



UNIVERSITI PUTRA MALAYSIA

***FACTORS INFLUENCING INTENTION TO PURCHASE FRAUDULENT
HONEY AMONG MALAYSIAN CONSUMERS***

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By

NUR NISAA BINTI AHMAD

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirements for the Degree of Master of Science**

July 2021

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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July 2021

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This study explores the topic of food fraud using honey as the context. Honey has been identified statistically as one of the most adulterated ingredients. It has a long history of dilution, substitution, misrepresentation of floral source, and geographical origin. The fraudulent honey industry has caused millions of dollars lost among pure honey producers around the world. But more alarmingly, the nutritional contents have been jeopardised by the fraudsters, which has resulted in consumers suffering monetary loss and exposed to health hazards. Gullible consumers create convenient targets for motivated offenders to take advantage of. Ignorance in consumers leads to poor buying practices. Our central thesis is that awareness influences the consumers' purchase intention, which later dictates their purchasing decision. Ideally, increasing awareness about honey fraud would minimise the purchase of fraudulent honey, hence encouraging fair competition among traders and eventually reducing the supply of fraudulent honey. Given the limited research on this topic, this paper aims to assess consumer awareness about fraudulent honey and its impact on purchase intention using an extended Theory of Planned Behaviour model. A quantitative online questionnaire survey was administered among Malaysian honey consumers. Multiple regression analysis was employed to generate the relationship between awareness, attitude, subjective norms, perceived behavioural control, and consumers' intention to purchase fraudulent honey. Findings show that consumers are aware of fraudulent honey but choose to buy it. Attitude and perceived behavioural control have a significant and positive relationship with the intention to purchase fraudulent honey. Consumers' unfavourable attitude towards fraudulent honey diminishes their intention to purchase it. Whereas, even with high perceived behavioural control, consumers choose to purchase fraudulent honey because it fulfils their needs. This study's practical implication is for marketers and policymakers to develop programs or create proper channels to educate consumers in making wise purchasing decisions.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

FAKTOR-FAKTOR YANG MEMPENGARUHI NIAT UNTUK MEMBELI MADU PALSU DALAM KALANGAN PENGGUNA MALAYSIA

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Kajian ini mengkaji tentang topik penipuan makanan dalam konteks madu. Madu telah dikenal pasti secara statistik sebagai salah satu bahan makanan yang sering dipalsukan. Ianya sering dicampurkan dengan gula atau terlibat dalam penyalahgunaan label bagi sumber flora dan negara asal pengeluarannya. Industri madu palsu telah menyebabkan kerugian yang besar dalam kalangan pengeluar madu tulen di seluruh dunia. Namun, perkara yang lebih membimbangkan adalah manipulasi kandungan zat dalam madu yang menyebabkan madu yang dibeli tidak setanding dengan harga yang dibayar, malahan boleh memudaratkan kesihatan pengguna. Pengguna yang tidak bijak akan mudah menjadi mangsa kepada peniaga yang tidak bertanggungjawab dan tidak beretika. Oleh itu, kajian ini dipandukan dengan perspektif bahawa kesedaran akan dapat mempengaruhi proses pembelian pengguna. Meningkatkan kesedaran tentang pemalsuan madu akan dapat mengurangkan pembelian madu palsu dan seterusnya mendorong persaingan yang adil dalam kalangan peniaga yang akhirnya akan mengurangkan bekalan madu palsu. Memandangkan terdapat kajian yang terhad mengenai topik ini, makanya kajian ini bertujuan untuk menilai kesedaran pengguna tentang madu palsu dan pengaruhnya terhadap niat pembelian menggunakan Teori Perilaku Terencana. Satu tinjauan soal selidik dalam talian dilakukan dalam kalangan pengguna madu di Malaysia. Regresi linear berganda digunakan untuk mengkaji hubungan antara kesedaran, sikap, norma subjektif, persepsi kontrol keperilakuan terhadap niat pengguna untuk membeli madu palsu. Hasil kajian menunjukkan bahawa pengguna menyedari tentang madu palsu dan memilih untuk membelinya disebabkan harganya yang lebih murah dan mudah didapati. Sikap dan persepsi kontrol keperilakuan berpengaruh secara signifikan dan positif terhadap niat untuk membeli madu palsu. Sikap negatif pengguna terhadap madu palsu mengurangkan niat mereka untuk membelinya. Sebaliknya, walaupun pengguna mempunyai persepsi kontrol keperilakuan yang tinggi, pengguna tetap memilih untuk membeli madu palsu kerana ia memenuhi keperluan mereka. Penemuan kajian ini dapat memberi implikasi secara praktikal dalam pelaksanaan kempen kesedaran awam untuk mendidik pengguna dalam membuat keputusan pembelian yang bijak.

