Chapter 1

Introduction

Industrialisation is frequently considered as the replacement of farming and resource extraction by manufacturing and service activity. It is the most popularly tested antidote for development. The development experience of countries reminds that industrialisation has provided the initial stimulus to development all over the world. Industrialisation, which helps mass production raises effective demand and rescues nations from economic recessions. The earliest form of industrialisation occurred at household levels where households converted inputs into output. As the process advances the system adopts division of labour, employs more capital, undertakes innovation and proceeds towards mass production. If we observe the stage of industrialisation of different countries all over the world, it is found that it is not balanced within a country and between countries. The main cause for this imbalance is resource scarcity. Among the various determinants of industrialisation the crucial ones are historical forces, public policy and the availability of infrastructure.

The earliest impetuous to industrialisation has always been triggered off by resource based industries. Among the various resource based industries, the one that has shown significant progress over years are the minor forest product industries. It includes all those industries that use raw materials other than timber, obtained from forests as the basic input. But over the years these minor forest product industries have grown into such an extent that they are now renamed as Non-Timber Forest Produce (NTFP) industries. Ayurvedic medicine manufacturing units (hereafter AMMU’s), paint industry, detergent industry etc. comes under this
sector. The foundations of Ayurvedic industry has been laid down on the bolster of traditional knowledge.

Traditional knowledge (hereafter TK) is used to refer “the knowledge, innovations and practices of indigenous and local communities embodying traditional life styles as well as indigenous and traditional technologies.” It refers to knowledge associated with environment. TK includes a system of classification, a set of empirical observations about local environment and a system of self-management that governs resource use. Since it is well integrated with the environment, it is also called traditional environmental knowledge (Johnson, cited in Dutfield, 2004). TK is built by a group of people through generations and is found in all societies. They are orally transmitted from one generation to other. TK is always adaptive and adaptation is crucial for its survival. TK develops incrementally with each generation adding to the stock of knowledge. Some consider TK same as tribal knowledge, but TK is more than latter. For others TK is age old knowledge which lacks creativity and innovation. Again there are some who consider that TK is not traditional. Many products based on TK are important source of income, food and health care for large parts of the populations of a number of developing countries. Traditional medicines form an important offspring of TK.

Traditional medicines play an important role in healthcare in both developed and developing countries. Traditional medicine is the totality of all knowledge and practices whether explicable or not used in diagnosing, preventing or eliminating physical, mental or social disequilibria and which rely exclusively on past experience and observation handed down from generation to generation (Good, et al., cited in Trotskie et al., 1997) It is the availability and affordability of traditional medicines that attracts people to it (Zhang, 2004). The rapid acceptance
of traditional medicines was augmented especially since it was first recognized by W.H.O at Alma Ata in 1978 and has been globally addressed since 1976 by the Traditional Medicine Programme of the W.H.O. Traditional medicine came into being long before the development of Western medicine that originated in Europe after the development and spread of modern science and technology. Broadly traditional medicine can be classified into four types:

- information commonly known and in constant use by people with or without document (example household remedies)
- information that is well documented and known to public (example Ayurveda)
- information that is not documented or commonly known to a small group (example tribal medicine)
- information known only to a small family (example lada vaidhyars)

The most widely used traditional and alternative therapies are herbal medicines and acupuncture. In Asia, there are formalised traditions such as the Ayurvedic healthcare of India, traditional Chinese medicine, Unani and Tibetan Swa-Rugpa medicine. This have an articulated theoretical framework, well established tradition of training, a recorded material medica and a typical and systematic clinical tradition. Ayurveda, Sidha, Unani and Homeo, together constitute our indigenous system of healthcare. Ayurveda takes the lead both in terms of popularity and acceptance. The word Ayurveda comes from the Sanskrit ‘Ayu’ which means life and ‘Veda’ which means knowledge. Thus Ayurveda means the Science of life. Ayurveda is a medical system comprising the wholeness of life’s harmony and balance addressing the dimensions of an individual’s physical, emotional and spiritual balance. It is holistic because it takes into account at the
outset the social, cultural and political forces that influence the illness. It is not a mere system of treatment but one which teaches how to live healthy. Ayurveda treats the disease not the patient. Further it is considered the world’s oldest system of healthcare. Ayurveda preaches the need for how to live daily life in harmony with cosmic life (Gowans, 2004).

