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A Foresight on Smell Detector toward Durian Fruit in Malaysia

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Abstract: The Recent advances in smell detector have led to the development of new applications; among them, the electronic nose has gained major interest and found successful application in many fields. An electronic nose is a device consisting of various smell detector with sensitivity to various chemical compounds. Durian fruit is known by admirers as the "King of Fruit" and characterized by its large size, strong smell, and hard thorn-covered husk. Ripe durian has a unique taste with a strong aroma. Durian have characteristic smell which can give clues to the type of durian. In this study, we want to investigate the key drivers and to explore the future trends of smell detector toward durian fruit in Malaysia. The mixed approaches of qualitative and quantitative methods were used in the research. For the foresight of the application stretch and the use of smell detectors for durian fruit in Malaysia, various research methodologies such as remote sensing methods, STEEPV analysis, SPSS statistical analysis, impact uncertainty analysis and finally scenario building analysis have been implemented to identify the main future drivers and their impact on the future of corresponding smell detectors. The objectives of this research have been successfully achieved by identifying two top drivers and four alternative future trends that show how the need for the detection of the specific smells and structuring of the smell detector will impact and shape the way of life in the future.

Keywords: Durian, Smell detector

1. Introduction

According to Norjana & Noor Aziah (2011), Durian (Durio zibethinus L.) Thailand, Malaysia, and Indonesia rely heavily on this crop for economic support. Durian fruit is known as the "King of Fruit"

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by some and the "Heaven and Hell Fruit" by others (Subhadrabandhu and Ketsa, 2001). Whatever your personal feelings are about the benefits or drawbacks of durian, one thing is certain: some people adore this fruit. The common name durian comes from the Malay word duri, which means thorn, and the species name zibethinus comes from the Italian word zibetto, which means civet, a catlike animal with a strong musky smell (Reksodihardjo, 1962). Durian fruit is distinguished by its large size, pungent odour, and tough thorncovered husk. Ripe durian has a distinct flavour and a strong aroma. The aril is widely thought to be an aphrodisiac. Eating durian fruit is simply "mind over matter" for Westerners who aren't familiar with the smell. Smell also known as odor can be used as a marker to identify a particular problem or source of interest. These include air pollution, environmental pollution, disease diagnostics, human identification and fruits (Li, 2009). Among the fruit smells that are easily identified by the community is durian fruit. Durian has been described as the world's stickiest fruit. The aroma has been compared to raw sewage, rotten meat and foul -smelling gym socks. The smell of durian is so pungent that the sharp -skinned fruit such as custard is even banned in public places in Malaysia and Singapore (CNN, 2020).

Electronic smell detector are configured to associate received output signals with respect to the presence or absence of smells. The amplifier has a semiconductor layer configured to produce an output signal that is responsive to the conductivity of its organic semiconductor layer. The smell detection process includes its absorption into the organic semiconductor layer and the measurement of the signal generated by the amplifier arrangement in response to the absorbing action. In general, smell detector are designed to detect certain smells in electrical appliances such as air purifiers or respirators. Each smell detector, such as a MOS or QCM sensor, has characteristics that respond to smell differently. When many smell detector are combined in one system, their ability to detect the smell increases (Wypych, 2017).

Durian has been cultivated in Southeast Asia for centuries at the village level, most likely since the late 18th century, and commercially since the mid-20th century. Edmund James Banfield, an Australian author and naturalist, recounts in My Tropic Isle how, in the early twentieth century, a friend in Singapore sent him durian seeds, which he planted and cared for on his tropical island off the north coast of Queensland (Wikipedia).

The aroma is a distinct feature of ripe durian fruit that is enjoyed by some but disliked by others. Furthermore, taking/eating durians on public transportation or in gathering places such as hotels or convention halls is strictly prohibited. This will be a major impediment to durian marketing. In ripe "Monthong" meat, ethyl esters (common fruit and fruit esters) are prominent esters. This sweet smell, however, is overpowered by the smell of sulphur compounds (Aschariyaphotha, 2021).

Nowadays there are more and more software analysis tools available for detection poor programming practices, highlight anomalies, and generally improve software engineer awareness of the structural features of the program below development. As this tool is increasingly accepted in practice, a question arises how to evaluate its effectiveness and choose the "best". For this aspect we need face common and very difficult problems of tool comparison and verification decision.

Many people, particularly those from Southeast Asia, enjoy the smell of durian. It also does not taste like western fruits. Naturalis British Alfred Russel Wallace in 1856 described the taste of durian as high-flavored custard with almonds. However, there are some flavours that remind us of cream cheese, onion sauce, sherry wine, and other unsuitable dishes (May, 2017). As a result, the purpose of this research is to examine the future trend of smell detectors toward durian fruit by evaluating the drivers and issues encountered in Malaysia.

