



Study on Wine Policies, Regulations and Standards in Maharashtra, India

S. S. Gawande, Priyanka Shukla, Atul Anand Mishra

Department of Food Technology, Faculty of Engineering and Technology, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad, India

Email address:

shreeramgawande@yahoo.com (S. S. Gawande), priyankashukla27dec@gmail.com (P. Shukla),

avanish.kumar@shiats.edu.in (A. A. Mishra)

To cite this article:

S. S. Gawande, Priyanka Shukla, Atul Anand Mishra. Study on Wine Policies, Regulations and Standards in Maharashtra, India.

International Journal of Food Science and Biotechnology. Vol. 1, No. 1, 2017, pp. 6-16. doi: 10.11648/j.stpp.20170101.12

Received: MM DD, 2017; **Accepted:** MM DD, 2017; **Published:** MM DD, 2017

Abstract: During recent years, the wine industry has become increasingly dynamic due to competition among wine organisations worldwide. In order to be competitive, many Indian wine organisations followed Wine Policies and Regulations and maintaining standards for quality wine production. Maharashtra is one of the typical states of wine- manufacturing in India which rank 1st. While wine consumption in India remains low the market has grown and developed considerably at growth of 25-30% annually in 2013. Wine industry in India is estimated to achieve 7.2 cr litres of wine consumption by 2020 at growing rate of 18%. The common average growth rate was 33.2% at the 2013. Thus, this study investigates the effectiveness of the implementation of Wine Policies, Regulations and standards to determine whether wine organisations consolidate the fundamental requirements of the domestic and international trade. Ten (10) wine organisations situated in Maharashtra which are currently following Wine Policies and Regulations were chosen as the research sites. A questionnaire and documents (Published & unpublished) based on the research was used as an instrument for data collection. Based on the study results, this study recommended that wine organisations should maintain the standards for their wines and certification and licensing. The significance of this study is to contribute a valuable guideline to Indian wine industry to consolidate their performances on the implementation of Wine Policies and Regulations increasing production under the standards specification to trading in international market.

Keywords: International Market, Policies, Regulations, Standards, Implementation, Wine, Guideline

1. Introduction

The history of wine grape cultivation is closely related to rise and fall in growth of wine industry. It was long road for the Indian wine industry to recover from the devastation at the end of the 19th century. Unfavorable religious and public opinion on alcohol developed and culminated in the 1950s when many of India's state prohibited alcohol. Vineyards were either uprooted or encouraged to convert to table grape and raisin production. Some areas like Goa continued to produce wine but the product was normally very sweet and with high alcohol levels. After a long pause several years the turning point of the modern Indian wine Industry occurred in early 1980s with the founding of Chateau Indage winery established in 1985, studies wine and brought new technology from European countries. With it the wine grape cultivation also took a turn, with assistance of French

winemakers. Chateau Indage began to import *vitisvinifera* grapes varieties like Cabernet Sauvignon, Chardonnay, Pinot noir and Ugni Blanc and started making still and sparkling wines. Other wineries soon followed as the emergence of India's growing middle class fueled the growth and development of the Indian wine industry. With the growth of wine industry wine grapes cultivation began to increase to provide wine grapes locally. Many existing table grape growers also started cultivation of wine grapes and many new vineyards established for wine grape cultivations, Champagne Indage (CI), Grower, Sula wine companies established vineyards for wine grape cultivation for indigenous production of quality wines in the country. Some wineries also did contract for getting wine grapes with growers having small vineyards started up wines grapes cultivation as they were sure about the sale of their produce.

For wines there is a huge potential in Indian market and

for export market there is increasing popularity of Indian wine. Indian wine exports growing up every year. As words are getting spread very fast creating awareness of Indian wines in International market. The wine market is growing at 25-30% a year. The per capita consumption in India is only 0.07 litre/person/year, the biggest consumption up to 80% is however confirmed to major cities like Mumbai (39%), Delhi (23%), Bangalore (9%) and the foreign tourist dominated state of Goa (9%), where rest of India has only 20% consumption. Not only has the number of imported wines increased exponentially, the Indian producers, too have introduced a number of neck labels and wine styles. Area under wine grape cultivation is increasing in state like Maharashtra, Karnataka and Tamil Nadu in view of their policy measures for the promotion of wine grape cultivation for diversification and wine making. (Adsule *et al.* 2013) [1]

Maharashtra is a leading state in production of Grapes in the whole country. In regards to agriculture land under grapes cultivation & grapes production, Nashik & Sangli districts are at forefront in the State. Maharashtra ranks first in wine grape cultivation with an area of 8,000 acres, which formed a proportion of 91.95 per cent in the country's wine grape area during the year 2007. It is one of the important states growing different varieties of wine grape. Cultivation of wine grape is extensively carried out in the belts of Nashik, Pune, Sangli, Solapur, Latur, Buldhana, Osmanabad and Ahmadnagar districts (Kale 2007).

The State Government has specifically provided in Maharashtra's Industrial Policy, 2001 that Wine Parks will be set up in Sangli and Nashik districts to encourage the Wine Industry in the state. In fact, Maharashtra Industrial Development Corporation has already initiated the action for setting up of Wine Parks in Sangli and Nashik districts. Accordingly, to give impetus to the grape processing and wine industry in the state, preparation of a separate policy was under active consideration of the State Government.

In the international wine trade Wine Laws enforce the regulations about the additives and processes that can be used in winemaking, which are collectively known as oenological practices. The set of wine regulations covers the details of oenological practices that are permitted within a particular country and regimes that limit additive use such as organic wine production and environmentally friendly wine production, regulations of wine importation, and scope for multilateral and bilateral wine trade agreements, and labeling of additives as well as of wine produced domestically or imported from other jurisdictions (Seth 2011).

