulnerable to multidimensional poverty [1]. Based on the minimal Gross National Income (GNI), a human assets index (HAI), and an environmentally vulnerable index, Nepal has been classified as the least developed country [2]. As per the Department of Foreign Employment, 3327 Nepalese depart for foreign employment daily, and almost 750,000 people have taken labor permits as of July 1 of the current fiscal year, 2022/23. Remittances from workers in foreign

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countries have become a major source of income, as they contribute 23.85% of the Gross Domestic Product (GDP) [3]. However, problems of high mortality rate (4,322 migrant workers died across 24 destinations from 2008 to 2015) and morbidity of migrant workers, along with issues relating to access to health services and justice, and indebtedness in the countries of destinations and migrant workers also face challenges in terms of reintegration after returning to Nepal [4]. Therefore, it is important to develop an effective business model as it creates job opportunities in Nepal. There are several studies related to proposing an effective business model that creates job opportunities in Nepal. For example, Dhungana (2022) conducted research to know the commercial vegetable production and household behaviors towards the adoption of commercial vegetable production economics and determinant factors of farmers for the adoption of commercial vegetables production in Kathmandu district, Nepal [5]. Atreya et. al. (2020) conducted research to understand the prospects, analyze challenges, and suggest practical solutions for promoting agroforestry as a viable system balancing economic, social, and environmental concerns [6]. Suvedi et al. examined the factors affecting farmers participation in extension programs and adoption of improved seed varieties in rural Nepal and provided a new direction to operationalize farmer-oriented policies of agricultural extension [7]. Poudel et al. analyzed the economics of fish production and marketing in the Dang district of Nepal and identified major issue such as lack of technological expertise, and timely input, unavailability of price information systems, and poor market competition with India [8]. Bhandari et al. studied the influence of entrepreneurial orientation on revamping women-owned tourism businesses [9]. Bennike et al. proposed “frontier tourism development” as an apt analytical lens through which to understand contemporary tourism development in rural peripheries. [10]. Shrestha et al. examined the exchange relationship between rural and urban stakeholders to shape collaborative decisions on tourism development in response to the crisis and COVID-19 [11]. Some studies considered ICT (Information and Communication Technology) usage to realize the proposed business model. For example, Shrestha et al. proposed an ICT framework for the Nepal tourism industry and elaborated on the prospects and challenges [12]. Tan et al. explored the tourism industry of Nepal to evaluate the implementation, development, and sustainability factors related to ICT application and use [13]. Mishra et al. analyzed the factors affecting the use of information and communication technology (ICT) for agricultural information among smallholder farmers in the Chitwan and Lamjung districts of Nepal [14].

As described above, [5] [8] used descriptive statistics, [6] [12] literature review, [7] interview and logistic regression model, [9] [10] survey questionnaire, [11] qualitative exploratory case approach, [13] qualitative exploratory combined with a ground theory approach, [14] pre-tested semi structured interview, particularly to specific topic, in total to enhance the economy that will create job opportunity in Nepal. However, none of them had proposed a business model according to the systematic business analyses methodology or process. Therefore, the discussions in them tend to be deep on specific topics but not considered from comprehensive viewpoints. And we search those kinds of related analysis in government website, however, we could not find out any documents or reports. In this article, we try to perform a series of business analysis as a systematic business analysis methodology or process in order to propose a new business model for Nepal.

2 Study Approach

We conduct a series of business analyses according to a systematic business analysis method or process to understand the current situation in Nepal and discuss the new business suitable the situation. First, we perform (i) PESTLE analysis, as we know of macro trend analysis and (ii) SWOT analysis. Next, we perform (iii) 3C analysis. Finally, we propose the new business model by using the business model canvas.

3 Results of Analysis

In this chapter, we show the results of a series of business analyses, such as PESTLE analysis, SWOT analysis, 3C analysis.

3.1 PESTLE Analysis

PESTLE (Political, Economic, Social, Technological, Legal, and Environmental) analysis provides a comprehensive view of the external business environment and trends, enabling organizations to understand market position, trends, and opportunities for strategic planning. It helps organizations capitalize on opportunities for a competitive advantage in their industry [15].

