

Traditional Health Supplements in Malaysia

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Working Paper

This KRI Working Paper is a work in progress that will eventually be revised and published elsewhere. This Working Paper does not necessarily represent the position of the Khazanah Research Institute.

Abstract

The value chain studied covers the manufacturing of health supplement products made from traditional herbs whereby the value chain covers research and development (R&D), manufacturing, and downstream product distribution. We found 49 services that contribute to this value chain. The case study also details the challenges faced by policymakers and businesses in creating an environment that is supportive of the development of innovative products. Services play a significant role in the firm's value chain and they contribute to a substantial percentage of the cost of the final product. The research and development (R&D) activities constitute a large portion of the value chain. However, a considerable number of services in the R&D stage are outsourced. These services tend to require specialised skills and facilities (e.g. safety studies and clinical trials) and therefore a certain level of scale economies to result in optimal costing/pricing. Learning about the markets and the regulations of new countries constitute a large barrier. The costs are significant, and the tasks are difficult to perform in-house due to the level of technical and market knowledge required and the geographical distance. Thus, independent vendors (to whom the services are outsourced) that are able to provide advisory services in multiple markets are able to grow with their clients as they seek to enter the said markets. There are cost implications of government policies. The government policy to support R&D in herbal products has contributed to the growth of the industry. Even though the firm has invested heavily in the R&D of its products, it is unable to make any new health claims based on the scientific outcomes. This is due to the regulatory classification, i.e. traditional medicine, which the product falls under.

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FIRM'S BACKGROUND

The firm represented in this case study develops, manufactures, and markets health supplement products made from traditional herbs. Its main selling products are made from the tongkat ali plant also known as *Eurycoma longifolia*. This plant is native to Southeast Asian forests. Among the local Malaysian population, the consumption of this traditional herb is widely believed to enhance the male libido, energy, and the immune system.¹

The firm distinguishes itself from other companies in the market by using R&D to develop traditional medicine-based products. Its products are highly innovative and are anchored to Malaysia's unique natural assets. Thus, the firm develops products that are based on science and high manufacturing standards.

INDUSTRY OVERVIEW: THE MALAYSIAN HEALTH SUPPLEMENTS MARKET

Malaysian consumers are increasingly showing appreciation for consumer health products such as vitamins and dietary supplements, believing that taking supplements can help to improve their health and wellness. Indeed, Malaysian consumers are spoilt for choice when it comes to health supplements, given the wide range of supplements and the presence of established international brand names such as Nutrilite, Live-well, Blackmores, and VitaHealth in the local market.

Aggressive promotional campaigns by manufacturers of vitamins and dietary supplements have also helped to increase the popularity of health supplements.

Market growth by product category

Over the past decade, the Malaysian market for vitamins and dietary supplements has experienced robust growth, with retail sales doubling from RM940.4m (USD248.3m) in 2005 to RM1.9b (USD572.6m) in 2014² (Figure 1). This represented a compound annual growth rate (CAGR) of 7.0% over the past 10 years. In 2014, retail sales of vitamins and dietary supplements recorded an annual growth rate of 7.9% from sales of RM1.7b (USD545.3m) in 2013³, which was slightly above the 10-year CAGR of 7.0%.

Among the different product categories, tonics and bottled nutritive drinks have gained significant popularity over the past decade. These include products such as BRAND'S ®

Essence of Chicken, and health and beauty drinks by NH Colla Plus and Kinohimitsu that are popular particularly with female consumers.

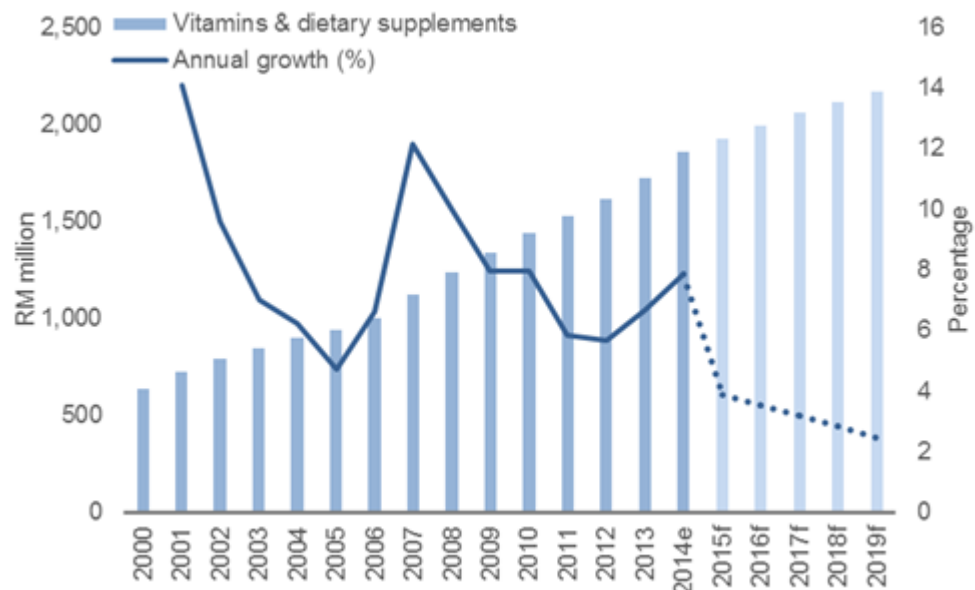
In 2005, tonics and bottled nutritive drinks registered total retail sales of RM93.5m (USD24.7m). By 2014, retail sales of these products are estimated to have increased 3.6 times to RM333.0m (USD102.8m)⁴ (Figure 2). This translated into a CAGR of 13.5% over the 10-year period, which was almost double the industry average. 2014 also saw tonics and bottle nutritive drinks registering a robust annual growth rate of 14.5% from sales of RM290.8m (USD92.2m)⁵ in 2013 (Figure 3).

Retail sales of non-herbal/traditional dietary supplements registered the second highest growth rate over the past decade, having more than doubled from RM278.4m (USD73.5m) in 2005 to RM576.2m (USD177.9m)⁶ in 2014 (Figure 2). This marked a CAGR of 7.5%, slightly above the industry CAGR for the same period.

As for herbal/traditional supplements, vitamins as well as paediatric vitamins and dietary supplements, retail sales in these categories grew at slower pace of around 5.0% over the past 10 years, below the industry average of 7.0% (Figure 3).

It is interesting to note that probiotic supplements were the most popular supplements in 2014, registering the strongest annual growth rate of 15.4% among all supplements. Probiotics are popular for their benefits of supporting a healthy digestive system (Ciorba, 2012; Nagpal et al, 2012; Kailasapathy, 2013), with lactobacillus and bifidobacterium being the most commonly used species or strains. However, in terms of market share, retail sales of probiotics totaling RM9.0m (USD2.8m) in 2014 accounted for less than 1% of total vitamins and dietary supplement sales for that year.