Therefore, to achieve the research objectives is to investigate the key drivers of smell detector toward durian fruit in Malaysia and to explore the future trends of smell detector toward durian fruit in Malaysia.

This foresight study was carried out keeping in view the time horizon of 5 years in the future or in other words from the year of 2022 to the year 2027. The current research focuses on each resource or information related to the trend of smell detector toward durian fruit in Malaysia. All the related

information and data collected from various sources such as journals, conference proceedings, government-related articles, the internet, non-governmental organizations and also from all kind of research materials corresponding to smell detector toward durian fruit. The respondents of this research study would be the seller of durian and durian buyers. The target respondents were selected and covered mainly in circles of seller of durian and durian buyers in Malaysia. Questionnaires had been distributed to the advocates for the data collection analysis.

This research was carried out and aimed to investigate the key drivers of smell detector toward durian fruit in Malaysia and to explore the future trends of smell detector toward durian fruit in Malaysia. This foresight study on smell detector toward durian fruit in Malaysia helps to broaden the views and perspectives of developers on the negative and positive issues of smell detectors as well as increase consumer knowledge about smell detectors toward durian fruit in Malaysia. In addition, this study helps Malaysians to better recognize the smell detectors toward durian fruit.

2. Research Methodology

2.1 Research Design

Research design is the layout and procedure for research that spans results from broad assumptions to detailed methods of data collection and analysis. Research design presents a practical overview of the focal issues involved in social and economic research design. There are three main types of accessible research methodology approaches which are quantitative, qualitative and mixed methods (Creswell, & Poth, 2016). Quantitative methods provide guidance for understanding the magnitude and scale of a humanitarian crisis by presenting a numerical picture of its impact on affected communities. Whereas, qualitative methods focus on determining and determining the nature of the impact of failure on the affected community (Acaps, 2012). According to Wisdom and Creswell (2013), mixed methods refers to an emerging research methodology that advances the precise combination of qualitative and quantitative methods in a single investigation. This study requires a larger number of respondents and explores information about future possibilities to meet the needs and opportunities for the future. Therefore, a mixed-methods approach that includes both qualitative and quantitative data was chosen to interpret the data. In this research, future trends, uncertainties and challenges of smell detectors will be analyzed using a mixture-based method through a foresight process.

2.2 Population and Sampling

A research population is a large group of people or things being studied scientifically. The researchers are acting in the best interests of the public. It is also a well-defined group of well-defined people or objects with comparable characteristics (Taherdoost, 2016). Allen (2017) defines that a population is all goals or events of a specific type that researchers want to learn more about. Other than that, research population is generally referred to a large collection of individuals or people that mainly focus for a scientific query. According to Saunder *et al*. (2009) population refers to a complete set of cases or group members to whom the research applies. This research focuses on the smell detector toward durian in Malaysia. Therefore, the target population is durian sellers and durian buyers in Malaysia.

Sampling is related to the process of determining the number of populations to be respondents or determining the sample size for the target population (Oosthuizen, 2005). According to Latham (2007), the sampling method is to take a representative selection of the population and use the information collected as study data. Sampling techniques can be classified into random and non -random sampling and random sampling involves a variety of sampling methods. The sample size for this study is 50 questionnaires. This research is based on purposive sampling. It is also known as judgment sampling in which the researcher deliberately selects participants because of the characteristics or qualities possessed by the participants. It involves controlling what one wants to know by including people who are able to provide information (Ethics, Moses, & Alkassim, 2016).The sample size has been identified

based on Krejcie and Morgan (1970) only Johor state will be incorporated in this research out of a total of 3 states to investigate the key drivers and explore the future trends of smell detector toward durian fruit in Malaysia.

2.3 Research Instrument

A questionnaire is a research instrument consisting of a set of questions and other prompts to gather information from respondents. According to Boynton and Greenhalgh (2004), questionnaires offer an objective method for gathering information about people's perceptions, knowledge, beliefs, attitudes and behaviors toward specific components. The questionnaire was used to investigate the key drivers of smell detector toward durian fruit in Malaysia and to explore the future trends of smell detector toward durian fruit in Malaysia. The questionnaire of this study is classified into four parts. Part A deals with demographic information, Part B has been devoted to selecting or placing important driver positions, Part C was allocated to measure the degree of impact of each issue and drivers of smell detector toward durian fruit and Part D has been devoted to measuring the level of uncertainty of each issue and incoming drive of smell detector toward durian fruit.

