

FACTORS ON CONSUMPTION OF SUGARY BEVERAGE
AMONG UTAR STUDENTS (KAMPAR CAMPUS)

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FACTORS ON CONSUMPTION OF SUGARY BEVERAGES
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BY

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PREFACE

The Final Year Project is regarded crucial for the programme Bachelor of Business Administration (Honours) Healthcare Management. It represents the culmination of each student's academic journey. The topic of research "Factors on Consumption of Sugary Beverage Among UTAR Students (Kampar Campus)" explore deep into increasingly relevant topic in the context of public health issue and health behavior.

Nowadays, dietary habits on consumption of sugary drinks have emerged as a health concern especially among university students. Sugary beverages had grown in popularity due to their accessibility, affordability and favorable taste. However, an excessive consumption of sugary drinks could lead to a variety of non-communicable disease such as obesity, diabetes and cardiovascular diseases.

The study aims to examine the key factors influencing the consumption of sugary beverage among students in UTAR Kampar Campus. By acknowledging these factors, we seek to better understand students' behavioral pattern in consumption and the underlying motivations of beverage choices. Additionally, it also provides valuable insights for developing effective health promotion strategies and intervention in the future.

We hope to contribute to the advancement of knowledge in public health while also supporting initiatives to promote better dietary lifestyle among university students. Ultimately, this project reflects our commitment to addressing contemporary health challenges through meaningful research and evidence-based solutions.

ABSTRACT

The consumption of sugary beverages has been on the rise now and ever. Even with the negative consequences that accompanies the action, the popularity seems to only increase and never subdue. This is said to be extremely relevant among livings with no age boundaries; whether it be a child or a senior. This study, seeks to investigate the factors on consumption of sugary beverages among UTAR students (Kampar Campus). The study adopted a quantitative approach and utilized survey method to collect data. Google Form questionnaires were distributed to UTAR students residing in Kampar Campus through both online platforms such as WhatsApp, Instagram, and Microsoft Teams and physical approach around campus by displaying QR code. Stratified random sampling and convenience sampling were applied under probability sampling. Through the use of Statistical Package for Social Sciences (SPSS) software, Multiple Linear Regression Analysis was performed. A total of 273 usable results were collected back and with the use of G*Power Software, a minimum of 119 respondents were needed. Results showed that parental influence and environmental accessibility have a direct effect on the consumption of sugary beverages while taxation shows negative correlations. The findings contributed to the limited studies on the topic of drivers to sugary beverages consumption and serves as new insights and foundation for business organizations, government, policy makers, and future researchers. Based on the findings, it is recommended for parents or guardians of minors to increase awareness of their actions in order to reduce the consumption of sugary beverages among youngsters all in the name of a healthier generation. Equally important, policy makers should consider increasing tax rates or form new policies to better influence the change as current interventions are at a loss.

(283 words)

Keyword: Sugary Beverages, Consumption, Taxation, Parental Influence, Environmental Accessibility

Subject Area: HB801-843 Consumption. Demand

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LIST OF ABBREVIATIONS

BFQ	Beverage Frequency Questionnaire
COSB	Consumption of Sugary Beverage
DV	Dependent Variable
EA	Environmental Accessibility
IV	Independent Variable
PI	Parental Influence
SB	Sugary Beverages
SEM	Socioecological Model
SPSS	Statistical Package for the Social Sciences
SSB	Sugar-sweetened beverage
T2D	Type-2 Diabetes
TX	Taxation
UTAR	Universiti Tunku Abdul Rahman
VIF	Variation Inflation Factor

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CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

The first chapter will comprise of background, issues, aim, hypotheses plus the significance for this research.

1.1 Research Background

Sugary Beverages (SB), also interchangeably known as Sugar-Sweetened Beverages are beverages with additional sweeteners or sugar (*Sugary Drinks*, 2023). As per Cambridge Dictionary, sugar is described as a sweet element achieved from the plants sugar beet and sugar cane, which serve the purpose as sweetener for foods and drinks (*SUGAR | Meaning in the Cambridge English Dictionary*, n.d.). Sugars exist naturally in foods such as from fruit or milk are not to be consider as added sugars therefore not grouped as part of SSB. Added sugar are syrups or sugars put in foods or drinks during the process of manufacturing, processing or when serving that does not naturally derive from the food itself (*Added Sugars on the Nutritional Facts Label*, n.d.). Beverages with ingredients such as; corn syrup, dextrose, fruit juice concentrators, cane juice, fructose, glucose, molasses, honey, malt and maple syrup, sugar either raw or cane, and sucrose are all considered as added sugars (CDC, 2023). These so-called SB include fruit juices, energy drinks, sports drinks, carbonated or soft drinks and sodas, sweetened waters, also tea and coffee beverages with added sugars.

The consumption of sugary beverages (COSB) has been rising not just in

Malaysia, but across the world too. According to Lara-Castor et al. (2024), in the span between 1990 to 2018, statistics has shown an increase of 23 percent towards SB intake among adolescents and children around the globe. With that being said, data revealed that adolescents and young adults are amongst the heaviest consumers but the facts are that SB are still consumed and enjoyed by individuals of all other and every ages. In Malaysia, the trend is also rising with consumption of plus minus 2.5 billion liters in 2024 where minimum of 1 soft drink is being consume by those aged between 18 to 34 and easy access to vending machines, convenience stores, and hypermarkets are said to be one of the factors (*Malaysia Soft Drinks Market Size, Share & Trends Analysis, 2033, 2025*). On the contrary, the recent trends of the increasing awareness towards health made it an optimistic assumption that these issues can be curb. According to Chen et al. (2022), reduction of sugar in beverages is the topic and the trend nowadays. Measures directed in reducing COSB have been implemented in more than 80 countries (Jacobs, 2025). This new trend is leading individuals to be more conscious when it comes to choosing the types of beverages to consume. According to Nandi (2025), the demand for sugar-free alternatives has increased with people aiming to decrease their sugar consumption with concerns regarding diabetes and obesity. To accommodate to the change, the food and beverage sectors has been coming up with new and innovative alternatives to keep up with the trend. According to Viet (2025), one of the fast-growing and most dynamic segments within the market nowadays surrounding health-conscious beverages is the zero-sugar industry. The term ‘zero-sugar’ assert that not more than 0.5 grams of either natural or added sugars is used in a product (KalaVita Nutrition, 2021).

SB posed a threat as a public health distress as it had been extensively contributing to the increase likelihood with obesity, stroke, type 2 diabetes (T2D) and not to forget heart disease, which are the leading causes of global fatality and golden years bygone due to disability (*Gobally, Consumption of Sugary Drinks Increased at Least 16% Since 1990, 2024*). Having a broader understanding regarding the topic will help tackle the rising issue

circling health burdens in Malaysia. According to Khaw et al. (2023), the predominant causes to the altogether disease burden in Malaysia are non-communicable diseases and is a significant health scare. In the year 2019, kidney ailment as a result of diabetes and diabetes itself had resulted in over 2 million deaths, not to mention, 11 percent of cardiovascular related deaths were the consequences of high blood sugar level (World Health Organization, 2024). T2D can lead to kidney, eye, foot, nerve damage, skin and mouth conditions and a long list of other complications (American Heart Association, 2024). Through changes in lifestyle, T2D is very much and often preventable (*NHS Diabetes Prevention Programme (NHS DPP)*, n.d.).

While the consumption is deteriorating ones' health, food manufacturers are still actively hyping and boosting sales as SB drives to profits. According to Fleming-Milici (2021), companies advertise their beverages as healthy despite the added sugar and invest a large sum in doing so to push sales. These tactics contribute to people consuming more SB. According to *Malaysia Soft Drinks Market Size, Share & Trends Analysis, 2033* (2025), steady rise of investment in soft drink market has been observed due to strategic partnership and increasing demand. This includes investing in smart bottling systems where over 900 bottles can be produced every minute and also automation to streamline the production efficiency and saving time. Additionally, through the Malaysian Investment Development Authority (MIDA), a tax exemption of 70 percent for five years for companies manufacturing beverages containing less than 5 grams of sugar for every 100ml drives companies to further pursue the beverage market with innovation as growth opportunity.

While much research has focused on consumption amongst children and adolescents, limited knowledge and findings are noted on the factors of consumption among young adults in Malaysia. Reducing the rate of preventable diseases can help Malaysians achieve a better quality of life without having to suffer the consequences from diseases derived from

COSB. According to *Sugary Drinks* (2023), significant validation and proof noted that SB give rise to the occurrence of diabetes and the prevalence is even more substantial in Asians and young adults. Taking everything into accounts and consideration regarding the past and current trends, it has been said that the overall expectation of consumption is more likely to rise rather than subside. According to ChiniMandi (2025), consumption of sugar in the global context is forecasted to increase by 1.2 percent every year due to income and population growth. In higher-income countries; people are influenced by health awareness therefore leading to reduce in sugar consumption whereas in lower-income countries it is the exact opposite (*OECD-FAO Agricultural Outlook 2025-2034*, 2025). Hence, it is important to investigate and get a sense of the factors and drivers to the COSB as conflicting and inconsistent findings are on the surface of our understanding right now.

1.2 Research Problem

One of the four pillars in the Health White Paper proposed by the Ministry of Health Malaysia is health promotion and disease prevention (CodeBlue, 2023). Claimed by World Health Organization (n.d.), sugar should stand for no more than 10 percent of ones' overall energy uptake in a proper diet. It has been said that one of the speediest-growing public health issue globally is T2D (Tseng et al., 2021). According to Magliano and Boyko (2021), an approximate of 537 million individuals ages between 20 to 79 has diabetes. The COSB and its direct linkage with T2D have been pointed out and stressed on over and over again by past researchers. According to Lara-Castor et al. (2024), in the year 2020, SB has contributed to an approximated 2.2 million new cases of T2D. The rates of mortality contributed by diabetes have been rising since the year 2000 (World Health Organization, 2024b).

In Malaysia alone, already forecasted stating by the year 2025, 7 million

people will be living with diabetes (Akhtar et al., 2022). Referring to Dattani et al. (2023), the most repeated and common basis of death in the world is due to non-communicable diseases. Although various interventions had been introduced and implemented with the strive to lower the intake of SB, limited study on the root cause on COSB among private university students in Malaysia still remains. Current findings lack comprehensive and in-depth review on variables such as taxation (TX), environmental accessibility (EA) and parental influence (PI) towards COSB. Hence it is crucial to address this gap as a hope to help prevent the younger generation from developing T2D later in life. Although it has been said that those older than 45 are at higher risk for getting T2D, an increasing number of adolescents, young adults and even children are being diagnosed too (Berg, 2023). According to World Health Organization (2024a), cardiovascular diseases, stroke, and T2D are amongst the top 10 diseases that causes more than half of the overall deaths in the world in the year 2021. Gupta (2023) termed sugar as ‘a silent killer’ in his discoveries.

According to Nursyuhadah Othman et al. (2024), although T2D is more common among adults, an increasing trend of diagnosis has been reported for those aged between 20-24 with the prevalence of 5.4 percent in 2019. Despite all the past researches conducted by various scholars, there are still limited findings focusing on non-public university goers in Malaysia, in the state of Perak. A research done by Harrington et al. (2020) focuses on children 8 to 11 years old from Ireland. Likewise, Miller et al. (2020) had conducted a similar study based on randomly selected Australian adults age 18 and above. Moreover, study conducted by Van Lippevelde (2020) focuses on adolescents of the ages 14 to 16 while Schneider et al. (2020) targeted children and teenagers whom were aged 0 to 17. Additionally, research by Hasan and Rony (2025) is regarding children of 8 to 14 years of age and Zhuang et al. (2021) targeted middle schoolers of the ages of 12 to 15 in Shenyang city of China. Correspondingly, Foo et al. (2020) selected Malaysian kindergartener between the ages of 3 to 6. Majority of the study conducted were on children and adolescents, hence, targeting

Malaysian private university students deem to be ideal in bridging the gap regarding factor on COSB. According to StudyMalaysia (2024), the age range of university goers in Malaysia generally falls between the range from 18 to 24 years old. This study mainly shines light on UTAR students within the Kampar Campus.

1.3 Research Objectives

1.3.1 General Objectives

The target regarding the groundwork is to evaluate COSB among UTAR students within Kampar Campus and figure out the factor that led to consumption of SB among them.

1.3.2 Specific Objectives

- 1) To examine direct effect between TX and COSB among UTAR students in Kampar Campus.
- 2) To examine direct effect between PI and COSB among UTAR students in Kampar Campus.
- 3) To examine direct effect between EA and COSB among UTAR students in Kampar Campus.