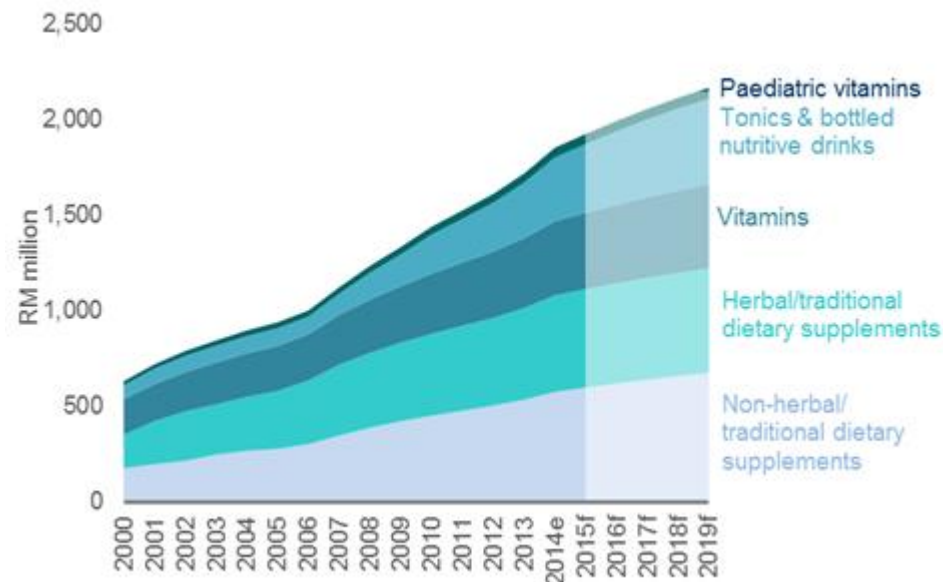
Figure 1: Retail and forecast sales of vitamins and dietary supplements



Source: Euromonitor International

Note: 2014 data is provisional and based on part-year estimates.

Figure 2: Retail and forecast sales of vitamins and dietary supplements by type



Source: Euromonitor International

Note: 2014 data is provisional and based on part-year estimates.

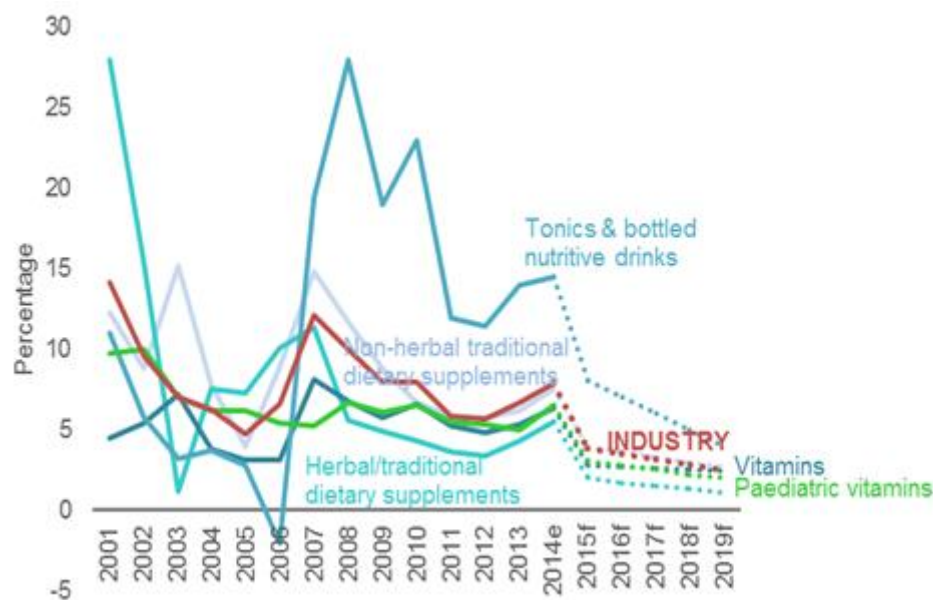
Market share by product category

In terms of market share, dietary supplements accounted for the bulk at 58.3% or RM1.1b (USD333.9m) of total retail sales in 2014. This is followed by vitamins, with retail sales of RM389.2m (USD120.2m), translating into a 2014 market share of 21.0%⁷ (Figure 4).

Tonics and bottled nutritive drinks accounted for 18.0%, or RM333.0m (USD102.8m) of total retail sales in 2014⁸ (Figure 3). Fueled by a meteoric rise in their popularity, their market share has almost doubled from 10% in 2005.

Paediatric vitamins and dietary supplements garnered the smallest market share of 2.7%, with retail sales of RM50.9 m (USD15.7m) in 2014 (Figure 4). Nevertheless, paediatric vitamins and dietary supplements are an emerging trend in health supplements in Malaysia, owing to increasingly health conscious parents who also provide supplements to their children as part of familial health routines. Vitamin C ranked as the most popular paediatric vitamin, while examples of paediatric dietary supplements include fish oil, probiotic supplements and colostrum⁹.

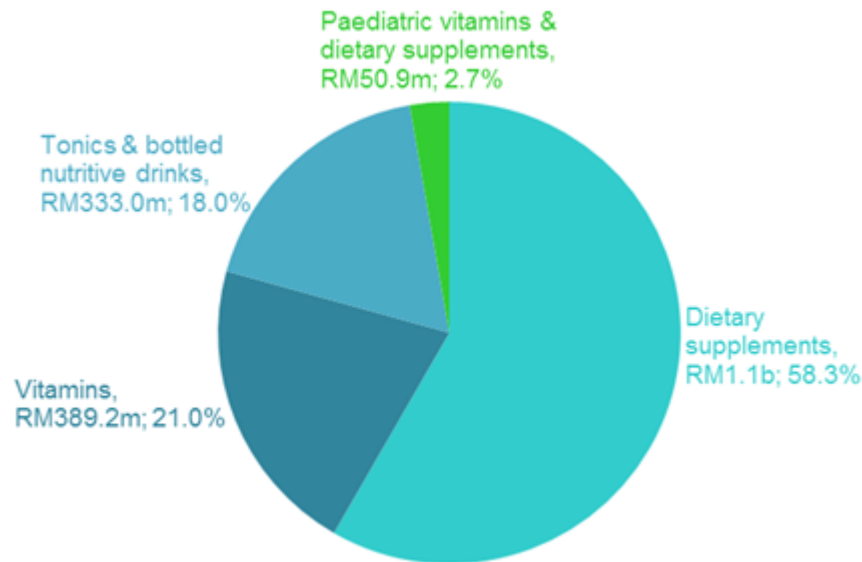
Figure 3: Annual growth in retail and forecast sales by type



Source: Euromonitor International

Note: 2014 data is provisional and based on part-year estimates.

Figure 4: Retail sales breakdown in 2014



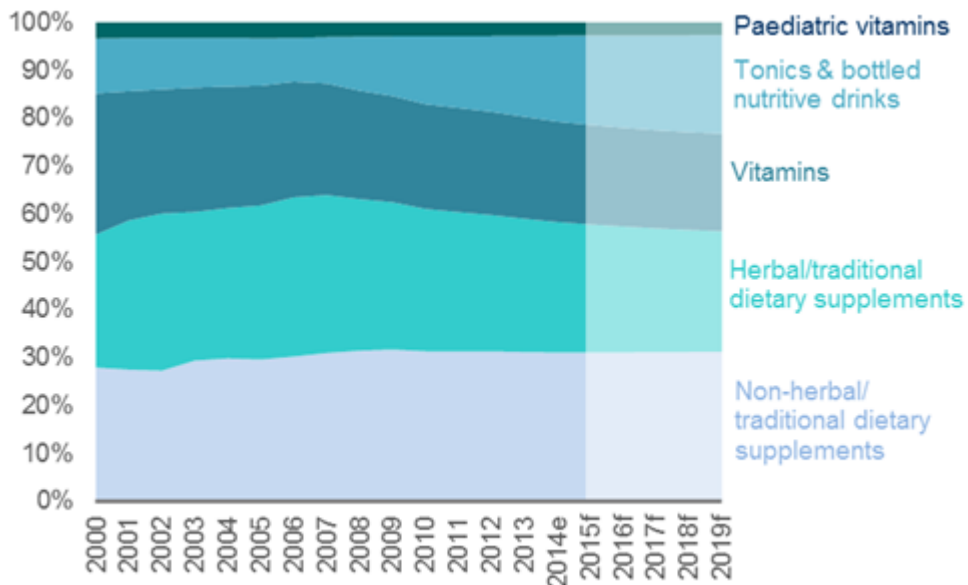
Source: Euromonitor International

Note: 2014 data is provisional and based on part-year estimates.