2.4 Data Collection

Data collection is the process of collecting and analyzing information from various sources to obtain a complete and accurate picture and to achieve research goals. In general, there are two types of data collection methods: primary and secondary data. The compilation of the researcher's original data for a particular study subject is known as primary data (Hox and Boeije, 2005). This type of information is usually obtained for the first time. For example, data collected through the use of questionnaires. Secondary data is information collected by others and provided for reasons other than the current study. Simply put, secondary data is information that has been collected and maintained by others (Daas, 2012). Online and offline journals, articles, newspapers, books, websites and databases are all common sources for secondary data collection. Data for this study was collected from secondary sources. Sources related to smell detection toward durian fruit were collected and analyzed to investigate the main drivers and to explore future trends of smell detection toward durian fruit in Malaysia. Furthermore, the collection of secondary data is preferred because secondary data works in addition to primary data and contains more accurate information based on previous studies.

2.5 Analysis of Data

a) Descriptive analysis

According to Zikmund (1997), descriptive analysis is the transformation of raw data into forms that facilitate the reader's understanding and interpret, rearrange, organize, and manipulate data to produce descriptive information. Data obtained from the questionnaire were analyzed using 'Statistical Package for Social Science' (SPSS). Computer -based statistics packages will assist in generating statistical results based on numerical forms. In addition, it displays the collected data in the form of frequency, percentage, mean and standard deviation. Given that SPSS allows dealing with large amounts of data and it is simple and easy to interpret the data.

b) Impact-uncertainty analysis

Scenario development was generated after conducting an effect-uncertainty analysis based on the mean collected in the data analysis. The resulting list of drivers was shortlisted according to importance, impact and uncertainty to construct an impact uncertainty analysis. The top two drivers with the highest level of impact and level of uncertainty were selected to develop the scenario analysis.

2.6 Development of Scenario Analysis

Scenario analysis was generated with the two corresponding top drives obtained in the impact uncertainty analysis. Four different alternatives scenarios were generated reflecting the future consequences of events and trend of smell detector regardless favorable or unfavorable outcome. Implications and recommendations of the study must be developed at the end of the research. These scenarios give an insight to four possibilities that can occur during 2022 to 2027. It will be developed through analysis of empirical data obtained during data collection. In case of possible negative consequences, a strategic management system will be designed or structured to curb and treat such negative consequences. The strategic management system will be designed by combining the full advantages of positive effects in case of positive consequences. Based on strategic planning methods regardless of negative or positive consequences, the recommendations were proposed for the sustainability of smell detector toward durian fruit in the future.

3. Literature Review

After referring to textual material that mostly consisted of journals and articles alongside the STEEPV method, various issues and related drivers were discovered. Journals, conference proceedings, websites, online newspapers and other sources from the internet were analyzed for STEEPV analysis in identifying key issues and drivers related to AR Marketing. Key issues and drives with detailed details have been recorded and shown as follows:

3.1 Social

Table 1: Key issues and drivers (Social)

No	Issues and Drivers	Key Term
1	The structuring of the smell detector should be able to deal with complex separation boundaries and small separations. (Boutaib, 2021)	Structuring of the smell detector
2	The fruit has become popular and highly priced fruit in Southeast Asian countries. (Jaswir, 2008)	Popular fruit in Southeast Asian countries.
3	Although the people of the region strongly favor it, the fruit has a mixed reception from Europeans. (Jaswir, 2008)	Met with a mixed reception from Europeans.
4	Try to detect the researcher's interest in certain smell detection. (Fernández, 2010)	Detection of specific smells.

3.2 Technological

Table 2: Key issues and drivers (Technological)

No	Issues and Drivers	Key Term
1	Conducted an evaluation of the detection tool, called iPlasma. (Fernández, 2010)	Conduct detection tool iPlasma
2	Direct detection of human odor VOCs from the air matrix, E-nose technology could be a more promising candidate (Li, S., 2009)	E-nose technology
3	A bad smell is a symptom that something is wrong with the system's design or code. (Fernández, 2010)	System design or code
4	An efficient search for effective software metric thresholds that should characterize different odors. (Boutaib, 2021)	Efficient search for effective software.