As a medical system, Ayurveda has various characteristics. Firstly, it is a scientific medicine, even though it is not cross culturally recognised. It has a rigidly defined framework. It is grounded on validation and experimentation. Secondly, Ayurveda gives meaning to the meaningless experiences of the sufferer. Thirdly, Ayurveda as a system of healthcare is unchangeable, because its principles are derived from Universal laws of nature. Fourthly, Ayurveda believes that the sufferer cannot be separated from the nature. Human life is a part and parcel of nature, what happens outside also happens inside.

1.1 Ayurveda – Philosophy and Principles

Ayurveda is the holistic vision about life and living which is as ancient as the origin of human civilization. Transmitted down the ages through a disciplined oral tradition for which India was famous for, Ayurveda is revered as part of Adharvaveda. It is also postulated by some as the fifth Veda. Ayurvedic history takes definite shape with the codification of hundreds of slokas of Ayurvedic wisdom into samhitas by scholarly saints Sage Athreya. His disciples and their followers further perfected this wealth of knowledge into a science for living and an art for healing. The contents of Ayurveda cover eight broad areas, Kaya Cikitsa (General Medicine) Bala Cikitsa (Pediatrics) Griha Cikitsa (Psychiatry) Urdhavanga Cikitsa (ENT & eye) Salya Cikitsa (Surgery) Damstra
Cikitsa (toxicology) Jara Cikitsa (rejuvenation) and Vajikarana Cikitsa (virilification).

The philosophical and conceptual fundamental of Ayurveda revolve around the *Tridosha-Siddhanta* — the doctrine of the three doshas (doshas means forces). Man is a dynamic system controlled by three primary forces called Vata, Pitta & Kapha. Vata is often equated with the nervous system or nerve force, pitta with digestive systems, enzymes, hormones and the heat regulating mechanism and finally kapha deals with unctuousness of the body, smooth working of joints, and general stability of the body. This system is unique to Ayurveda and is not easily comparable to other systems of medical thought. Health is the state in which the doshas are in equilibrium and illness is the disturbance of the equilibrium either towards its excess or insufficiency. Healthcare therefore is the maintenance of this balance between the doshas through an appropriate life style in diet and rituals. This implies that the art of healing is bringing body back to balanced state from imbalance. Obviously the treatment for the imbalance caused by excess of doshas will be different for the treatment for the imbalance brought about by its insufficiency.

Doshas being central to the physical system, an individual’s constitution or Prakriti is determined by the combination of these three doshas. Each combination is different from the other, even though there may be a predominance of one of the other doshas in the constitution. It is this differentiation that imparts uniqueness to an individual. Therefore evaluation of the Prakriti is a cardinal feature in determining the course of treatment for illness as well as the lifestyle for sustaining health. This is the reason why Ayurvedic treatment varies from person to person.
The Ayurvedic tradition views the world in terms of varying configurations of the ‘five states of matter’ (*panchaboothas*) present in all objects. These five states are viewed in an descending order and are symbolised by the words *akasa* (space), *(sound); vayu* (wind), *(touch); agni* (fire), *(sight); ap* (water), *(tongue); and *prithvi* (earth), *(nose). They are present in the substances, living and non-living in varying proportions. And just as the atomic configuration of a material determines its forms and properties, it is these properties that determine the form and qualities of every object. All manifestations small or big, subtle or gross, micro or macro, internal or external, organic or inorganic, living or non living, unmodified or modified are created by a permutation and combination of those basic categories (Unnikrishnan, 2004).

**Figure 1.1**

*Four Limbs of Ayurvedic Treatment*

![Four Limbs of Ayurvedic Treatment](image)

