

The Innovative Business Model Design of Mugwort Industry Based on Grounded Theory

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ABSTRACT

Mugwort (Artemisia Argyi), is a herbaceous perennial plant. Mugwort and mugwort products have a very broad prospect of domestic and international market demand. However, the mugwort industry only has scale advantage but no competitive advantages, which has greatly affected the development of the mugwort industry. Based on the grounded theory, this paper conducted various research methods, such as visiting and reviewing a large amount of literature related to the mugwort industry for tertiary coding analysis in order to explore the key points in the design of innovative business models for the mugwort industry. The results of the study show that the innovative business model can be developed in four aspects: product proposition, sales proposition, value proposition, and brand building. From this basis, the corresponding optimisation path options are proposed. It is expected that the results of this study will help enterprises and sectors related to the mugwort industry to have a better understanding of the



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solutions to existing problems, as well as create high-value products and services effectively, so that the mugwort industry can embark on an intensive, efficient and healthy development path.

Keywords: *Mugwort industry; Grounded theory; Business model innovation*

INTRODUCTION

The COVID-19 pandemic, also known as the coronavirus pandemic, has disrupted production and life in all sectors of the world, but it has also brought mugwort, a niche industry, into the public and has provided a potential development opportunity (Orege et al., 2023). Mugwort may be used as a medicinal herb for warming the menstrual cycle, dispelling dampness, dispersing cold, stopping bleeding, relieving inflammation, coughing, and as an anti-allergic agent. It may also be used as a pesticide for killing insects, as aromatherapy for disinfecting rooms, as an additive to high-quality feed, and as a natural plant dye (Liu & Xu, 2020). Since ancient times, Chinese people have preferred to purify the air by light mugwort or through moxibustion for the purpose of strengthening body and preventing diseases (Jin & Tian). In addition, moxibustion, as the only Traditional Chinese Medicine (TCM) technique that can realize the national strategy of integrating health care, has an obvious and immeasurable market prospect in China. Due to the fast-growing ageing population and the increasing demand for TCM health services, the market outlook is clear and incalculable (Quan et al., 2020).

Since 2020, data of the anti-COVID-19 pandemic show that TCM has played an irreplaceable and significant role in China, with the participation rate of TCM reaching over 90% and the effective rate of TCM reaching over 80% (Yang et al., 2023). TCM has been hailed as ‘The fifth invention of ancient China’, it is a powerful tool for Chinese in health care, disease prevention, and treatment (Feng, 2002). As a result, China has given full recognition to the role of TCM in its medical and health care system and has formulated many policies at the national level to promote and facilitate the development of TCM. As a unique member of the TCM industry, the mugwort industry is of profound research value.

Along with the development of the times, the changes in the market environment, and the upgrading of technology, the mugwort industry is facing the pressure of change. Externally, the upgrading of the national network technology environment has forced many industries to change their business models based on new technologies, such as the Internet in order to better adapt to the current trends (Luo & Li, 2015). From the industry's internal point of view, although the whole industry chain of mugwort is improving and the scale of the industry is also expanding gradually, the emerging problems like low degree of industrial intensification, small technological content, unstandardised industry operation, the leading enterprise is not enough to drive the ability, the low degree of branding, and other issues have become a stumbling block for the development of the industry (Fang, 2019).

Taking the low degree of intensification as an example, according to the results of field research, although the planting area of mugwort in Nanyang area has reached 300,000 mu, the planting land is very scattered, mainly based on individual planting, and there is a lack of unified and coordinated management. Among them, the average planting scale within 20 mu accounted for 42.2%, the average planting scale of 20-50 mu accounted for 36.1%, the average planting scale of 50-100 mu accounted for 15.1%, and the average planting scale of more than 100 mu accounted for 6.6% (Zhang, 2021). In terms of low technical content, we can see that mugwort product production enterprises generally produce moxa sticks, moxa pillars, mugwort and other primary products with low added value, and due to the lack of professional and technical personnel, the products on the existing market have low technical content and deep processing products are very limited (Pang, 2021). In terms of industry standards, the existing mugwort planting varieties are mixed and lack of supporting cultivation technology, and there is no standardized processing system in terms of processing, although there are industrial benchmarking enterprises leading the formulation of industry standards, but at present, a unified market standard system has not been formed (Yu, 2016). There are too few leading enterprises, only five enterprises with an annual output value of more than 100 million yuan, and the demonstration and driving capacity is limited (Zhang, 2021). In general, the existing mugwort industry planting, production, processing, and sales are relatively scattered, and the entire industry has no unified standards, no independent brands, no production