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	ii
ACKNOWLEDGEMENTS	iii
APPROVAL	iv
DECLARATION	vi
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS	xii
CHAPTER	
1 INTRODUCTION	1
1.1 Research Background	3
1.2 Problem Statement	3
1.3 Research Objectives	5
1.4 Significance of the Study	5
2 LITERATURE REVIEW	6
2.1 Honey Industry in Malaysia	6
2.1.1 Beekeeping in Malaysia	6
2.1.2 Honey Trade in Malaysia	7
2.2 Honey Fraud Cases	8
2.2.1 Honey Fraud in the United States	8
2.2.2 Honey Fraud in Europe	9
2.2.3 Honey Fraud in New Zealand	9
2.2.4 Honey Fraud in Malaysia	10
2.3 Standards of Honey	10
2.4 Types of Fraudulent Honey	12
2.5 Challenges in Tackling Honey Fraud	13
2.6 Consumers and Honey	14
2.6.1 Consumers' Behaviour Study on Honey Consumption in Malaysia	14
2.6.2 Consumers' Behaviour Study on Honey Consumption in Other Countries	15
2.7 Awareness as a Construct	16
2.7.1 Level of Awareness about Fraudulent Honey	16
2.7.2 Study of Relationship between Awareness and Purchase Intention	17
2.8 Theoretical Framework- Theories in Support of Purchase Intention	18
2.9 Utilization of TPB into Research Framework	20
2.9.1 Attitude	20
2.9.2 Subjective Norm	21
2.9.3 Perceived Behavioural Control	21
2.9.4 Purchase Intention	22

2.6	Research Questions and Hypotheses	22
2.7	Research Framework	24
3	METHODOLOGY	25
3.1	Research Design	25
3.2	Sample	25
3.3	Questionnaire Survey Development	25
3.3.1	Independent Variable- Consumer Awareness	26
3.3.2	Independent Variable- Attitude	28
3.3.3	Independent Variable- Subjective Norm	29
3.3.4	Independent Variable- Perceived Behavioural Control	30
3.3.5	Dependent Variable – Purchase Intention	31
3.4	Pilot Study	32
3.5	Data Collection	32
3.6	Data Analysis	33
4	RESULTS AND DISCUSSION	34
4.1	Demographic Profiling	34
4.2	Descriptive Statistic	38
4.2.1	Descriptive Statistic for Awareness Items	38
4.2.2	One-way ANOVA tests	39
4.3	Inferential Statistic	40
4.3.1	Reliability and Validity Tests	40
4.3.2	Multiple Linear Regression	41
4.4	Discussion	43
5	SUMMARY, CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH	45
5.1	Summary of Research Findings	45
5.2	Implications of the Study	47
5.3	Limitation and Recommendations for Future Research	48
5.4	Conclusion	49
	REFERENCES	50
	APPENDICES	60
	BIODATA OF STUDENT	73
	LIST OF PUBLICATIONS	74

LIST OF TABLES

Table		Page
2.1	Findings from the press statements released by MOH	10
2.2	Composition criteria for honey	11
3.1	Questionnaire items for consumer awareness	26
3.2	Questionnaire items for attitude	28
3.3	Questionnaire items for subjective norm	29
3.4	Questionnaire items for perceived behavioural control	30
3.5	Questionnaire items for purchase intention	31
3.6	Reliability analysis of study constructs in pilot study	32
4.1	Socio-demo graphic statistics of respondents	34
4.2	Consumption and purchase behaviour of honey consumers	36
4.3	Mean score of awareness items	38
4.4	ANOVA tests of awareness on demographic profile	39
4.5	Reliability analysis of study constructs	40
4.6	Correlations and discriminant validity test	41
4.7	Model summary	42
4.8	ANOVA results	42
4.9	Multiple regression coefficients	42
4.10	Hypothesis testing for purchase intention	44