As an industry, AMMU’s was totally household oriented in the beginning but over years they have grown into mechanised manufacturing unit. The manufacturing of Ayurvedic medicines in the modern mechanised form is over a century old in India. All major manufacturers were established between 1890 and 1920. Major firms in India include Dabur India, Himalaya Drugs, Arya Vaidya Sala Kottackkal, Zandu and Baidyanath. Nonetheless the Ayurvedic industry is highly unorganised and mostly in small scale sector. There are about 7000 Ayurvedic
manufacturers in India with less than 10 having a turnover of more than Rs. 50 crores. Around 25 companies have an annual turnover between Rs. 5 crore and Rs. 50 crores, while remaining 6965 companies have a turnover of less than Rs. 5 crore. The global demand for herbal medicines has grown steadily at a rate of 10 percent to 15 percent in the last decade. Hence there is a rapid increase in the number of manufacturing units. Among the leading Ayurvedic medicine manufacturing units in India, Kerala has a special place both in terms of quality and quantity. Kerala has the second largest number of manufacturing units in India (16 percent of the total), next to Uttar Pradesh and followed by Gujarat. The State has been considered as the potential hub of Ayurveda in the country. The process of Ayurvedic manufacturing in large scale began in a formal manner in 1902 with the launch of the world famous AVS, Kottakkal. Since then the number of registered manufacturing units have increased from 516 units to 962 units in 2001 and to 1245 units in 2007. The number of unregistered manufacturers may come around 500. The Ayurvedic industry in the state which is over 100 years old has undergone thorough transformation with regard to the method of production, products produced, sales, mechanization, etc.

1.2 A Theoretical Overview of the Study

The economists have propounded theories to explain the significance of resource based industries. Barney (1991) and Penrose (1959) developed the Resource based theory which states that firms possess resources, a subset of which enable them to achieve competitive advantage, which lead to superior long-term performance. Resources that are valuable and rare can lead to the creation of competitive advantage. That advantage can be sustained over longer time periods to the extent that the firm is able to protect against resource imitation, transfer, or substitution. In general, empirical studies using the theory have strongly supported
the resource-based view. Resource wealth theory developed by Jourdan (2006) asserts that resource base should provide an economy with enormous benefits. The export of these resources generate foreign exchange which can be used to finance trade imports, finance loan capital for infrastructure and private investment, the accumulation of reserves and foreign investments. Resource-based operations and the associated profits can be taxed generating revenue. This in turns allows the state to invest in physical infrastructure and social infrastructure. The state can also directly invest in productive infrastructure as investment capital. Employment is generated both within the resource sector itself and in support industries, and then within government and organisations building, servicing and operating the social and physical infrastructure. Further linkages are also beneficial as this employment and production creates a larger domestic market for goods and services.

Another significant theory developed by Porter (1985) known by the name value chain model helps to understand the activities through which a firm develops comparative advantage. Porter asserts that when all processes are completed the producer offers the finished product to the customer at a price which is more than the cost of all activities undertaken. This margin is called the profit. The value chain is often drawn to illustrate the general flow of the activities necessary to produce the product, market the product and provide customer service the primary activities. The value chain also separates out the support activities. The principal idea behind Porter's value chain is to identify the strategically relevant activities performed by the business, and to analyse each activity for its role in creating value. In many situations requiring strategic decisions, the value chain is a far more useful tool than standard financial statements.
Gereffi and Korzeniewicz (1994) developed the Global Commodity chain approach which has its origin in the world system analysis. Here the specific processes are connected by nodes and the nodes are interconnected together to form a network. The GCC theory has its roots in the dependency theory which states that Western Capitalism relies on poor countries for raw materials, demand and investment opportunities. The development of the core nations (rich countries) occurs at the expense of the peripheral countries (poor). However the GCC theory differs significantly from the dependency theories. In the dependency theory we study about focus of power and forms of ownership of productive resources. In GCC we study about new forms of industrial organisations and their systematic coordination. Dependency theory studies about regions whereas the GCC model studies about both regions and sectors. GCC theory attempts to provide a micro as well as macro picture of global production process. It explains why certain agents in the given chain are able to earn higher profits in the process of production. The theory is still in its infancy but has attracted a lot of researchers and research institutions such as MIT, IDS in Sussex, and Centre for Development Research in Copenhagen and School of Development Studies at University of Natal.

1.3 Review of literature

This section is intended to provide an overview of the available literature on the subject. Although much of the literature is spread on the cultivation of medicinal plants and formulation of Ayurvedic medicines, only limited studies are available pertaining to the Ayurvedic industry of Kerala.

