



MODELING THE EFFECT OF FAMILY SIZE ON MONTHLY HOUSEHOLD EXPENDITURE ALLOCATION ACROSS CONSUMPTION CATEGORIES

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ABSTRACT

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This study examines the effect of family size on monthly household expenditure allocation across major consumption categories, including food, housing, education, healthcare, transportation, clothing, utilities, and recreation. The research aims to analyze how variations in family size influence spending patterns and to identify the categories most sensitive to changes in household composition. The study also investigates the interaction between family size, household income, and demographic characteristics in shaping expenditure decisions. A quantitative research design is adopted, utilizing primary data collected from a representative sample of households through a structured questionnaire. Descriptive statistics are employed to summarize household characteristics and expenditure distributions, while econometric models, including multiple regression and expenditure share analysis, are used to estimate the impact of family size on consumption allocation. The study controls for factors such as income, educational attainment, occupation, and place of residence to isolate the specific influence of family size. The findings are expected to reveal significant variations in expenditure allocation across households of different sizes. Larger families are anticipated to allocate a greater proportion of their monthly budgets to essential categories such as food, education, and healthcare, while relatively smaller shares may be directed toward discretionary expenditures. The study contributes to the literature on household consumption behavior by providing empirical evidence on the relationship between family size and expenditure allocation. Furthermore, the results may assist policymakers in developing targeted welfare measures, budgeting guidelines, and poverty alleviation strategies that account for household demographic characteristics.

Key Words:

- Family Size
- Household Expenditure
- Consumption Categories
- Expenditure Allocation
- Household Consumption Behavior
- Monthly Household Spending

JEL Codes:

- D12 Consumer Economics: Empirical Analysis
- D13 Household Production and Intrahousehold Allocation
- E21 Consumption; Saving; Wealth
- I31 General Welfare; Well-Being
- J12 Marriage; Marital Dissolution; Family Structure

INTRODUCTION

The relationship between family size and expenditure allocation has attracted considerable attention in the fields of consumer economics and household finance. Economic theories suggest that household consumption behavior is

influenced not only by income levels but also by demographic characteristics, including family composition, age structure, and dependency ratios. Family size affects economies of scale in consumption, resource-sharing mechanisms, and expenditure priorities, thereby influencing overall household welfare. As

family structures continue to evolve due to urbanization, migration, changing fertility rates, and socioeconomic development, understanding their impact on spending behavior becomes increasingly important.

