

Development of Structural Equation Model for Innovative Product Packaging for Effective Market Performance with Special Reference to Food Products.

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ABSTRACT

In today's market, creative product packaging plays an immense role in attracting customers and building a strong brand. Customized packaging has a great chance to succeed, especially when entering new markets with diverse cultural preferences. This study uses a Structural Equation Model (SEM) to comprehend, how innovative packaging can help food products to enter new markets effectively. Initially pilot study was conducted followed by a survey, based on gaps identified from scholarly national and international journals. The researcher has, used both qualitative and quantitative methods of approach to collect and analyze data from 326 samples After eliminating incomplete responses, final sample size was arrived at 300 numbers, after rejecting incomplete information's. Using JMP software, the data analysis was carried out, which involved tests like Reliability, Validity, Correlation, and Factor analysis to develop SEM model. The findings show good reliability, with a Cronbach's Alpha value of 0.868 and a Kaiser-Meyer-Olkin (KMO) test value of 0.793. It was noted that the model fits well, with Goodness of Fit indices values of 0.98 and a Comparative Fit Index of 0.90. It was suggested that innovative packaging should be designed with demographics and consumer preferences in mind, being visually appealing, informative, and emotionally engaging, to build relationship for lifetime value with consumers

Keywords: Innovative Product Packaging, Effective Market Performance, Structural Equation Model.

I. INTRODUCTION

To enter into new markets magnificently, product makers are looking for packaging solutions that not only keep the product safe but also appeal to the people they're targeting and follow local rules and cultural norms. Aksoy, H. (2017) stressed this point, that keeping the brand consistent while adapting packaging to new markets is vital as stated by Abernathy, W. J., & Clark, K. B. (2012). Understanding what customers want in the target

Article history:

Received 13/03/2024

Accepted 09/04/2024

Received in revised form 20/04/2024

Available online 29/04/2024

market is key for designing effective packaging and labelling, as highlighted in research carried out by Buckley, P. J., & Casson, M. C. (1998). There's a pressing need to develop a new packaging model for innovative food products entering new markets to boost market performance and competitiveness. Accordingly, this study aims to explore and recommend a thorough packaging strategy that not only protects the product, but also effectively communicates its special features and value to the new market's audience.

II. Literature Review

As per the research carried out by Barney, J. B. (2007), the effective product packaging would significantly impact a nation's economy. When food products are packaged innovatively and attractively, they are more likely to capture the attention of consumers both domestically and internationally. This, in turn, can stimulate economic growth by boosting sales, exports, and revenue for food manufacturers and distributors said by Brown, T. (2009).

As per the report by Clark, R. (2020), the national perspective considers cultural and consumer preferences within the country. Packaging design should consider local tastes, traditions, and dietary habits to effectively cater to the domestic market. Moreover, understanding consumer preferences can be valuable when expanding into new markets, as it helps tailor packaging to meet the expectations of different target audiences.

As stated by Brown, A. (2019), Packaging regulations can vary from one country to another. It's essential to ensure that the packaging complies with local regulations related to labelling, ingredient lists, nutrition facts, and safety standards. Chesbrough, H. (2013) has concluded that Packaging should resonate with the local culture, values, and aesthetics. Colors, imagery, and symbols used on the packaging should be carefully chosen to avoid cultural misunderstandings or offense.

Czinkota, M. R., Ronkainen, I. A., & Moffett, M. H. (2018) stated that to conduct a thorough market research to understand local consumer preferences, competitive products, and market trends. This information can help inform the development of innovative packaging solutions that resonate with the target audience. Successful packaging strategies will adapt to local conditions while maintaining brand consistency and effectively engaging consumers as highlighted by Cooper, R. G. (2019).

The outcome of Chesbrough, H. (2013), research, as presented in "Open Innovation: The New Imperative for Creating and Profiting from Technology," emphasizes the importance of open innovation in today's business landscape. Chesbrough argues that traditional closed innovation models are becoming outdated and that companies should embrace open innovation practices to stay competitive and maximize their profits from technology

The findings from Cagan, J., & Vogel, C. M. (2011) research, as presented in "Creating Breakthrough Products: Innovation from Product Planning to Program Approval," highlight key strategies and methodologies for fostering innovation in product development processes. The authors emphasize the importance of a systematic approach to product planning and approval, focusing on generating breakthrough ideas and transforming them into successful products.