Political Factor: The end of the Rana regime (1902) to constitutional monarchy (2008) and the transition to a secular democratic federal republic state (2008) reflect the historical transitional phase of Nepal [16]. It has adopted bilateral labor agreements with five major destination countries, namely the Kingdom of Bahrain (2008), the State of Qatar (2005), the United Arab Emirates (2007), the Republic of Korea (2007), and Japan (2009). Nepal has a bilateral trade agreement with Bangladesh, India, Pakistan, and Sri Lanka [17] that extends to neighboring countries as it is a landlocked country.

Economic Factor: Being the poorest country in South Asia and the 17th poorest in the world, 25% of Nepalese live below the poverty line. The gross domestic product (GDP) was worth 40.83 billion US dollars in 2022, while it recorded a trade deficit of 115710.30 NPR Million in July of 2023. The inflation rate increased for the third successive year, reaching its peak of 7.52% in August 2023. In the meantime, the year-to-year consumer price inflation upsurge driven by food prices, housing utility, and trade restrictions, while exports stagnated [18] and the massive unemployment rate surged to 19.2% in youth, has jeopardized people's daily lives [19]. The tourism industry, being the largest source of foreign exchange and revenue, is contributing to economic growth [20]. While the people living in rural areas are dependent on agriculture for their livelihoods, 61.8% of Nepal's gross domestic product (GDP) comes from its service sector, and agriculture contributes the second-largest economic practice, supporting 23.9% of GDP, followed by industry according to the economic survey 2021/2022. The economy has been shifted from agrarian economy to a service economy. And the foreign employment rate is massive, the remittance inflow increased by 21.2 percent reaching to Rs 1220,56 billion in the fiscal year 2022/2023 [21].

Social Factor: Nepal's primary education enrollment reached 85% in 2019, and the literacy rate rose from 72% in 2019 to 71.15% in 2021 and limiting the difference in urban –rural education enrollment [22]. The rapid demographic transition has been observed as fertility

rates and crude death rates are declining, whereas the current population of Nepal is 30,896,590, a 1.14% increase from 2022 [23].

Technological Factors: At present, 42.78 million cellular mobile connections were active in Nepal in early 2023, exceeding 139.2 percent of the total population and improving internet penetration rate. As digital technology was established, e-commerce has rapidly expanded in the last decade, and revenue is projected to reach US \$1,034.00 million in 2023. With 126 million active users, social media connectedness is growing [24].

Legal Factor: The new Labour Act 2017 (Act) applies to companies, private firms, partnership firms, cooperatives, associations, and other entities operating in Nepal, as well as those registered in foreign countries promoting businesses, products, or works. Section 19-21, entitled Social Security of Part-Time Workers and Payment Based on work Hour [25].

Environmental: Even if there is a low carbon footprint in Nepal, the mortality rate exceeds 20,000 ever year due to ambient air pollution. It urges us to promote a green lifestyle [26].

A summary of PESTLE analysis is shown in Table 1.

Table 1: Summary of PESTLE Analysis

POLITICAL	<ul style="list-style-type: none"> ● Transition to secular democratic federal republic state ● Bilateral labor agreement for foreign employment ● Bilateral Trade Agreement
ECONOMIC	<ul style="list-style-type: none"> ● Uncontrolled inflation rate deteriorating the economy ● Upsurged unemployment rate ● Agriculture as the major economic sources for rural people ● Tourism dominates the economy ● Personal remittance supporting the livelihood
SOCIAL	<ul style="list-style-type: none"> ● Improving educational status ● Increasing population growth
TECHNOLOGY	<ul style="list-style-type: none"> ● Massive digital usability and mobile subscription ● Expansion of e-commerce platform ● Impressive social media connectivity
LEGAL	<ul style="list-style-type: none"> ● The new Labour Act 2017 applies to companies, private firms, etc.
ENVIRON- MENTAL	<ul style="list-style-type: none"> ● Promotion to a green lifestyle

3.2 SWOT Analysis

SWOT (Strength, Weakness, Opportunity, Threat) analysis provides an insight into the business environment. Regmi et.al (2020), conducted SWOT analysis, however, it focused on agribusiness only [27]. Here, we conducted a SWOT analysis for Nepal from the broader perspective.