LIST OF FIGURES

Figure		Page
1.1	The food fraud matrix	2
1.2	Global honey exports, beehives, and productivity per hive	4
2.1	Export, import and balance of trade for honey in Malaysia, 2000-2015 (USD)	7
2.2	Theory of Planned Behaviour	19
2.3	Research framework of factors influencing the intention to purchase fraudulent honey	24

LIST OF ABBREVIATIONS

USP	United States Pharmacopeial Convention
TPB	Theory of Planned Behaviour
CCD	Colony Collapse Disorder
U.S.	United States
ICE	Immigration and Customs Enforcement
HIS	Homeland Security Investigations
ALW	Alfred L. Wolff
EU	European Union
JRC	Joint Research Centre
MEP	Member of European Parliament
MPI	Ministry for Primary Industries
MGO	Methylglyoxal
DHA	Dihydroxyacetone
UMF	Unique Manuka Factor
MOH	Ministry of Health
HMF	Hydroxymethylfurfural
PDO	Protected Designated Origin
PGI	Protected Geographical Indication
TRA	Theory of Reasoned Action
PBC	Perceived Behavioural Control
VIF	Variance Inflation Factor

CHAPTER 1

INTRODUCTION

Until recently, the transaction from farm to fork was as simple as from your local producers to buyers. Foods were produced locally and prepared at home with little processing. However, as technology grows, the food sector's complexity and dynamism increase in tandem. The food supply chain becomes longer and more interconnected globally with multiple transactions from producers to wholesalers to distributors to retailers before reaching consumers. Nowadays, it is common for a country to import food products from another continent. Hence, food goes through a complex system involving production, post-harvest handling, processing, storage, transport, and distribution before finally being sold through large or small retail outlets. We cannot ascertain what we eat and where it comes from anymore. It is a complex web with low traceability.

Food fraud is now becoming a topic of interest in food safety, mainly because of the potential health threat it could harbour. Although food fraud has long existed, the complex nature and length of the supply chain made food fraud an emerging global threat with a larger scale and geographical coverage. Food fraud is riskier than conventional food safety negligence because first, the acts are intentional and second, the adulterants are unconventional, both of which are designed to avoid detection. The global food industry suffered an estimated cost of US\$30 to US\$40 billion yearly to food fraud (PWC, 2017). Some historical examples of food fraud are the adulteration of pure honey with sugar; mixing olive oil with cheaper oil substitutes; dilution of milk; substitution of wild captured salmon with more inferior farmed species and the enhancement using dyes on low-quality spices (Moore et al., 2012). We also have the far extreme cases of food fraud such as the 2008 Chinese milk scandal of the melamine addition in milk products which cost a few deaths in China (Huang, 2014); and the 2013 horsemeat scandal of the European-wide substitution of processing beef with horsemeat (Lawrence, 2013). Food fraud is an old problem but a rising concern to the authority and consumers who are the end users in the food supply chain. Intervention and prevention are needed to avoid the detriment of legitimate businesses and consumers' trust in food integrity.

Since food fraud is a relatively new topic of research interest, terminologies such as 'food fraud', 'food adulteration', 'economically-motivated food', or 'food crime' are sometimes interchangeably used in academia. The Food Risk Matrix (Figure 1.1) developed by Spink and Moyer (2011) conceptualised the concepts by differentiating them according to action (unintentional or intentional) and motivation (gain or harm).

Food Quality	Food Fraud	Gain: Economic	Motivation
Food Safety	Food Defence	Harm: Public Health/ Economic/Terror	
Unintentional	Intentional		
Action			

Figure 1.1: The Food Risk Matrix

[Source: Spink and Moyer (2011)]

In a report commissioned by the Department of Homeland Security, food fraud is defined as a "collective term that encompasses the deliberate substitution, addition, tampering or misrepresentation of food, food ingredients or food packaging, or false or misleading statements made about a product for economic gain." In a simpler term, food fraud is the deliberate act of modification on food or food packaging, usually for financial gain.

