



THE INFLUENCE OF EDUCATION LEVEL AND EMPLOYMENT SECTOR ON PER CAPITA CALORIE CONSUMPTION IN MAKASSAR CITY WITH INCOME AS AN INTERVENING VARIABLE”

Ramin^{1*}, Muh. Ashary Anshar², Rachman Suwandaru³

^{1,2,3}Nitro Institute of Business and Finance, Indonesia

Corresponden Email: raminsagiv@gmail.com¹

Abstract

This study aims to analyze the influence of education level and employment sector on per capita calorie consumption in Makassar City, with income as an intervening variable. Calorie consumption, as an indicator of the nutritional status of the population, is influenced by various factors, including education level and the type of employment sector, which ultimately determine household income. The research employs a quantitative approach using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS). The data were obtained from the March 2023 National Socio-Economic Survey (SUSENAS), involving 868 households and a total of 1,245 respondents in Makassar City.

The findings reveal that (1).the education level has a negative and insignificant effect on income. (2).The employment sector has a positive and significant effect on income. (3).Income has a positive and significant effect on per capita calorie consumption. (4).Education level has a positive and significant effect on per capita calorie consumption. (5). The employment sector also has a positive and significant effect on per capita calorie consumption. (6) education level positively and significantly affects per capita calorie consumption through income. (7) the employment sector positively and significantly affects per capita calorie consumption through income. These findings are expected to provide valuable insights for local governments in formulating poverty alleviation and community welfare improvement policies.

Keywords: Education Level, Employment Sector, Per Capita Calorie Consumption, Income, SEM-PLS

INTRODUCTION

The government places a high priority on improving the nutritional status of the community because it significantly impacts the quality of human resources. Nutritional status determines quality of life, but the food available to the community is not necessarily nutritious. Purchasing power, food availability, and consumption behavior also influence this. Ideally, consumption patterns should meet the needs for food, clothing, shelter, education, and health. However, in poor households, consumption patterns are very low due to limited income. Low income impacts nutrition, education, and health, reducing productivity and creating a perpetual cycle of poverty.

The March 2023 National Socioeconomic Survey (SUSENAS) in South Sulawesi involved 15,300 sample households, with 868 households in Makassar City. Data shows that poverty rates vary across districts/cities. Pangkajene and Kepulauan Regency recorded the highest percentage of poor people at 13.40% with 46,060 people, followed by Jeneponto at 13.06% (48,320 people), and Luwu at 12.71% (47,670 people). Conversely, Makassar City ranked the lowest at 5.07% or 80,320 people. Overall, the poverty rate in South Sulawesi was recorded at 8.70% with 788,850 people.

Based on the results of the March 2023 National Socio-Economic Survey (Susenas), the average daily calorie consumption per capita in South Sulawesi was recorded at 2,110.28 kcal/day. However, several regencies/cities have relatively low calorie consumption levels. Bone Regency ranked lowest with 1,899.94 kcal/day, followed by Palopo City with 1,907.09 kcal/day. Sidenreng

Rappang Regency ranked third with 1,961.47 kcal/day. Makassar City also had a low consumption rate, at 1,987.85 kcal/day. This situation indicates a disparity in calorie consumption between regions that requires attention in improving the nutritional status of the community.

According to Hartati et al. (2008), Engel's Law explains that low-income households tend to allocate a large portion of their income to basic needs, while high-income households spend only a small portion. Pande (2012) emphasized that culture also influences consumption behavior, while Thamrin (2007) stated that national consumption is influenced by income, interest rates, and inflation. Furthermore, Alfiati (2018) emphasized that the higher a person's education, the higher their consumption expenditure, which influences lifestyle patterns. Sularso (2018) added that the education of the head of the household also influences consumption. Riyadi (2003) emphasized that education increases awareness of balanced consumption.