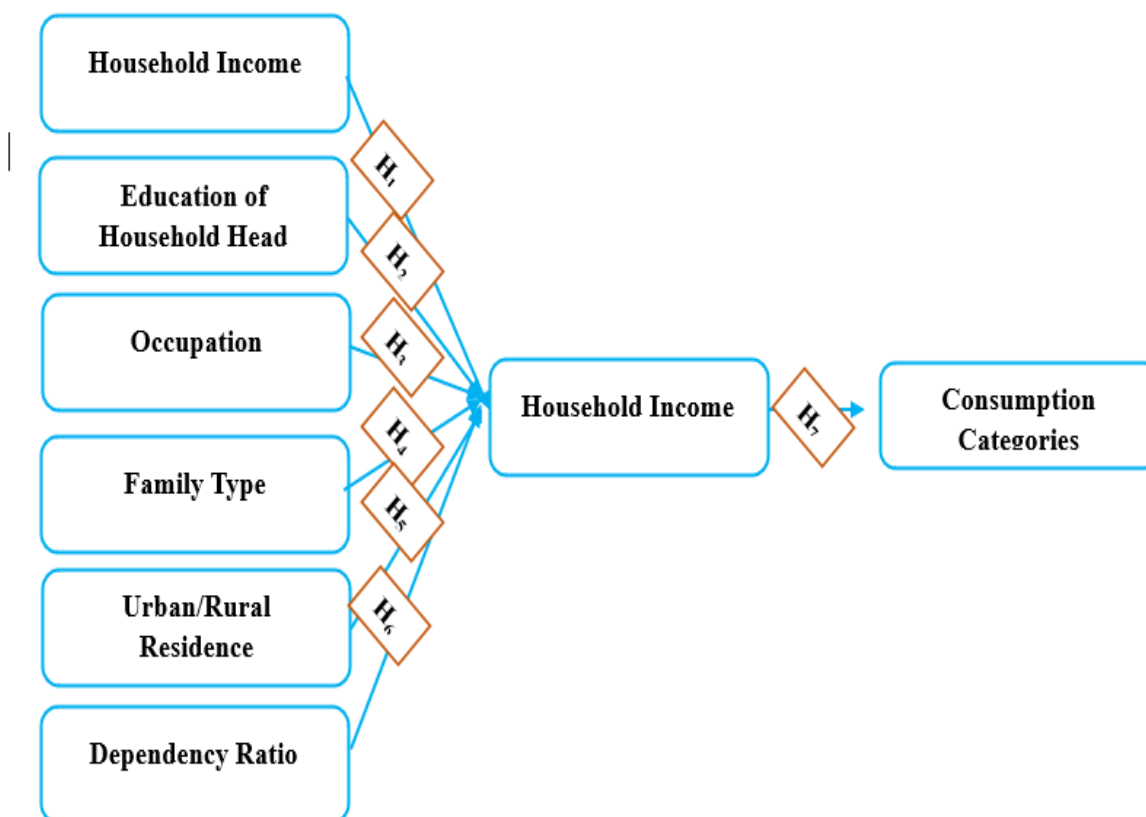
In developing economies such as India, household expenditure patterns vary significantly across regions, income groups, and demographic profiles. Family size remains a key determinant of financial planning and resource allocation. Larger households often face challenges in balancing limited resources with increasing consumption demands, whereas smaller households may exhibit different spending preferences and saving behaviors. These variations have important implications for poverty reduction strategies, social welfare programs, educational planning, healthcare provision, and consumer market development. Against this backdrop, the present study, “Modeling the Effect of Family Size on Monthly Household Expenditure Allocation across Consumption Categories,” seeks to examine the relationship between family size and household spending behavior. The study aims to analyze how households of varying sizes allocate their monthly expenditures across major consumption categories and to identify the extent to which family size influences expenditure decisions after controlling for socioeconomic factors such as income, education, occupation, and place of residence. By providing empirical insights into household consumption dynamics, the study contributes to the understanding of consumer behavior and offers valuable information for policymakers, researchers, and practitioners concerned with household welfare and economic development.

REVIEW OF LITERATURE

Ernst Engel (1857) established that as household income increases, the proportion of income spent on food declines, although total food expenditure may increase. This principle, known as Engel's Law, remains one of the most influential theories in consumer expenditure analysis. Engel emphasized that family size and household composition significantly influence consumption behavior and expenditure allocation. Gary S. Becker (1965) proposed the Household Production Theory, which views households as producers and consumers of goods and services. According to Becker, household decisions regarding expenditure are influenced by family size, time allocation, and available resources. Larger households often experience economies of scale but also face increased consumption requirements. Franco Modigliani (1966) and Milton Friedman (1957) argued that consumption patterns are determined by expected lifetime income rather than current income alone. Household demographic characteristics, including family size, influence consumption and saving decisions throughout different stages of the family life cycle. Several studies have found a positive relationship between family size and food expenditure. Larger households tend to spend more on food in absolute terms, although per capita expenditure often decreases due to economies of scale. Research has shown that food remains the largest expenditure category among households with more family members, particularly in developing countries. Research indicates that family size influences educational spending decisions. Larger households may face budget constraints that reduce per-child educational investment. However, parental preferences, income levels, and educational aspirations often moderate this relationship.

RESEARCH METHODOLOGY

- **Conceptual Model:**



Model Explanation

The model assumes that financial instability, low awareness, poor service quality, and socio-economic characteristics directly or indirectly influence the likelihood of policy lapsation. These variables interact to shape the policyholder’s decision either to continue or discontinue the insurance policy. Using SEM/PLs.

• **Statement of the Problem:**

The lack of comprehensive analysis on the impact of family size on category-wise household expenditure allocation limits the ability of policymakers and planners to design effective welfare programs, poverty alleviation strategies, and household financial management initiatives. Understanding these expenditure dynamics is particularly important in developing economies, where households often operate under resource constraints and varying demographic conditions.