Dietary supplements

Within the category of dietary supplements, non-herbal/traditional supplements accounted for a larger proportion of sales in 2014, at RM576.2m (USD177.9m), or 53.3%, while herbal/traditional supplements accounted for the remaining sales at RM505.4m (USD156.0m), or 46.7%¹⁰. In terms of trends in market share, however, herbal/traditional supplements have seen their market share eroding over the past decade. In 2005, herbal/traditional supplements occupied the pole position with a market share of 32.2% based on total retail sales of RM302.7m (USD79.9m). This has since shrunk to 27.2% in 2014, with retail sales totaling RM505.4m (USD156.0m). Herbal/traditional supplements have largely lost their market share to nonherbal/traditional supplements as well as tonics and bottled nutritive drinks¹¹ (Figure 5).

Figure 5: Proportion of sales of vitamins and dietary supplements



Source: Euromonitor International

Note: 2014 data is provisional and based on part-year estimates.

Vitamins

Within the category of vitamins, multivitamins accounted for the bulk at RM243.4m (USD75.1m) or 62.5% of total retail sales of vitamins in 2014, while single vitamins accounted for 37.5%, with retail sales totaling RM145.8m (USD45.0m). Vitamin C was the most popular single vitamin in 2014, as has been the case for the past several years, with sales of RM92.8m (USD28.7m) in 2014¹². Indeed, sales of Vitamin C accounted for more than 60% of sales of single vitamins in 2014.

Major market players

Amway continued to enjoy the local market leader position in vitamins and dietary supplements in 2014, with total retail sales of RM302.2m (USD93.3m) accounting for a market share of 16.3%¹³. With its popular international brand name of Nutrilite that offers a comprehensive portfolio of vitamins and dietary supplement products, Amway has managed to defend its top position over the past decade. In addition, the company is supported by a strong network of direct sellers for its products. However, its market share has eroded from 19.4% in 2005 due to greater competition from other market players.

Within the category of vitamins, Amway accounted for an even larger market share of 27.5%, while in the dietary supplements market, Amway's market share was 17.8% in 2014¹⁴.

Cerebos enjoyed the second largest market share of 9.1% in vitamins and dietary supplements, derived from total retail sales of RM169.5m (USD52.3m) in 2014, with its popular Brand's ® products, notably Brand's Essence of Chicken. Its retail market share has also increased significantly from 5.2% in 2005. Not surprisingly, within the category of tonics and bottled nutritive drinks, Cerebos acquired a market share of almost 51% in 2014¹⁵.

USANA was ranked the third most popular brand in vitamins and dietary supplements, with retail sales of RM121.1m (USD37.4m), providing a market share of 6.5% in 2014¹⁶. The US based company, which has been present in the Malaysian market since 2007, is a direct selling company for health supplements, weight management and personal care products¹⁷.

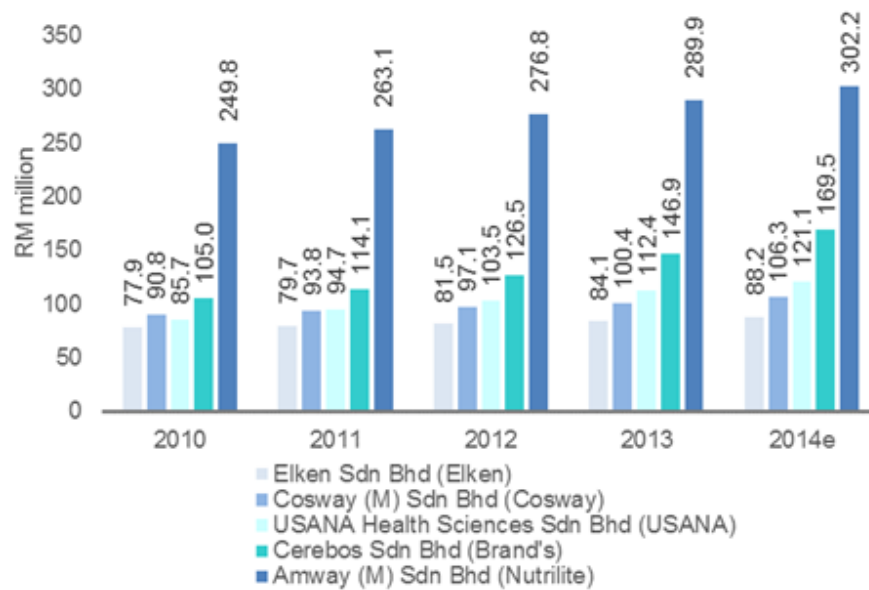
Cosway, a subsidiary of the Berjaya Group, is a well-established brand in Malaysia that sells health supplements as well as personal care and household products¹⁸. Its market share of vitamins and dietary supplements stood at 5.7% on the back of retail sales totaling RM106.3m (USD32.8m) in 2014¹⁹, placing the company at the fourth position in the vitamins and dietary supplements market.

Elken, is another direct selling company for health supplements, and is also known for its water purification systems²⁰. With total retail sales of RM88.2m (USD27.2m), the company was ranked as the fifth most popular brand with a market share of 4.8% in 2014²¹.

Collectively, these five brand names garnered a market share of 42.4% with combined retail sales of RM787.3m (USD243.0m) in 2014. Other popular brands such as Blackmores, Herbalife and Kordel's accounted for less than 4% each in the vitamins and dietary supplements market in 2014²².

Figures 6 and 7 illustrate the retail sales and market shares respectively of the Top 5 brands in vitamins and dietary supplements in the Malaysian market.

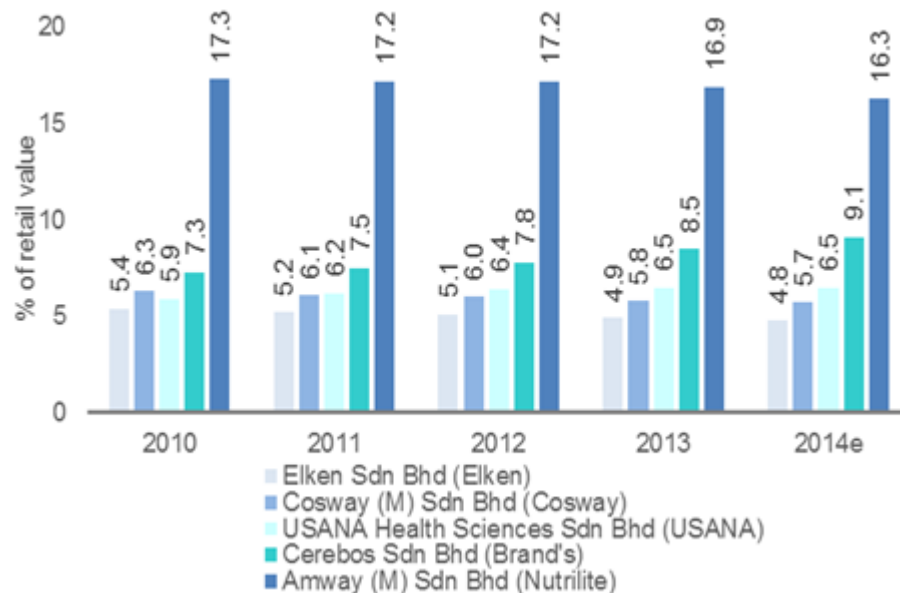
Figure 6: Sales of vitamins and dietary supplements – Top 5 brands (RM m)



Source: Euromonitor International

Note: 2014 data is provisional and based on part-year estimates.