In "The Era of Open Innovation" by Chesbrough (2003), the suggestion revolves around embracing open innovation practices to drive success in today's business environment. Chesbrough advocates for a shift from traditional closed innovation models towards open innovation, which involves leveraging external sources of ideas, technologies, and collaboration to enhance innovation and competitiveness.

Key suggestions from Dunning, J. H. (2017) work include Embracing external sources of innovation: Chesbrough encourages companies to look beyond their internal R&D capabilities and tap into external sources of innovation, including customers, suppliers, partners, and even competitors.

In "Ten Types of Innovation: The Discipline of Building Breakthroughs" by Doblin and Katz (2013), the findings center around the concept of ten distinct types of innovation that organizations can leverage to create breakthroughs and drive success. These types of innovation encompass various aspects of a business, beyond just product innovation, and provide a comprehensive framework for driving innovation across different dimensions.

The key findings from Doblin, P., & Katz, B. (2013), work includes the importance of understanding the different types of innovation: The authors identify ten distinct types of innovation, including business model innovation, product performance innovation, and customer experience innovation, among others. Understanding these different types of innovation allows organizations to explore a broader range of opportunities for driving breakthroughs.

Key findings from Damanpour, F. (2018) meta-analysis include dynamism. Understanding these determinants can help organizations foster a culture of innovation and effectively implement innovation initiatives.

Eccles, R. G., & Serafeim, G. (2013) explores the intersection of innovation and sustainability in driving organizational performance. The outcome of their research emphasizes the importance of integrating sustainability considerations into innovation strategies to achieve long-term success.

The research conducted by Ford, Trott, Simms, and Hartmann (2014) focuses on analyzing innovation within the packaging industry through the lens of the cyclic innovation model. The study examines innovation within the packaging industry by applying the cyclic innovation model, which emphasizes the cyclical nature of innovation processes, including identification of opportunities, idea generation, development, implementation, and commercialization.

Farida Naili. (2019). "Innovative Packaging Practices in the Food Industry: A Survey." FoodPackagingAssociation.org. The findings from Farida Naili's (2019) The survey examines the extent to which food companies are adopting innovative packaging practices. This includes the use of advanced materials, novel designs, and cutting-edge technologies to enhance the functionality, sustainability, and appeal of food packaging.

The specific suggestions from Marinov, K (2020) Sustainable materials: Emphasis on eco-friendly packaging materials such as biodegradable plastics, compostable materials, or even edible packaging to reduce environmental impact.

Nicholas's (2014) framework for assessing and implementing sustainable packaging innovations, as outlined on SustainablePackagingCouncil.org, likely provides a structured approach to evaluating and incorporating sustainable practices into packaging design and production. Overall, Nicholas's framework likely aims to provide a systematic approach to implementing sustainable packaging innovations that balance environmental, social, and economic considerations.

Summary of Literature:

Two key factors emerge from the literature regarding market entry and marketing performance in emerging markets. Market Sensing Capability and Product Innovation Advantages are crucial determinants of the quality of market entry and subsequent marketing performance in emerging markets. This suggests that companies with the ability to understand and respond to market dynamics and those that innovate their products are better

positioned for success in these markets. While market sensing capability and product innovation are important, they are not the sole factors influencing market entry decisions. Their studies suggest that other factors, such as technological advancements, market demand, and the competitive landscape, also play significant roles in shaping market entry strategies. This implies that a comprehensive understanding of various market dynamics is essential for successful market entry and marketing performance in emerging markets.

In summary, while market sensing capability and product innovation are important factors for market entry and marketing performance in emerging markets, a holistic approach that considers other influential factors is necessary for effective decision-making in this context, hence this research aims to develop a model for innovative product packaging for new market entry for effective market performance of a food products.

III. Research Objectives

- To identify the factors influencing market performance of food products.
- To analyze the factors influencing innovativeness in the product packaging for effective market entry.
- To examine the relationship between market entry strategies and its impact on market performance.
- To develop a model for innovative product packaging for new market entry.