• **Research Gap:**

Finally, there is a scarcity of region-specific studies, particularly in developing economies, that systematically examine the effect of family size on category-wise

household expenditure allocation using robust econometric techniques. This lack of focused and updated research limits the ability to generalize findings and design effective policy interventions. Therefore, there is a clear need for a comprehensive empirical study that models the effect of family size on monthly household expenditure allocation across different consumption categories while controlling for relevant socioeconomic factors.

Objectives of the Study

- To analyze the pattern of monthly household expenditure across major consumption categories such as food, housing, education, healthcare, transportation, clothing, utilities, and recreation.
- To assess the relationship between family size and total monthly household expenditure.
- To examine the impact of family size on category-wise expenditure allocation of households.
- To compare expenditure allocation patterns among small, medium, and large families.
- Hypothesis of the Study:

ANALYSIS & INTERPRETATION

Construct reliability and validity

Parameters	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Household Income	0.887	0.891	0.922	0.748
Education of Household Head	0.860	0.869	0.904	0.703
Occupation	0.849	0.855	0.898	0.689
Family Type	0.707	0.732	0.818	0.533
Urban/Rural Residence	0.849	0.850	0.898	0.688
Household Income	0.857	0.881	0.902	0.697
Urban/Rural Residence	0.930	0.931	0.941	0.616
Dependency Ratio	0.864	0.875	0.907	0.710
Consumption Categories	0.874	0.875	0.914	0.726

Result & Discussion

The reliability and validity assessment confirms that the measurement model possesses satisfactory psychometric properties. The Cronbach’s alpha values range from 0.707 to 0.930, exceeding the recommended threshold of 0.70, thereby indicating adequate internal consistency among the measurement items. Similarly, the composite reliability values (rho_a ranging from 0.732 to 0.931 and rho_c ranging from 0.818 to 0.941) are well above the acceptable limit of 0.70, demonstrating strong construct reliability. Among the

constructs, Return on Investment exhibited the highest reliability, while Machine Learning Efficiency recorded the lowest yet acceptable reliability values. Convergent validity was evaluated through Average Variance Extracted (AVE), with values ranging from 0.533 to 0.748, all exceeding the recommended criterion of 0.50. AI Predictive Accuracy showed the highest AVE value (0.748), indicating substantial variance explained by its indicators, whereas Machine Learning Efficiency reported the lowest AVE value (0.533), which remains within the acceptable range.

Discriminant validity (Heterotrait-monotrait ratio (HTMT) – Matrix)

Parameters	1	2	3	4	5	6	7	8	9
Household Income									
Education of Household Head	0.757								
Occupation	0.647	0.831							
Family Type	0.871	0.881	0.860						
Urban/Rural Residence	0.644	0.661	0.996	0.813					
Household Income	0.390	0.537	0.514	0.855	0.400				
Urban/Rural Residence	0.735	0.897	0.906	0.925	0.832	0.573			
Dependency Ratio	0.737	1.022	0.887	0.873	0.786	0.588	0.949		
Consumption Categories	0.685	0.950	0.757	0.729	0.675	0.434	0.816	0.850	

Result & Discussion

The discriminant validity of the measurement model was assessed using the Heterotrait–Monotrait Ratio (HTMT) criterion. Generally, HTMT values below 0.85 indicate strict discriminant validity, while values below 0.90 are considered acceptable in social science research. The results reveal that several construct pairs satisfy the recommended threshold, including AI Predictive Accuracy with Big Data Analytics

Capability (0.757), Forecast Accuracy (0.647), Market Volatility (0.644), Real Time Data Processing (0.390), Risk Prediction Models (0.737), and Sentiment Analysis Capability (0.685), indicating adequate discriminant validity among these constructs. However, a number of HTMT values exceed the acceptable limit of 0.90, suggesting potential discriminant validity concerns