Figure 7: Sales of vitamins and dietary supplements – Top 5 brands (% of retail value)



Source: Euromonitor International

Note: 2014 data is provisional and based on part-year estimates.

Industry outlook

Based on the sales projections by Euromonitor International ("Euromonitor"), vitamins and dietary supplements in Malaysia will continue to enjoy strong sales growth going forward. This is underpinned by growing awareness of health issues, rising incidences of non-communicable diseases and increasing affluence of Malaysians, as consumers believe that taking supplements would help to improve their state of health or alleviate existing health conditions.

By 2019, Euromonitor forecasts sales of vitamins and dietary supplements to reach RM2.2b (USD669.3m) from an estimated RM1.9b (USD572.6m) in 2014²³. This would represent a significantly lower CAGR of approximately 1.6% compared to a historical 7% CAGR for the 2005 – 2014 period, reflecting a maturing market.

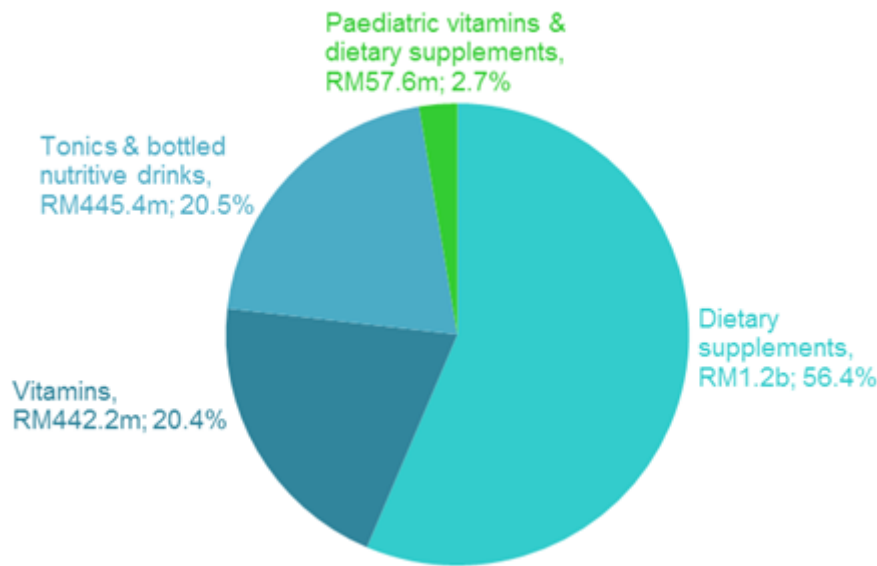
Sales forecasts by category

Of the total projected sales of RM2.2b (USD669.3m) in 2019, dietary supplements are expected to still account for the largest proportion of sales at RM1.2b (USD377.4m), albeit with a smaller market share of 56.4% vis-à-vis 58.3% in 2014²⁴.

However, sales of tonics and bottled nutritive drinks are expected to rise to RM445.4m (USD137.5m) in 2019²⁵. This would raise the market share of tonics and bottled nutritive drinks to 20.5% in 2019, approximately equaling the market share of vitamins, which is expected to contract marginally to 20.4% in 2019.

Paediatric vitamins and dietary supplements are expected to maintain their market share of 2.7% on account of projected sales of RM57.6m (USD17.8m) in 2019²⁶.

Figure 8: Projected sales breakdown in 2019



Source: Euromonitor International

Key trends and developments

Euromonitor has identified three key trends and developments that are expected to influence the demand for consumer health products in Malaysia, as discussed below²⁷:

1. Herbal/traditional health products to remain popular

Euromonitor opines that herbal/traditional consumer health products will continue to gain momentum in the Malaysian market, supported by consumers' perception that herbal/traditional products are more effective and have less harmful side-effects than non-herbal/traditional products. Cultural exposure to traditional products, coupled with influence from families and friends, also helps to foster consumer confidence in their efficacy in self-treatments and disease prevention²⁸.

In this regard, health supplement manufacturers in Malaysia are expected to introduce more new herbal/traditional supplements to local consumers. By 2019, Euromonitor forecasts retail sales of herbal/traditional supplements to touch RM545.1m (USD168.3m), an increase of 7.9% from an estimated RM505.4m (USD156.0m) in 2014²⁹ (Figure 2). In terms of market share, however, the 2019 sales forecast would represent a slight drop in market share from 27.1% in 2014 to 25.1% in 2019 (Figure 5).

2. Changing lifestyles and demographic patterns in Malaysia to influence health care product demand

Several key trends in the lifestyles and demographics of Malaysians are set to shape the demand for health care products in the future. For instance, Malaysia is rated as having the highest obesity rate in Asia, with 45.3% of its population classified as obese based on a 2014 study published in the Lancet medical journal. Gender-wise, 49% of Malaysian women and 44% of men were rated as obese³⁰.

This has significant implications on the incidences of non-communicable diseases (NCDs) in Malaysia, such as cardiovascular diseases and diabetes, as obesity is one of the key risk factors of NCDs. Based on the statistics compiled by the World Health Organization (WHO), ischaemic heart disease and stroke were the top two causes of deaths in Malaysia in 2012, collectively accounting for more than 30% of total deaths³¹.

With heart disease cases on the rise in Malaysia, consumers who are cognisant of the heart health benefits of consuming omega 3-6-9 fatty acids (both fish and non-fish oils) could push up the demand for these supplements. Euromonitor estimates that the retail sales of fish oils/omega fatty acids in Malaysia will increase by 19.8% from RM94.8m (USD29.3m) in 2014 to RM113.6m (USD35.1m) in 2019, accounting for 5.2% of total retail sales of vitamins and dietary supplements in 2019.

In terms of demographic patterns, the Malaysian population, like some of the other Asian countries, is ageing. By 2043, the proportion of the older population aged 65 years or over will double to 14% from 7% in 2020³². In an aging population, the incidences of osteoporosis and osteoarthritis are set to rise, which could see an increase in demand for supplements such as calcium and glucosamine, known for their benefits of supporting healthy bones and joints.

3. Technological advancement to facilitate greater demand for health care products

According to a survey conducted by Google and TNS, a global market research company, Malaysia is rated as one of the top five nations in terms of smartphone usage, where the use of smartphones exceeds the use of computers at 51% vs. 39%. Malaysia also has the distinction of being number one in terms of smartphone Internet access exclusivity, in that 35% of the Malaysian smartphone users surveyed depend solely on their smartphones to access the Internet³³. Additionally, based on World Bank's data, Malaysia's internet penetration rate stood at

67.5% in 2014, higher than most of its ASEAN neighbours, with the exception of Singapore (82.0%) and Brunei (68.8%)³⁴.

The high level of internet-savviness among Malaysians could have a two-fold impact: one, in terms of increasing the awareness of health-related issues, particularly with the advent of popular health websites such as MayoClinic.com, WebMD and Mercola.com; and two, in the form of greater retail sales of health care supplements through online channels. As such, technological advancement in the Malaysian society could lead to greater demand for health care products.

BACKGROUND OF THE FIRM AND THE PRODUCT

The firm's main products are based on tongkat ali and they are sold in the form of extract and capsules. The extract is sold in the business-to-business (B2B) market to other pharmaceutical companies, brand owners and manufacturers of health supplements which would then incorporate the ingredient into their own products. Currently, the extract is sold in the United States (US), Canada, Singapore, Hong Kong, Japan, and possibly in the near future, China and the European Union (EU).

A smaller portion of the tongkat ali extract is packaged into capsules for the end consumers and they are sold under the firm's own brand of health supplements for the business-to-consumer (B2C) market. The tongkat ali capsules are currently sold in Malaysia and China. To summarise, after the manufacturing stage, the value chain branches into the downstream product distribution of the two types of products, the tongkat ali extract (for the B2B market) and the tongkat ali capsules (for the B2C market).