Research by Fadliyah Maulidah (2015) shows that education level does not significantly influence the number of poor people in East Java, although both have a negative relationship. This means that increasing education does not necessarily reduce the number of poor people. Conversely, income has a significant and negative influence, so that higher incomes reduce the number of poor people. Consumption also has a significant and negative influence, where increased consumption can reduce the number of poor people. Simultaneously, education, income, and consumption influence poverty, making all three important in understanding the dynamics of the number of poor people in East Java.

Based on this description, the researcher is interested in conducting research with the title ***“The Influence of Education Level And Employment Sector on Per Capita Calorie Consumption In Makassar City With Income As An Intervening Variable”***. The novelty of this research lies in its focus on per capita calorie consumption, a rarely studied topic, specifically considering the role of employment sector and education level, and placing income as an intervening variable. With this approach, the research is expected to provide a new contribution in analyzing the relationship between socioeconomic factors and calorie consumption patterns in urban communities, particularly in Makassar City.

LITERATURE REVIEW

Consumption

According to Nurhadi (2005), consumption is the human activity of using goods or services to meet needs, where the quality and quantity reflect the level of prosperity. Salvatore (2004) emphasizes consumption related to satisfaction (utility), while Samuelson (2007) highlights the influence of prices and real income on consumption patterns. Sukirno (2006) defines consumption as household spending on final goods and services. Furthermore, Keynes (in Rahardja & Manurung, 2008) states that consumption expenditure is strongly influenced by income. These theories indicate

that consumption is an important aspect in reflecting the welfare and socio-economic conditions of society.

Income

According to Ramlan (2006), income is divided into gross income and net income, where net income is the result of production after deducting costs. Sukirno (2006) defines income as compensation for the use of production factors in the form of salary, rent, interest, and profits. It can be calculated using the expenditure, production, and income approaches. Suparmoko (2000) divides income into salary/wages, self-employment, and other businesses. Fadillah (2014) emphasizes that household income determines the level of consumption and welfare. Soekartawi (2007) adds that an increase in income not only increases the amount of consumption, but also the quality of goods consumed.

Education

According to Ahmadi and Uhbiyati (2007), education is a conscious process that changes individual behavior through group interactions. Buhang (2015) emphasized that education plays a crucial role in creating quality human resources, particularly in enabling rural communities to access development. Rahardja and Manurung (2010) added that the higher the level of education, the greater the consumption and living needs that arise. Baliwati (2004) emphasized that education provides broad insight, thereby improving the fulfillment of needs. Riyadi (2003) also stated that education increases awareness of balanced consumption. Helen F. Ladd (2012) emphasized that education contributes significantly to the well-being and quality of human resources.

Thinking Framework

1. Relationship between Education Level and Income

Julianto & Utari (2019) found that education has a positive and significant effect on income. The higher the education level, the higher the income. Age, gender, and location also influence this. Men earn more than women, urban residents earn more than rural residents, and those under 30 tend to earn lower incomes. Therefore, in addition to education, demographic factors also determine individual income.

2. Relationship between Business Area and Income

Nashikhah (2024) showed that the pecel chili sauce business in Ponorogo increased income and reduced unemployment. Putri (2020) emphasized that MSMEs contribute to community welfare, even during the pandemic through adaptive strategies. Wolok (2016) studied whale shark tourism, which has had an economic impact, albeit unevenly distributed. Overall, business sectors,

including industry, MSMEs, and tourism, have been shown to increase income and community welfare.

3. The Relationship between Education Level and Per Capita Calorie Consumption

Yanti & Murtala (2019) found that education has a positive and significant effect on household consumption. Higher education improves human resource capacity to manage income and nutritional needs. This has implications for improved per capita calorie consumption. In other words, higher education leads to greater awareness of healthy and balanced consumption patterns, and an improved quality of life.