1.4 Research Questions

- 1) Is there a direct effect between TX and COSB among UTAR students in Kampar Campus?
- 2) Is there a direct effect between PI and COSB among UTAR students in Kampar Campus?
- 3) Is there a direct effect between EA and COSB among UTAR students in Kampar Campus?

1.5 Hypotheses of the Study

H1: TX has direct effect on COSB among UTAR students in Kampar Campus.

H2: PI has direct effect on COSB among UTAR students in Kampar Campus.

H3: EA has direct effect on COSB among UTAR students in Kampar Campus.

1.6 Significance of Study

Understanding the factor on COSB among UTAR students is significant as it gives valuable insight into the dietary behavior of students. University students are in a transitional period in their lives where they started to make independent lifestyle choice including beverage intake. This research enhances existing literature on students' behavior related to COSB. In addition, it also provides foundation for future research on successful strategies that educate students about knowledge on intake of SB.

Secondly, the outcome of research also yields empirical evidence for

policymakers to establish and implement the public health policy such as sugar taxation and restrictions on SB. Furthermore, policymakers can design targeted interventions and organize campaigns in universities which increase perception about COSB among students. This research can also help the government understand how price sensitivity affects consumption patterns to determine the appropriate tax level and structure. This study intends to assist policymakers to rearrange and reconsider the pricing of SB.

Moreover, the research findings will benefit educational institutions especially universities, as they can strengthen campus beverage policies. For instance, they may adjust the availability of SB sold in cafeteria or vending machine. Besides, the universities can also develop targeted health promotion campaign to encourage healthier dietary choices. For example, using point-of-purchase message or interactive events to encourage students to choose healthier drinks. The universities can also integrate the findings into curriculum in the field of nutrition and health sciences to enrich classroom discussions and initiate evidence-based outreach activities.

Lastly, conducting this research may extend the theoretical understanding of Socio-Ecological Model (SEM) by exploring the multi-level factors that sway SB intake. SEM emphasized individual behavior from the aspect of policy, interpersonal, institutional, personal and community. In this framework, all the variables, TX, PI and EA are incorporated to modify the SEM. By linking these three variables across SEM levels, the study enriches the model's explanatory ability in the context of SB consumption. It demonstrates that effective health interventions must address multiple layers simultaneously rather than standing alone.

1.7 Chapter Summary

To summarize, chapter 1 shines light on the backbone of the research topic. Chapter 1 discussed the possible influential factors on COSB which are said to be TX, EA and also PI. Research objectives, questions and hypotheses have been identified and developed. In the next chapter, an in-depth literature review awaits.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In chapter two, readers may gain insight on the research underlying theory, review of DV followed with three IVs, proposed theoretical framework, concluded with the establishment of factual assumptions.

2.1 Underlying Theories

2.1.1 Socio-Ecological Model (SEM)

The Socio-Ecological Model (SEM) was contribution of Urie Bronfenbrenner, an American psychologist back in 1977. It is a model used in understanding the development of human where interdependent levels of society play a role in shaping the society. Those levels include, starting at the base level with individual, interpersonal, community, organizational and finally policy (Campbell, 2025). The framework was later modified by McLeroy et al. (1988) to reflect health issues as he and his team found that the same elements of societal factors impacted health outcome (Gousse, 2024).

In the individual level of the model, it stresses on an individual's own attitudes, beliefs, skills, and knowledge regarding a particular health outcome. For example, people with good knowledge on nutrition is more likely to consume healthy food. Moving on to the next level; interpersonal. This level explained how relationships with people around us such as family, friends and peers influence our health or health seeking behavior. Next

is organizational which includes institutions like workplace, school, or healthcare facilities. Moreover, is community which is relationships between organizations and community environment including influences from norms, social networks, neighborhoods and resources within a society. Last but not least, is public policy such as regulations, legislations, laws, and policies whether it is federal, state or local. Policy can either be monetary; imposing fines and taxes, or social; ban smoking in public eateries (Kilanowski, 2017; Olaniyan et al., 2021).

The public policy level is the first level that will be apply in this study to reflect the first IV which is TX. It shows how tax set by the government impact consumption among target population. For example, increasing final purchase prices of SB through tax. The second IV which is PI will reflect the interpersonal level. It explains how parental behavior and dietary habit led to shifts in their children's SB consumption pattern. For example, children mimicking their parents' habit. The third IV of EA will reflect both the organizational and community level. It indicates how built environment within the community influences consumption. For example, building a bus stop next to a convenience store.

2.2 Review of Variables

2.2.1 Dependent Variable- COSB

Referring to Heaton et al. (2021), a credible and dependable measurement can assist in evaluating effectiveness of interventions to suppress COSB. The Beverage Frequency Questionnaires (BFQs) is used as a type of dietary evaluation tool to approximate the intake amount and types of beverages over time (Hedrick et al., 2014). It granted researchers ability to study the health and nutrition implication from beverage consumption therefore is

said to be a prized instrument in research. Though it was designed more than a decade ago by several researchers (Hedrick et al., 2010), it had proven to still be a relevant and reliable tool as it had been used by various researchers till today. To illustrate, Fausnacht et al. (2020), Md. Ashraful Islam et al. (2020), Hasheminejad et al. (2020), and Aldhirgham et al. (2025) are amongst the many that are impossible to account for all. Consumption is the action of using up something, regardless of other related factors such as quantity or frequency, as long as it is being used, it is considered as consumption. Therefore, in this study, any intake of SB is counted as consumption without accounting it as either 'high' or 'low'. The boundary for consumption is between zero to any, putting aside volume and quantity (Abbass et al., 2024). According to Miller et al. (2020), regardless of quantity, the sole conduct of consuming SB itself is conceived to be problematic. Though the frequency is not being heavily emphasize in this study, questionnaire assessing it will still be use as a way to standardize and group responses into quantifiable groups. The BFQs from Hedrick et al. (2010) was adopted, later modified according to literatures to categorize beverages into specific groups to reduce confusion and ambiguity. Similar types of beverages were merged as a single category to avoid overlapping with the intention to achieve a more accurate result. The measurement for quantity is also being excluded as to place focus on targeted objectives.

2.2.2 Independent Variable 1- TX

Based on literatures reviewed, ambiguous and contradictory results were obtained as various authors have shown mixed results and different perspectives. Studies were conducted in different countries targeting different populations. An overview; Luong and Vu (2020) Vietnam, Sanchez-Romero et al. (2020), Phulkerd et al. (2020) along with Phonsuk et al. (2021) Thailand, Edmondson et al. (2021) Philadelphia, USA, Royo-Bordonada et al. (2022) Spain, and Zhai et al. (2022) China.

The claim that reduction in consumption due to TX is concluded by Sanchez-Romero et al. (2020), Edmondson et al. (2021), Phonsuk et al. (2021), Hagenaars et al. (2021), plus Royo-Bordonada et al. (2022). Though Vietnam currently does not impose any tax on SB, a survey conducted by Luong and Vu (2020) had reveal that the intervention will lead to reduction in consumption if prices are increased due to TX. Individuals have said will replace SB with other substitutes such as beer, milk, wine and tea. This brings to show that even when the tax has yet to be impose, individuals had already changed their mindset on COSB, showing how big of an impact price increase due to TX can do to change ones' behavior. Moreover, a decrease of 2.5 percent in consumption from individuals of every age group were observed after implementation of tax in Thailand, notably among people with lower salary (Phulkard et al., 2020). Same goes to Chinese citizens who earn less, are more sensitive towards price shifts therefore are willing to reduce consumption (Zhai et al., 2022). As opposed to findings from Vall Castello and Lopez Casasnovas (2020) cited that well-to-do people react more significantly towards the imposition of tax by lowering both their consumption and purchase. The actual cost of SB is the prime influence for intake (Hagenaars et al., 2021). Not limited to consumption, the rise in price has also resulted to reduction in purchase (Vall Castello & Lopez Casasnovas, 2020; Fichera et al., 2021; Piekara, 2022). With that, it is clear that people are less willing to spend additional money on those beverages after the prices were increased due to tax. Other than that, tax had also affected marketers as a reduction in availability had been noticed (Cawley et al., 2020a). This is notably important as the prevalent that leads to COSB is the vast availability (Dono et al., 2020).

However, not all authors shared the same view as various also had stated that implementation of tax on SB is not significant with the reduction in consumption (Cawley et al., 2020b; Alhareky et al., 2021; Cawley et al., 2022). The contributing factor leading to this might be due to the ineffective or flawed in policy design as claimed by Popkin and Ng (2021), the ongoing rates of tax on SB are mostly too low. In Thailand, though TX on SB exist, the rate is not as sufficient (Phonsuk et al., 2021). According to Wendorf and Rogon (2025), there is no foundation to suggest that tax on SB improves health of the public as no notable gap in the incidence of diabetes and obesity is seen after the

implementation. From another perspective, Andreyeva et al. (2022) had stated that though the increased prices of SB as a result of TX had led to lower sales, there is no significant changes when it comes to consumption. It could be argued owing to the fact that consumers can make their own SB at home without having to bear the additional cost as taxes are only imposed on SB; prices for sugar in general is still relatively low, especially after subsidy. Plus, the ineffectiveness is also due to the absence of TX. TX on SB has been employed in over forty countries and yet Vietnam seems to be left out (Nguyen et al., 2023). According to Hahn, a new TX law on SB has been introduced and is set to take effect starting from the year 2027 with 8 percent and rising to 10 percent in the following year after.

In conclusion, past researches have concluded mixed results on the correlation between TX with COSB. While some studies have identified a significant link and others found no such relationship. These inconsistencies findings may be due to differences in countries carried out and target population.

2.2.3 Independent Variable 2- PI

Stated by Grey et al. (2022), parents have direct influence towards many children's health behaviors. PI is generally defined as how parents impact their children's behavior and development (De Araújo Scattolin et al., 2021). Parents hold the right to choose what to feed their children and introduced dietary habits into their children's lives (Bogaard, 2023). Moreover, PI conceptualized as multidimensional set of mechanism in attitudes, beliefs, values and social support which impact children's activities or habits (Su et al., 2022). Existing studies suggest a significant relationship between PI and COSB while others indicate no direct impact. Firstly, Guo et al., (2021) in China found that parents had strong influence on children SB consumption, aligning with Talati et al. (2024). It is because parents model drinking habits at home and shape perception of what drinks are acceptable. Schneider et al. (2021) and Grap et al. (2024) also affirm the conclusion stating parents act as important role model to their children.

In the United Kingdom, Hasan and Rony (2025) emphasized that parents purchase beverage for personal consumption and as reward for their children inadvertently encouraged children to adopt similar behavior. According to Sylvetsky et al. (2020), youngsters develop strong cravings toward SB when they see people around them consuming it. Notable number of parents had loosen the restriction towards COSB on their children during the pandemic leading to an increase intake (Sylvetsky et al., 2022). However, other literatures suggest negative connection. The study from Qiu et al. (2021) pointed out that PI does not directly associate with COSB. Instead, the influence is mediated by other factors such as availability of SB at home and adolescent' self-regulation. Although parents had discouraged intake towards their children, consumption will not decrease unless accessibility and self-regulation was control.

While previous research provides valuable insight into relationship between PI and COSB, there are several limitations that warrant further investigation. Firstly, most of the existing studies focuses on high-income countries such as the study from Schneider et al. (2021) in United States, Talati et al. (2024) in Australia, Grap et al. (2024) in Germany and Hasan and Rony (2025) in United Kingdom. Hence, lacking on low or middle-income countries like Malaysia where parental practices may vary due to cultural and dietary differences. In addition, the studies grouped children and adolescents together without addressing potential age-specific differences. Methodological gap was also discovered. Most of the studies used self-reporting measures that may be sensitive to social affirming bias and recollection error. This stresses exceptional need for longitudinal research design to better acknowledge the complex influence on parents with COSB.

In conclusion, this comprehensive literature review had revealed complex interplay between PI and COSB. Some of the studies identified significant link and others found no such relationship. Geographical and methodological differences were also noted. By addressing these research gaps, future research can generate evidence-based strategies to better

promote healthier beverage consumption among adolescents.

2.2.4 Independent Variable 3- EA

Based on Liu et al. (2025), EA refers to ease or capacity access to something which include geographical proximity. The accessibility can be calculated in terms of distance from food stores to households (Konapur et al., 2022). EA is also known as absolute food environment and the environmental cues like number of food outlets such as supermarkets or restaurant which may prompt behavioral response and influence consumers' meal choices (Kalbus et al., 2023).