batch numbers, and no market supervision, which seriously inhibit the future development of the industry.

Therefore, the study not only helps industry-related enterprises, associations and government departments to identify the crux of the problem, but also provides measures and recommendations for the next step of the industry's future development that can be adopted.

LITERATURE REVIEW

Although domestic and international scholars have conducted in-depth studies on business model innovation through different aspects, it is easy to find out that the relevant studies are still mostly at the level of theoretical analysis. A summary of foreign scholars' literature on business model innovation reveals that foreign attention is focused on the aims and purposes, research methods, how to innovate, and types of innovation available. Gambardella and McGahan (2010) suggested that business model innovation, with technological improvement and upgrading as key factors, can achieve the integration and transformation of the resource structure of the whole industrial chain, whose core motivation is the pursuit of profit maximisation and even excess profit. Zott (2011) gave their views, in which they reviewed business model innovation as a series of innovative and transformative activities to achieve higher organisational goals (Zott et al., 2011). Osterwalder (2004) described types of business model innovation in terms of service leadership, consumer leadership, and control leadership (Gaspareto & Henriqson, 2020). China local scholars' research on innovative business model design has focused on innovation based on the integration of internal and external factors perspective (Xie & Qi, 2018), the value network perspective (Guo et al., 2020), technology catch-up perspective (Yao et al., 2014), knowledge management perspective (Zhao & Zhang, 2016) and other different perspectives to explore the innovation of business models.

In general, the existing research on business model innovation lacks industry-specific qualitative research and is not practically relevant. Therefore, this study is considered necessary to conduct research on business model innovation in the mugwort industry based on the current status of development.

Experiential/Computational Details

Glaser, one of the founders of grounded theory, stated the theory uses a series of processes to analyse, summarise and distil information in order to derive core key concepts and assist people in solving related problems (Thornberg & Dunne, 2019). Jia and Tan (2010) proposed the so-called grounded theory as a method of mining, refining and validating theories through the most comprehensive and systematic data collection, as well as possible analysis.

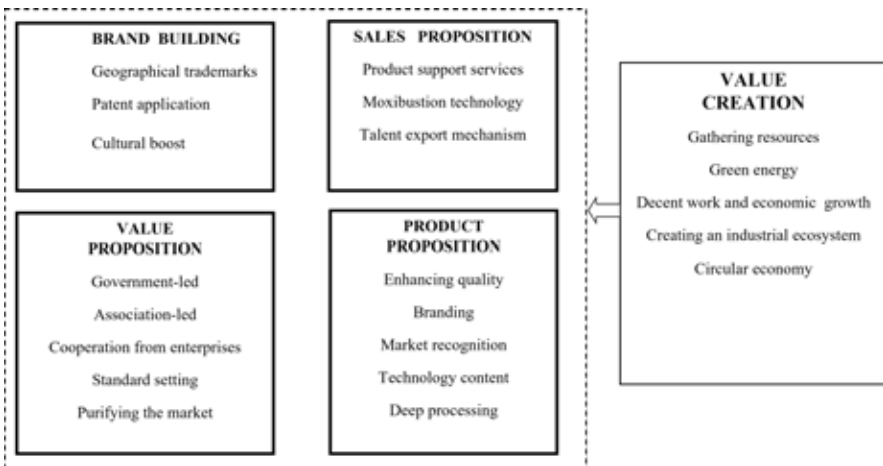
As the theoretical research literature on the mugwort industry is very scarce and the information available on the Internet is fragmented and unsystematic, this paper has chosen to adopt the research methods based on grounded theory, which is considered the most appropriate research method for innovative business model design in the mugwort industry. This section mainly focuses on the research methodology and explains how the data were collected and analysed.