Food fraud can be grouped into two distinct categories: food adulteration and food mislabelling. Food adulteration is the fraudulent act of substituting or diluting a high-value product with a cheaper or lower quality alternative to cut costs or increase the volume (Food Industry Asia, n.d.). Few of the classic example of food adulteration includes the substitution of extra virgin olive oil with cheaper vegetable oil varieties; addition of premier pure honey with the low-value sugar syrup; dilution of milk; substitution of wild captured salmon with more inferior farmed species; and enhancement using dyes on low-quality herbs and spices. Although these conventional adulterations may not necessarily pose a public health risk, they bear impending potential threat from the extent to which a fraudster would go for financial gain. This sheer greed is demonstrated in melamine adulteration in infant formula, which affected nearly 300,000 victims in China (Huang, 2014).

Another type of food fraud is food mislabelling. It is the misrepresentation or misdescription of food to deceive the consumers (Food Industry Asia, n.d.). Although food labelling might look trivial for some, rational consumers rely on product labelling information to make informed choices about the food they purchase and eat. For instance, consumers may wish to eat healthily through organically produced food or avoid certain animal products for religious reasons. Hence, food labelling is the bridge in providing accurate information from producers to consumers. Ideally, prepacked processed food should be authentic and accurately labelled to maintain consumers' confidence and trust in the food supply chain's integrity. However, unfortunately, that does not always happen. We have seen many fraudulent labelling cases due to businesses' sheer greed for financial gains, such as the European-wide substitution of processing beef with horsemeat in 2013 (Lawrence, 2013).

1.1 Research Background

This study explores the topic of food fraud using honey as the context. Honey has had a long history in the sphere of food fraud. It is prone to adulteration due to its high commercial value. It is priced higher than other sweeteners due to its high nutritional values and unique flavour characteristics (Oroian et al., 2018). In 2012, the United States Pharmacopeial Convention (USP) initiated the effort to raise awareness on food fraud. One of their initiatives is to develop a food fraud database by compiling records from scientific literature, media publications, regulatory reports, judicial records, and trade associations from around the world from 1980 to 2010. It was concluded that honey is one of the topmost adulterated food ingredients (Moore et al., 2012). It has a long history of dilution, substitution, misrepresentation of floral source and geographical origin.

To protect consumers' interest and ensure fair commercial practices, the Codex Stand 12-1981 Standard for Honey and European Council Directive 2001/110/E.C. set out a clear definition and composition criteria for honey. Only products which consist of 100% honey can be sold under the label "honey". Legally, a honey blend can be marketed because it is not labelled as "honey" and has no intention to deceive. European Council Directive 2001/110/E.C. even included Bakers' honey to accommodate industry needs of industrial honey to produce food products such as cereals. Ultimately, consumers should have the right to be informed and choose.

1.2 Problem Statement

The importance of combating honey adulteration lies in the impact it harbours. Firstly, in protecting consumers and secondly, in preserving the apiculture sector. Basic consumer rights relevant to purchasing fraudulent honey are the right to safety, the right to be informed and the right to choose. Deceptive advertising is considered fraud. Consumers suffer monetary loss because they are not getting what they paid for. At the same time, Consumers are also exposed to the undesirable health risk from the addition of unconventional and uncontrolled adulterants. For example, those who buy honey for its nutritional benefits could compromise their health by not being informed.

On the other hand, fighting honey adulteration ultimately goes back to the importance of preserving the apiculture sector. Fraudulent honey undermines fair competition for the beekeepers. They must compete with the unreasonably low price of fraudulent honey. Demand and prices have increased on the retail level, but on the beekeeper level, prices and productivity have declined while the cost of production has increased. This price competition impairs the sustainability of the beekeeping industry. In the long run, with the decline in beekeeping activities, sustainability in the environment and agriculture will also be adversely affected since pollination by bees is vital in sustaining the ecological balance for the nation's food security.

The graph in Figure 1.2 shows a mismatch between the production yield and honey sales. The export of honey is increasing yearly even though the production yield of honey by the beekeepers is declining. The selling of fraudulent honey can explain this

contradiction. The question is, do consumers know that they are buying fraudulent honey?