While some studies have found a link between EA and COSB, others have failed to replicate these findings. According to Sari et al. (2022), it shows placement of SB at home was a major factor to consumption because students with frequent access at home have higher likelihood to consume rather than those with limited access. Rocha et al. (2024) and Ra and Kim (2025) stated drinks sold in vending machine or cafeteria at school increases availability. It is because student usually spend longer times in school every day. Foo & Tan (2021) elaborated this stating that school is the most common place that sold beverages in pre-packaged forms which influences their dietary choices. Li et al. (2024) stated the expansion of supermarkets and grocery stores with different types of SB increase consumption. However, researchers also identified insignificant result. Bobade and Ozoh (2022) debated that the increase in consumption is due to it being heavily advertised and marketed to adolescents, creating a strong brand recognition. Previous studies had provided enlightening perspectives into the connection between EA with COSB, but there are notable limitations that must be considered. The existing research such as Li et al. (2024), Rocha et al. (2024), and Bobade and Ozoh (2022) focuses on specific areas like secondary school and less on university settings. Thus, future research should beyond studies into broader context to capture the complete

range on COSB. Moreover, methodological limitations were found. The findings from Bobade and Ozoh (2022), Sari et al. (2022), Rocha et al. (2024), Li et al. (2024), and Ra and Kim (2025) all rely on self-report data such as questionnaire which may be vulnerable to societal pressure bias and call back errors. Future study should consider longitudinal design and utilize more objective measures to better understand the complex influence of EA on COSB.

To conclude, this comprehensive literature review has shown the complex interplay between EA and COSB. While some of the studies identified a significant link and others found no such relationship. There are also a few gaps in the terms of geographical and methodological. Thus, by filling the gaps, future research can generate evidence-based strategies for promoting healthier beverage choices.

2.3 Proposed Theoretical Framework

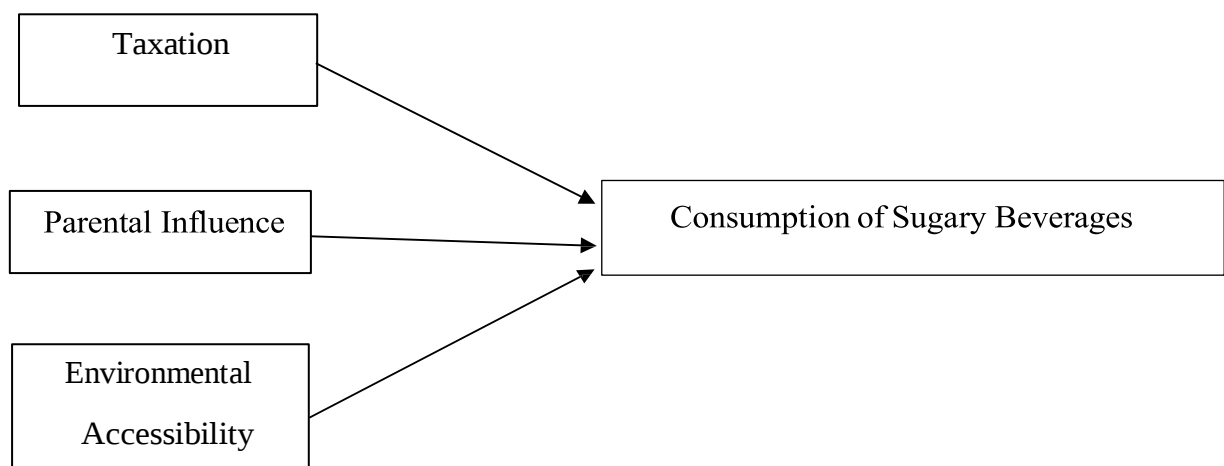


Figure 1 Proposed Theoretical Framework

Referring to Figure 1, a conceptual framework is being introduced to study the COSB among pupils in UTAR. The conceptual framework involves 3 IVs namely TX, PI and EA.

2.4 Hypotheses Development

2.4.1 Hypothesis 1- TX and COSB

According to Liu et al. (2022), imposing tax on sugar is a cost-effective and sensible way to lower the economic and health burden arises from over consumption of sugar. The policy will increase the final purchase price of the beverage itself (Vall Castello & Lopez Casasnovas, 2020). According to International Trade Administration (2024), Malaysian consumers are deemed to be price sensitive where large proportion will opt for lower price rather than higher quality.

Other than that, Luong and Vu (2020) had said that after the implementation of tax, reduction in COSB will be noted accompanied by substitution of SB with drinks such as beer, tea, milk, and wine. This shows that people would rather drink beverages where prices are not affected with tax. Similar findings are obtained from scholars from different countries, namely Vietnam, China, United States, Thailand, Mexico, and Spain.

These results suggest that the increase of price due to the imposition of tax had led to fewer purchase, availability, willingness, and attractiveness therefore reducing the consumption at the same time. Findings were noted from different countries and respondents of various backgrounds.

Rooted in the conclusion of past study, the hypothesis established is as below:

H1: TX has direct effect on COSB among UTAR students in Kampar Campus.

2.4.2 Hypothesis 2- PI and COSB

Tang et al. (2020) found direct effect of PI toward COSB. Students usually stay with their parents for longer time period, thus their dietary behaviour may be swayed. Most of the parents who consume SB at home for own pleasure may indirectly become a bad role model for their children, resulting in COSB. This claim is further strengthened by Calcaterra et al. (2023).

According to Sylvetsky et al. (2020), youngsters develop strong cravings toward SB when they see people around them consuming it. Khan et al. (2021), found that parents' attitudes and perception towards SB also do result in children's consumption. Children with parents that have lower health knowledge and whom do not view SB negatively, have higher intake than those with parents with better health literacy.

Findings justified that parents portray a crucial function in impacting the types of beverages their children consume. Their action, perception, attitude and knowledge whether it being good or bad are constantly being observe and mimic by their carbon copies.

Rooted in the conclusion of past study, the hypothesis established is as below:

H2: PI has direct effect on COSB among UTAR students in Kampar Campus.

2.4.3 Hypothesis 3- EA and COSB

According to Aranis et al. (2024), EA can be linked with COSB. The availability of SB at home increases accessibility and convenience leading to frequent consumption. This is also supported by Smirk et al. (2021). According to Rocha et al. (2024) with Ra and Kim (2025), school is also one of the settings that increases consumption rate due to accessibility

especially through vending machines.

Individuals with easy access to fast-food outlets, dairies and supermarkets also do affect consumption rates. Individuals who frequently visit the stated locations often purchase SB due to high availability and convenience (Smirk et al., 2021). As claimed by Dono et al. (2020) supermarkets and convenience stores are the most common purchase location that include different types of sugary drinks.

These results suggest that EA drive consumption. Easy access to physical environment such as school, home, fast-food outlets, supermarkets and convenience stores where SB are being offered is the highlighted focus.

Rooted in the conclusion of past study, the hypothesis established is as below:

H3: EA has direct effect on COSB among UTAR students in Kampar Campus.

2.5 Chapter Summary

To wrap it all up, chapter 2 is all about review of literatures starting with the underlying theories, DV; COSB and the three IVs namely TX, EA and PI. The proposed theoretical framework followed right after and the chapter is tied up with the development of hypotheses.

CHAPTER 3: METHODOLOGY

3.0 Introduction

In the third chapter, outline of study design, sampling style, ways to collect data, and the proposed instrument for analyzing the data is disclosed.

3.1 Research Design

Stated by Jain (2024), a sturdy research design comprises of description of data sources, specification of hypotheses, problem identification, literature reviews on statement of problems, and justification on data interpretation. It has also been said that a research design assist in providing direction and structure to the study, warranting rave results.

Quantitative research is being chosen for this study. Quantitative research emphasizes on collection, analysis, and interpretation of data to verify hypotheses developed in a study while also answering research questions and reaching research objectives (Ghanad, 2023). Quantitative utilizes statistical analysis to analyse patterns, compare groups or link variables, to help support the claims made in a study through comparison of existing literatures. Literature review is very important in quantitative research to provide explanation and importance of a particular study. The research method includes survey such as online questionnaires and secondary research which is using data gathered by past researchers (Bhandari, 2020).

Under quantitative, confirmatory research is chosen. According to Troisi and Grimaldi (2022), it is a research approach used to test hypotheses that

are set before carrying out the intended research. The hypotheses are set based on literature reviews and researches done beforehand. Confirmatory research aims to either accept or reject pre-determined hypotheses with the use of factual evidence at the end of the study (Williams, n.d.). It includes making comparison with new findings to establish statistical relationships in the outcome. The process involves applying all the data gathered to the research questions rather than using individual's imagination and perception.

3.2 Sampling Design

3.2.1 Target Population

Additionally, the intent batch to examine includes all UTAR pupils currently studying in the Kampar Campus which is the main campus out of the two. The level of education include foundation, undergraduate, and postgraduate accounting for both local and international students. The total number of target population is 10,490 and this figure was obtained from the Division of Admissions and Credit Evaluation, UTAR Kampar (Appendix 1 & 2).

3.2.2 Sampling Frame

A docket that comprises each subject of the whole population is a sampling frame (Prof. Essa, 2024). The sampling frame for this research was obtained from the Division of Admissions and Credit Evaluation, UTAR Kampar. According to the information given, out of the whole population of 10,490 students, there are 2204 foundation students, 7847 undergraduates, and 439 postgraduates (Appendix 2). Important to note that the sampling

frame obtained is incomplete as it only reveals the exact number of students without their names due to privacy concerns.

3.2.3 Sampling Size

Sample size reflects total character selected from the complete population to represent the whole population in a study (Coursera Staff, 2025). The sampling size for this research is determined using the G*Power. According to Kang (2021), G*Power is free and easy to use, hence a recommended instrument for power and sample size calculations for numerous statistical methods including F tests. Power analysis helps establish the minimum sample size and is highly proposed for business and social science studies (Memon et al., 2020). After running the data using the G*Power software, the base line sample size is considered to be **119 respondents** (Appendix 3).

3.2.4 Sampling Technique

Sampling technique points to procedure employed to choose a group out of the total population for research (*What are sampling methods?*, n.d.). This research uses both probability and non-probability sampling. Selection of sample at random from the population equals to probability sampling (Nikolopoulou, 2022). A mixed sampling approach is chosen for this research. Stratified random sampling following probability is the division of population into subgroups and randomly selecting sample from each subgroup to ensure representative from whole population, therefore yielding optimal accuracy (Makwana et al., 2023). Students of UTAR in Kampar Campus stood as the population while the subgroups being Foundation, Undergraduates, and Postgraduates. Sample size for each subgroup is proportional to the actual size of total population (Simkus, 2023).

Continuously, convenience sampling under non-probability is applied where partakers are picked based on researchers' accessibility and their availability. Due to the nature of it being low-cost, requires little effort and time, it is deemed as a preferred method for many researchers (Golzar et al., 2022).

Proportional representation of total population

The total population of **each subgroup** are Foundation; 2204, Undergraduates; 7847, Postgraduates; 439. Total population; 10,490. (Appendix 2).

Foundation	Undergraduates	Postgraduates
(2204/10,490) 100	(7847/10,490) 100	(439/10,490) 100
= <u>21.010%</u>	= <u>74.805%</u>	= <u>4.185%</u>

Sample size for each subgroup (Appendix 4)

Foundation	Undergraduates	Postgraduates
(2204/10,490) x 119	(7847/10,490) x 119	(439/10,490) x 119
= <u>25 respondents</u>	= <u>89 respondents</u>	= <u>5 respondents</u>

The minimum number of students needed to represent the whole population from each sub-group is 25 foundation students, 89 undergraduate students, and 5 postgraduate students.

3.3 Data collection method

Data collection is among one of the most crucial proceeding in research. Collecting data helps to improve quality of the results and reduce errors in the research process. Primary data is gathered by researcher in first hand

(Ajavi, 2023). The example of primary data method includes questionnaires, experiments and interviews.

The questionnaire is employed as the study instrument through data collection from students in UTAR Kampar Campus. A series of questions on COSB are included in the questionnaire. According to Caduff and Ranganathan (2023), questionnaire is an inexpensive method which can handle rapid collection of huge amounts of data although it involved diverse participants. The fixed choice questions are used in the survey allowing respondents to make choices to a set of predetermined option (Lindemann, 2025). This questionnaire is created using Google Form and distributed through online platforms (Instagram, Microsoft Teams, and WhatsApp), and also sharing of questionnaire in the form of QR code physically around campus. Aida Aliah Abu Bakar et al. (2020) and Drolet-Labelle et al. (2025) also utilizes questionnaire in their studies related to COSB.

3.4 Research Instrument

3.4.1 Questionnaire Design

Layout on questionnaire items for this investigation comprised of cover layout plus five divisions. Section A express demographic which collects the respondents' personal background. This part include gender, age, ethnicity, currently pursuing and monthly pocket money. Gender, ethnicity and current education degree are measured using nominal scale whereas age along with monthly pocket money uses ordinal scale.