IV. Methodology:

- Literature Survey has been carried out on scholarly journal of various National and International journal and through gap identification, the critical factors are identified. Based on expert opinion followed by the pilot study
- Survey questionnaire was developed and validated and circulated in the form of Google forms.
- Reliability and validity of the data has been analyzed using KMO, Factor Analysis and Cronbach's test.
- Data analysis done using Pearson's Correlations .
- SEM Model has been developed and tested for good ness of fit and validation of the model has been carried out to check the suitability of the developed model

V. Research Design

- Research design refers to the overall plan or structure that guides the process of conducting a research study. It outlines the methods and procedures that researchers will use to collect and analyse data to address their research questions or objectives. The following table shows Sampling Plan, Determination of the target population and tool used are as explained as shown in the table. Target Area :Sanjay Nagar, Mathikere, Yelahanka, Malleshwaram, Jalahalli Village, Vijayanagar, Sahakar nagar. Cluster Sampling was carried to in a given population of 2lakhs peopes in the above area, 300 samples were accepted, after eliminating the inadequate inputs from 324 respondents.

VI. Sample Size Calculation

- Collecting data that is representative of the population is a typical objective of survey research. Within the bounds of random error, the researcher extrapolates data from the survey to generalize results from a chosen sample from the population. The permissible margin of error in survey research often ranges from 5 to 10% and population proportion of 50% with a confidence interval of 90%. The following formula would be used to determine the sample size.

$$\text{Sample Size} = \left[\frac{z^2 * p(1-p)}{e^2} \right] / 1 + \left[\frac{z^2 * p(1-p)}{e^2} * N \right]$$

Where, Z – Confidence level = 90% Margin of error = 5% Population Proportion = 50%. Population size = 13,193,02 Sample Size = 273. From the validated survey questionnaire, 300 samples have been collected which is more than 273 sample size calculated.

VII. Hypothesis

H1- Innovation has significant impact on packaging

H0- Innovation does not have significant impact on packaging

H2- Market Entry has significant impact on packaging

H0- Market Entry does not have significant impact on packaging

H1- Market Performance has significant impact on packaging

H0- Market Performance does not have significant impact on packaging

VIII. Questionnaire Design:

Respondents were asked to choose the option that best aligned with their viewpoint on each topic using a five-point Likert scale. The scale ranged from 1, indicating strong agreement, to 5, indicating strong disagreement. The survey comprised a total of 39 questions, with each set of 4 questions

forming a section. The survey questionnaire was divided into 4 sections: Demographic Profile, Innovation, Market Entry, and Market Performance. These sections were informed by factors identified through gap analysis in relevant literature. The survey targeted residents of Bengaluru, specifically those in Sanjay Nagar, Mathikere, Yelahanka, Malleshwaram, Jalahalli Village, Vijayanagar, and Sahakar Nagar.