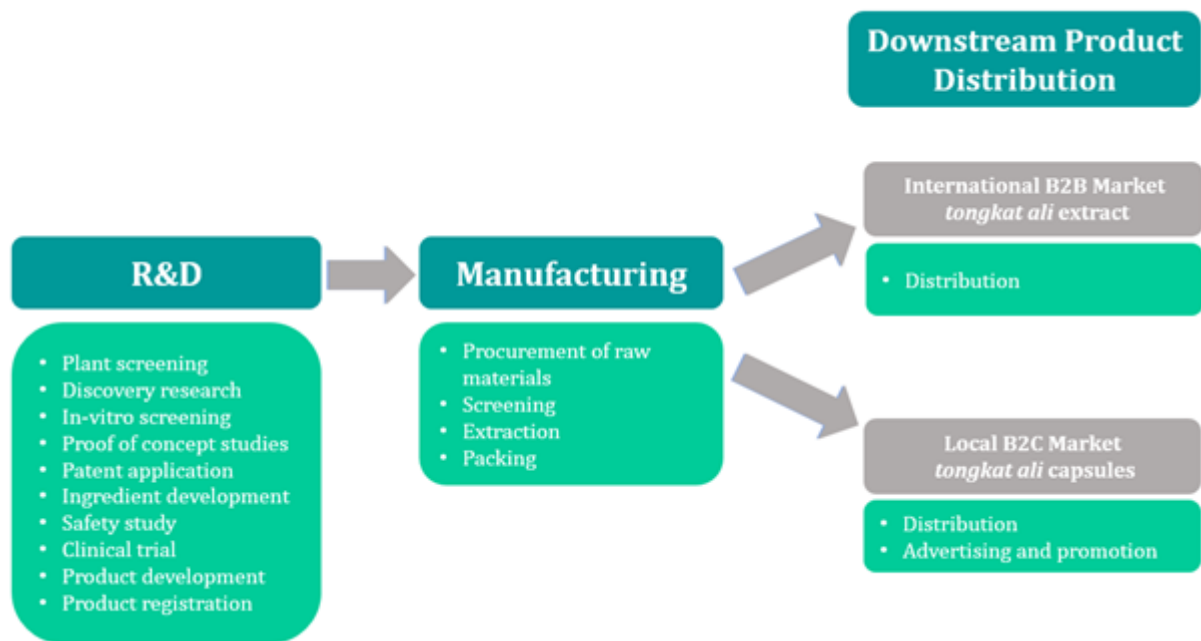
Products containing the firm's tongkat ali extract are marketed with a label and are positioned to communicate to the consumers that the extract used in the products is of high quality. The firm has established itself as a reputable manufacturer which uses scientific processes to develop its health supplement ingredients and follows high manufacturing standards. The labelling also distinguishes the firm's extract from other brands of tongkat ali products. It is comparable to the 'Intel Inside' labelling for electronic products.

The facility at the firm's headquarters is the largest and the most advanced herbal extraction facility in Malaysia. While the main product of the firm is the tongkat ali extract, the extraction facility can also be used for other traditional herbs. The firm currently has approximately 50 employees, including the manufacturing workers.

BASIC OPERATION OF THE VALUE CHAIN

Three stages of the value chain are covered in this case study and they are R&D, manufacturing, and downstream product distribution. After the manufacturing stage, the value chain branches into the downstream product distribution of two types of products, the tongkat ali extract (for the B2B market) and the tongkat ali capsules (for the B2C market). This is shown in Figure 9.

Figure 9: Value Chain of a Health Supplement Product



Source: Based on discussions with the firm

R&D

The firm's R&D processes differ from those of other traditional medicine manufacturers in that the former follows an approach similar to pharmaceutical drug research processes but on a smaller scale. The latter usually involves only basic laboratory tests to ensure that the product does not contain heavy metals and other contaminants, after which the product can already be marketed. There are ten phases in the firm's R&D stage. Each of them is described below.

1. Plant screening

The R&D stage starts with preliminary evaluation of plants through desktop research and consulting the general public about the traditional herbs that are commonly used. This is done internally by the R&D team of the firm and may take between three to six months.

2. Discovery research

The discovery research phase screens for useful chemical compounds in the plants of interest. The firm outsources this service to an independent vendor which operates a chemistry laboratory equipped with compound isolation and database search capabilities. Vendors which provide R&D services in this industry are commonly referred to as Contract Research Organisations (CROs). This phase typically involves multiple ingredients and can take up to six months.

3. In-vitro screening

The next phase, in-vitro screening, confirms whether or not the plant selected has medicinal value by conducting preliminary laboratory tests on cell lines. The process is outsourced to independent CROs which take four to six weeks.

4. Proof of concept studies

The R&D stage continues with the proof of concept studies using animal testing. The purpose of this phase is to demonstrate that the product has potential beneficial uses by observing the effects of the product on laboratory mice. This step also acts as early safety testing. This phase is usually outsourced to a CRO and can take between three and six months.

5. Patent application

The next phase is the patent application which is done to protect the intellectual property (IP) of the product. The patent is usually registered in Malaysia and other countries into which the firm plans to expand. This process usually takes three months and is managed by the internal science team with assistance from external patent lawyers.

6. Ingredient development

The following phase, ingredient development, aims to determine the optimum method of extracting the substance from the plant to produce a standardised extract. It is important not to compromise the active chemical compound due to the heat and pressure of the extraction process. This phase of the R&D is first performed in-house through a laboratory-scale process and then on small-scale pilot extraction facilities at the firm's headquarters.

The cost of R&D from the plant selection phase to the ingredient development phase ranges from RM300,000 to RM500,000 (USD92,000 to USD153,000)³⁵. Although the cost may be low for each plant, the firm has to screen many plants with only a few successful outcomes. Therefore, it constitutes a significant cost for the firm.

7. Safety study

After ingredient development, the next phase is the safety study, also known as the toxicology study. The purpose of this phase is to verify that the product is safe to be consumed. The tests follow the standards established by the Organisation for Economic Co-operation and Development (OECD) and are conducted by an overseas CRO which has the required accreditation. There are many types of safety studies ranging from three months to 36 months, and from RM50,000 (USD15,000) to RM2.5mn (USD765,000). The higher range is unique to special cases.

8. Clinical trial

The next phase, clinical trial, studies the effects of the product by testing it on at-least 60 human subjects. Evidence from this phase enables the firm to make claims of what the product may be able to do. This process also helps to determine the correct dosage for regular consumption. The end product of this phase is research papers which are published in journals. Having the results of the clinical trials published in reputable journals help to market the product. This phase takes one to two years and is outsourced to overseas CROs which have the expertise and experience related to the health industry and the countries in which the product is to be marketed.

The clinical trials are generally the most expensive phase of the R&D stage but the cost depends on the size and design of the study. A 60-patient study costs between USD300,000 (RM981,000) and USD500,000 (RM1.6mn).

9. Product development and product registration

The last two phases of the R&D stage are the product development and the product registration phases. The R&D stage of the B2B product (tongkat ali extract) ends with registration of the product with the relevant authorities.

The finished product for the B2C market, however, requires further R&D as it needs to be formulated with other ingredients and excipients, and packaged or incorporated into capsules, tablets, food, beverages, or other delivery forms. To reiterate, this case study also follows the value chain of the finished product in the form of tongkat ali capsules.

Once the final formulation is completed, the product, with all its packaging designs, is registered with the relevant authorities, which in Malaysia, is the National Pharmaceutical Control Bureau (NPCB) under the Ministry of Health (MOH). The R&D stage also incorporates a feedback loop mechanism for product improvement based on responses received from the marketing team.