Wine is one of the functional fermented foods that have many health benefits. Commercially, wine is produced by the fermentation of yeast which involves the conversion of sugar to alcohol. Wine can act as a nutrient supplement for seasonal fruits and vegetables throughout the year. Using fruits and vegetables having medicinal and nutritional value as a substrate for wine production, the health benefits of them can be improved widely. Ginger and Indian gooseberry, which are known for its high medicinal and nutritional value are used as the substrate here. Fermentation is carried out with

Saccharomyces cerevisiae commonly known as baker's yeast. Daily monitoring was done to study the composition and characteristics of the wine. The wine produced resembled the commercial wine in terms of its composition, taste and aroma.

At present 92 wineries are established in India and total production of wine is 25 million litres, Vineyards in India range from the more temperate climate of the north-western state of Punjab down to southern state of Tamil Nadu. Many of India's wine regions fall within the tropical climate belt. Vineyards are then planted at higher altitudes along slopes and hillside to benefit from cooler air and some protection from wind. Some of India's larger wine producing areas are located in Maharashtra, Karnataka and Tamil Nadu. The altitudes of India's vineyard typically range from around 660ft (200 m) in Karnataka 984ft (300 m) in Maharashtra, Nashik was famous for its table grapes for a very long time and now Nashik valley which is 2000ft above the sea level between 19-33° to 20-53° North altitude and 17-16° to 75-6° East longitude is identified for wine grape growing.

List of wine industries situated in Maharashtra:

1. Sula Vineyards, Nashik Vintners Pvt. Ltd.
2. Flamingo Wines Pvt. Ltd.
3. Renaissance Winery Pvt. Ltd.
4. Valle-de-vin Pvt. Ltd.
5. N. D Wines Pvt. Ltd.
6. PernodRicard India Pvt Ltd.
7. Red wing winnes Pvt. Ltd.
8. Vinsura winery Pvt. Ltd.
9. Sigma wines Pvt. Ltd.
10. Vallone Vineyards Pvt. Ltd.

Justification

Indian wine industry is growing at fast pace with increasing demand domestic and international market. Maharashtra ranks 1st in wine production and grape cultivation in India. Policies and regulations for wines govern by states authorities for trades need to be reform govern for promoting Indian wine. Standards and practices for safe and quality wine production are not specifically stated, though BIS has given some set of standards studied in this dissertation with the following objectives

1. To study the present scenario of wine production in India,
2. To study the wine policy and regulations in Maharashtra,
3. To study the standards for quality and safe wine production.

2. Review of Literature

This chapter deals with the various reviews about different wine practices and regulations.

Anderson *et al.* (2001) reviewed that the international trade in wine has been boosted by increasing demand mainly in Asian countries which until recently were only marginally involved in wine imports, and production is increasing in some importing countries (China, India, Brazil) and in those

with considerable potential (Ukraine). Undoubtedly, the growth of the international wine trade makes the wine industry “an intriguing case of globalisation at work”.

Seth (2011) reported that the international wine trade Wine Laws enforce the regulations about the additives and processes that can be used in winemaking, which are collectively known as oenological practices. The set of wine regulations covers the details of oenological practices that are permitted within a particular country and regimes that limit additive use such as organic wine production and environmentally friendly wine production, regulations of wine importation, and scope for multilateral and bilateral wine trade agreements, and labeling of additives as well as of wine produced domestically or imported from other jurisdictions.

Mariani *et al.* (2012) contributed to the understanding of international wine trade complexities, focusing on the period 2000–2011. Since 2000 the wine trade has grown significantly and its structure has experienced major changes. Such changes are shaping the current competitive scenario of the wine market and are the base elements for its future development. The paper analyses the growth of world wine imports, considering all wines together and the single categories recognized by global statistics (bottled, bulk and sparkling wine). It then describes the changes in the geography of importers with the emergence of new markets and the competitive performance of the main suppliers. The bulk wine trade, the re-export of wine and the exposure of trade flows to trade barriers are also analyzed in detail. Finally, on the basis of the dominant trend in wine consumption and changes in the supply chain, the critical issues arising from analysis are examined, with the need for further research being underlined.

Srivatsan and Sharath (2012) stated that India ranks 77 in terms of wine consumption in the world. The country accounts for 0.8 per cent of the total wine consumed in Asia as compared to China which accounts for more than 62.7 per cent market share. India's wine market is currently equivalent to around 200 people sharing one bottle but it is likely to grow at projected 22% in next three years due to the rise in domestic consumption. The current consumption is 5m bottles a year. Contrary to popular belief that only imported wines are mainly consumed, most wines consumed in the country is locally produced, accounting for 75 per cent of the total volume.

Adsule *et al.* (2013) stated that for wines there is a huge potential in Indian market and for export market there is increasing popularity of Indian wine. Indian wine exports growing up every year. As words are getting spread very fast creating awareness of Indian wines in International market. The wine market is growing at 25-30% a year. The per capita consumption in India is only 0.07 litre/person/year, the biggest consumption up to 80% is however confirmed to major cities like Mumbai (39%), Delhi (23%), Bangalore (9%) and the foreign tourist dominated state of Goa (9%), where rest of India has only 20% consumption. Not only has the number of imported wines increased exponentially, the

Indian producers, too have introduced a number of neck labels and wine styles. Area under wine grape cultivation is increasing in state like Maharashtra, Karnataka and Tamil Nadu in view of their policy measures for the promotion of wine grape cultivation for diversification and wine making.