4. The Relationship between Business Sector and Per Capita Calorie Consumption

Amaliah (2021) concluded that per capita income from the agriculture, mining, industry, and construction sectors positively impacted household consumption, while inflation negatively impacted it. Adistika et al. (2024) emphasized that the differences in living standards between factory workers and palm oil plantation workers are influenced by employment opportunities and environmental impacts. Therefore, the type of business sector can influence household calorie consumption through changes in income and the resulting socio-economic conditions.

5. The Relationship between Income and Per Capita Calorie Consumption

Handayani & Yulistiyono (2023) stated that income significantly influences consumption in poor households in Banyuwangi. Higher incomes lead to higher expenditures on consumption, including nutritious food. Family size also increases expenditure, while education has no significant effect. This suggests that income is a key factor in determining per capita calorie consumption, thus directly impacting the welfare of poor households.

6. The Relationship between Education Level and Per Capita Calorie Consumption through Income

Hariyati et al. (2020) confirmed that education level significantly influences household income in Sebuduh Village. Higher education increases the opportunity to earn a better income, which ultimately supports per capita calorie consumption. Analysis shows that various levels of education, from elementary school to postgraduate level, significantly influence income. Thus, education is a crucial variable influencing consumption through the mechanism of increasing household income.

7. The Relationship between Business Sector and Per Capita Calorie Consumption through Income

Amanaturrohim & Widodo (2016) studied coffee farmers in Gorontalo and found that income had a positive effect on family welfare by 7.89%, while household consumption had a 17.72% effect. Simultaneously, income and consumption influenced welfare by 27.1%. This indicates that the type of business sector, through its influence on income, directly impacts household consumption and overall family welfare.

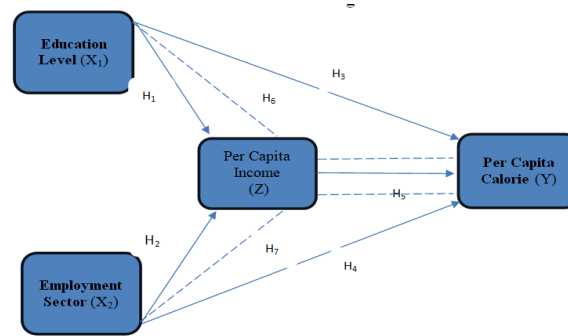


Figure 1 Thinking Framework

Hypothesis

The hypothesis of this research is assumed to be:

- H₁ : Education level has a positive and significant effect on community income in Makassar City
- H₂ : Business Sectors have a positive and significant impact on Community Income in Makassar City
- H₃ : Income has a positive and significant effect on the community's per capita calorie consumption
- H₄ : Does the level of education have a positive and significant effect on the community's per capita calorie consumption?
- H₅ : Business Sector has a positive and significant influence on per capita calorie consumption of the community in Makassar City
- H₆ : Education level has a positive and significant effect on per capita calorie consumption of the community through per capita income of the community in Makassar City.
- H₇ : Business Sector has a positive and significant influence on Community Per Capita Calorie Consumption through Community Per Capita Income in Makassar City

METHOD

Research Design

The research design used was a survey with a quantitative approach. According to Sugiyono (2017), quantitative research is used to test specific theories by examining the relationships between variables that can be measured using research instruments. This study focused on the influence of education level and field of work on per capita calorie consumption in Makassar City, with income as an intervening variable.

A survey design was chosen because this research requires factual, extensive, and representative data from households. Through a quantitative approach, the relationships between variables can be objectively measured through statistical analysis, thus obtaining an empirical picture of the relationship between education, employment, income, and per capita calorie consumption.

Population, Sample, and Sampling Techniques

According to Sugiyono (2018:130), a population is a generalized area consisting of objects or subjects with certain qualities and characteristics determined by the researcher to be studied and then conclusions drawn. The population in this study was all households sampled in the National Socioeconomic Survey (SUSENAS) in Makassar City in March 2023, namely 868 households with a total of 1,245 respondents. This is because all household members (ART) were selected as respondents.