The R&D activities at the firm are carried out by a team of approximately seven staff. Besides coming up with its own original research, the firm could also acquire and commercialise patents from third party specialists, in which case the R&D stage would be shorter.

Manufacturing

There are four phases in the manufacturing stage. Each of them is described below. Except for the first phase (procurement of raw materials), the entire process takes place using the facilities at the firm's headquarters.

1. Procurement of raw materials

The main raw material, which comes in the form of tongkat ali grains, is procured from local sources. This process includes identifying and verifying the suppliers based on quality and price.

2. Incoming quality checks

The next process, incoming quality checks, ensures that the tongkat ali grains are in good condition (by visual inspection) and do not contain other materials (by using in-house laboratory tests).

3. Extraction

The extraction phase is the most technology-intensive portion of the manufacturing stage. There are five processes and they are as follows:

- Extraction:

The grains are boiled in large tanks to extract the tongkat ali.

- Filtration:

The boiled mixture is filtered.

- Evaporation:

The liquid is reduced into a thicker liquid.

- Sterilisation:

Steam is intermittently shot through the thick liquid to reduce microbial load.

- Freeze-drying:

The thick liquid is placed in a freezer-drier for a few days to form dried cakes of pure tongkat ali extract.

4. Packaging

In the packaging phase, the 'dried cakes' of tongkat ali extract is grounded into powder and manually packed into individual packages. The extract is marketed to overseas brand owners and manufacturers for the B2B market. The customers would further process and incorporate the ingredient into their own health supplement products.

A smaller portion of the extract is also packaged into vegetarian capsules for the B2C market. This finished product is sold under the firm's own brand. The vegetarian capsules are purchased (instead of being produced in-house) from a local company.

The manufacturing process is managed by a team of approximately 17 staff. The machines are operated by domestic workers while the packaging is done by migrant workers on a contract basis.

Downstream product distribution – Business-to-Business (B2B)

As previously mentioned, the tongkat ali extract is exported to the US, Canada, Singapore, Hong Kong, Japan, and possibly in the near future, China and the EU. This case study focuses on the firm's exports to the US.

For the US market, the firm sells the tongkat ali extract to a US distributor which would then sell the ingredient to brand owners and manufacturers of health supplement products. The distributor purchases the tongkat ali extract directly from the firm, making the distributor the final direct customer of the firm. Thus, the firm's value chain for the B2B market ends with the distributor, as the ownership of the extract changes from the former to the latter.

The brand owners and manufacturers, in turn, would incorporate the ingredient into their products which would be sold under their own respective brands. Health supplement products containing the firm's tongkat ali extract is usually marketed with the firm's special labelling or brand name. This brand name communicates to the consumers that the product contains tongkat ali extract which has the claims of safety, efficacy, and quality.

To help the firm navigate the regulatory framework and position its product in new markets, the firm engages external regulatory and marketing experts. For example, the firm was advised by the experts to be careful to not make too many medical claims during the registration process to avoid the product being classified as a drug, instead of a health supplement. The marketing and sales of the extract are managed by a team of approximately four staff and they are closely assisted by four other science team members. The services of doctors, key opinion leaders, and brand ambassadors, are engaged at times to help promote the product.

Downstream product distribution – Business-to-Consumer (B2C)

The tongkat ali capsules are sold to pharmacies and specialty retailers, as well as through e-commerce websites for the B2C market. The product is currently marketed in Malaysia and China. This case study focuses on the firm's marketing and sales in Malaysia.

The distribution and sales of the tongkat ali capsules are outsourced to an independent vendor which distributes the product to pharmacies and specialty retailers. The distributor provides land

transport, warehousing, and sales services. The firm retains ownership of the product throughout the process and pays the distributor a distributorship fee from the sales of the tongkat ali capsules. Unlike the B2B market, the final direct customers of the firm are the pharmacies and retailers (instead of the distributor) in the B2C market. The cost of distributing the product constitutes a significant portion of the product's total cost.

Marketing and advertising of the tongkat ali capsules are managed by the internal sales and marketing team. However, the firm engages the services of specialist independent vendors who have expertise in various areas: media agents to assist in media planning and negotiation with media owners; design consultants to prepare design for product packaging, advertisement, and marketing materials; and copywriters to help in crafting the marketing messages.

SERVICES ALONG THE VALUE CHAIN

The firm identified a total of 49 distinct services. These include services performed by the firm and those directly outsourced to independent vendors. The full list of the 49 services is available in the Appendix. Although the firm is essentially a manufacturing company, many aspects of the firm's operations involve services. Moreover, as previously mentioned, the firm distinguishes itself from other traditional medicine and health supplement manufacturers through its R&D which is services intensive.

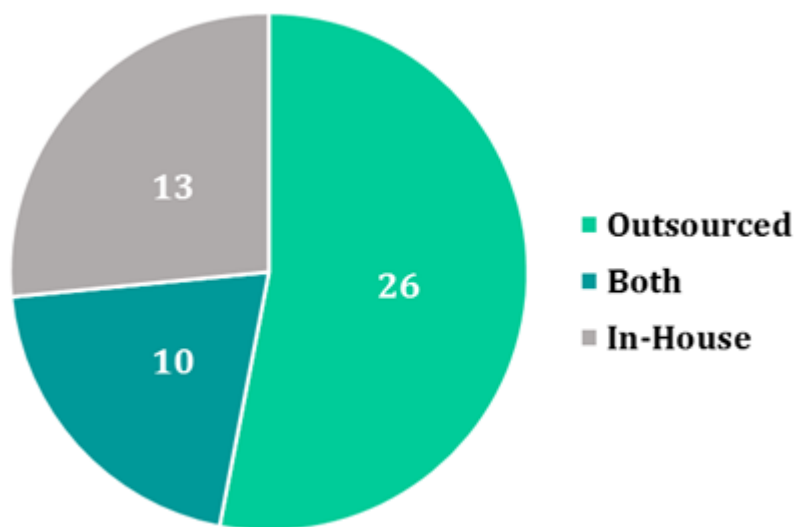
The R&D stage constitutes a large portion of the value chain. At this stage, approximately 95% of the R&D costs originate from services, while the remaining 5% from raw materials. The amount of raw materials needed for the R&D is small, hence the low contribution to overall costs. It generally takes three to four years to develop a product and the R&D can cost millions of Ringgit. This case study is a good example of how productivity growth can be championed by innovation through R&D which is service-oriented.

Apart from the R&D stage, other parts of the value chain which were identified by the firm to be significant in terms of their contribution to total costs were the procurement of raw materials (for the manufacturing stage); consultation with marketing and regulatory experts to access new overseas markets and filing for patents and trademarks; land transportation of goods from the warehouse to the domestic ports; marketing services (provided by the media agent); and distribution and sales services (provided by the independent distributor) of the finished product for the B2C market. With the exception of procurement of raw materials, these other services are concentrated in the downstream product distribution stage.

Outsourcing and Bundling

Figure 10 shows that approximately 73% of the services in the value chain are either outsourced or both outsourced and performed in-house.

Figure 10: Outsourcing by Number of Services



Source: Based on discussions with the firm

R&D

The R&D stage constitutes a substantial part of the value chain and a large portion of the services in that stage is outsourced. Approximately 60% of the phases of R&D are either outsourced or both outsourced and performed in-house. These outsourced services tend to require specialised skills and facilities (e.g., safety studies and clinical trials).

Each phase of the R&D is very specific and each CRO has a certain specialisation. Thus, different CROs are engaged for each of the outsourced phases. The CROs are carefully selected to ensure that the results from the laboratory tests can be accepted and approved by the authorities in the target markets.