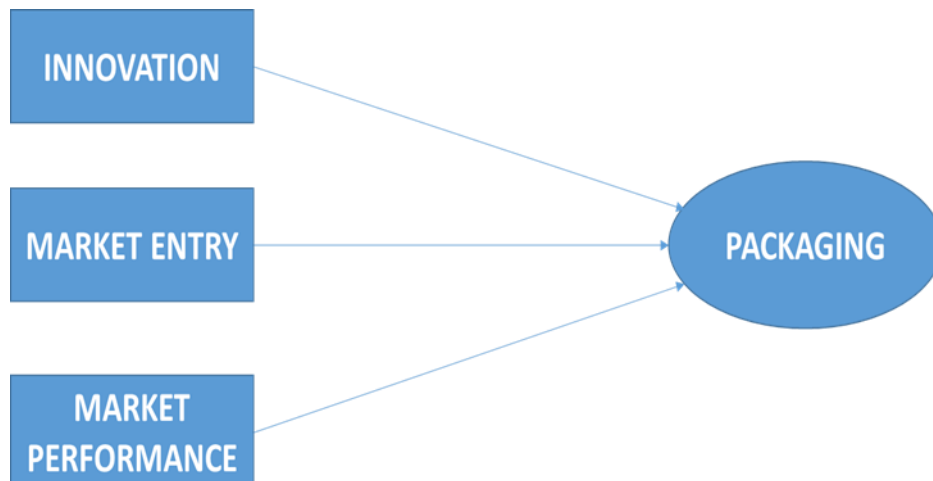
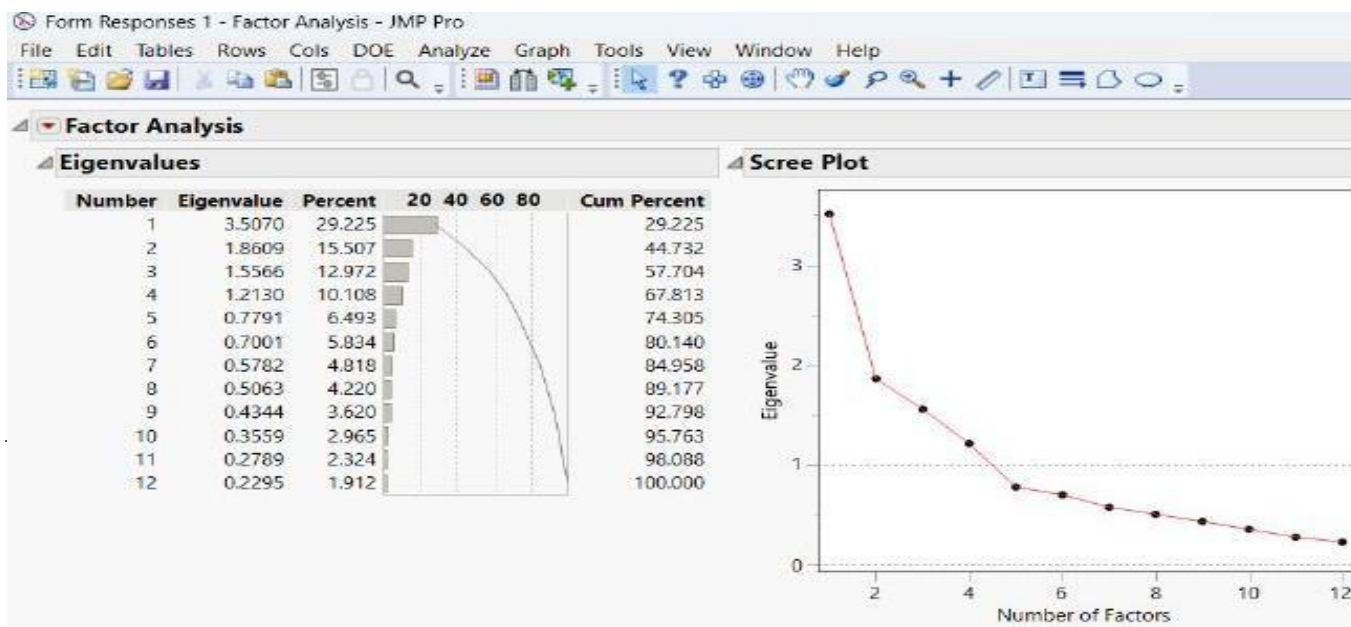
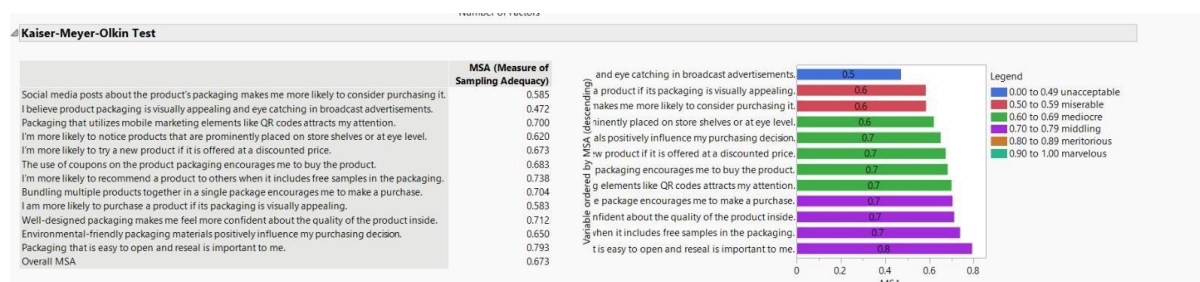
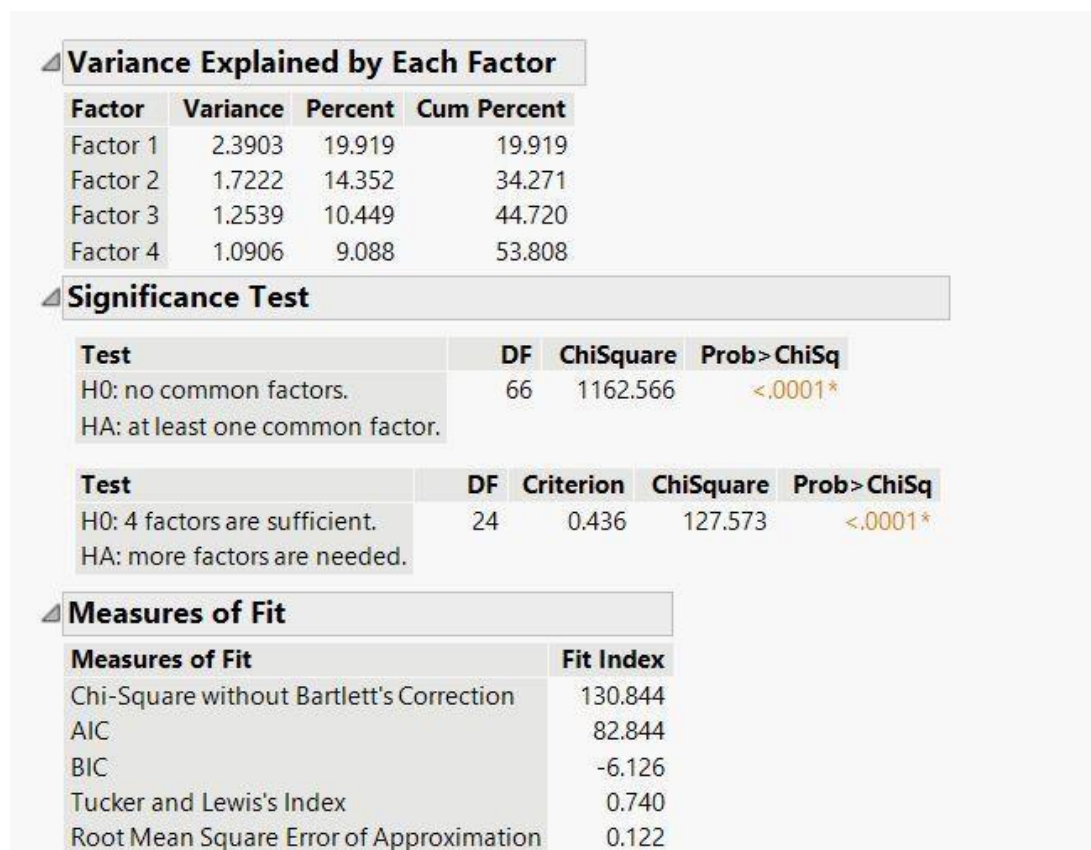