A sample is a subset of the population's size and characteristics (Sugiyono, 2017). The sampling technique used is saturated or census sampling, where all members of the population are sampled (Sugiyono, 2017). Because the 2023 SUSENAS population in Makassar City is relatively limited, the researcher used all 1,245 respondents as the research sample.

The technique used was nonprobability sampling, a technique that does not give every member of the population an equal chance of being selected (Sugiyono, 2017). However, this study employed a special form of total sampling/saturated sampling, as all population units were included in the sample. This ensures that the research results are more accurate and representative of the population being studied.

Data Types and Sources

The type of data used is quantitative data. The research data was obtained from two sources:

1. Primary Data – in the form of data on calorie consumption, education, business sector, and household income obtained from directly processed survey results.
2. Secondary Data – in the form of official documentation of the results of the 2023 National Socio-Economic Survey (SUSENAS) managed by the Central Statistics Agency (BPS).

The use of SUSENAS data was chosen because this survey routinely collects social, economic, educational, and household consumption information, making it relevant and accountable for academic research.

Data Analysis Techniques

Data analysis was conducted after data was collected from the SUSENAS. According to Priyatno (2008), data analysis is the process of processing, interpreting, and concluding research data. Mas'ud (2004) added that analysis aims to provide empirical evidence for field data. This study used descriptive statistical analysis. **And** Structural Equation Modeling-Partial Least Square (SEM-PLS) with the help of SmartPLS software.

1. Descriptive Analysis

Descriptive analysis was used to describe the characteristics of respondents, including age, gender, education level, industry, income, and calorie consumption. Data were presented in the form of frequency distributions, means, standard deviations, and graphs for ease of understanding.

2. Hypothesis Testing

Hypothesis testing was conducted at a significance level of 0.05 (95% confidence level). The decision-making criteria were:

- a. If the significance value is < 0.05 then H_0 is rejected and H_a is accepted, meaning that the independent variable has a significant effect on the dependent variable.
- b. If the significance value > 0.05 then H_0 is accepted and H_a is rejected, meaning that the independent variable has no significant effect.

3. SEM-PLS analysis

According to Hair et al. (2019), SEM-PLS is a multivariate statistical method for analyzing relationships between variables simultaneously without assuming a normal distribution, suitable for complex models, and prediction-oriented. Yamin (2022) stated that SEM-PLS evaluation includes measurement models, structural models, and goodness of fit. This study used a second-order model with an embedded two-stage approach (Sarstedt et al., 2020).

Evaluation of reflective measurements was conducted through validity tests (outer loading ≥ 0.70 ; AVE ≥ 0.50) and reliability (Cronbach's Alpha and CR ≥ 0.70). In the formative model, outer weight and VIF ≤ 5 were tested (Hair et al., 2021). The structural model was analyzed using path coefficients, bootstrapping, confidence intervals, and f-square. Goodness of fit was assessed using R-square, Q-square, SRMR < 0.08 , and linearity tests.

RESEARCH RESULTS AND DISCUSSION

1. SEM-PLS analysis

This research analysis uses a quantitative approach with descriptive statistical methods and hypothesis testing using Partial Least Square (PLS). The exogenous variables used are Education Level (X1) and Business Field (X2), while the intervening variable is Income (Z), and the dependent endogenous variable is Calories Per Capita (Y).

SEM-PLS is a multivariate statistical method that estimates relationships between variables simultaneously for prediction, exploration, and structural model development (Hair et al., 2019). The rationale for using SEM-PLS in this study is that it does not require the assumption of a normal distribution, can operate with relatively small sample sizes, and can accommodate complex structural models. Evaluation in PLS consists of three main stages: the measurement model, the structural model, and the goodness-of-fit test (Yamin, 2022).