In Section B, it is designed to assess the regularity of intake upon various types of SB. In this part, the question reads "How often do you consume the following beverages?" and respondents need to choose one option for

each beverage category based on their consumption habits. The beverages are grouped into six categories which are carbonated drinks, energy and sports drinks, powdered drinks, sweetened coffee and tea, fruit and vegetable flavored drinks and flavored waters and cordials. The six-point frequency scale is considered as ordinal scale to indicate how often they consume each beverage category. For instance, “Never/rarely”, “1 time per week”, “2-3 times per week”, “4-6 times per week”, “1 time per day” and “2 or more times per day”.

Moreover, there are 5 questions related to factors for the three IVs; TX, PI and EA in Section C, D and E respectively. Interval scale is used, namely Likert Scale. Participants will opt from the scale of one to five. To elaborate, 1 reflects “Strongly Disagree”, 2 reflects “Disagree”, 3 reflects “Neutral”, 4 reflects “Agree” and 5 reflects “Strongly Agree”. After data collection, IBM SPSS (Statistical Package for the Social Sciences) statistic is applied for explaining the reliability of questionnaire elements.

3.4.2 Pilot Test

Pilot test illustrate action of evaluating a project on a smaller scale of the actual study before the real implementation to check the validity, reliability and also feasibility of the research instruments, design and method (Misa, 2025). In this research, 30 participants are used in conducting the pilot assessment using the IBM SPSS software. Making room for 20 percent of non-response rate, 30 respondents are adequate to test reliability of questionnaires (Mohamad Adam Bujang et al., 2024).

Table 3.1:

*Alpha Coefficient **before** amendment*

Variable	Number of Items	Cronbach's Alpha
COSB	6	0.807

TX	5	0.806
PI	5	0.787
EA	5	0.658

Table 3.2:

*Alpha Coefficient **after** amendment*

Variable	Number of Items	Cronbach's Alpha
COSB	6	0.807
TX	5	0.806
PI	5	0.787
EA	4	0.712

Referring to Table 3.1, the Cronbach's Alpha value for DV and all three IV's fall within 0.658 to 0.807. Based on the results, illustrated that EA shows the lowest readings at 0.658, compared to the rest. In order to achieve standardization, we have decided to redraft the questionnaire which removed one question from the EA with the highest alpha value; as suggested by the SPSS software, while the rest remain unchanged. Hence, table 3.2 shows the result after amendment which illustrate good reliability for EA as the Cronbach Alpha has increased from 0.658 to 0.712.

3.5 Construct Measurement

3.5.1 Operational Definition

Table 3.3:

Dependent Variable

Variables	Items	Descriptions	Sources
COSB	COSB 1	Carbonated drinks (eg; Cola, Sprite)	Adopted and modified from Fausnacht et al. (2020)
	COSB 2	Sports and energy drinks (eg; 100 Plus, RedBull)	
	COSB 3	Powdered drinks (eg; 3in1 Milo sachets)	
	COSB 4	Sweetened coffee and tea (eg; coffee or tea with added sugar or cream)	
	COSB 5	Fruit and vegetable flavoured drinks (eg; not 100% pure fruit and vegetable juices)	
	COSB 6	Flavoured waters and cordials (eg: non-alcoholic, concentrated fruit and sugar syrup that dilute in water; Sunkist/Ribena Syrup)	

Table 3.4:
Independent Variables

Variables	Items	Descriptions	Sources
TX	TX1	A sugary beverage tax would reduce people's sugary beverage consumption.	Adopted and modified from Eykelenboom et al. (2021)
	TX2	A sugary beverage tax would reduce my sugary beverage consumption.	
	TX3	A sugary beverage tax would contribute to improving my beverage choices.	
	TX4	A sugary beverage tax limits my freedom.	
	TX5	I support imposing sugary beverage tax as a strategy to reduce consumption of sugary beverages.	
PI	PI1	If my parents do not regulate me, I would consume too much sugary beverages.	Adopted and modified from Morris et al. (2023)
	PI2	If I consume more than usual of sugary beverages, my	

		parents try to limit how much I have at the next mealtime.	
	PI3	My parents tell me that healthy beverages taste good.	
	PI4	My parents show me what healthy habit is by consuming healthy beverages themselves.	
	PI5	There are several different kinds of sugary beverages for me to choose between at home.	
EA	EA1	It is possible for me to get any sugary beverages by myself without anyone's help.	Adopted and modified from Bassul et al. (2020)
	EA2	I am allowed to access sugary beverages without my parents' consent.	
	EA3	Sugary beverages are easy to find or are automatically offered in eateries I visit.	Adopted from Fuster et al. (2025)

	EA4	I consider that I have easy access to sugary beverages at school.	Adopted and modified from Durette (2023)
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3.5.2 Scale Measurement

Nominal and ordinal scale are used in Section A, whereas the latter is used again in Section B and the remaining three sections are under interval scale. Nominal scale is the most straightforward types of measurement to group data into specific categories without ranking or order. Questions regarding gender and ethnicity are some of the examples. Ordinal scale arranged data in certain order without requiring equal quantifiable items (Digital E-Learning, 2022). The questions include age, education level, monthly pocket money, and consumption frequency where they are arranged from low to high within appropriate form. The Five Likert scale used under interval scale ranges amid strongly disagree fore strongly agree.

3.6 Data Processing

Procedure for acquisition and conversion of raw statistics to useable information is recognized as processing of data. (Talend, n.d.). It usually entails modifying, coding plus classifying research data (Francis, 2024). Data processing is carried out after collection of data from respondents. High concentration and carefulness are required during data processing to ensure accuracy and error free. Raw data can be converted into meaningful information after data processing. The study used computer software, IBM SPSS statistic to handle all the statistics.

3.6.1 Data Checking

Data examination defined as method employed by researchers which help in assessing the quality plus truthfulness of the accumulated data prior to being process and analyse (Vale, 2023). Some of the questionnaire may be missing, illogical, contradictory and wrong. Therefore, data checking is important to ensure the least or no wrong data.

3.6.2 Data Editing

Editing of data include thorough operation in analyzing, revising, also standardizing acquired data to eliminate errors, inconsistencies, and ambiguities (Kumar, 2025). Editing of data is a vital step in overall data processing which help identify the wrong and messy data to improving the quality (Palikhe & Phuyal, 2025). It decreases research gaps by finding technical omissions, assessing readability and explaining responses that are logically and conceptually incorrect (Palikhe & Phuyal, 2025).

3.6.3 Data Coding

Coding of data reflects action to organize input into an analyzeable form through labels assignment. It includes giving numerical or categorical classifications to statistical objects such as survey answers or demographic particulars (Quality Gurus, n.d.). These numeracies are transferred into the SPSS software. The information are coded from 1 to 5 while the missing value is be coded as 99.

Table 3.5:

Coding for Section A

Q1	Sex	“Male” =1 “Female” =2
Q2	Age	“18-20” =1 “21-23” =2 “24-26” =3 “27 and above” =4
Q3	Ethnicity	“Chinese” =1 “Malay” =2 “Indian” =3 “Others” =4
Q4	Currently Pursuing	“Foundation” =1 “Bachelor’s Degree” =2 “Master’s Degree” =3 “PhD” =4
Q5	Monthly Pocket Money	“Less than RM500” =1 “ RM500-RM1000” =2 “RM1001-RM2000” =3 “RM2001-RM3000” =4 “RM3001 and above” =5

Table 3.5 reflects how questions are ciphered for Section A

Table 3.6:

Coding for Section B

Items	Code Given
Never, rarely, or less than 1 time per week	1

1 time per week	2
2-3 times per week	3
4-6 times per week	4
1 time per day	5
2 or more times per day	6

Table 3.6 reflects how questions are ciphered for Section B.

Table 3.7:

Coding for Section C to E

Items	Code Given
Strongly Disagree (SD)	1
Disagree (D)	2
Neutral (N)	3
Agree (A)	4
Strongly Agree (SA)	5

Table 3.7 reflects the option from Section C to E, ciphered according to Five Likert Scale.

3.6.4 Data Transcribing

Finally, reproducing data by converting raw data into useful information defines data transcribing. The particulars are processed using IBM SPSS statistic.

3.7 Proposed Analysis Tool

For this study, IBM SPSS Statistics is recommended as the inspection instrument. It is an important tool in statistical software. Most of the researchers rely on this software due to its uncomplicated operational design, wide analytical proficiency and robust statistical approach (Jain & Sengar, 2024). The analytics lifecycle includes data management, preparation, reporting and analysis (Raja et al., 2024).

3.7.1 Descriptive Analysis

Descriptive inspection illustrates the requisite process for summarizing plus analysing collected data so they can be understood in easier way (Alabi & Bukola, 2023). Descriptive statistics provide insights into data's central tendency, distribution, and variability which guide researchers in selecting relevant statistical procedures (Alabi & Bukola, 2023). Besides, it also sets a stage for inferential statistics which can lead to more general conclusions based on sample data (*Descriptive Statistics: Advanced Analytics 101*, 2025). In this study, Section A which is demographics, will be analysed using descriptive analysis. The output is going to be demonstrated in bar and pie charts.

3.7.2 Inferential Analysis

Inferences scanning illustrates the procedure for making inferences about populations that are made by analysing sample data (Nickerson, 2000 as cited in Elkins et al., 2022). Researchers confirm the differences among the group with assistance from inferential statistics which provide significance differences (Bhaskar et al., 2020).

In this study, Multiple Linear Regression analysis helps in drawing

correlations between DV; COSB and the IVs; TX, PI and EA. The DV and IVs are placed under metrics, hence Multiple Linear Regression Analysis was implemented.

Multiple Linear Regression uses one DV and more than and/or equal to two IVs that are linearly related to one another (Montgomery et al., 2021 as cited in Roustaei, 2024). This technique can be used in this study because there are three IVs. The expression for Multiple Regression Analysis is as bellow:

$$y = a + b_1(x_1) + b_2(x_2) + b_3(x_3)$$

y illustrates DV, a represents y-intercept, b_n represents the coefficient for each IV also x_n illustrate IV (FormulatedBy, 2025).

The modified Multiple Linear Regression analysis model is shown below: $COSB_i = \beta_0 + \beta_1TX_i + \beta_2PI_i + \beta_3EA_i + \mu_i$

Where $COSB_i$ = Consumption of Sugary Beverage

TX_i = Taxation

PI_i = Parental influence

EA_i = Environmental accessibility

μ_i = Error term

3.7.3 Reliability Test

Reliability is to evaluate stability across any items, knowledge or instruments that is intended to test and aims to conclude the same outcome under consistent condition (Myers, 2021). One of the frequently used statistical measurement to test reliability is the Cronbach's Alpha (Nurhafizah Ahmas et al., 2024). The higher the number, the higher the reliability.

Table 3.8:

Acceptable Cronbach's Alpha Range for Internal Consistency

Cronbach's Alpha Range	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.7 \leq \alpha < 0.9$	Good
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

(Source: Streiner, 2003)

Referring to Table 3.5, the range indicate excellent reliability when reading of Cronbach's alpha is higher than or equivalent to 0.9. Besides, reliability is considered good if it is higher than or equivalent to 0.7 but lower than 0.9. Next, acceptable reliability is reached when the value is higher than or equivalent to 0.6 but lesser than 0.7 and poor reliability is whereupon Cronbach's alpha being higher or equivalent to 0.5 yet lesser than 0.6. Lastly, if Cronbach's Alpha is below 0.5, it is considered to be unacceptable. Reliability is established once Cronbach's alpha reads more or equivalent to 0.6.

3.8 Chapter Summary

This third section has provided all the relevant measurement techniques employed for the research to move forward.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

Under chapter four, results are interpreted after being analysed employing the IBM SPSS software.