1.3.1 Studies on Industrialisation

Industrialisation is regarded as a part and parcel of development. It is the most popularly tested solution for development. The development experience
of countries reminds that industrialisation has provided the initial stimulus to
development all over the world (Cherunilam, 1994). Industrialisation, which helps
mass production raises effective demand and rescues nations from economic
recessions. The earliest form of industrialisation occurred at household levels where
households converted inputs into output. This phase is called ‘proto-
industrialisation’ (Pillai, 1994). Later due to the inducement of supply and demand
factors, by the increase in division of labour and specialisation and mechanisation it
develops into a modern industry. But the disturbing aspect behind industrialisation is
that it is never even, across a nation and between nations (Awasti, 1987).

One of the major causes for this uneven growth is the resource
base. Rich deposits of resource base can trigger the process of development where as
others will become industrially ‘bare-footed’ (Muraleedharan, 2002). The impact of
this industrialisation on development depends upon the linkages and innovations that
it brings. Hirschman (1958) developed this into a comprehensive theory. It is argued
that higher levels of growth can be achieved through the development of one or
many regional centres of economic growth.

Industrialisation creates linkages in many ways. Perrox (1988)
distinguishes three such effects. If a firm exerts considerable influence on the other
firm it is called induction effect. If the development of a particular firm leads to the
increase in the demand for the products of another dynamic enterprise it is called
dimension effect and finally if a firm induces another firm to undertake innovation it
is called innovative effect.

Perrox (1988) divides industries into three groups such as (a) entirely
new industries (b) modern industries and (c) traditional industries. The first two
groups exert commendable influence on the third and force the latter to undertake innovation.

There are several determinants of industrialisation which can be broadly classified into three viz., historical factors, public policy and infrastructure (Awasti, 1995). In India early industrialisation took place in port towns like Mumbai, Kolkotta and Madras which were the captive centres of Britain. The easy availability of resources, local skills and existence of political stability enabled the colonial powers to select and erect their industrial empire in these areas. The role of public policy can be clearly seen in the Second Five Year plan which entrusted a strategic role to public policy and which finally led to the public sector led industrialisation. Public policy thus became instrumental to industrial development (Ahluwalia, 1985).

The third major factor was the provision of infrastructure. Hirschman called this, development via social overhead development (Hirschman, 1958). But in India these determinants could not exert uniform effect on all ports leading to large scale regional disparities.

1.3.2 Studies on Resource Based Industrialisation

As mentioned earlier, the initial stimulus to industrialisation everywhere was triggered off by resource based industries. Jha and Sastri (1993) believed that rich resource base is always conductive to development. The major resource based industries in India include, cement, chemical industries, cotton textiles, fertilizer, gas industry, electricity, iron and steel, locomotives, petroleum refining, sugar etc.

Industrial structure of Kerala is characterised by traditional labour intensive firms, low investment in modern industries and poor infrastructural
facilities. Kerala holds relatively a backward position in the industrial map of India. The product structure of Kerala continues to be dominated by traditional and old industries which are resource based. Modern industries could not fix their roots in Kerala. These natural and resource based industries produce consumer or intermediate goods such as coir, cashew, handlooms, Khadi and handicrafts, bamboo minor forest products, food products etc. The share of Kerala in the gross output in the factory sector of India comes to only 2.19 percent whereas share in fixed capital is less than 1.69 percent. The contribution to the total employment in the factory sector is not significant. Industrial sector contributes 11.9 percent to the state exchequer (Meera Bai, 2008).

Mirdul Eapen (1999) studied about the problems and prospects of Kerala’s oldest resource base industry, cotton textiles. The study showed that there is a vibrant, innovative modern and external market oriented handloom sector in the north and a traditional sector in south Kerala catering to the requirements of the market. The sector had only limited growth during the period. Mohandas (1999) studied about the beedi industry in Kerala which during the initial days depended neighboring states for tender leaf and tobacco. The strong labour movement in the North Kerala created a healthy climate for the growth of the industry. But the predominance of the informal sector and the new laws pertaining to public smoking are set backs to the industry. Mani (1999) studied about the prospects of tile industry in Kerala. The availability of clay led to the heavy concentration of the industry. But the rise in cost of production and the changes in the house construction pattern led to the falling prospects of the industry. George Tharian (1986) studied about the highly commercialized rubber based industries in Kerala. The author argues that state could not fully exploit its advantage in the raw material availability.
Rajasenan (1999) described the struggles in the fisheries sector which is caught between modernity and sustainability. He believed that the crucial issue in the sector is the heavy competition between the traditional and modern section in the fisheries sector. And this rift has led to the depletion of marine resources. Varma et al., (1999) studied about food processing industry the most promising sunrise industry in the State. Although the contribution of the food processing sector to the output, value added and employment increased in 1990’s, it is not a positive growth. Mathew (1999) touched upon bamboo sector of the State. He suggested the formation of bamboo clusters called bamboo village, which must be managed by bamboo workers themselves for the future growth of the industry.