Hinge *et al.* (2013) conducted that in Nashik and Pune districts of Maharashtra during 2008-09. One hundred and sixty wine grape growers were selected by adopting simple random sampling. About 40.00 per cent of the respondents belonged to medium level of adoption category. As high as 57.50 per cent of the respondents had grown Cabernet Sauvignon variety. A large majority of the respondents followed summer pruning in April (71.87%) and winter pruning in September (90.62%). Very negligible per cent of the respondents applied the filling material (10.00%), organic manure (11.87%) and chemical fertilizers to their orchards as per recommendation. A large majority of the respondents (80.00%) did not adopt the gibberlic acid treatment. The major problems perceived by the wine grape growers were high cost of planting material (100.00%), irregular and insufficient supply of electricity for irrigation (100.00%), high cost of plant protection chemicals (88.75%), inadequate guidance regarding improved technology (86.62%) and high cost of fertilizers (82.50%).

Williams (2013) reported that India does not currently have a set of wine production standards. Industry sources indicate that, for the most part, the proposed standards have been lifted directly from OIV guidelines. However, there are several standards that have been adjusted to comply with existing Indian regulations established by the Food Safety and Standards Authority of India.

Nandagopal and Nair (2013) stated that Wine is one of the functional fermented foods that have many health benefits. Commercially, wine is produced by the fermentation of yeast which involves the conversion of sugar to alcohol. Wine can act as a nutrient supplement for seasonal fruits and vegetables throughout the year. Using fruits and vegetables having medicinal and nutritional value as a substrate for wine production, the health benefits of them can be improved widely. Ginger and Indian gooseberry, which are known for its high medicinal and nutritional value are used as the substrate here. Fermentation is carried out with *Saccharomyces cerevisiae* commonly known as bakers yeast. Daily monitoring was done to study the composition and characteristics of the wine. The wine produced resembled the commercial wine in terms of its composition, taste and aroma. During the fermentation period the wines were analyzed for pH, titratable acidity, specific gravity, biomass content, alcohol and reducing sugar on a daily basis. pH show a decreased trend then attains minima and then increased. As the fermentation days proceed, the specific gravity increased and the alcohol percentage increased gradually.

Thaliath and Kumar (2014) founded the impact of quality and internal factors in the purchase decisions of wine patrons and also creates a frame to benchmark the development and management of wine tourism. Geographically regions of

Karnataka have been selected apt for the growth of vines (grape plant), and many vineyards are already producing wines of international quality. How this potential of making wines can be converted to a wine tourism destination and also its development? In Europe the vineyards are converted into not only a place for wine making but also a potential place to enjoy food with wines, a place to stay in the midst of the vineyard, actively participating in the harvesting of grapes, stomping and crushing, wine festivals etc. Changing habits of Indians in drinking has changed the fortunes of wine industry in India. Both the Indian wine market and indigenous wine industry are witnessing a tremendous growth. Favorable and promotional government policies, higher disposable incomes and growth in foreign tourists are some of the reasons for such growth. Introduction of

Karnataka grape wine policy 2008-2009, has opened a new range of opportunities to wine farmers. Presently 1.1 crore litres production per annum is likely to multiply to 7.2crores litres over the next seven years. Grapes are being grown in an area of 10,000 acres and the estimated industry size is about 1050 crores of rupees (India Tourism Statistics). The factors are apt for converting Bangalore as a wine tourism destination. How Bangalore be benchmarked for the development and management of wine tourism, if wine tourism is considered as a product.

3. Materials and Methods

According to the plan of work shown in Table 1, all research work had been carried out

Table 1. Plan of work.

Stages	Objectives	Variable indicators	Tasks
1 st	To study the current status of wine production in India.	Primary as well as secondary data	Collecting data Through document and studies
2 nd	To study the policy and regulations applied in Maharashtra.	Survey data, Market data	Interaction and questionnaires to be studied
3 rd	To study the standards for quality and safe wine production.	Industrial SOP's	Verification and comparative studies

This chapter focused on aspects on the research methodology used to identify and investigate the research question. The research design, data collection and questionnaire design are discussed.

3.1. Research Design and Methodology

Methodology is the application of various methods of technique and principles in order to create scientifically based knowledge by means of objective methods and procedures within a particular discipline. The research methodology guides the research efforts, controls a study, dictates the acquisition of data set up a means redefining the raw data and formulates an approach to manifest the underlying meaning.

To reach the objective of this research an explanatory research was conducted, whereby existing wine Policies and regulations will be examined and compared in order to understand how each of the chosen respondents measures the performance of their policy. Certain criteria are commonly applied to all true research and must build into the planning stage of research design. These criteria are:

- Research is human activity that promotes critical thinking in cross functional approach.
- If there is no discovery, there is no research.
- Data must be interpreted for the enlightening awareness of what the facts mean.
- Research must be always answer question to solve problems
- Effective research is rational, systematic and is guided by constructive, critical assumption and measurable data

3.1.1. Types of Research

Three types of research can be applied to research design, namely explanatory research, descriptive and casual research,

which are stated as follows

i. Exploratory Research

Exploratory research call always contribute to research in which few prior researchers have studied similar problems in a particular field

ii. Descriptive Research

Descriptive research is to appropriately collect or analyze the quantitative data,

iii. Casual Research

Casual research as the examining of cause and effects relationship that always employ experiments to examine these relationships between two or more variables. For the purposes of this research, descriptive research is chosen as the most appropriate approach in collecting and analyzing the quantitative data to solve research problems.

3.1.2. The Appropriate Research Method

The research methods are commonly associated with quantitative and qualitative research paradigms. Qualitative research is usually employed for exploratory research and focuses on small respondent samples. It collects analyse and interprets data that cannot be meaningfully quantified. Quantitative research is usually adopted to collect, analyse and interpret data to describe the characteristics of large respondent samples. It is appropriate for collective quantitative data and always employs a questionnaire survey as a research technique.

The question of how to choose the appropriate research method is based on the nature of the data, the problem of the research, the location of the obtaining of the data and for what intention the data is collected. The objection of this research re is to determine, the criteria that can be used to measure wine policy and regulation. For this reason a

quantitative research design is applied.

i. Selection of Area

India is rapidly emerging wine economy in terms of both production and consumption, and has the potential to become a significant player on the world wine scene. This stems from the fact the country has consistently experienced the highest growth in consumption in the world around 20-30% a year between 2002 and 2010. To meet this demand, a significant quantity of wine is imported annually but India also has mix of well established and evolving domestic wineries.