4.1 Descriptive Analysis

4.1.1. Participants Demographic Description

Table 4.1.1.1:

Summarization of Sex

Gender	Frequency	Percentage	Valid Percent	Cumulative Percent
Male	107.0	39.2	39.2	39.2
Female	166.0	60.8	60.8	100.0
Total	273.0	100.0	100.0	

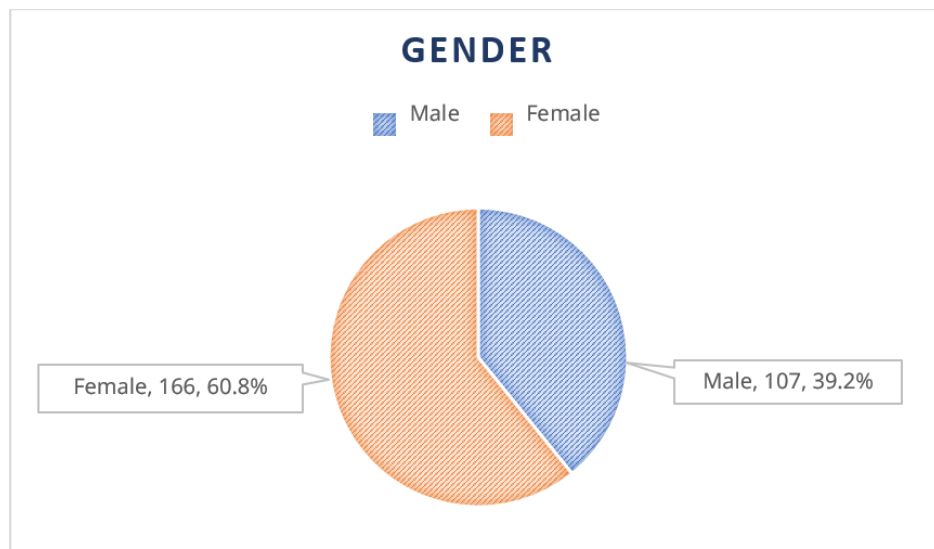


Figure 4.1.1.1 Sex

Table and Figure 4.1.1.1 represent participants' sex. The results showed that out of the 273 respondents, 166 of them (60.8%) are female while the remaining 107 (39.2%) are male. In conclusion, greater than half is dominated by female.

Table 4.1.1.2:

Summary of Ethnicity

Ethnicity	Frequency	Percentage	Valid Percent	Cumulative Percent
Chinese	264.0	96.7	96.7	96.7
Indian	8.0	2.9	2.9	99.6
Others	1.0	0.4	0.4	100.0
Total	273.0	100.0	100.0	

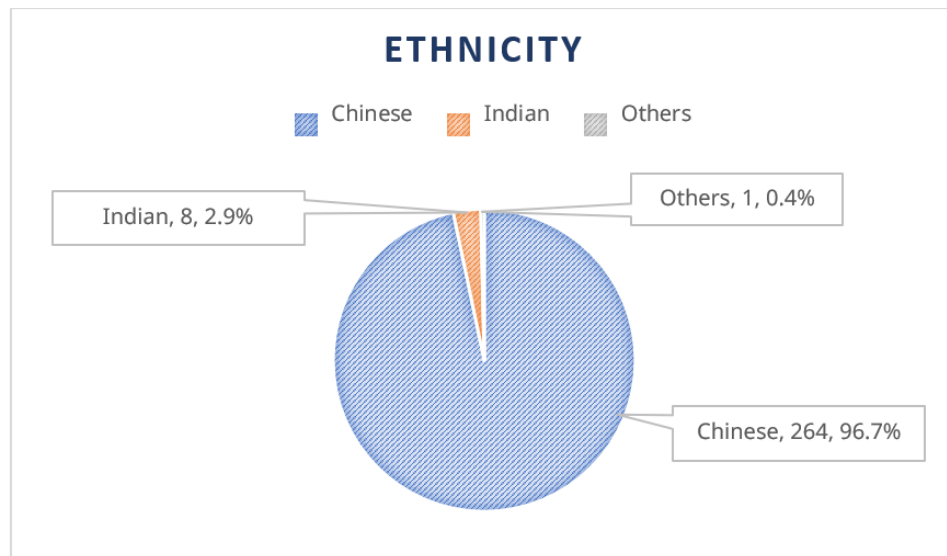


Figure 4.1.1.2 Ethnicity

Table and figure 4.1.1.2 show the participants' ethnicity. The results showed that out of the 273 respondents, 264 (96.7%) are Chinese, 8 (2.9%) are Indian, and 1 (0.4%) of the respondent is African which is reported under the 'Others' category. In conclusion, majority of the respondents are Chinese.

Table 4.1.1.3:

Summarization of Age

Age	Frequency	Percentage	Valid Percent	Cumulative Percent
18-20	124.0	45.4	45.4	45.4
21-23	141.0	51.6	51.6	97.1
24-26	8.0	2.9	2.9	100.0
Total	273	100.0	100.0	

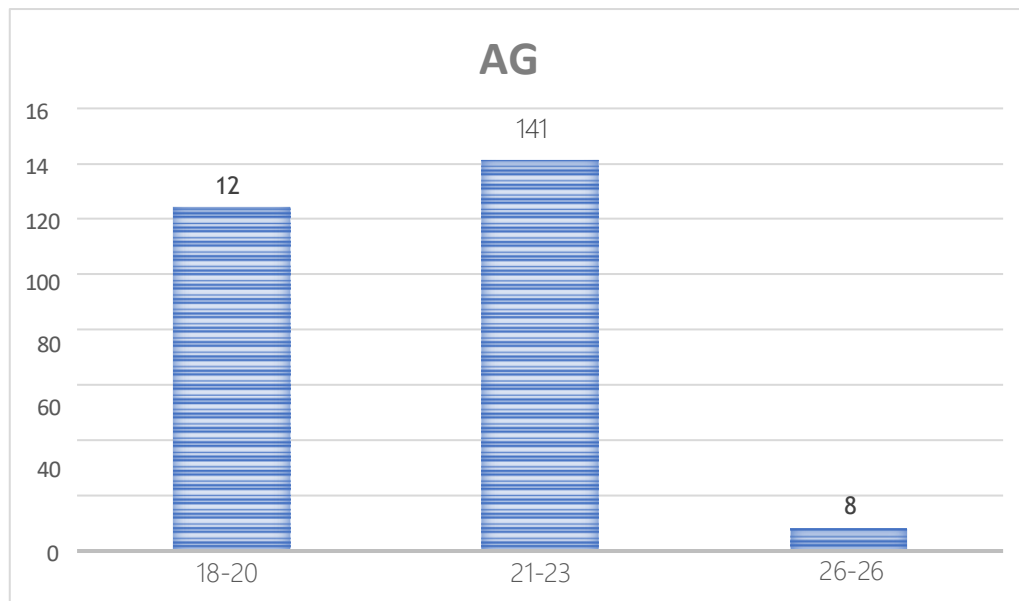


Figure 4.1.1.3 Age

Table and Figure 4.1.1.3 reflect the participants' age. The results showed that 124 (45.4%) respondents are aged between 18 to 20, 141 (51.6%) between 21 to 23 and the remaining 8 (2.9%) are aged between 24 to 26 years old. In conclusion, those aged between 21 to 23 stands the highest proportion.

Table 4.1.1.4:

Summarization of Educational Description

Currently Pursuing	Frequency	Percentage	Valid Percent	Cumulative Percent
Foundation	59.0	21.6	21.6	21.6
Bachelor's Degree	201.0	73.6	73.6	95.2
Master's Degree	11.0	4.0	4.0	99.3
PhD	2.0	0.7	0.7	100.0
Total	273	100.0	100.0	

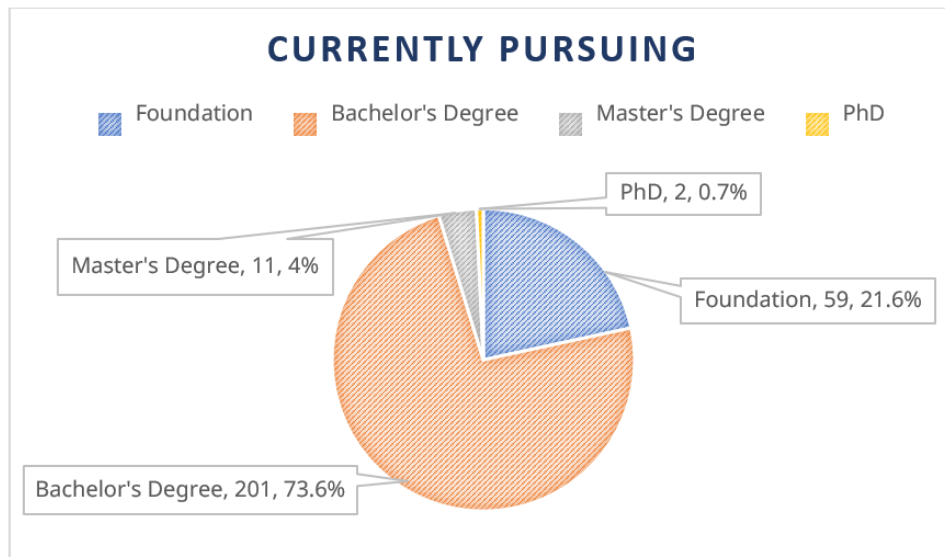


Figure 4.1.1.4 Currently Pursuing

Table and Figure 4.1.1.4 reflect the level of education the participants are currently pursuing. The results showed that out of the 273 respondents, 59 (21.6%) of them are pursuing Foundation, 201 (73.6%) pursuing Bachelor's Degree, 11 (4%) pursuing Master's Degree, and 2 (0.7%) respondents pursuing PhD. In conclusion, more than half of the respondents are pursuing Bachelor's Degree.

Table 4.1.1.5:

Summarization of Pocket Money per Month

Monthly Pocket Money	Frequency	Percentage	Valid Percent	Cumulative Percent
Less than RM500	55.0	20.1	20.1	20.1
RM500-RM1000	135.0	49.5	49.5	69.6
RM1001-RM2000	75.0	27.5	27.5	97.1
RM2001-RM3000	6.0	2.2	2.2	99.3

RM3001 and above	2.0	0.7	0.7	100.0
Total	273.0	100.0	100.0	

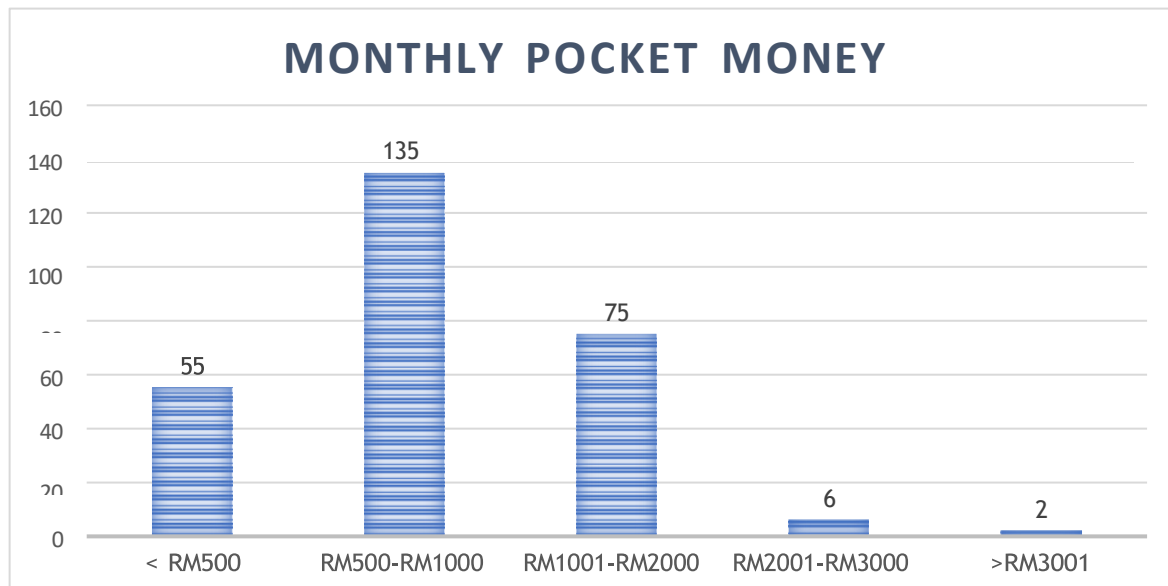


Figure 4.1.1.5 Monthly Pocket Money

Table and Figure 4.1.1.5 reflect the partakers' monthly pocket money. The results showed that the monthly pocket money for 55 (20.1%) of the respondents is less than RM500, 135 (49.5) of them with amount between RM500 to RM1000, 75 (27.5%) of them with RM1001 to RM2000, 6 (2.2%) respondents with RM2001 to RM3000 while the remaining 2 (0.7%) respondents reported to have monthly allowance of RM3001 and above. In conclusion, most of the respondents have a monthly allowance of RM500 to RM1000.

4.1.2 Central Tendencies Measurement of Constructs

Table 4.1.2.1:

Measurement of Central Tendencies; Dependent Variable- COSB

Variable	N	Minimum	Maximum	Sum	Mean	Standard Deviation
COSB 1	273	1	6	484	1.77	0.887
COSB 2	273	1	6	479	1.75	0.960
COSB 4	273	1	6	646	2.37	1.212
COSB 5	273	1	6	529	1.94	1.108
COSB 6	273	1	6	436	1.60	1.053

Table 4.1.2.1 reflect the mean along with the standard deviation (SD) for the DV. The highest mean value is held by COSB4 with the SD of 1.212, indicating that sweetened coffee and tea are the type of beverages consumed most frequently by the respondents. Additionally, COSB6 have the smallest mean value with SD of 1.053.