1.3.3 Studies on the Ayurvedic Industry in the State.

Thomas Philip (1999) studied about the minor forest products of the state with special reference to the AMMU’s of Kerala. He found that before the introduction of monopoly procurement and marketing of non timber forest produce (NTFP) through cooperative societies, the NTFP trade was dominated by private traders. Thus the growth of AMMU’s has positively contributed to the improvements in the standard of living of the tribals through the establishment of the Federation. Gauthem et al., (2002) sighted the export potentialities of the traditional medicines like Ayurveda, Sidha and Unani. To ensure continuous supply or export of medicines a contract farming of medicinal plants should be encouraged because the biggest threat to the industry is the scarcity of medicinal plants. Another mainstream work on the industry was by Banerjee (2002). She argues that modernization of Ayurveda undertaken by both the civil society has been governed by a *pharmaceutics episteme* which focuses on retaining the usefulness of Ayurveda.
as a mere supplier of new medicine while dismissing its world view on body health and disease. Abraham (2003) attempted to study the mode of cultivation and distribution chain in the medicinal plants to assess the returns at each stage. Through supply chain analysis she came to the conclusion that degree of exploitation is considerable in the case of cultivators and the growth of AMMU’s has led to over exploitation and mismanagement in the cultivation and collection of medicinal plants. Sankar (2002) examined the existing provision of health care and the factors deciding the choice of health care provider. By studying the health care structure of Alapuzha District of the state of Kerala, she came to the conclusion that willingness to pay for health care exceeded the ability to pay even in the case of Ayurvedic treatment. KSIDC (2004) undertook a comprehensive study on the Ayurvedic industry in the state by highlighting the strength, weaknesses, opportunities and threats faced by the industry. They developed an action plan in which they reminds that by developing Ayurveda and exploiting the situation the sector can really become a “cash-cow” for India. There should be a comprehensive well integrated effort from the part of the Government, industry and educational institutions for this.

A study of the Ayurvedic industry in its organised sector was undertaken by Harilal (2004). He selected leading nine players in the industry and studied their productivity and estimated the financial performance. His analysis of the linkages of the industry revealed that the industry has strong backward linkage with the medicinal plants sector and forward linkage with the tourism sector. Although the share of raw materials in the total output has declined, the price of Ayurvedic medicines has gone up. But a similar has hike in price did not occur in the case of medicinal plants.
Commenting upon the characteristic features of the industry, Agnivesh (2002) opined that in this industry the production was in anticipation of demand rather than according to demand. He also commented that the industry is confronted with the problems like adulteration, escalating price of drugs, unscientific changes made in the formulations, and excessive use of preservatives. Ayurvedic medicines were produced in kitchens and when demand increased, Arya Vaidya Sala Kottackkal (Ravi Kumaran, 2003) started the mechanised production in 1967 in Kerala.