Strength: Nepal is known for its authentic and mesmerizing natural beauty. Adversely diversified topography ranges from the steamy jungle and Terai to the icy peaks of the world's highest mountains. With 15 national and wildlife parks (two are UNESCO Heritage sites), 8 out of 10 highest mountains exist with endangered species. With unique hospitality and cultural practices, its ethnic group serves local and authentic cuisine with joy and an abundance of love. Nepal has unparalleled and unique tourism resources. Agriculture is also a strength of Nepal. The

engagement of the large population in the agriculture sector contributes 25.8% of the gross domestic product [28] and is self-sufficient for individual households.

Weakness: Nepalese rural settlement is scattered and does not hold the threshold of basic infrastructure and economic services. There is a wide gap in terms of human development index between the rural (0.647) and urban (0.561) populations.

Opportunities: COVID-19 has caused serious damage to the tourism sector. The tourism business regained vitality due to the end of COVID-19 pandemic. According to the Nepal Tourism Board, there has been a 98 percent recovery in tourist arrivals compared to 2019, as a total of 91,012 international tourists have visited Nepal in September 2023. An increase in foreign tourists could improve the economy in Nepal. The spread of mobile phones has also made it possible for people living in rural areas to access a variety of information.

Threat: If the tourist inflow is too high, there is a possibility of over tourism, resulting in the deterioration of natural resources and an increase in pollution. We have to manage the number of tourists.

The summary of SWOT analysis is shown in Table 2.

Table 2: Summary of SWOT Analysis

STRENGTH	<ul style="list-style-type: none"> ● Unparalleled and unique tourism resources ● Agriculture production could be self-sufficient
WEAKNESS	<ul style="list-style-type: none"> ● Poor infrastructure development in rural area
OPPORTUNITY	<ul style="list-style-type: none"> ● Tourism business regain the vital after Covid-19 ● Information accessibility improved by the spread of mobile phones
THREATS	<ul style="list-style-type: none"> ● Possibility of over tourism in future

3.3 Case Studies

The SWOT analysis indicates that tourism has great potential for economic growth and agriculture is the mainstay of local people, so we tried to understand the connectivity of these two situations in more depth. As a part of our analysis, we took two specific places in Figure 1, as a part of our case study.

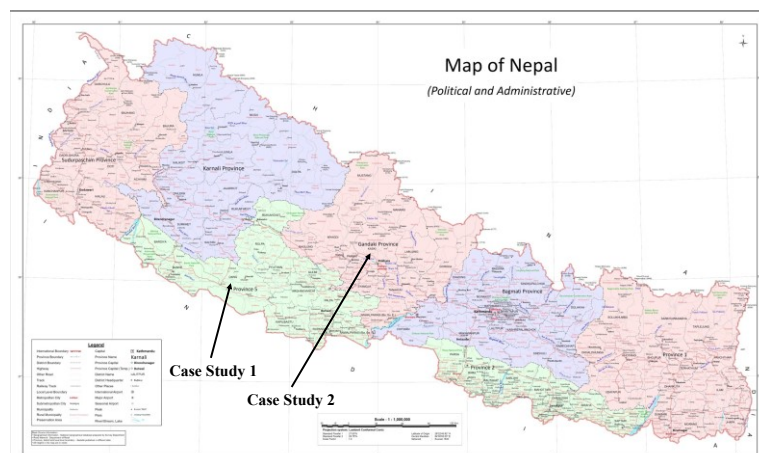


Figure 1: Location of Areas of Case Studies

(1) Province no. 5, Dang Nepal

Dang Valley is in the inner Terai of the midwestern part of Nepal, also known as the second-largest valley in Asia. With an area of 2,955 km², the total population of this district is 674,993, of which 47.5% are male and 52.5% are female.