Table 4.1.2.2:

Measurement of Central Tendencies; 1st Independent Variable- TX

Variable	N	Minimum	Maximum	Sum	Mean	Standard Deviation
TX1	273	1	5	1041	3.81	0.950
TX2	273	1	5	1033	3.78	1.112
TX3	273	1	5	998	3.66	1.114
TX4	273	1	5	937	3.43	1.223
TX5	273	1	5	1016	3.72	1.119

Table 4.1.2.2 reflect mean along with SD for the first IV. Highest mean value is shown by TX1 that reads 3.81 plus SD of 0.950, justifying most respondents agree that a SB tax would reduce people's consumption. In contrast, the lowest value of mean is shown by TX4 that reads 3.43 with

the SD of 1.223.

Table 4.1.2.3:

Measurement of Central Tendencies; 2nd Independent Variable- PI

Variable	N	Minimum	Maximum	Sum	Mean	Standard Deviation
PI1	273	1	5	679	2.49	1.345
PI2	273	1	5	854	3.13	1.402
PI3	273	1	5	956	3.50	1.228
PI4	273	1	5	1037	3.80	1.124
PI5	273	1	5	858	3.14	1.297

Table 4.1.2.3 reflect mean along with SD for the second IV. The highest mean value is shown by PI4 that reads 3.80 with the SD of 1.124. The results indicate that parents of most respondents are good role model to them. In contrast, the lowest value of mean is shown by PI1 that reads 2.49 with SD of 1.345.

Table 4.1.2.4:

Measurement of Central Tendencies; 3rd Independent Variable- EA

Variable	N	Minimum	Maximum	Sum	Mean	Standard Deviation
EA1	273	1	5	1117	4.09	1.001
EA2	273	1	5	1152	4.22	0.846
EA3	273	1	5	1132	4.15	0.920
EA4	273	1	5	1105	4.05	0.967

Table 4.1.2.4 reflect mean along with SD of the third IV. Highest mean value is shown by EA2 that reads 4.22 with the SD of 0.846. This indicate that most

respondents can access SB without their parents' consent. In contrast, the lowest mean is shown by EA4 that reads 4.05 with SD of 0.967.

4.2 Scale Measurement

4.2.1 Cronbach's Alpha Reliability Analysis

The stability along with consistency of the variables in the questionnaire from the 273 respondents were measured through reliability testing.

Table 4.2:

Cronbach's Alpha Reliability Analysis

No.	Types of Variables	Name of Variables	Number of Item	Cronbach's Alpha	Reliability Test
1	DV	COSB	5	0.655	Acceptable
2	IV 1	TX	5	0.726	Good
3	IV 2	PI	5	0.629	Acceptable
4	IV 3	EA	4	0.783	Good

Table 4.2 reflect the Cronbach's alpha readings for each variable. Based on Table 4.2, IV of TX (0.726) and EA (0.783) has a good reliability for their Cronbach's alpha value surpass 0.7 and lesser than 0.9 (Streiner, 2003). The IV of PI is within the acceptable range at 0.629. For DV, its Cronbach's alpha value becomes acceptable after removing one of the items with the highest alpha value, as suggested by SPSS. After amendment, the value is 0.655 with 5 items remaining. In short, every variable has Cronbach's alpha

rate exceeding 0.6. Therefore, all the variables are reliable.

4.3 Preliminary Data Screening

Preliminary statistics analysis is to warrant reliability and validity of measurements prior to conducting the inferential analysis. Multicollinearity and normality test are included.

4.3.1 Multicollinearity Test

Multicollinearity point to more than one element in a regression model to be highly correlated with the dependent element and with one another (Shrestha, 2020). If a problem exists in the model, it may show the term ‘error’ indicating results to be unreliable. There are 2 methods to indicate multicollinearity problem; tolerance and variance inflation factor (VIF). VIF reading lower than 10 and tolerance reading exceeding 0.1 indicate that no multicollinearity issue is present (Nakarmi, 2024).

Table 4.3.1:

Tolerance Value and Variation Inflation Factor (VIF)

Independent Variables	Collinearity Statistics	
	VIF	Tolerance
Taxation	1.170	0.855
Parental Influences	1.162	0.860
Environmental Accessibility	1.060	0.944

According to the Table 4.3.1, all of the IVs show the value of VIF to be lesser than 10 also each tolerance value is more than 0.1. Hence, it is clearly stated

that no multicollinearity issue present for all independent elements.

4.3.2 Normality Test

Normality investigation is conducted after performing multicollinearity test, evaluating normality of the statistics. In accordance with this investigation, the skewness along with kurtosis are used to determine the value.

Table 4.3.2:

<i>Normality Test Result</i>		
Variables	Skewness	Kurtosis
DV: COSB	1.503	2.937
1st IV: TX	(0.600)	(0.258)
2nd IV: PI	0.047	(0.411)
3rd IV: EA	(0.934)	1.161

First of all, all the data variables should have skewness values joining -2 and +2 plus the kurtosis values normally in range joining -7 and +7 (Hair et al, 2010 as cited in Sovey et al., 2022). Referring to Table 4.3.2, the DV; COSB has highest skewness reading at 1.503 while TX reflects the lowest at -0.934. Moreover, the highest kurtosis is also placed on the DV, which is 2.937 and the lowest is PI at -0.411. As every skewness outcome ranges between -2 and +2 including kurtosis between -7 and +7, the statistical distribution for every variable met the assumption of normality.

4.4 Inferential Analysis

4.4.1 Multiple Linear Regression Analysis

Table 4.4.1:

Multiple Regression Analysis

	Unstandardize d Coefficient Beta	Coefficient Std. Error	Standardized Coefficient Beta	t- statistics	p- value
(Constant)	2.073	0.281		7.384	
TX	0.026	0.056	0.029	0.458	0.647
PI	0.193	0.052	0.231	3.694	<0.001
EA	(0.219)	0.056	(0.234)	(3.914)	<0.001
R-squared					0.091
Adjusted R- square					0.081
F-test					8.979
p-value					<0.001

The study examines how the three IVs; TX, PI and EA relate to DV; COSB. It is seen from Table 4.4.1 that p-value for TX is higher than 0.05 at 0.647, thus TX is not statistically noteworthy. Next, PI and EA both are statistically pronounced because its p-value of <0.001 is lower than 0.05.

The first IV; TX is not numerically pronounced with confidence rate of 95% and p-value at 0.647, namely exceeding the significance level at 0.05.

The outcome affirmed findings from Alhareky et al. (2021). This assertion reflects that **TX does not have direct effect on COSB**. Additionally, a positive value of 0.026 is shown by the unstandardized regression coefficient. This reflects that when all other factors are held constant, students at UTAR Kampar experience 0.026 units of COSB for every unit rise in time.

Furthermore, at the 95% confidence level, PI is statistically influential as the p-value of <0.001 being higher than significance degree at 0.05. The result aligns with findings of Tang et al. (2020), Khan et al. (2021) plus Calcaterra et al. (2023). Hence, it shows that **PI has direct effect on COSB**. The figure 0.193 shows positive unstandardized regression coefficient meaning that increase of every unit in PI improve COSB by 0.193 units.

Besides, the final IV; EA is relevant pointing to 95% in confidence level. This is because the p-value reading at <0.001 is lower than the significance range of 0.05. The outcome from Dono et al. (2020), Smirk et al. (2021), including Aranis et al. (2024) also presented to have a significant outcome. As a result, it reveals that **EA has direct effect on COSB**. However, its unstandardized regression coefficient shows negative at -0.219, indicating an inverse relationship with the DV. This interprets that rise in every one unit in EA, decreases DV by 0.219 units which hold other variables constant.

In addition, the R-squared or coefficient of determination is a statistical measurement employed to evaluates the extent where IV justified the DV (Gupta et al., 2024). The result of $0.091R^2$ reveals that 9.1% of the variances in COSB among UTAR Kampar students is influenced by the joint variation of TX, PI and EA. The remaining 90.9% of the variation in COSB among goers of UTAR in Kampar being justified by different related factors. The model interpreted 9.1% of the variance for DV, $R^2 = 0.091$, which shows weak explanatory power (Cohen, 1988). However, it is still acceptable in behavioural science research (Ozili, 2023). Thus, low R-

squared can be increased by replacing IVs, changing the dataset and also the structural form of the model (Ozili, 2023).

Subsequently, the modified R-squared reads 0.081. Justified by saying that 8.1% in variation of COSB among UTAR goers in Kampar is explained on the joint variation regarding all three IVs after accounting the level of freedom. The model has weak explanatory power as it only involves a small proportion of the variation in the DV that is justified by the IVs (Cohen, 1988). However, this result is still acceptable in social science research, where it may be affected by human behaviour which changes from time to time (Ozili, 2023).

Lastly, the regression models show a statistically significant result with a 95% confidence level because its p-value from the F-test is lesser than 0.001 which is beneath the stated significance rate of 0.05. Moreover, F-statistic at 8.979 is significant. Hence, explicitly stated that this model has a correlation between the IVs which are TX, PI and EA, and COSB, the DV.

4.5 Chapter Summary

Under the fourth chapter, all of the results have been interpreted and laid out in a systematic form. A comprehensive discussion of the interpretations will follow through.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

In the final chapter, contents include justifications on research outcome, implication, barriers and recommendations regarding the study.

5.1 Discussion on Major Findings

Table 5.1:

Summarization for statistical outcome

IVs	T-statistics	p-value	Results
TX	0.458	0.647	No Direct Effect
PI	3.694	<0.001	Direct Effect
EA	(3.914)	<0.001	Direct Effect

5.1.1 Tx and COSB

H1: TX has no direct effect on COSB among UTAR students in Kampar Campus.

The findings of Multiple Regression Analysis referring to Table 5.1 suggest that p-value for TX is higher than 0.05 at 0.647. Therefore, the first assumption is not supported. The results of Cawley et al. (2020), Alhareky et al. (2021), and Wendorf and Rogon (2025) are comparable to this. Several factors indicate that taxes had no major impact on the intake of sugar-filled beverages.

Although TX is widely used as a public health strategy to curb the consumption of unhealthy beverages or food, current study reveals that tax may not indicate a direct effect on reducing the intake of SB. Recent exploration found that taxing SB alone will not be sufficient to effectively decrease the consumption and reduction in health and economic burden of chronic diseases; it would be caused by other reasons (Liu et al., 2022 as cited in Smith et al., 2024). Students may continue to purchase SB due to taste preferences, habitual behaviour or low health awareness. For instance, students who have developed strong preferences for SB or rely on them for convenience and energy during academic activities are not bothered by the price changes. Individuals who maintain long-standing purchasing habits also might erode tax policy responsiveness. These behavioural and psychological factors may weaken the effectiveness of TX.

Additionally, Popkin & Ng (2021) stated that the current tax rates being placed upon SB are not high enough. Thus, the existing tax may not be enough to discourage the consumption where students may perceive the additional cost as negligible. The substitution effects also make TX ineffective to reduce COSB. Some consumers perceive SB as high-caloric drinks, so people are converting to other beverages to reduce caloric intake (Ismail et al., 2024). This is to state that substitutions to healthier options

are driven by other factors and not TX. Moreover, consumers can also substitute from commercially tax SB to untaxed or lower cost alternatives as sugar is one of the perishables being heavily subsidized. According to Fahad Ijlal Nizam (2025), the Malaysian government spent an estimated of 500 to 600 million Ringgit Malaysia annually on subsidizing refined sugar to maintain low retail prices. Hence, people can easily make SB at home with minimal cost while avoiding the intended effect of taxing regulations. As a result, the effects of TX on COSB do not apply equally to everyone since other factors can disguise and affect it.

5.1.2 PI and COSB

H2: PI has direct effect on COSB among UTAR students in Kampar Campus.

Referring to the outcome of Multiple Regression Analysis in Table 5.1, statement reflects p-value for PI being <0.001 , making it lesser than alpha reading at 0.05. Ergo, hypothesis two is accepted. Tang et al. (2020), Khan et al. (2021), along with Calcaterra et al. (2023) all presented a comparable result.