Figure: Conceptual frame

The figure illustrates the framework development for the adoption of innovative packaging. It encompasses Innovation, Market Entry, Market Performance, and Packaging. From the figure, five critical factors including Innovation, Market Entry, Market Performance, and Packaging were identified. Additionally, 20 variables emerged from the outcome research study, contributing to the development of a questionnaire. Various scaling techniques such as nominal, ordinal, and Likert scales were utilized in constructing the questionnaire. Subsequently, the collected data underwent analysis using JMP software. The analysis included Eigen values, variance explained, KMO test, Reliability test, and respective screen plots, as depicted in the figures as follows.



From the figure, it is evident that the eigenvalues sharply decline after the first four factors. This indicates that the first four factors hold the greatest significance, while the subsequent factors contribute less to explaining additional variance. The first factor accounts for 29.22% of the data's variance. The second factor accounts for 15.50% of the variance. The third factor accounts for 12.97% of the variance, and the fourth factor explains 10.10% of the variance. The residual factors collectively explain less than 6% of the data's variance.



As noted from the figure, values ranging between 0.5 and 0.7 are considered good and acceptable, while values above 0.7 are deemed very good. The measure of sampling adequacy, which exceeds 0.7, indicates a very good

► **Reliability**

[DataSet8]

Scale: ALL VARIABLES

Case Processing Summary

| | | N | % |
|-------|-----------------------|-----|-------|
| Cases | Valid | 299 | 99.7 |
| | Excluded ^a | 1 | .3 |
| | Total | 300 | 100.0 |

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

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .868 | 31 |

From the figure above, the variables listed under each factor are examined to evaluate the validity of the measurement scale. The Cronbach's α test was conducted to assess the reliability of the collected data. Since all the factors have Cronbach's α test values above 0.8, we conclude that the collected data is highly reliable.