1.3.4 Studies on Commodity Chain

The value chain describes the full range of activities which are required to bring a product or service from conception, through different phases of production (involving a combination of physical transformation and input of various producer services) delivery to final consumer and final disposal after use. Commodity chain analysis developed out of world system theory is a network of labour and production processes whose end result is a finished commodity (Hopkins and Wallerstein, 1986). The commodity chain consists of several stages called boxes or nodes. The study of commodity chain is of great importance because of the following reasons: modern production is characterised by division of labour where there is large scale specialisation of labourers and production processes. This has improved the competitiveness in the manufacturing system. Commodity chain helps to study this competitiveness. Commodity chain helps to improve efficiency which helps penetration into global markets. Finally value chain is important to find the inherent strengths and weaknesses of a system which helps sustainability. Value chain analysis is also known by the name supply chain analysis. Several studies on value chain are reviewed in the following section.
Talbot (1997) focused on the dynamics of coffee market in three East African nations viz, Kenya, Tanzania and Uganda through a global commodity chain approach. They studied the marketing chain before and after liberalisation and found the coco basket commodity chain is simpler and involve six stages and fewer actors: extractors, producers, household traders, retail vendors, intermediaries and final consumers. Raviraman (2001) studied commodity chain with special stress on tea cultivation and analysed the material flows, mode of transfer, relations of production and production organisation. In tea trade, fabulous profits were made and promptly repatriated to Europe. The plight of the workers involved, especially women pluckers was vulnerable. Hence he concluded that there was a surplus drain in tea cultivation which went against the workers. Humphery (1999) studied about the value chain in food exports. He identified the actors in the chain and the governance structure that regulate the relations between them. He observed that in some chains such as in supermarket fresh vegetable trade quality and food safety requirements have been satisfied using tightly managed chains. Gereffi\(^8\) (1994) observed the apparel industry in USA and developed the organisation of buyer driven global commodity chain (GCC). He highlights that a GCC should possess three characteristics-an input output structure, structure of production network and nature of its governance structure. His study concluded that there is heavy concentration and consolidation of buying power in US apparel retail trade. This study reminds that sustained competitiveness in global apparel industry involves continual changes in economic roles and capabilities (Gereffi, 1994).

Hill (1989) analysed a producer-driven commodity chain in his comparative study of how Japanese and US car companies organise, manufacturing in multilayered production systems that involves thousands of firms including
parents, subsidiaries and subcontractors. Doner (1991) extended this framework to highlight the complex forces that drive Japanese automakers to create regional production schemes for the supply of auto parts in a half–dozen nations in East and Southeast Asia. Henderson (1989) in his study of the internationalisation of the US semiconductor industry also supported the notion that a producer–driven commodity chains have established an East Asian division of labour.

Pelupessy Wim (2001) analysed from a global commodity chain perspective why there are generally imbalances between coffee demand and supply and what could be done to solve the problem in an acceptable way. It appears that presence of stable and unstable oligopolies in the different chain segments, the widespread use of non-price competition and dynamic consumer trends are the root of the problem.

1.3.5 Studies on Productivity and Production Function Estimates

The output of an industry is a net result of an efficient combination of different factors of production. The productivity of the Indian industry can be measured in terms of the productivity of its consistent factors of production such as labour and capital. Partial productivity as they are called does not provide a complete picture of the growth. This aspect has been covered up by the total factor productivity growth (Ahluwalia, 2000). Krishna (1987) in his review of studies during the period 1960s and 1970s observed that all studies estimated that the total factor productivity decelerated during the reference period. Ahluwalia (1985) observed a decline in productivity during 1970s and a turnaround in the first half of 1980s. This improvement in productivity was solely due to labour component. However this finding was refuted by several authors (Balakrishnan and Pushpangadan, 1994). The studies on total factor productivity uses the wholesale
price index of manufacturing products as the deflator (Goldar, 1986) where as Balakrishnanan and Pushpangadan advocate the use of double deflation method where as Rao (1996) uses single and double deflation of value added to measure productivity. Several works are available on the productivity estimates. The most famous of them are the Cobb-Douglas production function and the C.E.S (Constant Elasticity Substitution) production function. The former estimates the marginal product of labour and capital and returns to scale where as C.E.S production function was popularised by Arrow et al., (1961). One of the earliest studies on Indian manufacturing production function is that of Murti and Sastry (1957) who estimated Cobb - Douglas production function with cross section data for the industrial sector as a whole and for some group of industries for the years 1951 and 1952. The result indicated that constant returns to scale as the sum of two elasticities was not statistically different from unity. Diwan and Gujarati (1968) showed that Indian industries enjoyed large economies of scale. Using the constant elasticity of substitution Gujarati and Diwan (1968) showed that high economies of scale existed during 1946-58.

Das (2003) examined the productivity performance of Indian manufacturing under varying trade regimes. The analysis focuses on the overall period of 1980–2000 and four sub-periods to reflect the shifts in trade policy regime. The study showed that there is no evidence of much change in TFPG following liberalisation. As in 1980’s factor accumulation rather than productivity growth accounts for most of the output growth. Goldar et al. (2004) analysed the effect of ownership on the efficiency of engineering goods industry in India. They took three categories of owner’s viz., firms with foreign ownership, domestically owned private firms and public sector firms. It was found that foreign firms in India have
higher technical efficiency than domestically owned firms. No significant difference was found between the domestically owned private and public sector firms. There were signs of a process of efficiency convergence where by the domestically owned private firms were trying to catch up with foreign firms in terms of technical efficiency.