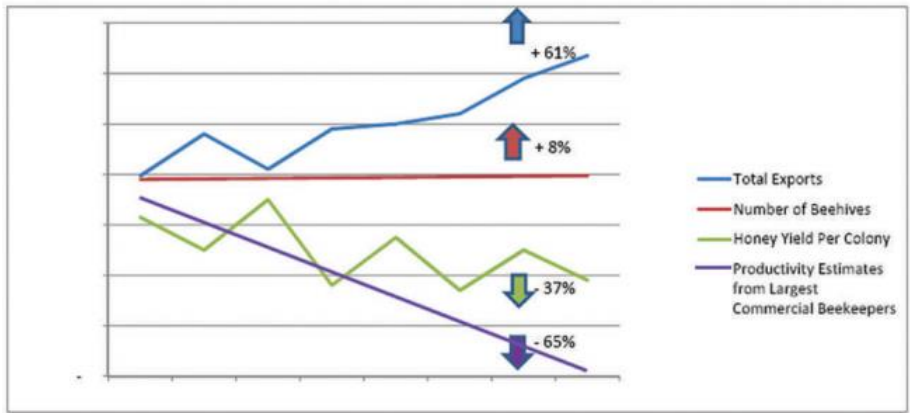


Figure 1.2: Global Honey Exports, Beehives and Productivity per Hive
[Source: Garcia and Phipps (2018)]

Since food fraud is an intentional act designed not to be detected, Van Ruth et al. (2017) proposed to look at food fraud vulnerabilities from a criminology standpoint using Routine Activity Theory from Cohen and Felson. Like other organized crimes, the vulnerability of honey fraud heightens with the presence of these three elements: (1) a motivated offender, (2) a suitable target, and (3) the absence of control measures which in our case is the low traceability system. Gullible consumers create convenient targets for motivated offenders to take advantage of. Ignorance in consumers leads to poor buying practices. We proposed that consumers make wiser purchasing decisions by being aware of fraudulent honey on the market. Our central thesis is that awareness influences the consumers' purchase intention, which later dictates their purchasing decision. Ideally, increasing awareness about honey fraud would minimize the purchase of fraudulent honey, encouraging fair competition among traders and eventually reducing the supply of fraudulent honey on the market. The growing power of consumers' voices can dictate companies' ways of doing business.

There is a lack of studies on consumer purchase behaviour of adulterated food. Most scientific studies report the prevalence of honey adulteration and focus on the latest most advanced honey authenticity detection method (Fakhlai et al., 2020; Se et al., 2019; Soares et al., 2017). In social science, most consumer studies assess consumers' honey preferences and criteria affecting their purchase decision (Batt & Liu, 2012; Blanc et al., 2021; Kallas et al., 2019; Murphy et al., 2000). Little is known on the level of awareness about honey fraud among Malaysian consumers and consumers' purchase behaviour of fraudulent honey. As such, insight into consumer awareness about fraudulent honey on the market and the factors influencing consumers' purchase intention of fraudulent honey warrant further investigation. Hence, this study serves as a baseline.

1.3 Research Objectives

This study aims to assess Malaysian consumer awareness about fraudulent honey and investigate the relationship between awareness and purchase intention towards buying fraudulent honey. Apart from that, other factors related to purchase intention will also be examined to enhance the predictability of the research model. Specific objectives of the study are:

- RO₁** : To determine the level of Malaysian consumers' awareness about fraudulent honey based on demographic profile.
- RO₂** : To examine the relationship between consumer awareness and their purchase intention of fraudulent honey.
- RO₃** : To investigate other factors influencing consumers' purchase intention of fraudulent honey.

1.4 Significance of the Study

Beyond the financial cost, food fraud can potentially lead to serious public health risks, damage brands' reputations, and ultimately weaken the public trust in authority (PWC, 2017). In the past, big players had the upper hand in dictating consumers' decisions because of the restricted communication channel. However, modern consumers want more transparency in their purchases, with the world becoming more virtual and borderless. Consumer's voice is seen to be making a presence in the industry. The decisive shift from supplier power to consumer power is apparent in this digital age. Companies are paying more attention to listening to consumers' wants and needs. Marketing has shifted tremendously in accommodating consumers' demand for honesty and ethical products. More and more brands are using marketing strategies such as organic, fair trade, and green products to promote an image of good business ethics and integrity. This study acts as a baseline study in understanding consumer behaviour of purchasing adulterated food. This study's outcome can be used as a knowledge base for policymakers and the trade association in preserving the food industry's sustainability and integrity.

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