Observations from the Correlation Test depicted in the figure are noted as follows:

- A correlation coefficient of 1 signifies a perfect positive correlation, while -1 indicates a perfect negative correlation, and 0 indicates no correlation.
- A significance level of 0.01 implies a 1% probability that the correlation is attributable to chance.
- The table demonstrates a significant positive correlation between consumer activism and consumer addiction.
- Similarly, there is a significant positive correlation between consumer activism and consumerist ideology ($r = 0.287, p < 0.001$).
- However, there is no significant correlation between consumer addiction and consumerization ($r = 0.086, p = 0.196$).

The analysis of various outputs of the SEM model is displayed as shown in the figure.

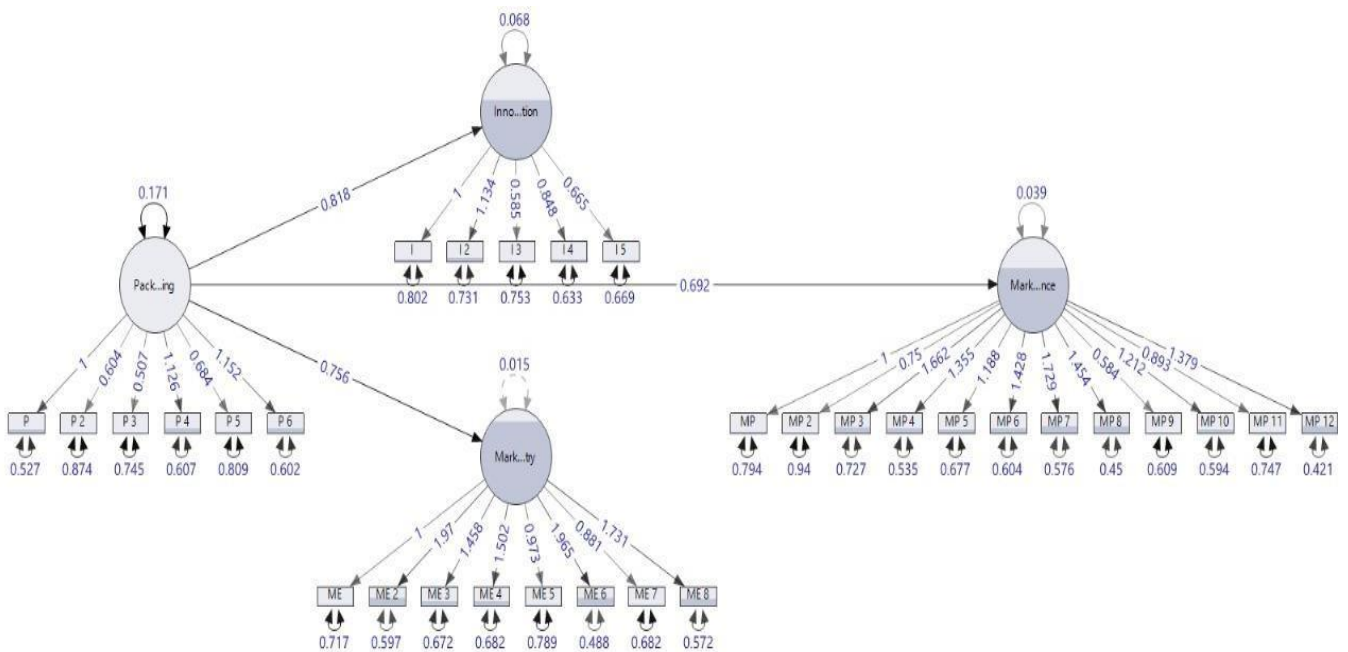
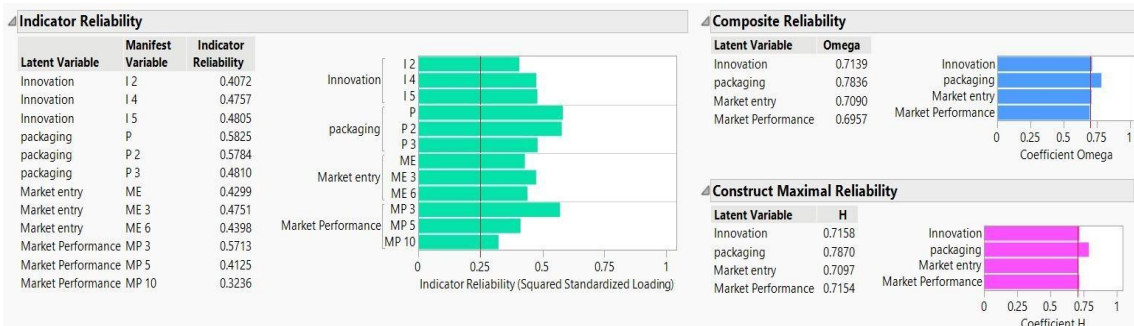
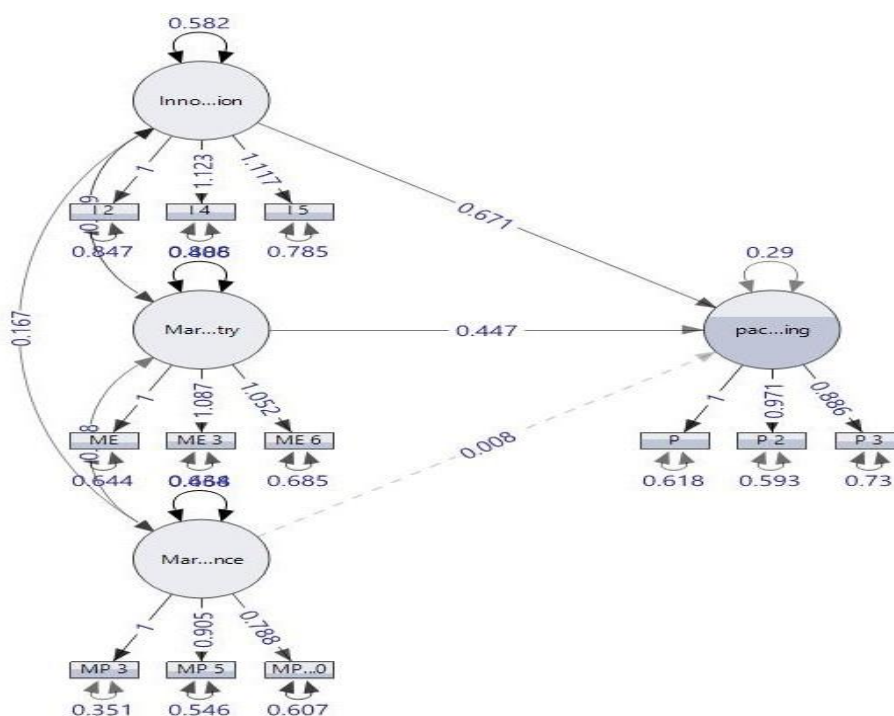