5	Novice programmers sometimes cannot locate smells as proficiently as more experienced programmers. (Murphy-Hill, 2008)	Experienced programmers.
6	Various sensors and detection systems are checked based on their odor detection capabilities, can be used in the field and operational capability. (Li, S. ,2009)	Sensors and detection systems
7	This study relies on two software systems and three metrics for comparison: agreement, recall and precision. (Fernández, 2010)	Agreement, recall, and precision.
8	For each identified tool, we show its characteristics, such as the programming language developed, the compatible language for odor detection, the types of odors supported, the online availability for download, the available documentation and the year of release. (Fernández, 2010)	Developed the features and programming
9	The identification of these code smells has been considered an intuitive art rather than an exact science, as there are very few empirical steps or methodologies for doing so. (Mathur, 2011)	Identification of these code smells
10	An unusually long method in an object-oriented programming language like Java may indicate a "Long Method" smell. (Mathur, 2011)	“Long Method” smell
11	It is an implementation technique used to apply a better design to an existing software program, fully or partially functional. (Mathur, 2011)	Apply a better design to an existing, fully or partially functional, software program
12	Duplicate code isn't just a design issue; it also leads to incorrect calculations and redundant code and data. (Mathur, 2011)	Duplicate code leads to incorrect calculations
13	JNose Test, a tool that aims to analyze the quality of test suites in a test smell perspective. (Virginio, 2020)	A tool aimed to analyze test suite.
14	We have defined this improper use of authorization best practices as 'authority smells' to indicate possible authorization-related syntax issues and have created the P-Lint tool to assist in identifying these smells in source code. (Dennis, 2017)	Created a tool P-Lint to assist in the identification.

3.3 Environmental

Table 3: Key issues and drivers (Environmental)

No	Issues and Drivers	Key Term
1	This instrument was tested with respect to odor detection capability and field use (Li, 2009).	Capabilities of smell detection
2	There are many odor detectors proposed in the literature, it is difficult to enumerate them and specify the odor they can detect. (Fernández, 2010)	Many bad smell detection tools.
3	Animal species such as the small flying fox, which pollinates the durian tree, and the Malayan tiger are threatened by increased deforestation in their habitat. (Wikipedia)	Animal species endangered by the increasing deforestation of their habitats

3.4 Economic

Table 4: Key issues and drivers (Economic)

No	Issues and Drivers	Key Term
1	Design a detector quality evaluation function that should account for data imbalance. (Boutaib, 2021)	Take into account data imbalance
2	This fruit has become a popular and highly valued fruit in Southeast Asian countries. (Jaswir, 2008)	Popular and highly priced fruit
3	Durian peel is a prospectively processed durian product but relatively unknown in the Malaysian market today. (Jaswir, 2008)	prospective processed durian product in Malaysian market
4	It should be noted that fruit peel has a stable and growing market and is a well-established product, especially in the American market. (Jaswir, 2008)	Fruit leathers have a steady and growing market and are well-established products.
5	Durian prices are high due to changes after harvest and have a short shelf life in normal temperatures. (Wikipedia)	Price high due to postharvest changes.

3.5 Political

Table 5: Key issues and drivers (Political)

No	Issues and Drivers	Key Term
1	It should be noted that fruit peel has a stable and growing market and is a well-established product, especially in the American market. (Jaswir, 2008)	Well-established products in the American market.
2	The high demand for durian in China has prompted a shift in Malaysia from small-scale durian orchards to large-scale industrial operations. (Wikipedia)	High demand for durians in China.
3	Thailand government scientist Songpol Somsri has bred more than ninety varieties of durian to create Chantaburi No. 1, cultivar without odor characteristic. (Wikipedia)	Crossbred more than ninety varieties of durian to create Chantaburi.

3.6 Values

Table 6: Key issues and drivers (Values)

No	Issues and Drivers	Key Term
1	Based on quantitative and qualitative data, we also discuss related usability issues and suggest guidelines for tracking tool developers. (Fernández, 2010)	Relevant usability issues and propose guidelines.
2	The processed durian skin retains most of the aroma components of the fresh durian fruit. (Jaswir, 2008)	Retained most of the aroma components.
3	They concluded that durian has two distinct notes: an onion smell caused by thiols and thioethers and a fruity smell caused by esters. (Jaswir, 2008)	The onion odor caused by thiols and thioethers and the fruity odor.
4	Smell sensors have led to the development of new applications. (Hotel, 2018)	Led to the development of new applications.
5	Test smell identification obviously depends on tool support, otherwise it can be a cost-effective strategy. (Virginio, 2020)	Identification is clearly dependent on tool support.

6	This remarkable success for trained animals provides some of the primary evidence that humans can relate to distinctive odor signatures. (Li, 2009)	Success trained to provide evidence
7	It measures the quality of a test suite based on how well it covers structural elements, such as functions, directives, branches and lines of code. (Virginio, 2020)	The test suite quality based on how much it covers structural elements.

