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ExShapes Math Card Product Market Research Analysis

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Abstract: Mathematics cards are one of the products produced by a company called "EDUPROPS" which operates in the field of providing educational teaching aids for school children. ExShapes math cards are a series of cards that combine flat shapes with exponent numbers. The research focuses on market research needs for ExShapes math card products, so that the product's marketing potential can be identified more clearly. The analysis method was carried out using trend analysis, similarity, contradictions, and odd groupings on primary data that had been obtained through distributing questionnaires. The final result of the research is the results of the respondents' trend analysis regarding respondents' interest in ExShapes math cards based on the gender and profession of each respondent, then their source of knowledge of math cards and the respondent's experience in using or playing math cards. In the similarity analysis, there was respondents' interest in buying mathematics cards in terms of design, price, quality or brand. The results of the contradiction analysis are the respondent's interest in the product and the results of the odd grouping analysis are that the respondent will promote the ExShapes math card product to other potential customers.

Keywords: ExShapes Math Cards, Market Research , EduProps

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1. Introduction

In the current era of globalization, educational institutions must be able to adapt to increasingly rapid developments, resulting in increasing demand. With very tight competition in the business world. An educational institution must have the ability to adapt quickly and precisely and be able to follow various demands from educational users to meet current needs[1].An organization in conducting business requires coordination activities within an organization and the technical environment. These activities can be carried out to achieve business goals to be achieved. Business is key in managing activities in serving and increasing understanding of the reciprocity of these activities [2]. In this case the institution requires Various kinds of efforts are made by business actors to increase their income. One effort that can be made is to carry out market analysis regarding the products they produce.

Market research is a process of identification, collection, analysis, dissemination, and utilization of information in a structured and objective manner to be able to carry out management, make decisions related to identifying and solving problems in the field of marketing [3]. Market research really needs to be done before starting a new business, introducing a new product, or maintaining an existing business [4]. Marketing research plays an important role, namely being a liaison between marketers and consumers, customers and society through information used to identify and define marketing opportunities and problems, produce and evaluate marketing efforts, assist marketing performance and improve the understanding of marketing as a process.Data obtained from marketing research must be accurate, relevant, reliable and objective in order to

provide a proper understanding of the market and customers. With information obtained from marketing research, company management can better plan and implement various aspects of marketing, including product development, pricing, product distribution, and integrated marketing communications [5].

Carrying out market research on existing businesses not only helps entrepreneurs to find out the level of product acceptance by the public, but also facilitates improvements and innovations in accordance with market needs. This shows that ultimately the analysis results from market research can increase business income [3]. Apart from market research, a company must always adapt their product design to the preferences and desires of potential consumers. This can be viewed from a design perspective, namely product elements that can be seen and assessed by consumers directly, and through attractive product designs, it is hoped that product marketing will increase [6].

Mathematics cards are one of the products produced by a company called "EDUPROPS" which operates in the field of providing educational teaching aids for school children. Mathematics cards in this context are a series of cards that can be used as a tool in learning mathematics. Market analysis is an important step in business planning to gather information about the potential of the product to be developed. Market research conducted by "EDUPROPS" aims to understand current market potential, develop products, determine product selling prices, assess interest in products, and formulate appropriate sales strategies [7]. The purpose of market research is to analyze the needs or desires of the market (society) and understand business competitors. By conducting market research, companies can find out the products or services offered, where the demand for these products or services comes from, and the product quality standards expected by consumers [8].

This research is focused on planning market research to explore information about market conditions related to new products in the form of educational teaching aids in the form of educational cards. This research is motivated by the product's new status, with the hope that through the research planning process data can be obtained regarding market interest through market questionnaire analysis. The main aim is to specifically determine market interest in educational teaching aids in the form of educational cards. By knowing the current market conditions and potential, it is hoped that we can obtain an initial prediction regarding the acceptance of the product.