COSB could be caused by PI for several reasons. According to Hashim et al. (2022), parents play an important role that has an impact on developing children's SB intake starting from a young age. When parents frequently buy or consume SB on a regular basis, their children are also more likely to mimic these consumption habits as they are viewed as a role model. Furthermore, previous research indicated that parents are at higher chance to provide healthier beverage option for their kids (Talati et al., 2024). This will lead to increase intake of healthier alternatives as they also act as the sole provider for their children. Besides, parental control of daily beverage intake can also affect the consumption. Parents may implement restriction method or any rules at home to control the consumption (Mueller et al., 2023). For example, limiting the availability of soft drinks or any SB at

home and encouraging mineral water consumption could lead to a reduction in COSB. Therefore, it is evident that parents have a high influence on COSB among UTAR students in Kampar Campus.

5.1.3 EA and COSB

H3: EA has direct effect on COSB among UTAR students in Kampar Campus.

Lastly, as per the outcome of Multiple Regression Analysis referring to Table 5.1, it was found stating the p-value regarding EA < 0.001 does not exceed the alpha reading of 0.05. Thus, H3 is endorsed. This aligns with the results from Dono et al. (2020), Smirk et al. (2021), plus Aranís et al. (2024).

Hence, potential explanation includes the increases availability and convenience of SB in the daily surroundings, will further increases usage frequency. University students are often exposed to SB through cafeterias or vending machines set up in school which make them readily obtainable at all times (Oliveira et al., 2024). They are able to obtain the product within walking distances between classes all around campus. Hence, this may lead to high accessibility ultimately increasing the likelihood of consumption. Furthermore, the environmental cues such as product position, promotional displays and availability in many locations might also lead to consumption. The availableness and accessibleness of SB in different locations have a substantial impact on increasing purchases especially among students. When SB are clearly exhibited and frequently available, consumers may regard them as a regular or common beverage option. All these related issues may lead to higher COSB.

5.2 Implications of Study

5.2.1 Managerial Implications

According to results with regards to Multiple Regression Analysis, the first IV; TX, do not have direct effect on COSB. Clearly, taxation is insufficient to curb COSB among university students and students may possibly be less responsive to price increases. To address the issue of consumption taxation, universities should undertake holistic initiatives that complement taxing such as health education programs that highlight the health scares corresponding with over the limit sugar consumption in order to raise awareness. For example, university can invite financial experts to educate students on how their purchasing behaviour will influence the overall economy that is contributing to the worsening of public health. Besides, policymakers should regularly review the magnitude of the tax and adjust the rate based on the current market and product situation. For TX to effectively change consumer consumption behaviour, the rate may need to be higher and revenue generated could be used to subsidize healthy products such as 100% pure fruit juices.

In addition, PI, which is the second IV, indicates a direct effect on COSB. Parents often strongly influence children's dietary habits from an early age. As a result, in order to minimize consumption, the government can create public health educational programs targeted at parents to raise awareness of health information. These programs may involve seminars or speeches in which parents can learn how to educate their children toward healthier consumption habits. They should also point out how their behaviour is leading their children to the possibility of developing chronic diseases in the future. Furthermore, schools might also incorporate family-based nutrition initiatives such as weekend seminars which encourage participation from both parents and children. Activities such as classes on how to make healthier beverages at home with fresh fruits. Such measures

may increase their position and duty as a role model and aid to reinforce healthy behaviours in the home setting.

The last IV is EA. This IV also has direct effect on COSB. Universities and policymakers can help reduce COSB by fostering healthier settings. Firstly, universities can ban the sale of SB in campus facilities and cafeterias while expanding the availability of healthier beverage alternatives namely fruit juices or smoothies or even increasing the number of water fountains. The universities can establish interactive beverage stations where students can select and prepare their own beverage with consideration of nutritional information. For example, having a fruit juice stall where students can customize their own smoothie with fruits combination of their choice. This will make consumption of healthy beverages more exciting and inviting. Besides, policymakers could further support by controlling the availability of stores outside or near the school environment. For example, limiting proximity and concentration of stores selling high-sugar drinks may reduce environmental cues that trigger consumption among students.

5.2.2 Theoretical Implications

The research provides valuable theoretical implication in understanding toward factors of COSB among students through SEM. Proposed by Urie Bronfenbrenner in 1970 (Bronfenbrenner et al 1986; McLeroy, K.R. et al 1988 as cited in Gousse et al., 2024), the model emphasized on dynamics interrelations among policy, interpersonal and environmental factor in determining health-related behaviours. Using the SEM, the study validates the importance of interpersonal and environmental factors as PI and EA were found to have direct effect on COSB. These findings support the idea that SEM is applicable in dietary behaviour research and demonstrate its effectiveness in explaining health-related behaviours beyond individual-level factors.

Furthermore, the study enhances theoretical knowledge by understanding the limited role of policy intervention since taxation resulted to have no direct effect on consumption. Although TX represents a macro-level strategy which aim to reducing consumption, the lack of significance suggests that such measures may not directly impact students' behaviour. This outcome affirms the notion illustrating policy-level factors alone may not be sufficient without reinforcement of lower-level influences within the SEM.

Lastly, the research provides toward the growing body of literature on health behaviour by contributing more nuanced understanding of how multiple layers of influence interact in shaping SB consumption. It also paves the way to the future theoretical framework which integrate contextual, social and environmental dimension more explicitly especially when addressing complex public health issue and unhealthy dietary behaviours. The study concludes that effective theoretical framework must account for interaction of multiple level of factor in order to better explain and predict real-world behaviour.

5.3 Limitations of Study

In duration of conducting the research, multiple hindrances became apparent. Firstly, the research relied upon self-reported data through questionnaire where respondents were asked to reveal the frequency of their consumption. Due to that, respondents may inaccurately recall or misinterpret the results as caused by the complex nature of human behaviour. According to Bailey (2021), achievement of reliable and accurate dietary measurement via self-report is extremely challenging. Error in assessment can be due to daily variation as there are always changes in the type of food and beverages people consume every day (Bailey, 2021).

The next barrier is the limited variables. This investigation only concentrates on three IVs; TX, PI, and EA as the factors, whereas other important influences are being excluded. COSB is a complex action swayed by many other factors. According to Wang et al. (2022), taste preferences, advertisement and food culture influence consumption. According to Atar and Hizli Güldemir (2025), screen time and consumption have direct effect on one another. Furthermore, the other factors are said to be norms, knowledge, and attitudes by Roesler et al. (2021). This means that the study may not fully apprehend all factors therefore leading to inaccurate representation and interpretation.

Though this study has presented some limitations and we fully acknowledge them, the significance of the findings yield is still of value. The acknowledgement of the limitations will act as a foundation for further exploration and aspect to look into for future researcher. It provides a platform for future explorer to take into considerations of the stated limitations and address them before conducting the similar topic of interest.

5.4 Recommendations for Future Studies

In accordance with mitigating the stated obstacles, a few suggestions are proposed for future investigators to take into consideration. Firstly, to increase the accuracy of data collected in measurement of dietary consumption, it is suggested for researchers to use and explore different types of measuring scale other than survey questionnaire which can be too general as the answers are fixed. According to Food and Agriculture organization of the United Nation (n.d.), a more detailed information on food consumption can be obtained from the Household Consumption and Expenditure Surveys (HCES) rather than using individual quantitative dietary intake survey. According to Whitton et al. (2021), technology-assisted tool such as mobile food record application increases accuracy and decreases recall mistakes. Using a combination of multiple measuring tools can also

enhance data accuracy and reliability (Zhang, 2021).

The second recommendation is to include more factors or variables to the study. Researchers can incorporate more than just three variables to increase inclusivity and consider all other factors. This can help with wider representation of the population hence yielding a more accurate result. They can conduct preliminary interviews and research to determine which factors are most relevant to their target population before deciding on the factors to investigate further. Setting a clear base can help researchers to reach a more targeted result as less relevant factors will be excluded.

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APPENDICES

Appendix 1: Letter to Obtain Sampling Frame

2275, Jalan Seksyen 2/8,
Taman Bandar Barat,
31900 Kampar, Perak.

Department of Admission & Credit Evaluation
Heritage Hall, 31900 Kampar, Perak.

26 August 2025

Dear Sir/Madam,

I am Wong Kit Sum, Student ID 22ABB05612, a student from UTAR Kampar Campus, currently in my third semester of second year under the programme of Business Administration (Honours) Healthcare Management.

I am writing this letter to formally request:

- The total number of UTAR students in Kampar Campus
- The total number of UTAR students in Sungai Long Campus
- The total number of UTAR Foundation students in Kampar Campus
- The total number of UTAR Undergraduates students in Kampar Campus
- The total number of UTAR Postgraduates students in Kampar Campus
- The total number of International UTAR students in Kampar Campus

I am in the process of undergoing my Final Year Project (FYP) which consists of carrying out a research titled 'Factors on Consumption of Sugary Beverages Among UTAR Students (Kampar Campus)', hence the proposed request for the above data.

The requested data will strictly be used only for academic purposes. Please accept this letter as my formal request.

Thank you for your time and consideration.

Yours sincerely,

KitSum
Wong Kit Sum
Student

KTY
Mr. Kuek Thiam Yong
FYP Supervisor

Appendix 2: Sampling Frame

Request of Data for Academic Purposes
Inbox x


KIT SUM WONG

Greetings, I am writing this email to formally request some data to conduct a research for an assignment. Attached is the letter as per request. Thank you.

Tue, Aug 26, 6:26 PM (1 day ago)


Division of Admissions and Credit Evaluation

to kuekty, me

Dear Ms Wong,

The total number of UTAR students in Kampar Campus - 10,490
The total number of UTAR students in Sungai Long Campus - 8,001
The total number of UTAR Foundation students in Kampar Campus - 2,204
The total number of UTAR Undergraduates students in Kampar Campus - 7,847
The total number of UTAR Postgraduates students in Kampar Campus - 439
The total number of International UTAR students in Kampar Campus - 432

Thank you.

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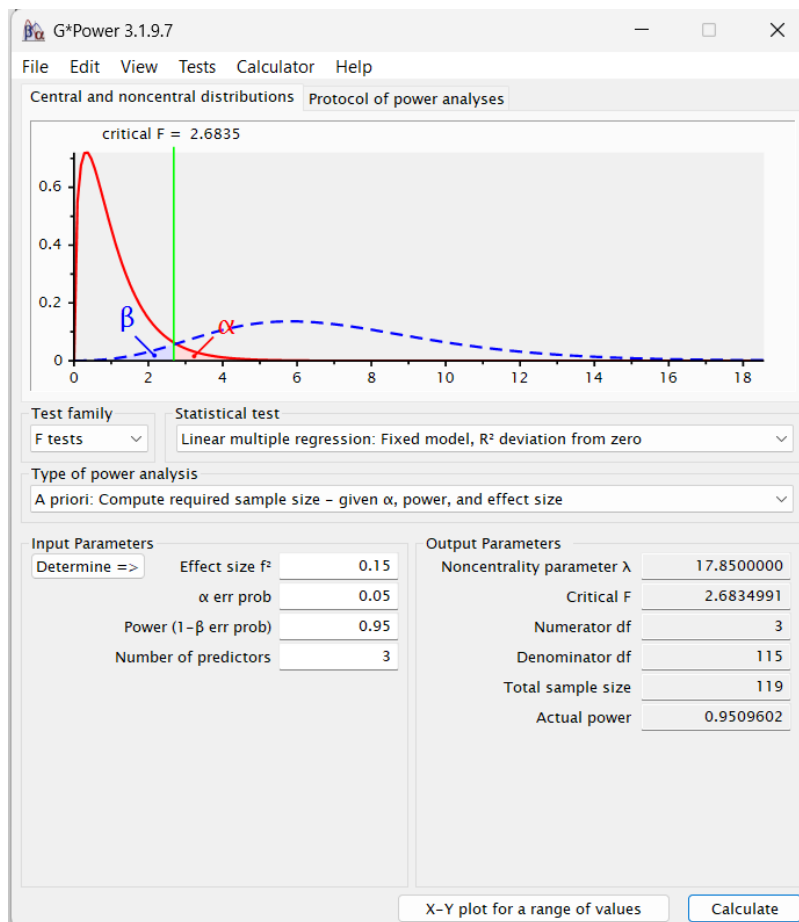
Division of Admissions and Credit Evaluation (DACE)
Universiti Tunku Abdul Rahman

Hotlines : 016 - 223 3562 (Kampar Campus)
018 - 295 3100 (Sungai Long Campus)

Connect with Us : Monday - Friday, 8.30 am - 5.30 pm
except Public Holidays

3:21 PM (4 hours ago)

Appendix 3: Sampling Size using G*Power



Appendix 4: Formula to Calculate Sample Size for each Subgroup

The formula researchers can use to determine sample size using proportionate stratified random sampling can use the formula below:

$$n_h = \frac{N_h}{N} n$$

n_h =	Sample size using proportionate stratified random sampling
N_h =	Total stratum population
N =	Total population
n =	Sample size (calculation results using the slovin formula)