4 Data Analysis

4.1 Reliability Test

In authentic studies, reliability tests are performed to ensure the reliability of the research. According to Amirrudin (2020), measurement consistency is implied by reliability, while inconsistency and inaccuracy are implied by lack of reliability, both of which are equated with measurement error. To analyze the internal consistency of each scale item for each primary construct, Cronbach's Alpha coefficient was used to test the reliability of all elements on the questionnaire. Rules of thumb for calculating Cronbach's Alpha and determining reliability are shown in Table 7. Reliability testing is a method to determine the internal consistency of a questionnaire (Bolarinwa, 2015). Cronbach's alpha, which can be used for three-, four- or five-point Likert scale items to test internal consistency, is the most commonly preferred, according to Table 7. Cronbach's alpha is more interested in the range from 0 to 1, which indicates low to very high internal consistency. To examine the inter-item consistency of measurement items in a construct, Cronbach's Alpha coefficient must be greater than 0.6. Therefore, Cronbach's Alpha is less than 0.6, the development potential of the question is unclear, and there is repetition. To ensure instrument reliability, questions that are not at the appropriate level should be rearranged and deleted.

a) Pilot test

Table 7: Result of pilot test

Part	Drivers	Cronbach's Alpha	No of Items
B	Importance	0.858	10
C	Impact	0.891	10
D	Uncertainty	0.844	10

The questions in this pilot test were separated into three sections: Part B, Part C and Part D. Part B dealt with the importance of Smell Detector toward Durian fruit in Malaysia, while Part C dealt with the impact of Smell Detector toward Durian fruit in Malaysia and Part D dealt with the level of uncertainty of Smell Detector toward Durian fruit in Malaysia. Each section has ten questions. All of the reliability tests of Cronbach's Alpha were more than 0.70, so all parts were acceptable. Part B's Cronbach's Alpha was 0.858, indicating that the research was an excellent level of reliability. Furthermore, the value of Cronbach's Alpha for Part C was 0.891, indicating that the research had an excellent level of reliability. Finally, Cronbach's Alpha score for Part D was 0.8.44, indicating that it was on par with parts B and C, demonstrating that the research was of excellent reliability.

b) Actual study

Table 8: Result of actual study

Part	Drivers	Cronbach's Alpha	No. Item
B	Importance	0.909	10
C	Impact	0.916	10

D	Uncertainty	0.894	10

From the table, it shows the value of all Cronbach's alpha for all variables above the acceptance level which is more than 0.7. The results for importance, impact and uncertainty are 0.909, 0.916 and 0.894 respectively. The value of Cronbach's alpha should be above 0.7 or a minimum acceptable level of reliability would be 0.7. Based on the result, it shows each of the variables has a reliable value based on Cronbach's Alpha.

4.2 Descriptive Analysis (Demographic)

The background information of the respondents was analyzed and discussed. Information on the gender, age, ethnicity of the respondent, employment status, seller or buyer of durian, durian lovers and smell detectors in the questionnaire. The overall profile of the respondents is shown in the pictorial chart. It represents the characteristics of the population being studied and must be taken into account to design research and present meaningful survey responses by breaking down the data into an understandable format.

Table 9: Result of demographic

Gender	Frequency	Percentage (%)
Male	26	26.8
Female	71	73.2
Total	97	100
Age	Frequency	Percentage (%)
20-29 years	50	51.5
30-39 years	24	24.7
40-49 years	23	23.7
Total	97	100
Race	Frequency	Percentage (%)
Malay	76	78.4
Chinese	14	14.4
Indian	6	6.2
Others	1	1
Total	97	100
Employment Status	Frequency	Percentage (%)
Student	37	38.1
Working	52	53.6
Unemployed	8	8.2
Total	97	100
Seller or Buyer of Durian	Frequency	Percentage (%)
Seller of durian	14	14.4
Buyer of Durian	83	85.6
Total	97	100
Often of eating Durian	Frequency	Percentage (%)

Every month	23	23.7
Every durian session	66	68
Not eat durian	8	8.3
Total	97	100
Knowledge about smell detector	Frequency	Percentage (%)
Yes	33	34
No	64	66
Total	97	100

4.3 Means of Drives on Importance

Table 10 shows the value of the mean for the importance for each driver. The mean value is represented to each merged issue and drivers which are mentioned in chapter 3. According to Table 10, the importance of driver's mean is being placed based on the sequence from the highest to the lowest mean. The highest mean is 4.1237 to the lowest mean is 3.4227.

Table 10: Means of drivers on importance

No.	Issues and Drivers	Mean
1	Detection of specific smells.	3.9278
2	Identification of these code smells	3.9897
3	Prospective processed durian product in Malaysian market.	3.9588
4	Detection of specific smells.	3.5773
5	The test suite quality based on how much it covers structural elements.	4.0309
6	Fruit have a steady and growing market and are well-established products	3.9175
7	Identification of durian code smells	3.9278
8	Retained the aroma components.	3.9588
9	A tool aimed to analyze test suite	3.4227
10	Structuring of the smell detector technology	4.1237

4.4 Mean of Drivers on Level of Impact

Table 11 illustrates the mean value for impact drivers. Result shows resource of efficiency is the highest mean represents the highest impact towards Smell detector toward durian fruit in Malaysia with 4.1715 mean value. Lastly, the mean result will bring forward to the next analysis of impact and level of uncertainty.