2. Evaluation of the Reflective Measurement Model

Evaluation of the reflective measurement model is conducted to test the causal relationship between constructs and indicators. The criteria used include:

- Outer Loading: values above 0.70 indicate good convergent validity.
- Composite Reliability (CR): values above 0.70 indicate the internal consistency of the instrument.
- Cronbach's Alpha: the reliability of an instrument is considered good if the value is above 0.70.
- Average Variance Extracted (AVE): a minimum value of 0.50 indicates that the construct is able to explain more than half of the indicator's variance.
- Fornell-Larcker Criterion: the AVE root of a construct must be greater than the correlation between constructs.

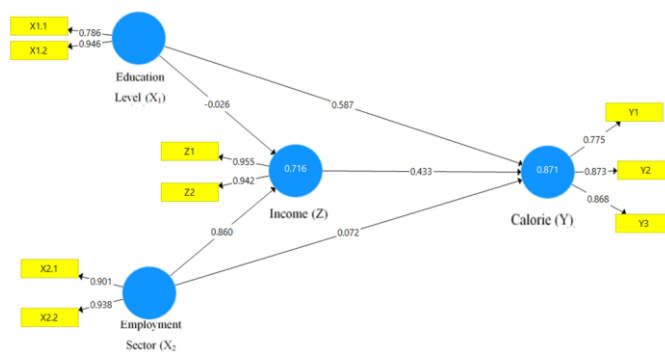


Table 1 Evaluation of the Reflective Measurement Model

Variables	Measurement Items	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
Education Level (X1)	X1.1	0.786	0.703	0.877	0.705
	X1.2	0.946			
Business Field (X2)	X2.1	0.901	0.820	0.916	0.846
	X2.2	0.938			
Income (Z)	Z1	0.955	0.889	0.947	0.900
	Z2	0.884			
Calories Per Capita (Y)	Y1	0.775	0.790	0.877	0.756
	Y2	0.873			
	Y3	0.868			

Source: Processed Secondary Data (2025), Ringle et al. (2022)

Interpretation of the results shows that all constructs meet the criteria for convergent validity and reliability. All outer loading values are >0.70 , AVE values are >0.50 , and CR and Cronbach's Alpha values are >0.70 .

Tabel 2 Fornell-Larcker Criterion

Variables	Y (Calories Per Capita)	X2 (Business Field)	Z (Income)	X1 (Education Level)
Calories Per Capita (Y)	0.840			
Business Field (X2)	0.769	0.920		

Income (Z)	0.763	0.846	0.948	
Education Level (X1)	0.826	0.564	0.459	0.870

Source: Processed Secondary Data (2025), Ringle et al. (2022)

The AVE root of each construct is greater than the correlation with other constructs. Thus, all constructs have met discriminant validity.

3. Structural Model Evaluation

The structural model aims to test research hypotheses through three stages:

- Multicollinearity Test (Inner VIF) A VIF value < 5 indicates no multicollinearity between variables.

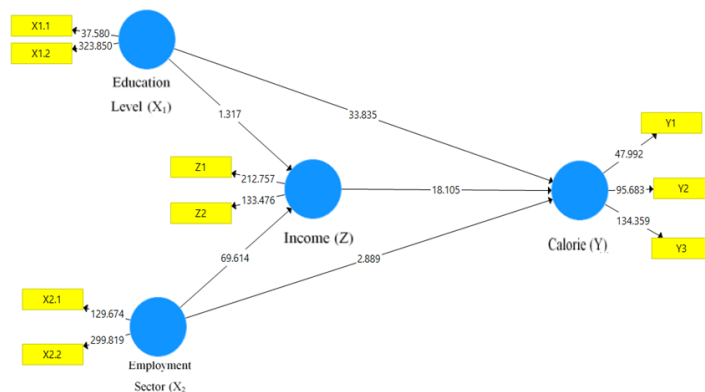
Table 3 Inner VIF

Variables	Y (Calories Per Capita)	X2 (Business Field)	Z (Income)	X1 (Education Level)
Calories Per Capita (Y)	-		-	
Business Field (X2)	4.070		1.466	
Income (Z)	3.518		-	
Education Level (X1)	1.468		1.466	

Source: Processed Secondary Data (2025), Ringle et al. (2022)

The results show that all VIF values < 5, meaning there is no multicollinearity problem.