- There are equal opportunities and participation of individuals in economic activities, where 56.5% of people are involved in economic activity based on agriculture business, 48.6% male participation, 64.4% are female and more than half of the total population are skilled workers in agricultural activities.
- The literacy rate of people is 81%, and most of them can read and write.
- Internet penetration is not so good, just 34.2%, however, the smartphone useability rate is 76%.
- Migration is too low here, and 70% of people are native to their locality [29].

According to the Agricultural Knowledge Center Dang, a total of 75,991 hectares of fertile land in the district is being used for farming, which yields 294,074 metric tons of agricultural product. Paddy is cultivated across 39,400 hectares of land in the district and yields 173,360 metric tons, whereas there are 169,472 metric tons of food grains available, but the market size is very small.

(2) Province n. 4 Pokhara, Nepal

Pokhara metropolitan area is the headquarters of the western development region as well as the capital of Province 4, Nepal. It is one of the largest cities in terms of area (464.94 sq. km) and the second largest city in terms of population.

- The employment rate is 90.7% and tourism services and manufacturing contribute about 58% to the economy, followed by remittances at 20% and agriculture at 25.9%, respectively.
- The literacy rate is almost 89%, and the internet penetration rate is at a satisfactory level of 72% [29].

The total number of tourist arrivals in 2019 (1,197,191) was found to be nearly double compared to 2010 (602,867), where 11.2% comes for trekking and mountaineering alone [30]. Tourism is highly operational in Pokhara as the center of the mountain economy, not only for the Pokhara valley itself but also beyond the valley. Due to the enormous natural and cultural attractions for tourism and the strategic position of Pokhara as the entry and exit point for trekking to Annapurna Conservation Area, Mt. Annapurna Base Camp, Mt. Machha-puchhre Base camp, post-trekking resting or relaxation point, and other adventure activities (e.g., paragliding, ultra-light aircraft, mountain expeditions, skydiving, rock climbing, river rafting, zip-line, etc.) in Annapurna and Dhaulagiri mountain areas in Province, 4 . The hills, along with other destinations like Sirubari, Gahlegaun, Bhujung, Tanahsur, Damauli, and Nuwakot, are unique, culturally rich, historical village tourism destinations lying on the periphery of Pokhara. A number of short treks are available in the surrounding areas of Pokhara, such as short treks where tourists can spend one to four weeks of time in lodges, camping, and homestays. The diversities of these activities offer a

perfect ground for all kinds of visitors, tourists, and researchers to explore Pokhara in detail and its exotic surroundings [31].

We compare the general tendencies of the people's activities: (1) Dang and (2) Pokhara city (Table 3). We found similar trends in mobile usability, literacy rate, and migration practice. On the other hand, there is a high difference between agricultural activities and internet penetration rates.

Table 3: Comparison of general tendencies of Dang and Pokhara

Dang	Pokhara
Agriculture –57.3%	Agriculture-25.9%
Smart Mobile phone users –76.9%	Smart Mobile phone users- 90.7%
Internet-34.2.2%	Internet-72.2%
Literacy Rate –81.4%	Literacy rate-88.7%

3.4 Concept of a New Business Model in Nepal

After investigating two selected areas, we found the opportunity to provide a new business model in Nepal. Tourism recovered after the COVID-19 period. The number of international tourists visiting Pokhara is approximately 230,000, and they would stay for 10 days. It generates a large amount of food demand. To support them, food products are imported from India. On the other hand, there is a potential capability for food production in the Dang area. Farmers produce their own food, but selling food is limited because of a lack of food markets. Foreign tourists are relatively rich compared with Nepalese, and they carry the money from foreign countries and drop it into the tourism business sector. If the farmers know the food demand in Pokhara, they want to increase the amount of food production by employing modern agriculture knowledge. In Nepal, even in rural areas, most people start using mobile phones. Therefore, there is a possibility to create business opportunities for both agribusiness and tourism businesses by connecting information such as food demands and food preferred by foreign tourists through mobile applications and internet connections.