The majority of India's wine region is concentrated in the south western part of the country, primarily in the state of Maharashtra but also in Karnataka. The slopes of the Sahayadri mountains range which forms the 'Western Ghats' have been identified as the most suitable place for viticulture, due to high altitudes and corresponding mild macroclimate. Some of the most well known wine producing areas in Maharashtra includes Nashik, Sangli, Sholapur, Satara, Ahmednagar and Pune. The states covers around 120,000 square miles (310,000) on the western edge of the Indian peninsula and is characterized by the Deccan Plateau, which rises on the eastern side of the western ghats. Light, easy going wines are made here from grape varieties such as Cabernet Sauvignon, Chenin Blanc, Shiraz and Sauvignon Blanc. The wine producing state of Karnataka is directly to the south of Maharashtra. Two-thirds of Maharashtra population is employed in agriculture and state is home to India's largest grape producing districts, Nashik. 90% of the country's wine is produced here and to encourage even the growth, the state government offers concessions and incentives to wine producer. The Indian Grape Processing Board, an organization that aims to regulate the Indian wine industry, is located in Pune. (IGPB)

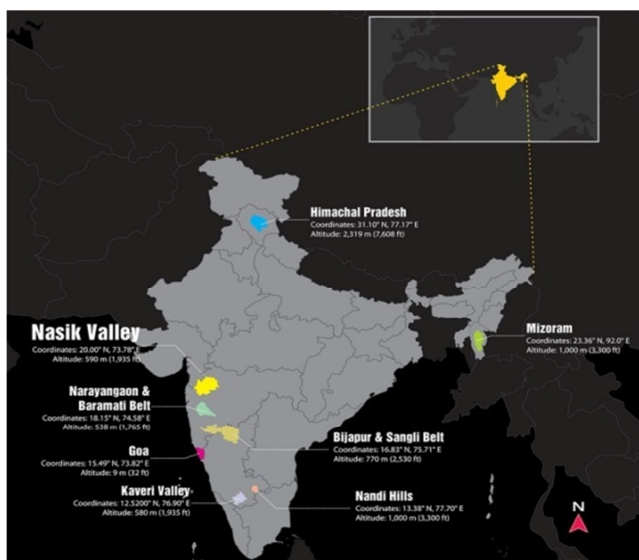


Figure 1. Map wine producing region in India.

ii. Survey Targets

For the purpose of this study, the research population

consists of 10 wine organisations situated in Nashik district of Gowardhan, Dindori, Sinnar, Ozar, Vinchur, Niphad, These wine organizations were the member of AIWPA.

A sample should be carefully chosen to reflect all the characteristics of the total population in the same relationship that they would be found in the total population. The total number of wine producing organizations in India is around 430 cellars, with the majority situated in the Maharashtra.

A total of 10 wine-producing organisations were selected as respondents. A total of 86 responses out of 100 from all of the participants of the 10 organisations were received by means of the completion of the questionnaires and interviewed Data in descriptive format.

iii. Company Identification

All organisations were identified through the Maharashtra Wine Board. The Maharashtra Wine Board has a database of all wine-producing organisations. Therefore it is almost mandatory for the chosen wine organisations to have State wine policies and regulations implemented.

iv. Data Collection

Among all the participants 10 were selected as major wine producing organizations in the Maharashtra, These organizations are typically in the Maharashtra Winelands of India Data collection is critical in obtaining useful knowledge for an individual research by examining the raw data from the questionnaires.

Distinguish between three primary data collection methods, namely:

- Personal interviewing.
- Telephone interviewing.
- Self-administered questionnaires.

Research often involves a survey, making use of questionnaire to gather information in order for the researcher to arrive at an educated conclusion. The data collected is analysed at a later stage.

v. Questionnaire

A questionnaire is a carefully designed set of questions to generate the necessary data for accomplishing a research project's objectives and a questionnaire is a list of research questions asked to respondents and is designed to extract specific information.

It serves four basic purposes:

- To collect the appropriate data.
- To make data comparable and amendable to analysis.
- To minimize bias in formulating and asking question.
- To make questions engaging and varied.

The data is used in this study was collected through questionnaires. The questionnaire was sent to 10 organisations and was divided into 3 sections: (Individual information; company profile; and PR. Question) based on the five-point-type scale allow researcher to gauge the respondents attitude toward a concept, the question is normally in the format of a statement has a scale which allows the respondent to indicate the degree to which he agrees or disagrees with the statement.

For the individual information required the respondent had to complete information regarding their gender, age, their level of responsibility at the organization and their educational qualification. The decision making part consisted of questions each respondent had to answer and were ranked from 1-5. The ranking signified the following:

- (1). Strongly agree
- (2). Agree
- (3). Do not know
- (4). Do not agree
- (5). Strongly disagree

The respondent had to indicate their decision with an X, A space for comments was left below.