Table 11: Means of drivers on level of impact

No.	Issues and Drivers	Mean
1	Detection of specific smells.	3.8969
2	Identification of these code smells	4.0206
3	Prospective processed durian product in Malaysian market.	3.9485
4	Detection of specific smells.	3.6082
5	The test suite quality based on how much it covers structural elements.	4.0000
6	Fruit have a steady and growing market and are well-established products	4.1715
7	Identification of durian code smells	3.9897

8	Retained the aroma components.	3.8969
9	A tool aimed to analyze test suite	3.5258
10	Structuring of the smell detector technology	4.0515

4.5 Mean of Drivers on Level of Uncertainty

The analysis continues by determining the level of uncertainty for each driver and its mean value. Table 12 shows the mean value based on the rating scale for each level of uncertainty reported by questionnaire respondents. This is to compare the drivers with the greatest mean value. The highest mean value indicates the greatest degree of uncertainty for the drivers which is the highest value is 4.0619. To create the impact-uncertainty analysis, all mean values for the level of uncertainty will be moved forward.

Table 12: Mean of drivers on level of uncertainty

No.	Issues and Drivers	Mean
1	Detection of specific smells.	3.9691
2	Identification of these code smells	3.5567
3	Prospective processed durian product in Malaysian market.	3.9278
4	Detection of specific smells.	4.0619
5	The test suite quality based on how much it covers structural elements.	3.5258
6	Fruit have a steady and growing market and are well-established products	3.5258
7	Identification of durian code smells	3.8660
8	Retained the aroma components.	4.0000
9	A tool aimed to analyze test suite	3.9897
10	Structuring of the smell detector technology	3.9381

4.6 Impact-Uncertainty Analysis

Impact-uncertainty analysis is conducted to identify the top two drivers with high impact and high uncertainty values. These two drivers will then be used to develop the scenario analysis.

Table 13: Mean of the 10 leading drivers on level of impact and uncertainty

No.	Issues and Drivers	Impact	Uncertainty
1	Detection of specific smells.	3.8969	3.9691
2	Identification of these code smells	4.0206	3.5567
3	Prospective processed durian product in Malaysian market.	3.9485	3.9278
4	Detection of specific smells.	3.6082	4.0619
5	The test suite quality based on how much it covers structural elements.	4.0000	3.5258
6	Fruit have a steady and growing market and are well-established products	4.1715	3.5258
7	Identification of durian code smells	3.9897	3.8660
8	Retained the aroma components.	3.8969	4.0000
9	A tool aimed to analyze test suite	3.5258	3.9897
10	Structuring of the smell detector technology	4.0515	3.9381

Table 13 indicates the comparison of mean value between the level of impact and level of uncertainty. Mean values recorded in Table 11 and Table 12 were transferred into Table 13. This table shows clearly the corresponding mean for each driver in the impact-uncertainty analysis. The main

purpose of the analysis is to determine the highest outcome in terms of impact and uncertainty. All data was used to construct impact and uncertainty analysis as shown in Figure 4.8. The top two coordinates with high impact and uncertainty were chosen, which is D7 (3.9897, 3.8660) and D10 (4.0515, 3.9381). D7and D10 has the highest level of impact and level of uncertainty for the future of Smell Detector toward durian fruit in Malaysia. The two top drivers which is Identification of these code smells and Structuring of the smell detector technology. These two drivers will be selected as the top drivers and will be used to generate in the next chapter.