According to the Henan Provincial Administration of Market Supervision (HPAMS), 2022), the given data show that there are 3,771 registered mugwort industry chain-related enterprises in Nanyang, including 336 processing enterprises, 567 sales enterprises, 35 moxibustion centres, five (5) training institutions in the mugwort industry, and nearly 3,000 network e-commerce businesses across the country, of which 80% are in Nanyang, with annual sales of mugwort reaching 8 billion yuan, driving mugwort cultivation to 300,000 mu and the exploitation of 120,000 tons of wild mugwort, promoting income growth for nearly 100,000 mugwort farmers. This paper focused on mugwort enterprises in Nanyang area as the main research object. The selection of the sample was based on judgmental sampling. By classifying the enterprises related to the mugwort industry in Nanyang area, visiting around 60 representative enterprises in the mugwort industry chain and collecting relevant information on the Internet, a grounded theory study was conducted. Firstly, 56 basic concepts were obtained through open coding, and these concepts were then scoped to obtain 13 categories. From this basis, four main categories were obtained through further sorting and analysis. Finally, the four main categories were identified with a new theme word - value creation, which aims to solve the mugwort industry chaos of innovative business model path options, to promote the mugwort industry optimisation and upgrading by using

information technology, to help the healthy development of the mugwort industry, to provide high-quality mugwort products and services in market, so that the mugwort usage is common in public, and to enhance good health across nation.

The specific steps in the study of grounded theory are shown in Figure1.

Figure1
The path of business model innovation in the mugwort industry



Source: Compiled from the results shown in the tertiary coding analysis of the grounded theory

Open coding

Firstly, the information collected from field visits and the Internet was summarised, a preliminary naming refinement of the content was prepared, and then an open coding of the refinement results to select the concepts that could cover and reflect the connotation of the original material was prepared. The results of the open coding were then further compressed and refined until conceptual saturation was reached, resulting in 56 basic concepts that broadly covered the mugwort industry, business model innovation design, and other aspects. Furthermore, 13 scopes were derived from the 56 basic concepts obtained by using the most representative and general terms to reflect the homogeneous categories. The results were shown in Table 1.

Table 1
The scope of open coding

Scope	Initial concept groups
Current status of the industry	no industry standard quality, homogeneous competition, price wars, hard to distinguish the fake, overabundance of companies, counterfeit is becoming the norm
Marketing Strategy	distribution, agency affiliation, third-party platform placement, official website, low price dumping, physical display, promotion and marketing
Socio-cultural environment	health care, disease prevention, green therapy, traditional treatment techniques
Value representation	anti-pandemic health wellness, air purification, immunity boosting, drug efficacy, getting rid of disease and enhancing fitness
Market demand	differentiated products, product promoting based on culture, product innovation, product quality enhancement, technical content enhancement, further processed products, moxibustion knowledge supporting services, market purification, standardisation of cultivation, processing and storage supporting services
Customer demand	real deal, efficacy, therapeutic efficacy, penetration, conscience product, moxibustion sensation, drug efficacy
Industry demand	trademarks, standard setting, government-led, leading enterprises, planting techniques, high added value, technological content enhancement, consumer philosophy, brand building
Profit model	merchants and franchise, state subsidies, visit volume, product live streaming, product live streaming policy
Market dominance	health centre, foot bath centre, moxibustion centre, middle-aged and elderly groups, targeted needs
Product demand	origin, variety, obsolescence, region, processing method, production method
Product scope	raw herbs, moxa stick, moxa patch, moxa velvet, moxa bar, moxa added daily products, moxibustion device
Human resource	operations team, professional talent, comprehensive talent

Source: Data collection, analysis, and summarisation of research

Main axis coding

By categorizing 12 scopes extracted from the open coding, four main categories of the mugwort industry business model innovation design were derived, which include product proposition, sales proposition, value proposition, and brand building.