The questionnaire were given to quality managers, production managers, warehouse In-charge, and internal auditor, wine makers, laboratory technicians and shop floor workers in cellar.

vi. List of the Questions/ Statements to Respondents

The questionnaires need to be designed to focus on the wording of questions planned to categories variables; scaled and coded after responses are received; and that attention should be paid to the general appearance of the questionnaire. In the survey the following list of statements was posed to the respondents, being quality managers, administrative staff and shop floor workers (Appendix). For the purpose of data analysis, the main body of the questionnaire includes policy and regulation section which is coded PR

The wine policies and regulation statements include following statements:

- Your organization is BIS certified
- Organisation authorised with DGFI and IEC Number for Trading.
- Storage regulations followed by your organization
- Your organization maintain the SPS standards
- Wine making as per standards
- Your organization maintaining MRLs for all types of wines
- Your organization have wholesale and distribution license
- Brand and label registration validity
- Transport permit for wine warehouses
- Labelling requirement according to laws

vii. Interviews

Interviews in combination with questionnaires were used to collect data. A semi-constructed personal interview was conducted by the researcher with the staff member responsible for the wine standards. Besides data collected through questionnaires some key issues regarding Policy and regulations, were covered by gathering some personal opinions. Which were not easy to obtain through questionnaires, thus some of the experienced Legal advisors from the wine manufacturing organizations were interviewed. An interview is a form of conversation in which the purpose is for the researcher to gather data that address the study's goals and questions. Structured interviews may be conducted in which the researcher

follows a sort of script of questions, asking the same questions, and in the same order, of all respondents. Interview is a method of data collection, information or opinion gathering that specifically involves asking a series of questions. A semi-structured interview generally starts with a few specific questions and then follows the each individual's tangents of thought with interviewer probes. Individual in-depth interview represents an interaction between an individual interviewer and a single participant. Interviewees are often provided with advance material to prepare them for the anticipated interview. The current literature mainly focuses on analyzing face-to-face or telephone surveys in terms of response rate, sensitive questions, social desirability, or 'don't know' responses. There is only a small amount of research that offers comparisons concerning the quality and representativeness of these different survey modes (Bracken *et al.* 2009).

viii. Interview Technique

The interviews were all semi-structured and were individual in-depth type of interviews. The following interview questions were asked to a few of the respondents:

- Question 1: What are your goals for quality wine production?
- Question 2: Quantity of wine production annually and organizational future targets?
- Question 3: Types of wines produce in your organisation?
- Question 4: Does your organization follows permitted oenological practices % process?
- Question 5: Barriers for marketing and distribution of wine?

The data obtained from the interviews is discussed in descriptive formats in results.

ix. Survey Design

Surveys are studies that are usually quantitative in nature and which aim to provide a broad overview of a representative sample of a large population. A survey should be designed in accordance with the following stages

- Stage 1: Identify the topic and set some objectives
- Stage 2: Pilot a questionnaire to find out what people know and what they see as the important issues
- Stage 3: List the areas of information needed and refined the objectives
- Stage 4: Review the responses to the pilot
- Stage 5: Finalise the objectives
- Stage 6: Write the questionnaire
- Stage 7: Re-pilot the questionnaire
- Stage 9: Code the questionnaire

The data was collected over period of eight weeks. The respondent's answers and response to the questionnaires are ranked according to the five-point scale. The results of the data collected for this study are discussed, namely data analysis.

x. Survey Validity and Reliability

Validity is concerned with the extent to which the research

findings accurately represents what is happening, and more specific, whether the data is a true reflection of what is being studies is applicable. Three major forms of validity can be identified, namely content validity, criterion-related validity and construct validity.

Reliability is concerned with the findings of the research. There are three common ways of estimating the reliability of the responses to questions in questionnaires or interviews, namely the test and re-test method, the split halves method and the internal consistency method, surveys research is generally weak on validity and strong on reliability.

4. Results and Discussion

This chapter focuses on analysis of the survey conducted among various wine producing organizations, and this chapter will explain the data analysis and findings of the empirical study in order to solve the research problem. The respondents who participated in this study were all employees of the organization where wine policies are followed. Questionnaires were distributed to participants to determine the fundamental requirements of the wine regulations. A personal interview was conducted with the respondents responsible for the maintenance of records. Comparative, descriptive and inferential statistics are used to analyze the data.

The quantitative data collected was coded into numerical representations, such as genders, age, years of work experience, job titles and qualifications. For analysis purposes, the respondents were asked to rank their responses to the questions according to the five-scale format. These distributions show the frequencies of participants' responses and percentages for each of the item in the questionnaire with regard to the evaluation of Wine Policies and Standards.

4.1. Present Scenario of Wine Industry in India

The wine market in India a decade ago was virtually non-existent. Since then, it has become the fastest-growing wine market in the world. Fundamental changes including government regulations, consumer behavior, higher incomes, industry advancements, media and increased globalization have contributed to this sector growth. While wine consumption remains low the market has grown and developed considerably, experiencing growth of approximately 25-30% annually in 2013, the size of the Indian wine market was estimated at approximately 1.6 million cases. Although unit prices experienced a marginal drop from 2009 to 2011, sales volume grew a noticeable 35% from 20012, amounting to 11 million litres. From 2008 to 2013, the sales volume common average growth rate (CAGR) for wine was 33.2%, while the sales value CAGR was 33.6%. The proportion of wine imports in the market has been increasing, from approximately 13.3% in 2009 to 16.7% of the market in 2013. Indian wine market value during period 2003-2013.

India ranks 77 in terms of wine consumption in the world. The country accounts for 0.8 per cent of the total

wine consumed in Asia as compared to China which accounts for more than 62.7 per cent market share. India's wine market is currently equivalent to around 200 people sharing one bottle but it is likely to grow at projected 22% in next three years due to the rise in domestic consumption. The current consumption is 5m bottles a year. Contrary to popular belief that only imported wines are mainly consumed, most wines consumed in the country is locally produced, accounting for 75 per cent of the total volume. The Indian wine market and the indigenous wine industry are in their nascent stages, but growing by leaps and bounds as shown in Table 2.

Table 2. Indian Wine Market-Domestic Production 2009-2013.

Wine Types	Year				
	2009	2010	2011	2012	2013
Sparkling wines	45	45	56	56	74
Premium Still Wines	130	163	278	366	520
Economy Still Wines	254	260	410	515	623
Other	15	14	16	15	19
Total	444	482	760	952	1236
Industry Revenues (wholesale, in Millions)	15.00	16.50	26.20	33.00	41.00
Average Revenues/case	38.77	40.91	39.17	38.94	42.63

Note: A case is a unit of 9 liter capacity or equivalent to 12 bottles.