Balakrishnan and Babu (2004) investigated the trajectory of growth and its relationship to the distribution in Indian industry in the 1990’s. The study primarily addressed the relationship between output growth, investment and profitability which helped to provide a broad and consistent characterisation of industrial development. The study found that there was a faster growth of output across manufacturing since 1991 which was largely attributed to the growth of investment.

Asid and Saiman (2006) focused on the issue of total factor productivity growth (TFPG) for both 3 and 5-digit level and the performance of resource-based industries (RBIs) in Malaysia for the period 1981-1997. By using the neoclassical Cobb-Douglas production function and traditional growth accounting methodology (Solow-residual) with time discrete Tornqvist weighted value share index, the TFPG estimation for both classifications showed an interesting pattern in terms of sign and fundamental composition. The development of RBIs during the period under study is mostly input driven (moving towards a capital intensive industry), where supply effect of unskilled labour assimilates to the underlying value added growth over time.

Thus the foregoing discussion reveals that though there are a number of studies on the Ayurveda, supply chain and productivity, so far only little literature is available covering different aspects of the Ayurvedic industry. Hence an attempt
is made to analyse the different aspects of industry in the context of data available with respect to the Ayurvedic industry in Kerala.

1.4 Statement of the Problem

The twentieth century witnessed a revolution in health care. The dramatic decline in mortality, the increase in life expectancy and the eradication of small pox are the highlights of this success. This was largely contributed by the scientific innovation of Western medicine. Despite this success, nearly one third of the world population lacks access to this medicine as it is not affordable to them. In contrast, it is estimated that traditional medicines is widely available even in remote areas. Due to its local availability and low cost it is affordable to vast majority of people. According to the WHO records 80 percent of the world population depends directly or indirectly on herbal medicines. In India according to Government of India publications, 70 percent of the population uses traditional Indian medicine. This growing demand for traditional medicine has accelerated the growth of Ayurvedic medicine manufacturing units in the Country.

Kerala holds relatively a backward position in the industrial map of India. The product structure of Kerala continues to be dominated by traditional and old industries which are resource based. Modern industries could not fix their roots in Kerala. These natural and resource based industries produce consumer or intermediate goods such as coir, cashew, handlooms, khadi and handicrafts, bamboo, minor forest products, food products etc. The Ayurvedic industry which sprang up 100 years ago has been contributing substantially to augment the phase of industrialisation, promotion of employment opportunities, provision of better health care and earning global attention. From the earlier review of the works undertaken
on the area it is clear that there are three major studies that focused on the industrial aspects of the industry.

Work done by Harilal (2004) studied about the Ayurvedic industry in the organised sector. He identified top nine firms and analysed their performance. But it is to be noted that large number of the firms lie in the unorganised sector and are small scale manufacturers. One cannot portray a complete picture of the industry by avoiding them. Abraham (2003) studied about the profitability and exploitation in the medicinal plant cultivation and does not deal with the industry directly. The sectoral study undertaken by the EXIM Bank (2002) attempted to point out the strength, weaknesses, opportunities and threats faced by the Ayurvedic industry. Hence it is clear that there is a clear research gap. The present study attempts to bridge this gap.

In this backdrop, a systematic study of the Ayurvedic industry assumes importance. The studies conducted earlier are scanty and do not portray the economics behind the manufacturing. The present study is an attempt towards this direction. The specific questions to be addressed herein are the following.

What factors contributed to the upcoming of Ayurvedic medicine manufacturing units in Kerala? What are the specific characteristics of the industry? How have this industry performed over years? It is widely believed that the prices of Ayurvedic medicines have increased due to the rise in the prices of the medicinal plants. Is this attributed to the scarcity of medicinal plants or due to the existence of intermediaries in the trade? What can be done to correct this malady? Looking into the structure of the Ayurvedic industry in the state it is found that 99 percent of the firms are either small scale or medium scale units. What are the major problems faced by these units in particular and industry in general?
1.5 Objectives of the Study

The study attempts to analyse the growth and performance of AMMU’s in Kerala. The specific objectives of the study are:

1. To trace the evolution and record the growth of Ayurvedic medicine manufacturing units in Kerala.

2. To identify the nodes in the supply chain of medicinal plants trade in Kerala to compute the value share of each player and to develop a chain which can reduce the raw material cost.