Selective coding

Through the analysis of the results of the main axis coding, product proposition and sales proposition are the basis of value creation, value proposition needs to be reflected by value creation, and brand building is the support and guarantee of value creation. Through the exercise of the logical relationship between these four main categories and the continuous exploration and identification of other categories, the theme word, value creation was finally outlined.

RESULTS AND DISCUSSION

Based on grounded theory, according to the reality of the business model innovation mechanism, the mugwort industry business model innovation can be carried out in the following ways.

Government-led / Association-led / Cooperation from enterprises / Standard setting / Purifying the market

Standardisation has long been the hallmark of a mature market (Priyono et al., 2020). To control the quality of mugwort product, it is necessary to trace the roots of the product from the production process of planting, harvesting, storage, acquisition, processing, and packaging to set unified standards, in order to eliminate the market chaos of substandard, indistinguishable and homogeneous competition from foundation stage, and win the respect of consumers with quality products. The government, as well as the association, will take the lead, and the enterprises will cooperate to set industry-related standards to issue the corresponding qualification certificates, so as to eliminate those enterprises that fail to meet the relevant standards. This implementation also allows strong and capable enterprises to focus on developing new products and exploring the market. Government data is shared to guide planting in order, allowing the industry's leading enterprises, supported by scale, technology and value chains, to create cost advantages and obtain proprietary profits, and thus become the backbone of the drive to develop, optimise and upgrade the industry.

Improving quality, branding and increasing market recognition

Quality is the core brand value, and it is essential to maintain the quality of the product in order to sustain the industry (Willy et al., 2023). On the contrary, the current market of mugwort industry is caught in the whirlpool of homogeneous competition and cannot extricate itself from the low-price dumping, a low-yield, high-cost marketing model that is extremely detrimental to the formation and stability of brand loyalty. The current mugwort industry is experiencing competitive business situations, diversification of choice channels, and freedom of choice for consumers, which have challenged the survival and development of enterprises greatly. In such a severe competitive situation, several steps are needed to be taken to maintain characteristics and gain a sustainable comparative advantage, such as building a quality management system under the premise of scientific management, using modern, standardized, procedural, and advanced concepts, and then develop a competitive quality product with a unique sales proposition and value proposition. Furthermore, a brand recognition strategy is needed to meet the needs of consumers and the market. At the same time, the government can introduce appropriate investments to ensure the success of the brand building.

Improving the content of science and technology, broadening marketing channels, and promoting further processed products

Technological innovation is the first productive force, and the development of the industry will ultimately be carried out through the improvement of technological content (Ciampi et al., 2021). Internally, this increases the investment in R&D and the training of professional talents. Externally, it strengthens the mutually beneficial cooperation with research institutions and colleges to promote the innovation and upgrading of products. These steps help to provide high-quality and functional products for the increasingly diversified needs of consumers and to build brand loyalty. Focusing on cooperation with growers, this increases the promotion and popularisation of technology to downstream growers and the effective use of regional specialty resources. This also makes full use of existing scientific and technological resources to enhance the technological content of mugwort products, extends the industrial chain and develops further processed products actively to increase the added value of the products and helps boost the value of the brand.

Valuing the role of geographical trademarks and patents

The government, as well as the various authorities, in conjunction with mugwort associations and leading enterprises, accelerate the registration and protection of geographical trademarks, the development and use of the mugwort industry, the application of patents to form regional brands and enhance the market value of products. This includes integrating resources, improving policies, coordinating and cooperating with all parties to create a complete industrial ecological chain, enhancing the core brand value of geographical trademarks, and the property rights protection role of patents.