Some of the CROs selected include local research universities which are perceived by the company to be independent and advanced in their knowledge. However, outsourcing to the local universities can be time-consuming and inconvenient. For example, the universities may want to

negotiate to share the IP arising from the study, unlike private CROs which pass the IP ownership to the client. The cost of outsourcing to local universities can also be substantially more expensive compared to private CROs which tend to be efficient due to specialization and economies of scale.

To summarise, the motivation for outsourcing services in the R&D stage includes the need for specialised skills and facilities; managing the regulatory process (outsourcing the services to reputable CROs can facilitate the regulatory approval process); and economies of scale (the CROs deal with greater volume, thus allowing them to offer competitive pricing. Outsourcing to these CROs can help to lower the cost).

The R&D services which are undertaken by the firm in-house tend to be those which (a) require less specialised skills and facilities (e.g., plant selection); (b) are closely linked to production (e.g., process development and improvement); and/or (c) involve ‘trade secrets’ (e.g., product formulation, proprietary process for production).

Manufacturing

Approximately 40% of the services in the manufacturing stage are either outsourced or both outsourced and performed in-house. This is largely due to the lack of capacity in the country to undertake extraction services, as well as logistics costs to send raw materials overseas.

Additionally, the ability to undertake extraction in-house allows the firm to keep certain processes as trade secrets. For the capsulation process of the finished product, the in-house manufacturing capability also provides the firm with the speed, the flexibility, and the assurance of quality in producing tongkat ali products for its clients.

Downstream product distribution

At the downstream product distribution stage for the B2B product (the tongkat ali extract), the first challenge is to register the product with the authorities in the new market. Engaging a competent regulatory consultant is important – one that understands the available science and is able to identify the niche market for the product to be registered under.

In the case of the US, the regulators accept results from previous studies which fulfil international guidelines. The firm’s tongkat ali extract has the approval from the Food and Drug

Administration (FDA) as a dietary supplement product. As such, it does not need extensive FDA pre-marketing approvals such as those required for pharmaceutical drugs.

However, once the product is being marketed to consumers, the marketing activities are regulated by the Federal Trade Commission (FTC) which requires, among other things, that the labelling on the finished product does not mislead consumers. In the US, for example, dietary supplement products are required to include the following labelling: "This statement has not been evaluated by the FDA. This product is not intended to diagnose, treat, cure or prevent any disease."

Once the product is registered, finding a good distributor is very important – one that is able to understand and promote the science, has a close relationship with manufacturers and brand owners in the relevant market segment, and has the capacity to ‘defend’ the product in the face of competition. There are two models for distribution: (i) distribution based on fee over sales, and (ii) distribution based on outright purchases. In the latter model, the distributor is the firm’s final client, which is the case in the US for this value chain. In addition, the firm also needs to consider whether the distributor should be on an exclusive basis or an ‘open’ basis, subject to the competency of the distributor and the commitment on sales.

Learning about the markets and the regulations of new countries constitute a large barrier. The costs are significant, and the tasks are difficult to perform in-house due to the level of technical and market knowledge required and the geographical distance. Finding a reliable, competent distributor that is able to focus on the product is important. For example, a large distributor with a strong network of clients is important, but the distributor may not spend enough time and resources on the product because it has many other products to sell. Smaller distributors may be more specialised but may not have the network or capacity to deal with market challenges.

After the product has been marketed, the next issues that the firm has to address are competition from other tongkat ali brands and possible IP infringements. Unscrupulous companies may use the firm’s labelling without actually incorporating the firm’s tongkat ali extract in their products. Again, because of limited resources and geographical distance, the firm has to rely on the local distributors to monitor for possible IP infringement in the overseas markets.

As for the downstream product distribution stage for the B2C product (the tongkat ali capsules), the main services identified by the firm include sales and distribution. Both are outsourced to an independent distributor which bundles the services for land transport, warehousing, and sales management. Another significant service is the marketing planning and management which are

performed in-house but using input from specialist consultants for media planning, material designs, and copywriting. The motivation for outsourcing is specialised skills and economies of scale. The independent vendors have the skills and networks that allow the services to be performed more efficiently than they would be if they remained in-house.

Some other services are both performed in-house and outsourced because, by their very nature, they must be provided by an independent supplier such as external auditing or government inspections. Others are outsourced for reasons of scale and network economies such as telecommunications and freight transportation.

POLICIES AFFECTING SERVICES IN THE VALUE CHAIN

Policies can be divided into those that impact either the domestic or the export markets. The value chains covered in this study focus on the tongkat ali extract sold to foreign markets (for the B2B market) and the tongkat ali capsules sold to domestic Malaysian consumers (for the B2C market).

In the export markets, emphasis is given on increasing the products' market share in current markets, penetrating new markets, and educating customers (whether businesses or consumers) on the benefits of tongkat ali in general. Policies identified by the firm that make up the main points of interface for exported products include customs administration (Malaysia and export markets); quarantine and certification for the export of material (Malaysia); safety, efficacy, and security of health products (export markets); and export promotion (Malaysia).

It is noteworthy that the firm has utilised Malaysia's free trade agreement in exporting its product to China. Malaysia, as one of the ten Member States of the Association of Southeast Asian Nations (ASEAN), has an FTA with China known as the ASEAN-China FTA. The firm is able to take advantage of preferential tariff rates for the export of tongkat ali extract to China under this FTA.

However, the firm also spends substantial amounts of time and resources to deal with policies impacting the domestic Malaysian market due to the cost implications of these policies on the business. The policies identified by the firm that comprise the main points of interface for domestic products include R&D; marketing and advertising of health products; safety, efficacy, and security of health products; manufacturing and sale of health products; intellectual property rights; forest management; and customs administration. The firm highlighted key policy issues

that impact its business, two of which (R&D policies and marketing and advertising) are discussed below.

R&D

Government support in R&D has significant positive cost implications on the business. Thus, the government policy to support R&D in herbal products has contributed to the growth of the industry – both in terms of providing R&D grants and policies regarding the commercialisation of IP. The healthcare industry has also been identified by the government as one of the 12 industries to be developed under the National Key Economic Areas (NKEAs) which is led by the Performance Management & Delivery Unit (PEMANDU), a unit under the Prime Minister's Department. The firm has benefited from the actions taken under the NKEAs.

The firm has also benefited from the IP Commercialisation Policy of the Ministry of Science, Technology and Innovation (MOSTI) Malaysia whereby the firm utilises a patent owned by the ministry. Nevertheless, IP infringement is a concern as the firm has to depend on the ministry to take action against any infringing party. This might be time-consuming, which in turn, would affect the firm's business.

In addition, Malaysian public universities and government agencies have been able to provide competitive and commercial R&D services. In general, the R&D services are highly specialised. Thus, the specialised capability of Malaysian institutions need to be strengthened to be globally competitive.

Marketing and Advertising

The NPCB regulates the registration of health products that require marketing and sale authorisation. These include pharmaceutical drugs, over-the-counter (OTC) drugs, and traditional medicine. One of the policy issues in advertising health products is the regulation by the NPCB that prohibits manufacturers of traditional medicine from making medical claims.

As is the general practice worldwide, the certification and the approval processes for drugs is extensive. Thus, the product development takes many years and can cost billions of Ringgit. Because products under this category have to undergo rigorous scientific and clinical trials to prove their safety, efficiency and efficacy, the products are allowed to include claims of medical uses for labelling and marketing purposes. For example, the drug Augmentin containing the antibiotic Amoxicillin can claim that the drug can be used to treat bacterial infections. This is a

strong claim as it says that it is able to treat a bacterial disease and are able to do so due to the backing of extensive laboratory tests and clinical trials.

In contrast, the approval process for traditional medicine is relatively simple, as the process does not require proof that it is effective, only that it is safe to be consumed. Because there is no scientific proof attached to the approval process of traditional medicine, sellers of this type of product are not allowed to make medical claims. This is in contrast to the claims made by pharmaceutical drugs such as Amoxycillin, as explained above.