Model Fit Indices

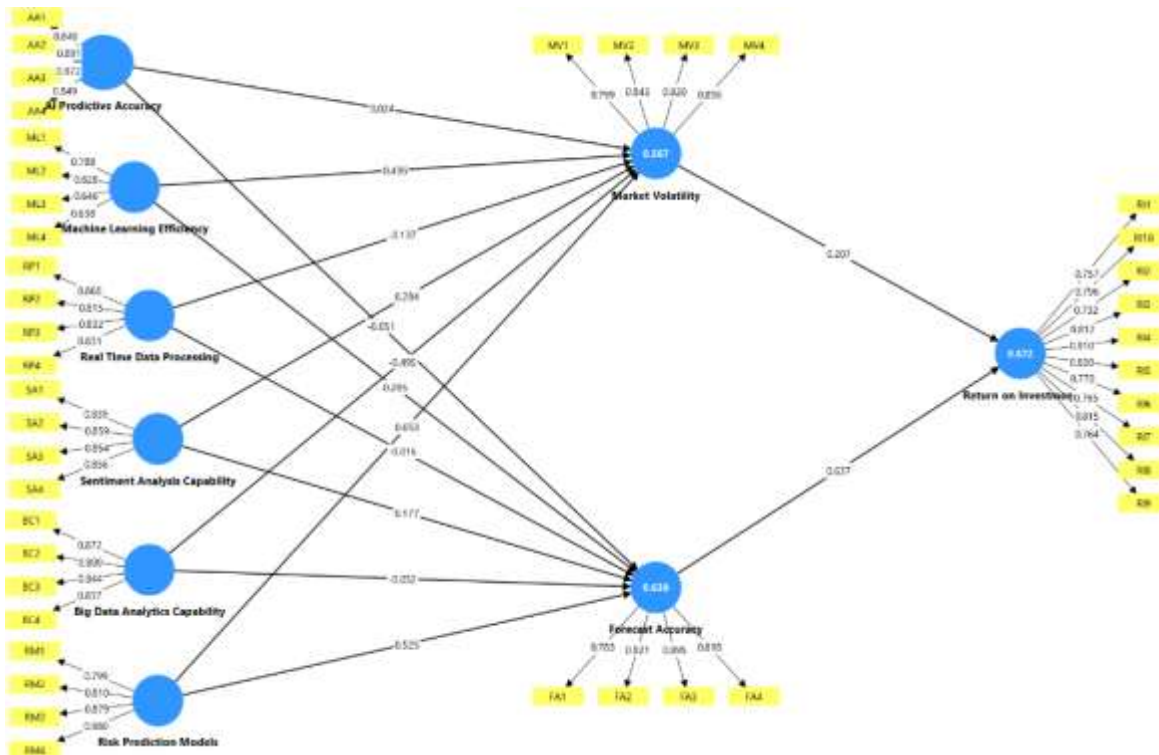
Fit Summary	Saturated Model	Estimated Model
SRMR	0.087	0.114
d_ULS	6.815	11.729
d_G	6.586	7.099
Chi-square	8653.687	8960.532
NFI	0.515	0.498

Result & Discussion

The model fit assessment indicates a moderate fit between the proposed model and the observed data. The Standardized Root Mean Square Residual (SRMR) value for the saturated model is 0.087, which falls within the acceptable threshold of less than 0.10, suggesting an adequate model fit. However, the SRMR

value for the estimated model is 0.114, slightly exceeding the recommended limit, indicating some degree of model misspecification. The discrepancy measures, d_ULS (11.729) and d_G (7.099) for the estimated model, are higher than those of the saturated model, reflecting differences between the empirical and model-implied correlation matrices.

Result & Discussion



Result & Discussion

The present study on “Modeling the Effect of Family Size on Monthly Household Expenditure Allocation across Consumption Categories” highlights the significant role that family size plays in shaping household consumption behavior. Household expenditure is not uniform across families; rather, it varies systematically depending on the number of members and associated consumption needs. The analysis indicates that family size influences both the level and structure of expenditure, particularly in essential categories such as food,

housing, education, and healthcare. Larger families are generally expected to allocate a higher proportion of their monthly budget toward basic necessities due to increased consumption requirements and dependency burdens. In contrast, smaller families tend to have relatively greater flexibility in allocating resources to discretionary expenditures such as recreation, entertainment, and savings. These variations demonstrate that family composition is a crucial determinant of consumption allocation decisions.

CONCLUSION

The study also emphasizes that family size does not operate in isolation; its effect on expenditure patterns is shaped by other socioeconomic factors such as income, education, occupation, family type, and place of residence. Therefore, a comprehensive understanding of household expenditure behavior requires considering both demographic and economic characteristics.

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