- Path Coefficient & Significance Testing is done by bootstrapping, the criteria are significant if $t > 1,96$ And $p < 0,05$.



Gambar 2 Diagram Path Coefficient & p-value

Table 4 Hypothesis Testing Results

Hypothesis	Statement	Path Coefficient	t-statistic	p-value	f ²	Results
H1	X1 → Z	-0.026	1.456	0.146	0.002	Rejected
H2	X2 → Z	0.860	74.112	0.000	1.777	Accepted
H3	Z → Y	0.433	19.802	0.000	0.413	Accepted
H4	X1 → Y	0.587	34.793	0.000	1.819	Accepted
H5	X2 → Y	0.072	3.141	0.002	0.010	Accepted
H6	X1 → Z → Y	0.011	2.903	0.004	0.003	Accepted

H7	$X2 \rightarrow Z \rightarrow Y$	0.373	20.132	0.000	0.314	Accepted
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Source: Processed Secondary Data (2025), Ringle et al. (2022)

As a result, most of the hypotheses were accepted, except for H1 which was rejected because education level did not have a significant effect on income.

4. Goodness of Fit Evaluation

To ensure the model is suitable, a test is carried out. **R-square, Q-square, dan SRMR.**

Tabel 5 R-square

Variables	R ²
Calories Per Capita (Y)	0.871
Income (Z)	0.716

Interpretation: Exogenous variables explain 87.1% of the variation in Calories Per Capita and 71.6% of the variation in Income, both of which are in the high category (Chin, 1998).

Tabel 6 Q-square

Variables	SSO	SSE	Q ² (=1-SSE/SSO)
Calories Per Capita (Y)	3744.000	1478.292	0.605
Business Field (X2)	2496.000	2496.000	0.000
Income (Z)	2496.000	919.964	0.631
Education Level (X1)	2496.000	2496.000	0.000

A Q² value > 0.50 indicates high predictive relevance for variables Y and Z.

Table 7 SRMR

Model	SRMR	d_ ULS	d_ G	Chi-square	NFI
Saturated Model	0.078	0.908	2.499	9569.508	0.415
Estimated Model	0.078	0.908	2.499	9569.508	0.415

The SRMR value of 0.078 < 0.08 indicates that the model has a good fit (Hair et al., 2021).

Thus, the SEM-PLS analysis shows that the business sector has a strong influence on income, while education level only has a significant direct effect on per capita calories, not on income. The income variable is proven to be an important mediator in increasing per capita calorie consumption. The goodness of fit evaluation shows high R² and Q² values, and SRMR < 0.08, so the model can be considered fit and suitable for use in prediction.

Hypothesis Testing

The results of hypothesis testing in this study show variations in the influence between variables. **Hypothesis 1** shows that Education Level has a negative and insignificant effect on Income ($t = 1.456$; $p = 0.146$; $f^2 = 0.002$), so the hypothesis is rejected. **Hypothesis 2** shows that the Business Field has a positive and significant effect on Income ($t = 74.112$; $p = 0.000$; $f^2 = 1.777$), so it is accepted. **Hypothesis 3** shows that income has a positive and significant effect on calories per capita ($t = 19.802$; $p = 0.000$; $f^2 = 0.413$).

Hypothesis 4 shows that the level of education has a positive and significant effect on calories per capita ($t = 34.793$; $p = 0.000$; $f^2 = 1.819$). **Hypothesis 5** shows a positive influence of Business

Field on Calories Per Capita, although the influence is low ($t = 3.141$; $p = 0.002$; $f^2 = 0.010$). **Hypothesis 6** shows a positive and significant influence of Education Level on Per Capita Calories through Income ($t = 2.903$; $p = 0.004$; $f^2 = 0.003$). **Hypothesis 7** shows a positive and significant influence of Business Field on Per Capita Calories through Income ($t = 20.132$; $p = 0.000$; $f^2 = 0.314$).