4.2. Study the Policy and Regulations

4.2.1. Validation of Survey Results

The results of survey were analysed by the means of descriptive analysis. The responses obtained from the questionnaires are indicated in the graphs and specific frequency table were used for ease of reference. Each aspect within a question is compared with each other.

4.2.2. Sample

The target population consisted out of 10 wine organizations situated in Maharashtra. It includes Sula Vineyards, Nashik Vintners (Gowardhan), Flamingo Wines (Niphad), Renaissance Winery (Ozar), Valle-de-vin Wines (Igatpuri), N. D Wines (Dindori), PernodRicard India (Dindori), Red wing wines (Dindori), Vinsura winery (Vinchur), Sigma wines (Sinnar), Vallone Vineyards (Igatpuri).

4.2.3. Demographical Results and Statistics for Sample

The demographical results and statistics include the section from the questionnaire (Appendix A) which is individual information, such as gender, number of years worked in the company, educational level and job title.

4.2.4. Individual Information

i. Gender

Figure 2 indicates that the majority 75% (62) of the participants are male and only 25% (24) female. Based on the general status of India in Maharashtra, the majority of employees in the wine industry are male.

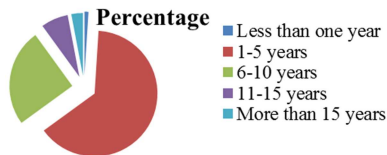


Figure 2. Male and female employees in the industry.

ii. Years of Work at Industry

According to Figure 3, nearly half of the participants 64% (55) have between 1-5 years working experience at their present company, 25% (87) have 6-10 years working experience, 7% (6) have 11-15 years of experience, 3%(3) have more than 15 years of working experience and only 1%(2) have less than one year of working experience.

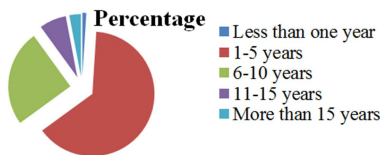


Figure 3. Years of work at company.

iii. Educational Level

As indicated in Figure 4, both participants Grade 1 or 2 have 20% (17), Technical Diploma 45% (39) and Bachelor's degree have 27% (23), 5%(4) have post-graduate degrees and 3% (2) have other qualifications.

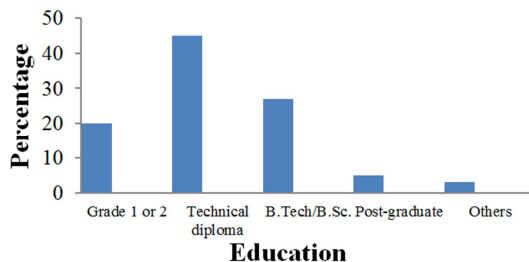


Figure 4. Educational qualification.

iv. Job Title

According To Figure 5, 45% (39) of the participants are Shop floor workers/ supervisors, 18% (15) are in administrative position, 12% (10) are in middle management positions and those in senior/director positions 19%(16) and other positions have 6% (5).

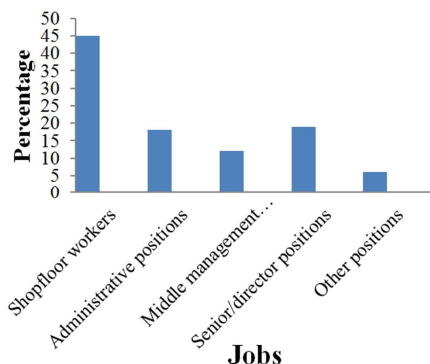


Figure 5. Job Title.

4.2.5. Company's Profile

i. Number of Employees

Shown in Figure 6 is the number of employees in graphical format. 60%(6) of the companies have less than 100 employees, 20%(2) have 101-200 employees, 10%(1) have 201-300 employees, 10% (1) have 301-400 employees, 0% (0) have 401-500 employees and 0% (0) have more than 500 employees.

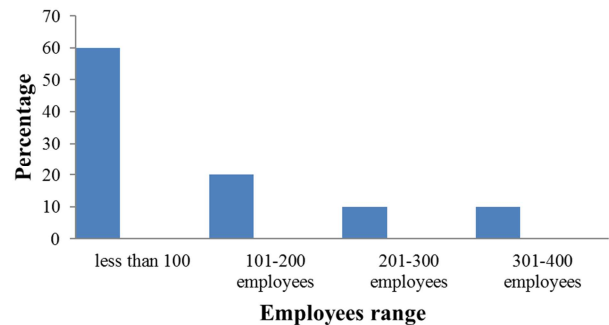


Figure 6. Number of employees.

ii. Main Markets for Product

Figure 7 shows the main market for the wine products produced, in graphical format. Results in Fig 4.7 depict that 20% (2) of the wine organizations export wine to other countries, 40% (4) produce wines for the local market, 20% (2) import wine and produce for local market, whilst 20% (2) wine organizations produce their products for both local and export purpose.

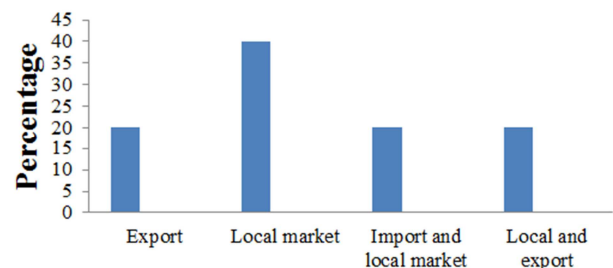


Figure 7. Main markets for product.

iii. Main Activities on Production Information

Shown in figure 8 are the main activities of the wine organizations. 40% (4) indicated that they make wines, 30% (3) indicated that they also bottle wine, 10% (1) distribute their wine and 20% (2) market their own wine.