As we have addressed in Chapter 1, there are several studies (such as [5]-[13]) that propose an effective business model that creates job opportunity in Nepal. However, those studies focused on a sector, either agribusiness or tourism business. We could not find out the business model proposal that interconnects agribusiness and tourism businesses.

3.5 3C Analysis

In order to make the new business model clearer, we conducted a 3C (customer, company, competitors) analysis. We suppose that an ICT (Information and Communication Technology) company in Nepal will be the firm. Also, the small and medium-sized farmers and restaurant owners are customers. Other ICT companies could be competitors. The relationships among farmers, restaurant owners, foreign tourists, and ICT company are shown in Figure 2 and Table 4.

3.6 Business Model Canvas

The business model canvas proposed by Alexander Osterwalder is considered a shared language for describing, visualizing, assessing, and changing business models, where the business model describes the rationale for how an organization creates,

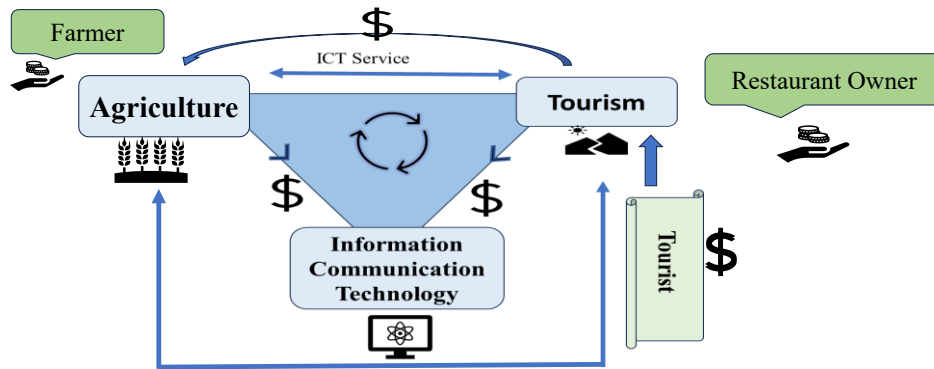


Figure 2: Relationship among Stakeholders in Business Model Proposed

Table 4: Summary of 3C Analysis

CUSTOMER	<ul style="list-style-type: none"> ● Small and medium-sized farmers (Producer) ● Restaurants owners. (Consumer) ● Tourist (Final consumer)
COMPANY	<ul style="list-style-type: none"> ● Nepalese ICT Company ● Matching of producer and consumer, order entry with online payment service ● Collaboration with modern cultivation expertise for special products, registering evaluation from tourists connecting with the farmers and restaurant owners.
COMPITITORS	<ul style="list-style-type: none"> ● Existing ICT companies in Nepal ● Oversea ICT companies, difficult to enter because it is a niche market

delivers, and captures value. It is like a blueprint for a strategy to be implemented through organizational structures, processes, and systems [32]. In the business model canvas, we consider the nine building blocks, such as (1) customer segment, (2) value proposition, (3) customer relationship, (4) channel, (5) key activities, (6) key resources, (7) key partners, (8) revenue stream, and (9) cost structure and relationship among those building blocks. The nine blocks cover the four main areas of a business: customers, offer, infrastructure, and financial viability.

In this section, we show the business model we proposed (Figure 3) by using the Business Model Canvas.

4 Conclusion

Nepal, being the 17th poorest country in the world, has gone through a serious of socio-economic changes, leading to a high poverty rate and an unemployment problem at present. To improve economic conditions, an effective business model is very important. Numerous studies have explored the business model concept, but none of them proposed the business model by using a systematic business analysis approach. Therefore, we conducted a systematic business analysis and proposed the business model using the business model canvas. The results of the PESTLE analysis and SWOT analysis suggest a promising business environment in the