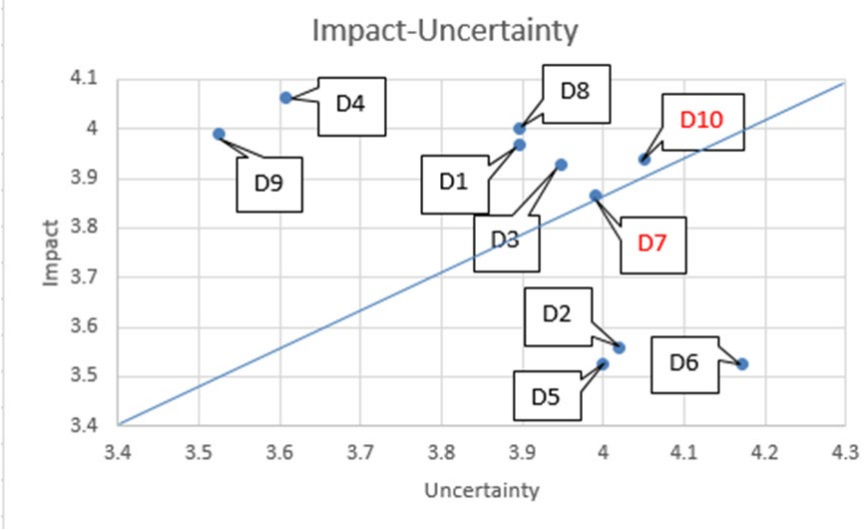

Figure 1: Impact-uncertainty analysis

5 Discussion And Conclusion

5.1 Structuring of the smell detector technology

This driver had gathered the highest votes in terms of importance while being the most impactful drivers compared to the rest of drivers. It had a score of 4.0515 and 3.9381 in terms of uncertainty and impact respectively out of the total score of 5.000. The need for the structure of the smell detector technology is the most impactful in the respondents' perspective because the smell detector is the best choice for interconnection because the user can get in the structure of the smell detector without losing the real smell of durian. The impact is related to the consumers' motivation in smell detector toward durian fruit. According to Maslow's Hierarchy of Needs, human behavior and their decisions are based on physiological, safety, social, esteem and self-actualization needs (Thompson, 2017) and although different people have different needs, they are directly related to the demand for the smell detector of fruit durian in Malaysia. From an economic point of view, the demand or need for smell detectors will naturally increase the marketing supply of durian.

5.2 Identification of durian code smells

The second driver which had the second highest vote in importance while being the most uncertain drivers compared to the rest of the drivers is on identification of durian code smells by using smell detector. It had the score value of 3.9897 and 3.8660 out of 5.000 in uncertainty and impact respectively. Respondents opined that the driver is the most uncertain and unpredictable in future development and its impact on the future prospects of smell detectors toward durian fruit in Malaysia. We should never underestimate the power of smell in our daily lives and choices, especially when it comes to durian fruit. Although we may tend to think that it arises from visual cues, research shows that it is the unique smell of durian, which consists of various type of durian with different code and the smell that highlights the system of this royal fruit that we unconsciously avoid (Alpha Aromatics, 2017).

5.3 Discussion Based on the Second Research Objective

The second goal of this study was to investigate the future trend of smell detectors toward durian fruit in Malaysia. It is to identify the trends that will act as driving forces for future development and how they will change and shape the future environment and market of smell detectors. The trend is achieved by performing scenario analysis on four different alternative scenarios based on the top two drivers identified through the impact-uncertainty analysis. These scenarios provide insight into four distinct possibilities that could occur in the next five years, or from 2022 to 2027. In the Figure 5.1 development of four alternative scenarios which is the emergence of new normalization, stagnant society, boom and bust, and disruptive invention, which have been further demonstrated and discussed in terms of possible implications. The scenarios will be discussed regardless of whether the outcome is positive or negative in the time frame forecasted.