Goodness of fit evaluation showed an R^2 of 0.871 for Calories Per Capita and 0.716 for Income, categorized as high. The Q^2 value of the endogenous variable >0.50 indicates strong predictive relevance. An SRMR of 0.078 <0.080 indicates model fit, thus the SEM PLS model is generally acceptable.

DISCUSSION

1. The Influence of Education Level on Community Per Capita Income

The results of the first hypothesis test indicate that education level has a negative and insignificant effect on per capita income in Makassar City, with a t-value of 1.456 (less than 1.960) and a negative path coefficient of -0.026. This means that although education is theoretically expected to increase income, in the context of Makassar City, a high level of community education does not guarantee an increase in income. This is caused by a mismatch between educational background and the needs of available employment opportunities, as well as the majority of graduates working in the informal sector or below their educational qualifications (underemployment). This phenomenon indicates that the formal employment sector has not been able to optimally absorb the entire highly educated workforce.

Furthermore, other factors influencing income, such as work experience, length of employment, business capital, and the economic sector in which people work, are more dominant than education level. The majority of Makassar's economy is driven by the trade and services sectors, where workers' education levels are not a primary consideration in determining wages. The Regional Minimum Wage (UMR), as a wage standard, also does not take educational background into account, often falling short of a decent living wage (KHL). Research by Safitri & Effendi (2023) and Loppies & Wildan (2022) shows that education does not always significantly impact income, consistent with the findings of Fauziana et al. (2010–2019) in OIC member countries, including Indonesia.

2. The Influence of Business Sectors on Community Per Capita Income

The second hypothesis test shows that the Business Sector has a positive and significant influence on the community's per capita income, with a t-value of 74.112 and a path coefficient of 0.860. The more productive or broad the scope of the business sector a person participates in, the greater the potential for increasing their income. This indicates that the business sector is a dominant factor in determining the income of the people of Makassar City. Productive business

sectors, supported by adequate infrastructure, technology, business capital, and market access, encourage increased community income.

Furthermore, the type of business sector also determines the unequal distribution of income among the community. Workers in the industrial, trade, and service sectors tend to earn higher incomes than workers in the agricultural sector. The Makassar City Government needs to encourage business diversification and local economic empowerment to improve community welfare. Research by Novianti & Fithriyah (2022) and Sari & Sugiarto (2024) shows that business sector and type of employment significantly influence worker income, both in the formal and informal sectors, making business sector development a crucial strategy for reducing economic inequality.

3. The Influence of Per Capita Income on Per Capita Calorie Consumption of the Community

The results of the third hypothesis test indicate that per capita income has a positive and significant effect on per capita calorie consumption, with a t-value of 19.802 and a path coefficient of 0.433. This means that the higher a community's income, the greater their ability to meet nutritional needs, including calorie consumption. This finding confirms that income plays a significant mediating variable in determining the food security of the Makassar community.

People with higher incomes tend to purchase more nutritious and varied foods, thus increasing calorie consumption. The "1 Stall 1 Stunting" program implemented by the Makassar City Humanitarian Forum (FKKM) demonstrates the importance of providing nutritious food for stunted children. Keynes and Duesenberry's consumption theory supports this finding, stating that consumption expenditure increases with income. Research by Baladina et al. (2024) and Rustam et al. (2021) also found a significant positive relationship between per capita income and community calorie intake.

4. The Effect of Education Level on Per Capita Calorie Consumption

The fourth hypothesis test shows that education level has a positive and significant effect on per capita calorie consumption, with a t-test of 34.793 and a path coefficient of 0.587. Higher education improves public understanding of the importance of balanced nutritional consumption, including calories. The higher the parental education, the better their supervision of their children's consumption patterns, resulting in the nutritional status of the majority of children in Makassar City being normal.