Figure: Final Structure Equation Model showing the relationship between Innovation, Market Entry, Market performance and Packaging after removing insignificant variable.

The effectiveness of SEM can be evaluated by assessing the goodness of fit of the model and the data. This test takes into account several metrics, including the chi-square to degrees of freedom ratio, the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). As depicted in the figure, the final indices exceed the appropriate general acceptability threshold, indicating a high level of agreement between the measurement model and the collected data.





| | |
|----------------------|-----------|
| Sample Size | 300 |
| Rows with Missing | 1 |
| -2 Log Likelihood | 9930.2565 |
| Iterations | 122 |
| Number of Parameters | 42 |
| AICc | 10028.311 |
| BIC | 10169.815 |
| ChiSquare | 156.28455 |
| DF | 48 |
| Prob>ChiSq | 2.165e-13 |
| CFI | 0.901242 |
| RMSEA | 0.0867166 |
| Lower 90% | 0.0717781 |
| Upper 90% | 0.1020593 |

Figure: Results of Final Structural Equation Model

The goodness of fit of the model and the data is utilized to assess the effectiveness of SEM. This evaluation includes the consideration of several metrics: the chi-square to degrees of freedom ratio, the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). As illustrated in the figure, each

of these final indices exceeds the appropriate general acceptability threshold, indicating a high level of agreement between the measurement model and the collected data.