Appendix 5: Construct Measurement- Operational Definition

3.5 Construct Measurement

3.5.1 Operational Definition

Table 3.3:

Dependent Variable

Variables	Items	Descriptions	Sources
Consumption of Sugary Beverage (COSB)	COSB 1	Carbonated drinks (eg: Cola, Sprite)	Adopted and modified from Fausnacht et al. (2020)
	COSB 2	Sports and energy drinks (eg: 100 Plus RedBull)	
	COSB 3	Powdered drinks (eg: 3in1 Milo sachets)	
	COSB 4	Sweetened coffee and tea (eg: coffee or tea with added sugar or cream)	
	COSB 5	Fruit and vegetable flavoured drinks (eg: not 100% pure fruit and vegetable juices)	
	COSB 6	Flavoured waters and cordials (eg: non-alcoholic, concentrated fruit and sugar syrup that dilute in water; Sunkist/Ribena Syrup)	

Table 3.4:

Independent Variables

Variables	Items	Descriptions	Sources
Taxation (TX)	TX1	A sugary beverage tax would reduce people's sugary beverage consumption.	Adopted and modified from Evkelinboom et al. (2021)
	TX2	A sugary beverage tax would reduce my sugary beverage consumption.	
	TX3	A sugary beverage tax would contribute to improving my beverage choices.	
	TX4	A sugary beverage tax limits my freedom.	
	TX5	I support imposing sugary beverage tax as a strategy to reduce consumption of sugary beverages.	
Parental Influence (PI)	PI1	If my parents do not regulate me, I would consume too much sugary beverages.	Adopted and modified from Morris et al. (2023)
	PI2	If I consume more than usual of sugary beverages, my parents try	

FACTORS ON CONSUMPTION OF SUGARY BEVERAGES

		to limit how much I have at the next mealtime.	
	PI3	My parents tell me that healthy beverages taste good.	
	PI4	My parents show me what healthy habit is by consuming healthy beverages themselves.	
	PI5	There are several different kinds of sugary beverages for me to choose between at home.	
Environmental Accessibility (EA)	EA1	It is possible for me to get any sugary beverages by myself without anyone's help.	Adopted and modified from Bassul, Corish, & Kearney (2020)
	EA2	I am allowed to access sugary beverages without my parents' consent.	
	EA3	Sugary beverages are easier to find or are automatically offered in eateries I visit.	Adopted from Fuster et al. (2025)
	EA4	I consider that I have easy access to sugary beverages at school.	Adopted and modified from Durette, G. (2023)

Appendix 6: Reliability Test Analysis Results for Pilot Test

Consumption of Sugary Beverage

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.807	.809	6

Taxation

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.



Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.806	.802	5

Parental Influence

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.787	.787	5



Environmental Accessibility

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.712	.730	4

Appendix 7: Descriptive Analysis

Gender

Frequency Table



Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	166	60.8	60.8	60.8
	Male	107	39.2	39.2	100.0
	Total	273	100.0	100.0	

Ethnicity

Ethnicity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	African	1	.4	.4	.4
	Chinese	264	96.7	96.7	97.1
	Indian	8	2.9	2.9	100.0
	Total	273	100.0	100.0	

Age

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-20	124	45.4	45.4	45.4
	21-23	141	51.6	51.6	97.1
	24-26	8	2.9	2.9	100.0
	Total	273	100.0	100.0	

Currently Pursuing

Currently pursuing					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's Degree	201	73.6	73.6	73.6
	Foundation	59	21.6	21.6	95.2
	Master's Degree	11	4.0	4.0	99.3
	PhD	2	.7	.7	100.0
	Total	273	100.0	100.0	

Monthly Pocket Money

Monthly pocket money					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than RM500	55	20.1	20.1	20.1
	RM1001-RM2000	75	27.5	27.5	47.6
	RM2001-RM3000	6	2.2	2.2	49.8
	RM3001 and above	2	.7	.7	50.5
	RM500-RM1000	135	49.5	49.5	100.0
	Total	273	100.0	100.0	

Appendix 8: Reliability Test Analysis Results for Actual Test

Consumption of Sugary Beverage

Case Processing Summary

		N	%
Cases	Valid	273	100.0
	Excluded ^a	0	.0
	Total	273	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.655	5

Taxation

Case Processing Summary

		N	%
Cases	Valid	273	100.0
	Excluded ^a	0	.0
	Total	273	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.726	5

Parental Influence

Case Processing Summary

		N	%
Cases	Valid	273	100.0
	Excluded ^a	0	.0
	Total	273	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.629	5

Environmental Accessibility

Case Processing Summary

		N	%
Cases	Valid	273	100.0
	Excluded ^a	0	.0
	Total	273	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.783	4

Appendix 9: Normality Test

Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewnes s Statistic
ConsumptionAVE	273	1.00	4.80	1.8857	.68049	1.503
TaxationAVE	273	1.40	5.00	3.6813	.76484	-.600
Parental_InfluenceAVE	273	1.00	5.00	3.2117	.81431	.047
Environmental_Accessibi lityAVE	273	1.00	5.00	4.1264	.72828	-.934
Valid N (listwise)	273					

Appendix 10: Multicollinearity Test

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	TaxationAVE	.855	1.170
	Parental_InfluenceAVE	.860	1.162
	Environmental_Accessibi lityAVE	.944	1.060

Appendix 11: Multiple Linear Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.302 ^a	.091	.081	.65239

a. Predictors: (Constant), Environmental_AccessibilityAVE, Parental_InfluenceAVE, TaxationAVE

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.465	3	3.822	8.979	<.001 ^b
	Residual	114.490	269	.426		
	Total	125.954	272			

a. Dependent Variable: ConsumptionAVE

b. Predictors: (Constant), Environmental_AccessibilityAVE, Parental_InfluenceAVE, TaxationAVE

		<u>Coefficients^a</u>				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.073	.281		7.384	<.001
	<u>TaxationAVE</u>	.026	.056	.029	.458	.647
	<u>Parental InfluenceAVE</u>	.193	.052	.231	3.694	<.001
	<u>Environmental AccessibilityAVE</u>	-.219	.056	-.234	-3.914	<.001

Appendix 12: Survey Questionnaire

Cover Page

Section 1 of 9

Factors on Consumption of Sugary Beverages among UTAR Students (Kampar Campus)

Dear beloved respondents,

We are students from BACHELOR OF BUSINESS ADMINISTRATION (HONOURS) in HEALTHCARE MANAGEMENT from Universiti Tunku Abdul Rahman (UTAR), currently conducting a research regarding consumption of sugary beverages as part of our final year project. For that, your valuable insights and inputs are needed to make this project a success and your contribution can be carried out by completing this survey questionnaire.

This questionnaire consist of **FIVE** parts:

- Section A: Demographics Profile
- Section B: Consumption of Sugary Beverages
- Section C: Taxation
- Section D: Parental Influence
- Section E: Environmental Accessibility

Your participation in this survey we highlighted is greatly appreciated as it will provide a better understanding for our research study. All responses will be kept **STRICTLY CONFIDENTIAL** and be used for **ACADEMIC PURPOSES ONLY**.

This survey may take approximately **5-10 minutes** to be completed. Any doubts, uncertainty or requirements of further clarification can be obtained by contacting Wong Kit Sum through email at kitsumwong4@utar.my.

Yours Sincerely,

Wong Kit Sum 22ABB05612
Ng Yue Yan 22ABB04275

Section 2 of 9

Before we proceed any further..

Description (optional)

Are you currently a student studying in UTAR Kampar Campus? *

☐ Yes

☐ No

Section 3 of 9

Personal Data Protection Notice

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:

- a) Name
- b) Identity card
- c) Place of Birth
- d) Address
- e) Education History
- f) Employment History
- g) Medical History
- h) Blood type
- i) Race
- j) Religion
- k) Photo
- l) Personal information and Associated Research Data

2. The purposes for which your personal data may be used are inclusive but not limited to:

- a) For assessment of any application to UTAR
- b) For processing any benefits and services
- c) For communication purposes
- d) For advertorial and news
- e) For general administration and record purposes
- f) For enhancing the value of education
- g) For educational and related purposes consequential to UTAR
- h) For replying any responds to complaints and enquiries
- i) For the purpose of our corporate governance
- j) For the purposes of conducting research/ collaboration

3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect is the purposes and all such purposes that are related to purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

4. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

5. UTAR is committed to ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent

6. **By submitting** or providing your personal data to UTAR, **you had consented and agreed** for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.

7. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.

8. You may access and update your personal data by writing to us at **kitsumwong4@1utar.my** or **nyy0710@1utar.my**.

Acknowledgement of Notice *

- ☐ I have been notified and that I hereby understood, consented and agreed per UTAR above notice.
- ☐ I disagree, my personal data will not be processed.

Section A- Demographic

Section A- Demographics

Description (optional)

Gender *

☐ Male

☐ Female

Age *

☐ 18-20

☐ 21-23

☐ 24-26

☐ 27 and above

Ethnicity *

☐ Chinese

☐ Malay

☐ Indian

☐ Other: _____

Currently pursuing *

☐ Foundation

☐ Bachelor's Degree

☐ Master's Degree

☐ PhD

Monthly pocket money *

☐ Less than RM500

☐ RM500-RM1000

☐ RM1001-RM2000

☐ RM2001-RM3000

☐ RM3001 and above

Section B- DV (Consumption of Sugary Beverages)

Section 5 of 9

Section B: Consumption of Sugary Beverages

Note:

- Illustration shown are to be used as examples for clarification purposes therefore the types of beverages are not limited to only those shown.
- All of the beverages can either be ready-to-drink, bottled/canned, store-bought, or homemade.

How often do you consume the following beverages? *

1	2	3
		
4	5	6
		

Never, rarely,... 1 time per w... 2-3 times pe... 4-6 times pe... 1 time per day 2 or more ti...

1. Carbonat...	☐	☐	☐	☐	☐	☐
2. Sports an...	☐	☐	☐	☐	☐	☐
3. Powdered...	☐	☐	☐	☐	☐	☐
4. Sweetene...	☐	☐	☐	☐	☐	☐
5. Fruit and ...	☐	☐	☐	☐	☐	☐
6. Flavoured ...	☐	☐	☐	☐	☐	☐

Section C- 1st IV (Taxation)

Section C: Taxation

Please select the **most appropriate** option that best indicate your agreement level on following statements.

Level of agreement
1- Strongly disagree
2- Disagree
3- Neutral
4- Agree
5- Strongly agree

A sugary beverage tax would reduce people's sugary beverage consumption. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

A sugary beverage tax would reduce my sugary beverage consumption. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

A sugary beverage tax would contribute to improving my beverage choices. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

A sugary beverage tax limits my freedom. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

I support imposing sugary beverage tax as a strategy to reduce consumption of sugary beverages. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

Section D- 2nd IV (Parental Influence)

Section D: Parental influence

Please select the **most appropriate** option that best indicate your agreement level on following statements.

Level of agreement
1- Strongly disagree
2- Disagree
3- Neutral
4- Agree
5- Strongly agree

If my parents do not regulate me, I would consume too much sugary beverages. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

If I consume more than usual of sugary beverages, my parents try to limit how much I have at the next mealtime. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

My parents tell me that healthy beverages taste good. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

My parents show me what healthy habit is by consuming healthy beverages themselves. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

There are several different kinds of sugary beverages for me to choose between at home. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

Section E- 3rd IV (Environmental Accessibility)

Section E: Environmental accessibility



Please select the **most appropriate** option that best indicate your agreement level on following statements.

Level of agreement

- 1- Strongly disagree
- 2- Disagree
- 3- Neutral
- 4- Agree
- 5- Strongly agree

It is possible for me to get any sugary beverages by myself without anyone's help. *

	1	2	3	4	5	
Strongly disagree	☐	☐	☐	☐	☐	Strongly agree

I am allowed to access sugary beverages without my parents' consent. *

	1	2	3	4	5	
Strongly disagree	☐	☐	☐	☐	☐	Strongly agree

Sugary beverages are easier to find or are automatically offered in eateries I visit. *

	1	2	3	4	5	
Strongly disagree	☐	☐	☐	☐	☐	Strongly agree

I consider that I have easy access to sugary beverages at school. *

	1	2	3	4	5	
Strongly disagree	☐	☐	☐	☐	☐	Strongly agree

End Page

Section 9 of 9

The End



That is the end of the survey.
Thank you for your participation till the end. Your time and response is truly appreciated.
Wishing you a nice day ahead.

Image title