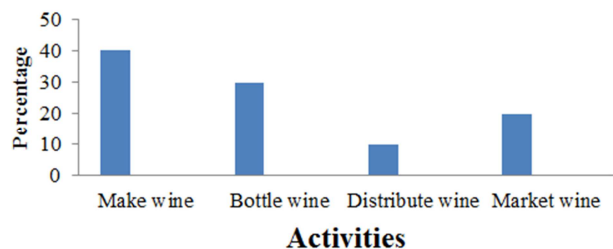


Figure 8. Main activities of industries.

4.2.6. Wine Policy & Regulation in Maharashtra.

The liquor industry remains highly regulated by the government, particularly with regards to manufacturing, storage and distribution. There has also been a movement toward favourable government policies that promote the industry, which has significantly helped to foster growth. Maharashtra have been undergoing regulatory changes to further promote the wine industry and involve international wine companies, which are expected to further boost wine consumption among consumers. Maharashtra has the most liberal liquor policy, with wine duties either 200% of the assessed value or Rs200/bulk litre (\$4.55 bulk litre*). The state has also commissioned the sanctioning of wine bars to aid in increasing wine consumption (Reuters, 2009). The Maharashtra government has made further progress toward a more open wine industry, recently announcing a reduction in the excise duty on BIO (bottled-in-origin) wines. A value added tax (VAT) reduction for BIO wines, ranging from 20-25%, and a reduction for domestic wines from 4-25% was also announced.

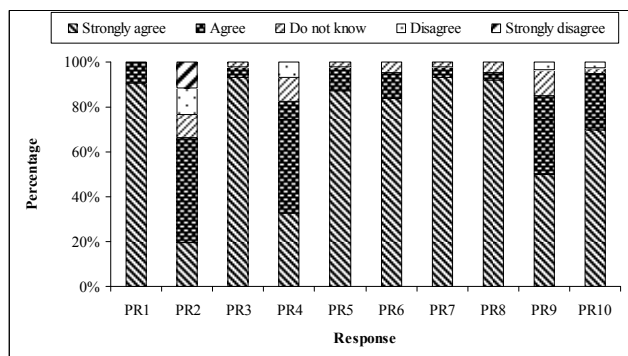


Figure 9. Response regarding Wine Policies and Regulations.

Figure 9 depicts the respondent's opinions on general statements about Wine Policies and Regulations. It is of importance to note that the majority of the respondents all strongly agreed in general questions asked. All the organizations that participated in the survey are IGPB and AIWPA members, so it was for this reason that most of them strongly agreed. Most of the statements 1-10 have a positive response.

Results from Figure 9 results indicate that:

- BIS certification is a pre-requisite for wine industry (PR1).
- For trading, DGFI and ICE authorization is mandatory (PR2).
- Regulations for storage are followed (PR3).
- SPS standards are necessarily followed by the export industries (PR4).
- Wine is prepared as per standard norms (PR5).
- MRL levels are strictly controlled (PR6).
- Wholesale and distribution license is mandatory for the wholesale distribution of wines (PR7).
- Brand and label regulations are followed as per requirement (PR8).
- Transport permit is necessary for the transportation of

wines to warehouses (PR9).

- Labeling rules are followed (PR10).

4.3. Study on Standards for Quality and Safe wine Production

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country. Indian wine industry has been growing at a fast pace but there are no wine laws to define various standards to check frauds, safety of consumers while international wine business is controlled through legislative controls. BIS have set some standards but those are not elaborated based on the scientific findings. The Indian Grape Processing Board, which is a board comprised of representatives from the public and private sectors and established under the auspices of the Ministry of Food Processing, is now working to harmonize Indian wine standards with OIV guidelines and has published a solicitation of comments concerning the proposed standards. India does not currently have a set of wine production standards. Industry sources indicate that, for the most part, the proposed standards have been lifted directly from OIV guidelines. However, there are several standards that have been adjusted to comply with existing Indian regulations established by the Food Safety and Standards Authority of India.

The Indian standards for wines were studied under the following heads:

- Permitted additives and MRLs in wine production
- Specifications of wine
- Labeling specifications

4.3.1. Permitted Additives in Wine Production

Table 4 depicts the maximum and the existing permitted level of the additives along with their function that were used in the respective wineries.

4.3.2. Specifications of Wine

The specification of wine produced in the different wineries is enlisted in Table 3. It depicts that the pH of the wine should be adjusted between 3.0-4.0 by addition of different quantities of acidity regulators. Tannins play an important role in the enrichment of wine. Sulphur dioxide acts as a preservative whereas, methyl alcohol works as a clarifier.

Table 3. Specification of wine.

Characteristics	Quantity
Reducing Residual Sugar (g/l)	10-150
pH	3.0-4.0
Total acids as tartaric acid (g/l), Max	10.0
Volatile acidity expressed as acetic acid(g/l)	1.0
Esters as ethyl acetate (g/l of absolute alcohol), Max	4.0
Aldehydes as acetaldehyde (mg/l of acetic acid)	1.0
Total SO ₂ (mg/l), Max	300

Characteristics	Quantity
Free SO ₂ (mg/l), Max	100
Copper as Cu (g/l), Max	5
Iron as Fe (g/l), Max	15
Extracts	180
Tannins (g/l)	3.0
Methyl alcohol (g/l of absolute alcohol)	2.0

4.4.4. Labeling Specifications

The Bureau of Indian Standards is responsible for alcoholic beverage standards, with labelling regulations set-out in “The Standards of Weights & Measures Rules for Packaged Commodities” (1977). Indian labeling standards generally follow international norms and therefore do not constitute a significant barrier to trade. Requirements established under India’s food safety laws were often more stringent than international norms, but their enforcement has been weak. India is seeking to harmonize any existing differences between national standards and international norms. When imported into India, wines that are bottled at origin were subjected to the labeling provisions. The labeling declaration on the wine bottle included the following:

- (1) Name and address of manufacturer
- (2) Generic or common name of the packaged commodity
- (3) Net quantity in terms of milliliters or liters
- (4) Month and year of manufacture
- (5) Maximum retail price (MRP)

In addition, the Standards and Weights and Measures (National Standards) Rules of 1988 stipulate that the alcoholic content of the wine be declared on the label as a percentage of volume with the symbol “% Vol.” However, an exception can be made for the MRP for alcoholic beverages if the retailer prominently displays the retail sale price of the package at the sale location. Some states also require a safety hologram, certifying the payment of duties and fees, and that the liquor meets necessary standards. The alcoholic strength of wine must also be declared as a percentage of the volume using “% Vol.”.

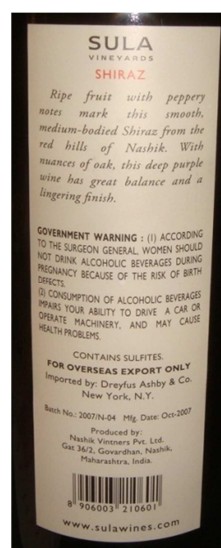


Figure 10. Wine label sample.

Table 4. Maximum and existing permitted level of the additives.

Additives	Maximum level (mg/kg)	Existing numerical use (mg/L)	Function
Ascorbic acid	300	250mg/l for each treatment or 300mg/l in wine thus treated and placed in the market	Sequestrant
Calcium ascorbate	GMP	GMP: 11000 or ML: N/A	Stabiliser
Carbon dioxide	GMP	GMP or 3000mg/l in still wines	Carbonating agent and packaging gas
Citric acid	4000	GMP: 11000	Acidity regulator, anti-oxidant & sequestrant
Erythorbic acid	250	GMP: 11000 or ML: N/A	Anti oxidant
Fumaric acid	3000	GMP: 3000 or ML: N/A	Acidity regulator
Lactic acid (D-, L-, DL-)	4000	Wine: 3000 mg/l of lactic acid equivalent to 2500 mg/l of tartaric acid: For wine products (other than wine): 1800g/l of lactic acid ML: 11000	Clarification
Malic acid (DL-)	4000	Wine: 2230 Wine products: 1340 mg/l	Acidification
Sodium ascorbate	200	GMP: 11000 Or ML: N/A	Anti-oxidant
Sodium carboxy methyl cellulose (Cellulose gum)	100	100	Stabiliser

Additives	Maximum level (mg/kg)	Existing numerical use (mg/L)	Function
Sodium erythrobate	GMP	GMP: 11000	Anti –oxidant
Tartaric acid (L+)	4000	GMP: 11000 Wine: 2500 Wine products: 1500 Limit for total acidification: GMP: 2000	Stabiliser and acidity regulator
Calcium sulphate	2000	Sulfate content of the treated product is not more than 2.5 g/l expressed as potassium sulphate	Stabiliser
Sulphur Dioxide		200-250	Antimicrobial, Antioxidant

*GMP: Good manufacturing practices; *ML: Maximum limit

5. Conclusion

Climatic conditions of Maharashtra, especially, Nasik, Pune, Sangli, Solapur and Ahmednagar districts is warm day and cool night, which is essential for good wine grape cultivation. Compared to foreign wine producing countries, there is high potential in Indian weather and soil to give best quality of wine. Over the period of time, Government of Maharashtra has implemented many schemes, policies, subsidies to boost wine industry; however, such booster efforts were not effectively implemented. Only 7% of wineries have established and defined marketing zone as a target. Rests are running behind this successor without target, looking like ‘hitting an arrow in the dark on the target’. It was found that all the standards, rules and regulations although not strictly followed but are being implemented to a greater extent.

References

- [1] Adsule P. G, Karibasappa G. S, Sawant S. D., Banerjee K. (2013). Present scenario of wine industry in India. *N. R. C. for grapes*, Manjari Farms, Pune.
- [2] Codex Alimentarius. Recommended international code of practice.[Online]. Available from: <http://www.codexalimentarius.net>.
- [3] Hinge R. B., Angadi J. G, L. Manjunath, Basavaraja H. and Kataraki P. A. (2013). Adoption of wine grape production technology in Maharashtra Karnataka. *J. Agric. Sci.*,26 (1): (80-84).
- [4] Indian Grape Processing Board (IGPB) [Online] Available from: <http://www.igpb.com>.
- [5] Indianwines[Online] Available from: <http://www.Indianwines.info>.
- [6] Kale K. J. (2007). Article on Me Draksh Wine UddoyogUbharuShaktoka?Maharashtra Industrial Development Corporation, Mumbai.
- [7] Marianian A., Eugenio P., Vasco B.(2012). The international wine trade: Recent trends and critical issues. *Wine economics and Policy* 1: 24-40.
- [8] Nandagopal M. S. and Nair P. S. (2013). Production of wine from ginger and indian gooseberry and a comparative study of them over commercial wine. *American Journal of Engineering Research* 2 (5): 19- 38.
- [9] Seth R. (2011). Marketing, packaging standards and other aspects of wine industry in country, *journal and food laws and policy* 5(2): 30-75.
- [10] SrivatsanA and Sharath S. (2012). Wine consumption ethics in India, *Journal of pharmaceuticals* vol6 (2012)
- [11] Thaliath Avian and Kumar V. N. S. (2014). Impact of quality factors and internal factors in the buying decisions of wine patrons: critical factors in bench marking wine tourism development and management. *International Journal of Recent Scientific Research*, 5 (6): 1091-1097.
- [12] Williams D (2013). Indian Wine Industry Proposes New Standards Gain report number IN3041.