The products developed by the firm do not fit squarely into the drug and non-drug categories. Beyond ensuring that the product is safe, the firm also conducts R&D to verify that the product is effective. In this sense, its products have undergone relatively more R&D and have complied with higher product manufacturing standards compared to traditional medicine. However, the level of R&D is not as extensive as that for drugs. Even though the firm has invested heavily in the scientific R&D of its products, it is unable to make any medical claims as the products are considered traditional medicine. This, in turn, affects the marketing and sales of the products.

This issue is indicative of the ongoing policy discussions in Malaysia on ways to support an industry that can be highly innovative and is anchored to Malaysia's unique natural assets. This also relates to the ability to support the development of innovative products that is based on R&D and high manufacturing standards.

ENDNOTES

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APPENDIX

Services entering the value chain and their outsourcing status:

Table 1: R&D Stage

Service	CPC Code	Mode of Supply		Nature of Contractor	Reason for Mode of Supply
		In-House	Outsourced		
Product R&D and laboratory tests	81130 – Research and experimental development services in medical sciences and pharmacy 8393 – Scientific and technical consulting services n.e.c.	X	X	Third party specialist	There are many laboratory and biochemical tests required for the R&D stage. Some of these are done in-house while others are outsourced for reasons of expertise and scale economies.
Product registration services		X			
Intellectual property licensing services	Group of 733 - Licensing services for the right to use intellectual property and similar products	X	X	Specialist provider	The patent may be owned either by the firm or an external patent owner.
Government R&D	91114 - Government services to research and development	X	X	Third party specialist	Some of the R&D processes are outsourced to government agencies for reasons of expertise and scale economies.

Source: Based on discussions with the firm

Table 2: Manufacturing Stage

Service	CPC Code	Mode of Supply		Nature of Contractor	Reason for Mode of Supply
		In-House	Outsourced		
Procurement of raw materials	85999 - Other support services n.e.c.	X			
Quality assurance services (of raw materials)	83441 - Composition and purity testing and analysis services	X	X	Certifying organisations.	Required by the organisations which provide the certification of standards (e.g., kosher).
Food manufacturing services	88169 – Other food product manufacturing services n.e.c	X			
Chemical product manufacturing services	8842 - Chemical product manufacturing services	X			
Freight transportation services (of raw materials) by road	651 - Land transport services of freight	X			
Storage of raw materials – general storage	67290 - Other storage and warehousing services	X			
Storage of raw materials – refrigerated storage	67210 - Refrigerated storage services	X			
Cargo handling services	671 - Cargo handling services		X	Specialist provider	Economies of scale
Cleaning services	85330 - General cleaning services		X	Specialist provider	Economies of scale
Specialised cleaning services for machines and equipment		X			
Packaging Services	85400 - Packaging services	X			

Service	CPC Code	Mode of Supply		Nature of Contractor	Reason for Mode of Supply
		In-House	Outsourced		
Sewage water treatment services	94110 - Sewerage and sewerage treatment services		X	Specialist provider	Economies of scale
Engineering services	83310 – Engineering advisory services	X			
Repair and maintenance services of machines and equipment	87156 - Maintenance and repair services of commercial and industrial machinery	X			
Government inspections on fire prevention, health hazards, environmental protection, and other aspects.	91133 - Public administrative services related to mining and mineral resources, manufacturing and construction 91290 - Public administrative services related to other public order and safety affairs	X	X	Government official	Legally required
Medical services	93121 - General medical services		X		
Personnel search and referral services - Recruitment of factory workers	85112 - Permanent placement services, other than executive search services	X	X	Specialist provider	Economies of scale

Source: Based on discussions with the firm

Table 3: Downstream Product Distribution Stage

Service	CPC Code	Mode of Supply		Nature of Contractor	Reason for Mode of Supply
		In-House	Outsourced		
Design of Packages*	83919 - Other specialty design services		X	Specialist provider	Expertise and economies of scale
Conception and design of product	83920 Design originals		X	Specialist provider	Expertise and economies of scale
Cargo handling services	67110 – Container handling services		X		
Customs-related services	85999 - Other support services n.e.c.	X	X	Government officials	Legally required
Land transport of goods (from warehouse to domestic port)	65112 - Road transport services of freight by tank trucks or semi-trailers		X	Specialist provider	Expertise and economies of scale
Water transport (from domestic port to destination port)	65213 – Coastal and transoceanic water transport services of intermodal containers by container ships		X	Specialist provider	Expertise and economies of scale
Air transport (from domestic port to destination port)	Class of 6531 - Air transport services of freight		X	Specialist provider	Expertise and economies of scale
Corporate communications, marketing and public relationship*	83114 - Marketing management consulting services		X	Specialist provider	Expertise and economies of scale
Retail services*	Group 622 - Specialised store retail trade services		X	Specialist provider	Expertise and economies of scale

Service	CPC Code	Mode of Supply		Nature of Contractor	Reason for Mode of Supply
		In-House	Outsourced		
Storage and warehousing services for finished goods*	67220 - Bulk liquid or gas storage services 67290 - Other storage and warehousing services		X	Specialist provider	Expertise and economies of scale
Intellectual property	83960 Trademarks and franchises		X	Specialist provider	Expertise
Business consultant services	Class of 8311 - Management consulting and management services		X	Specialist provider	Expertise in regulatory environment of export markets
Business liaison services	Class of 9113 - Public administrative services related to the more efficient operation of business	X	X	Government officials	Legally required
Advertising services*	83611 - Full service advertising 83620 - Purchase or sale of advertising space or time, on commission		X	Specialist provider	Expertise
Online sale services*	83612 - Direct marketing and direct mail services	X			

Source: Based on discussions with the firm

Note: asterisk * indicates that the service is specific to the finished product (tongkat ali capsules) for the B2C market

Table 4: Back Office and Supporting Services

Service	CPC Code	Mode of Supply		Nature of Contractor	Reason for Mode of Supply
		In-House	Outsourced		
Accounting services and auditing on financial accounts	Group of 822 - Accounting, auditing and bookkeeping services	X	X	Specialist provider	Some services are outsourced due to legal requirement
Tax consultancy and preparation services	Group 823 - Tax consultancy and preparation services		X	Specialist provider	Scale economies
Banking and finance services	71121 - Deposit services to corporate and institutional depositors	X			
Insurance services	Group 713 - Insurance and pension services (excluding reinsurance services), except compulsory social security services		X	Specialist provider	Scale economies
Company secretary services	83990 - All other professional, technical and business services, n.e.c.		X	Specialist provider	Scale economies
Human resources management	8511 - Personnel search and referral services	X	X	Specialist provider	Scale economies
I.T. and information system management	8314 - Information technology (IT) design and development services 8316 - IT infrastructure and network management services		X	Specialist provider	Scale economies
Safety and security services	85230 - Security systems services 85250 - Guard services		X	Specialist provider	Scale economies

Service	CPC Code	Mode of Supply		Nature of Contractor	Reason for Mode of Supply
		In-House	Outsourced		
Telecommunication services	Group 841 – Telephony and other telecommunications services		X	Specialist provider	Scale economies
Utilities	Division 69 - Electricity, gas and water distribution (on own account)		X	Specialist provider	Scale economies
Postal and courier services	Division 68 - Postal and courier services		X	Specialist provider	Scale economies
Legal services	82110 - Legal advisory and representation services concerning criminal law 82120 -Legal advisory and representation services concerning other fields of law 82130 - Legal documentation and certification services		X	Specialist provider	Expertise and scale economies
Government services	91131 - Public administrative services related to agriculture, forestry, fishing and hunting		X	Government official	Legally required