<p>Key Partners</p> <ul style="list-style-type: none"> ● Technical Partners/ API Providers , companies offering real-time data tracking and APS through GPS technology ● Payment Gateway: Integrate secure payment options for transactions. ● Nepal tourism Board – Hotel association of Gandaki Province ● Agriculture Department of Dang ● Modern Agri-Production Company ● Logistic companies mainly working for agricultural product delivery to restaurant 	<p>Key Activities</p> <ul style="list-style-type: none"> ● Application software development ● Optimization of feedback sharing platform ● Customer support ● Community Engagement ● Partner Relations 	<p>Value Proposition</p> <ul style="list-style-type: none"> ● Order entry matching for restaurant owners and local farmers ● Online transaction and point system for each transaction ● Knowledge and information sharing platform for farmers and agricultural expert ● Inventory management – Help farmers track their inventory and reduce waste ● Direct online sales for tourist ● Systematic market regulation- Track the price rate of each product and share market of Agri-product 	<p>Customer Relationship</p> <ul style="list-style-type: none"> ● Customer Support – Help through in-application messaging, email or phone for any issue ● Training an onboarding ● Community engagement : Foster user interactions through forums, chat features and local interest group 	<p>Customer Segment</p> <ul style="list-style-type: none"> ● Agricultural Practitioners – Local small and medium size farmers of the Dang district ● Restaurant owners of Pokhara city
<p>Key Resources</p> <ul style="list-style-type: none"> ● Application software engineers ● Technology infrastructure ● Industry expertise 			<p>Channel</p> <ul style="list-style-type: none"> ● Application software distributing platforms – Google play store and Apple stores ● Agricultural extension centers ● Community centers ● Event organizers 	
<p>Cost Structure</p> <ul style="list-style-type: none"> ● Development Costs: Expenses related to application software design, coding and maintenance ● Operational costs : Staff salaries customers support, and ongoing maintenances ● Server and Infrastructure costs : Hosting the app and storing data 			<p>Revenue Stream</p> <ul style="list-style-type: none"> ● Freemium model to farmers and restaurant for basic features ● Transaction fees: Charge a percentage for each transaction 	

Figure 3: Proposed Business Model Described by Using Business Model Canvas

tourism and agriculture sectors. Tourism and agriculture are major industries and are very competitive in terms of available natural resources. Tourism supports one million job opportunities, while agriculture stands as the major economic source and a source of nutrition for rural communities. Agriculture alone contributes 21% to the gross domestic product of the country's economy. The increase in literacy rate followed by mobile technology has a positive impact in rural and urban areas. To understand the situation in more detail, we performed case studies in two specific areas; (1) Dang, a grain basket in Nepal where production exceeds consumption but must compete with the uncontrolled imported goods and prices of the Indian market. (2) Pokhara, an entry point for tourist attractions, where most visitors spend millions of dollars on accommodation and other recreational activities. Approximate visit days were considered to be about one and a half weeks, generating a high demand for food but fulfilled by imported goods and local availability. To resolve that problem, we need to connect link data for food demands and types of food foreign visitors enjoy via mobile applications and internet connections.

Through 3C (customer, company, competitors) analysis, we were able to clarify the new business model as an ICT (information and communication technology) corporation, which will provide the platform for matching producer and consumer, order entry, and online payment service. Small and medium-sized farmers, restaurants could be our customers. To implement this model, we consider the business model canvas as our blueprint, where we describe the nine building blocks in detail and propose the ICT-based business model to facilitate the agriculture and tourism sectors of Nepal.

As a result of applying the systematic business analysis methodology or process, which consists of a series of business analyses like PESTLE analysis, SWOT analysis, and 3C analysis, we found a lack of linkage between the agribusiness sector and the tourism business sector. This contrasts with other previous studies that have concentrated solely on either the agribusiness sector or the tourism sector. Moreover, we proposed a new business model that connects information on food demand and preferred cuisine by foreign tourists by using ICT and mobile phone applications.

The first author of this article is Nepalese and familiar with the situation in Nepal; however, this study has limitations that should be acknowledged, as we use secondary data sources and online available government data only. For future work, field research and discussion with stakeholders such as small- to medium-sized farmers in rural areas, restaurant owners in the tourism area, and ICT companies in Nepal. In our future work, we will try to build a system dynamics simulation model to understand the feasibility of transitioning into the new business model from the current situation.

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