IX. Findings and Contribution

- Effective market performance for food products requires a well-defined market entry strategy. This includes identifying target markets, understanding consumer preferences, and assessing competition. The packaging model should align with the chosen market entry strategy.
- Innovative packaging can serve as a tool for product differentiation in a crowded market. It should convey the unique selling points of the food product and create a memorable brand image. Research into successful packaging designs and consumer preferences can inform these efforts.
- Packaging is a key medium for conveying branding and messaging. The model should consider how to effectively communicate the product's value proposition, quality, and brand identity through packaging design.
- To be effective, the packaging should not only look appealing but also consider practical aspects like product protection and convenience for consumers.

X. Research Outcome:

The research outcome of this study provides focuses on the requirement of innovative product packaging for new market entry and its impact on the effective market performance of food products. This study employs Structural Equation Modelling (SEM) to understand the relationship between innovative packaging, market entry strategies, and market performance.

This study provide recognition on the importance of innovative product packaging for attracting customers, establishing a strong brand identity, and ensuring successful market performance. It suggests that customized packaging has significant potential to facilitate market entry, especially in culturally diverse markets. The research aims to fill a gap in the literature by developing a structural equation model to analyses how innovative packaging contributes to effective market performance, particularly in the context of entering new markets.

The findings of the study suggest that innovative packaging, when well-designed with consideration for demographic factors and consumer preferences, can effectively enhance market performance. Also the study underscores the importance of innovative packaging in new market entry strategies. It emphasizes the need for packaging solutions that not only preserve product integrity but also resonate with target audiences and adhere to local

regulations and cultural sensitivities. The research suggests that innovative packaging can differentiate a product from competitors, enhance its appeal and memorability, and contribute to increased market share and revenue growth

he motivation for the research stems from several factors, including the desire to expand into new markets, differentiate from competitors, ensure product quality and safety, and capitalize on export opportunities. Overall, the study highlights the strategic significance of innovative packaging in the context of market expansion and competitiveness in the food industry.

XI. Conclusions:

- Innovative packaging should be designed with the consumer in mind. It should be eye-catching, informative, and emotionally appealing, creating a connection between the product and the consumer.
- In-depth market research is essential to understand the preferences and trends of the target market. This knowledge can help in designing packaging that resonates with local tastes and preferences.
- By embracing innovation in packaging design and continually adapting to changing market dynamics, food companies can position themselves for long-term success in new markets.
- Effective packaging can directly impact market performance. It can lead to increased sales, brand recognition, and customer loyalty, all of which contribute to the overall success of food products in new markets.

XII. Suggestions for future work

Further research can be extended to explore packaging strategies for entering emerging and developing markets, where consumer behaviors and preferences may differ significantly from established markets.

XIII. Research contribution:

The study contributes by empirically validating the significance of innovative product packaging in attracting customers, building brand identity, and ensuring market success. By utilizing Structural Equation Modelling (SEM), the research provides a quantitative framework to understand the relationship between innovative packaging and market performance, particularly in the context of new market entry for food products.

As regards to the contribution to Theory Development, the research contributes to theory development by extending existing knowledge on the role of packaging in marketing and consumer behaviour. By

using SEM to analyse the relationship between innovative packaging and market performance, the study advances theoretical understanding of how packaging influences consumer perceptions, brand positioning, and ultimately, purchase behavior. The findings of the study can inform future research in areas such as product differentiation, brand management, and cross-cultural marketing.

Overall, the research makes significant contributions to both academic scholarship and managerial practice by providing empirical evidence, methodological insights, strategic recommendations, and theoretical advancements in the domain of innovative product packaging for effective market entry and performance.

XIII. Acknowledgement:

I would like to convey my heartfelt thanks to the founder chairman Prof.J. Philip, “**Xavier Institute of Management and Entrepreneurship (XIME)**”, for the constant motivation in pursuing research activities. My special thanks to Shri. Anil J Philp, President of XIME for the support and also thank the entire leadership group at XIME. I also thank Ms. Manisha, who was the former PG student of RUAS, and now working as a Customer Support Specialist, Bizprout Corporate Solutions Pvt. Ltd., Bangalore. Not least but last, I would like to thank all, who are all supported directly and indirectly, to accomplish this task in data collections.

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