3. To estimate the partial and total factor productivity indices of the industry.

4. To find out the problems and future prospects of the Ayurvedic medicine manufacturing units with special reference to small and medium sized manufacturers.

1.6 Data and Methodology

1.6.1 Type and Sources of Data

Both primary and secondary data have been used for the study. Primary data was collected using sampling technique. The total number of registered Ayurvedic medicine manufacturing units in Kerala is 1245. Of which, six units having an annual turnover of more than Rs. 3 crores were categorised as large units and all of them were included into the sample. From the remaining 1239 units, 123 units were randomly selected for detailed study. The selected units were classified as tiny/small and medium based units on the basis of their turnover. The information from these units was elicited through personally attended well designed questionnaire.

Data on the prices of medicinal plant for the estimation of value share and for tracing the direction of supply chain was collected through
participatory method from the Badagara Market\textsuperscript{10} in Kozhikode district (oldest primary medicinal plant market in Kerala) and from Thrissur district (only minor market for medicinal plants in the state).

Secondary data required are collected from various sources such as Annual reports of leading Ayurvedic firms, Registrar of Companies, Kochi; Confederation of Indian Industry, Kochi; District Industries Centre, Thrissur; Directorate of Ayurveda, Thiruvananthapuram; Drug Controller’s Office, Thiruvananthapuram; Economic Review, Government of Kerala; Handbook of Statistics on Indian Economy, RBI; Reserve Bank of India Bulletins, publications of Indian System of Health and Homeopathy (ISM& H), New Delhi; and Ministry of Health and Family Welfare, Government of India. Secondary data for estimating productivity have been taken for the period 1996 - 97 to 2007 - 08.

1.6.2 Tools of Analysis

Primary data is analysed using simple statistical tools such as tables, percentages and averages. Compound growth rate (CGR) is calculated to record the growth of the selected economic variables. Partial productivity indices such as capital and labour productivity are estimated. Total factor productivity is estimated using the Kendrick index. Cobb - Douglas production function has been estimated to find the relative contribution of inputs in total output.

1.7 Limitations of the Study

This study has the following limitations: statistics relating to the several aspects of the industry are scattered and inadequate. Many of the manufacturers were not ready to reveal information relating to various aspects of their performance even after repeated efforts. The study is based on a sample.
Hence the limitation applicable to any sample study will be applicable to the present study also.

1.8 Organisation of the Study

Apart from the introductory chapter there are six chapters in this work. The evolution and growth of the Ayurvedic sector is dealt with in the second chapter. An attempt is made in the third chapter to study the growth of Ayurvedic industry in the state. The fourth chapter attempts to identify the nodes in the supply chain of medicinal plants trade in Kerala and also to calculate the share of each player in final value of output. The fifth chapter deals with the productivity measurement of the Ayurvedic industry in the state. The sixth chapter is devoted to analyse the problems and prospects of the AMMU’s with special reference to the small scale manufacturers. The emerging conclusions are presented in the seventh and final chapter.

Endnotes

1. Vaidya means physician and lada vaisdhyars denotes physicians who were well versed in treating horses.

2. Vedas are hymns, prayers, teachings and manuscripts brought by Aryans invaders who came to the Indian sub continent around 1500 B.C. Atharva veda is the fourth veda.


5. Athreya, a sage who developed Ayurveda.

6. Tridosha sidanta the basic principle of Ayurveda which means body constitute 3 components vata, pitta and kapha.

7. Value share meaning supply share.

8. A popular economist who writes extensively on commodity chain.

9. All AMMU’s have to get registration from the Drug Controller’s Office; Thiruvananthapuram as per their data there are 1245 manufacturing units in Kerala as on 2007.

10. Badagara is situated in Northern Kerala, which was known for Kalaripayittu, the martial art of Kerala. The wounds and injury thus caused during the Payitta had to be treated using medicinal plants, which led to the Badagara medicinal plant market.