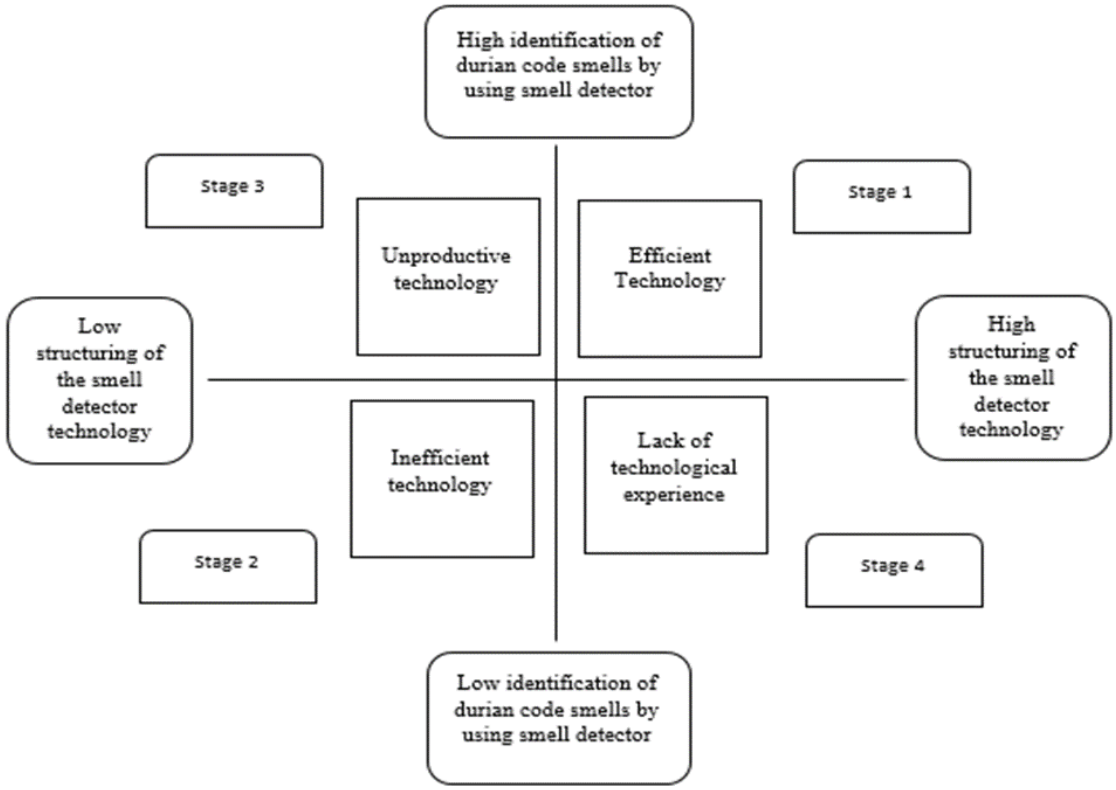

Figure 2: Development of four alternative scenarios

The first scenario occurs when there is a high need for the identification of durian code smells by using smell detector in the structuring of the smell detector technology. It will give birth to a new kind of normalization where the smell detector towards durian fruit grows rapidly and thrives as the main marketing medium. Efficient technology refer to a situation which the high of identification of durian code smells by using smell detector and it will make the structuring of the smell detector technology will high too. This scenario is the ideal scenario for smell detector toward durian fruit where both the need and generation continuously improve and develop the industry. When the society perceive there is a high need for the identification of durian code smells by using smell detector, the structuring of the smell detector technology will be motivated and encouraged to develop and discover a better smell detector especially toward durian fruit.

Next, the second scenario is inefficient technology which when there is a low need for the identification of durian code smells by using smell detector in a structuring of the smell detector technology. This scenario is where the society perceived that there is no need for smell detector in marketing while the structuring of the smell detector technology is low. This is the worst scenario in

terms of development in marketing as the society do not have the resources or knowledge to innovate a new technology in order to replace smell detector in marketing after perceiving it to be only to have a low usage in durian marketing. Hence, the durian marketing sector will remain stagnant and constant in terms of technology used.

After that, the third scenario which is unproductive technology occurs when there is a high need for the identification of durian code smells by using smell detector while still in the absence of structuring of the smell detector technology. The scenario would be an initial lack of technological experience in smell detector marketing due to a high need for the identification of durian code smells by using smell detector as perceived by the consumer. However, the technology did not last to a sustainable market as the structuring of the smell detector not have the skills and ability to apprehend the technology. It suggests the ability to demand smell detector but had the inability to sustain the technology due to the negative attitude of the technology enablers. Smell detector generally possesses a short life cycle which contributes to the failure of the research and development and commercialization effort. Hence, there will an unproductively technology in the application of smell detector in durian marketing activities.

Lastly, the last scenario is lack of technological experience was generated by the presence of structuring of the smell detector technology and a low need of the identification of durian code smells by using smell detector. Generally, with a highly structuring of the smell detector but a low need for smell detector, it will lead to new innovations that are able to replace and disrupt the market position of smell detector. This scenario is good for technology marketing development and unfortunately a negative situation for the future development of smell detector in durian marketing. Hence, there will be the lack of technological experience with low in identification of durian code smells by using smell detector.

5.4 Recommendation

The application of smell detector has been spreading its influence in varieties of industries such as manufacturing, education and much more. The current development of smell detector toward durian fruit has the potential to drives and push forward the marketing sector's technology in the future. Thus, the study had provided recommendations for any future study purpose on smell detector toward durian fruit in Malaysia.

5.5 Conclusion

In essence, this research was carried out to identify the issues and drivers of smell detector toward durian fruit and to study the future trend of smell detector toward durian fruit in Malaysia. Although durian is widely sold in Malaysia, the smell detector for durian fruit has never been implemented. This will even make it easier for buyers to track the type and quality of the durian and can reduce fraud in buying and selling durian in Malaysia.

Indeed, the high need for new innovation and the generation of technological knowledge will result in the positive development of smell detectors in the future for durian fruit in Malaysia. The need for relevance directly reflects the recognition and attention given to technology. On the other hand, the generation of technological knowledge will have skills and knowledge that promote the development and innovation of smell detectors in durian marketing

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