Besides knowledge, social factors and access also influence calorie consumption. The presence of fast food outlets, the lifestyle of young people who frequent cafes or restaurants, and nutrition education provided in schools contribute to increased calorie consumption. Findings by Islam & Sim (2021) and Siallagan et al. (2023) confirm that education level has a significant positive effect on per capita calorie intake in various Indonesian provinces. Improving public

education is expected to encourage policies that integrate nutrition literacy into formal and non-formal education.

5. The Influence of Business Sector on Per Capita Calorie Consumption

The results of the fifth hypothesis test indicate that the field of business has a positive and significant effect on per capita calorie consumption, with a t-value of 3.141 and a path coefficient of 0.072, although the effect is relatively low. Stable employment and a steady income enable individuals or families to increase their consumption of quality food, although its contribution is lower than the direct effect of income.

Furthermore, the type of work determines different calorie needs. Heavy work, such as in agriculture and construction, requires a higher calorie intake, while light work requires less. Studies by Syatira & Ekaria (2022) and Baladina et al. (2024) show that the field of work influences calorie consumption, both through income and work-related energy needs. This underscores the importance of the business sector in supporting community nutritional well-being.

6. The Effect of Education Level on Per Capita Calorie Consumption through Per Capita Income

The sixth hypothesis indicates that education level has a positive and significant effect on per capita calorie consumption through income, with a t-value of 2.903 and a path coefficient of 0.011. Although significant, the contribution of this path is relatively small, so the direct effect of education on calorie consumption is more dominant. Education still plays a role in shaping healthy consumption patterns, but increased income through education is not large enough to guarantee higher calorie consumption.

Limited job opportunities in Makassar City mean that the income of higher education graduates is not always high, thus weakening the indirect pathway through income. Islam & Sim (2021) showed that education encourages healthy food consumption and reduces unhealthy consumption, but the contribution of income as a mediator is still limited. Research by Dai et al. (2023) also confirmed that the influence of years of schooling on income distribution remains relatively low in several regions of Indonesia.

7. The Influence of Business Sector on Per Capita Calorie Consumption through Per Capita Income

The seventh hypothesis indicates that the business sector has a positive and significant effect on per capita calorie consumption through income, with a t-value of 20.132 and a path coefficient of 0.373. Productive and high-income businesses directly impact people's ability to plan nutritious food purchases and adequate calorie consumption. This intervening pathway demonstrates how interventions in the economic sector can improve the quality of food consumption.

Employment sectors that employ intensive labor and provide adequate wages encourage high calorie consumption, particularly in the formal and manufacturing sectors. Research by Syatira & Ekaria (2020) and Dewantoro (2022) shows that wage increases significantly increase per capita calorie intake. Overall, employment plays a stronger role than education in increasing

income, which impacts calorie consumption. While education remains crucial in shaping healthy and quality consumption patterns.

CONCLUSION

Based on the results of the analysis of Susenas data from BPS Makassar City, South Sulawesi Province and hypothesis testing on the relationship between Education Level, Business Field, Per Capita Income, and Per Capita Calorie Consumption, the following conclusions can be drawn:

1. Education level has a negative and insignificant effect on per capita income of people in Makassar City.
2. The business sector has a positive and significant influence on the per capita income of the people in Makassar City.
3. Per capita income has a positive and significant effect on per capita calorie consumption of people in Makassar City.
4. Education level has a positive and significant effect on per capita calorie consumption of people in Makassar City.
5. Business Fields have a positive and significant influence on Per Capita Calorie Consumption of the community in Makassar City.
6. Education level has a positive and significant effect on per capita calorie consumption through per capita income of the community in Makassar City.
7. Business Field has a positive and significant influence on Per Capita Calorie Consumption through Per Capita Income of the Community in Makassar City.

In general, the business sector plays a dominant role in increasing income and calorie consumption, both directly and indirectly. Education level, while not directly influencing income, remains important in shaping healthy consumption patterns.

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