Culture contributes to the development of the industry

Nanyang, the hometown of Zhang Zhong Jing, the famous medical practitioner who wrote China's epoch-making medical monograph "Treatise on Typhoid" during the Eastern Han Dynasty, is a place that has a deep cultural heritage (Jiang, 2007). Nanyang has 800 miles of pristine Vernonia Mountains with abundant rainfall, wild mugwort accounts for 80% of the mugwort industry in China, making it the "home of mugwort". At the same time, Nanyang mugwort is sold in local and international markets for its strong penetrating power and remarkable healing effect (Wang et al., 2018). Based on regional characteristics, injecting cultural essence into the brand building can arouse the emotional resonance of consumers, while strengthening and consolidating the brand culture during the operation and promotion of the industry, eventually forming consumer awareness and enhancing the competitiveness of the brand. In this context, not only the expansion of this industry is promoted, but it also plays a driving role in the regional economy.

Strengthen product support services, increase moxibustion technology and talent export mechanisms

Moxibustion has been developed over thousands of years and has fully demonstrated its unique medical and medicinal value. It can significantly improve the symptoms of fatigue caused by insufficient vital energy, blocked meridians, blood imbalance, stimulate the body's energy, and adjust the body's condition to achieve internal and external balance (Xia, 2015). With the recent emphasis on health care, the importance of

moxibustion is becoming more and more obvious, but moxibustion is still limited in the moxibustion centres, health centres and other specific places, mainly because the moxibustion technology is not popular enough. In order to seize the domestic 1.4 billion population niche market, it is needed to increase the output of moxibustion technology, moxibustion talent training, and strengthen the product supporting services.

Construction of the Internet+ industry platform

In the context of globalization, both in the market economy and the rapid development of e-commerce platforms, constructing an e-commerce platform for the mugwort industry by integrating the resources of the whole industry chain to form big data information on cultivation, processing, technology, equipment, trade, information, experts, alliances and associations, to guide the planning and layout of the industry, broaden sales channels while reducing the production costs of enterprises, and put the industry on a virtuous cycle of sustainable development (Wu, 2021).

CONCLUSION

The above findings show that the innovative business model design for the mugwort industry can be focused on value creation, respectively from the four aspects of product proposition, sales proposition, value proposition, and brand building, to make targeted improvements and additions.

In terms of brand building, through the registration and protection of geographical trademarks, we will increase the intensity of patent applications, and vigorously promote with the help of local cultural advantages and the celebrity label effect of the medical saint "Zhang Zhong Jing".

In terms of sales proposition, it increases the supporting services of products to help consumers master basic moxibustion knowledge, increases the training of moxibustion technology, and sends more moxibustion talents to the society, so that the sales of moxa products are no longer limited to middle-aged and elderly groups, so that the consumption places of moxa products are no longer limited to moxibustion halls, foot baths, and other places.

In terms of value proposition, it is necessary for the government, associations, enterprises, universities, and intermediaries to coordinate and link up in various aspects to formulate unified norms and standards for the planting and processing of mugwort products, strengthen market supervision, and purify the chaos of the existing mugwort industry market.

In terms of product proposition, mugwort product manufacturers should increase investment in research and development rather than being satisfied with only producing primary products with low added value and large sales and shape the brand of products and promote market recognition by launching high-quality deep-processed products.

These findings can provide some reference for the mugwort industry to improve the existing market chaos, aggregate resources, create an industrial ecosystem, and develop a circular economy.

There are two limitations to this study that need to be addressed in future research. The first limitation is on the mugwort industry chain-related companies in the Nanyang region as the main research target. Although Nanyang is relatively representative as a mugwort distribution and production based in China, the business environment and culture of different regions will have some influence on the results of the visits and research, thus the results may not be suitable for all across the nation. The second limitation is that the research methodology is mainly based on qualitative research methods, and it would be making the result about the business model innovation in the mugwort industry more convincing to combine quantitative research methodology.

AUTHORS' CONTRIBUTIONS

Ding Yali contributed to article conception, literature collection and analysis, fieldwork, research data analysis and manuscript writing, Muhammad Azman Ibrahim contributed to the literature review and methodology, and Lanlan Yang helped with the language translation and revision.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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