2. Results

2.1. Product specifications

ExShapes math cards are a series of cards that combine flat shapes with exponent numbers. Each card contains an image of a flat shape, such as a triangle, square or circle, which is accompanied by an exponent number related to the properties or mathematical formulas of that shape. These cards can be used as an interactive math learning tool and also for various types of games involving math skills. For example, in the game, players can match cards with corresponding powers to the figures shown, or use the cards to solve certain mathematical challenges.



Figure 1. Exshapes math card

How to play this card when used as a game by:

1. Shuffle the cards and deal 7 cards to each player.
2. Keep the remaining cards in the middle of the players.
3. Take and reveal the top card from the deck to start the game.
4. Remove a card according to the same type of flat shape as the card that is being opened, a number in the rank or number resulting from a power, or the symbol on the card that is being opened.
5. Take a card from the deck if you don't have any cards to draw.
6. Pay attention to the action and free cards.
7. Play the last card to win the game.

The results of the market research that has been carried out show that there are 41 respondents. The analysis showed that there were 15 male respondents and 25 female respondents who showed positive interest in ExShapes math card products. It can be concluded that this ExShapes math card product is feasible to produce and market.

Based on the background that has been researched in this study, it can integrate and innovate entrepreneurs in making ExShapes math card products in terms of design, price, and quality of the product. So that later consumers feel interested in the product being marketed, and feel that the product is useful in learning math is also the hope.

The results of respondents' answers from distributing questionnaires in this study produced the following data:

1. Knowing product trends among respondents based on age and employment status
2. Know the existence of the product
3. Find out product similarity among respondents regarding aspects of interest, sales opportunities, product supporting factors, and product similarity with other products.
4. As well as providing contradiction analysis and odd grouping analysis on the data obtained

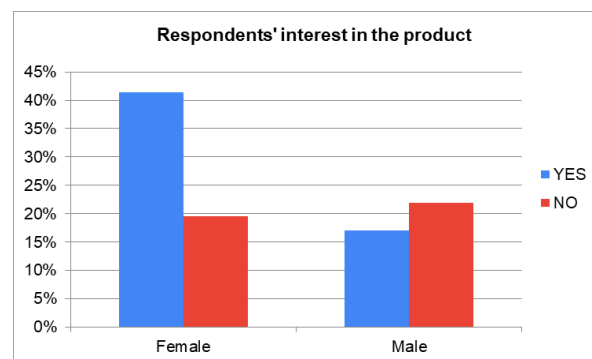


Figure 2. Respondents' interest in the product

3. Discussion

3.1 Trend Analysis

The trend in this case is a response that is quite high or low to several options that have been given [9]. Determining the target market and consumers is important so that you can adapt the goods/services produced to their needs and desires[10]. A trend will be clearer when the data that has been collected is grouped according to class. Some data in this market research that has a trend pattern is as follows.

1. Based on the results obtained, there were 41 respondents who were interested in the mathematics cards offered, including 15 male and 25 female, who could be grouped based on their educational background, 23 as students and 18 as university students.

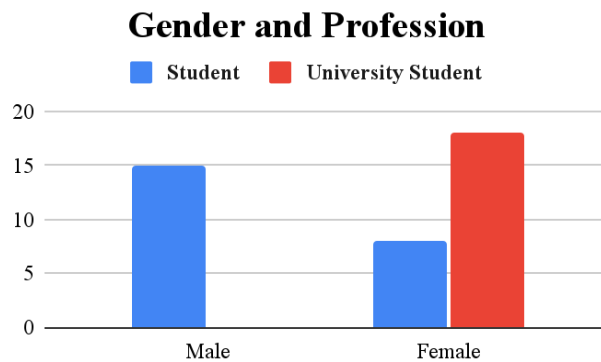


Figure 3. Respondents by gender and profession

2. From various potential consumers, they appear to be familiar with the mathematics card products that have been widely marketed, both available in online and offline stores.

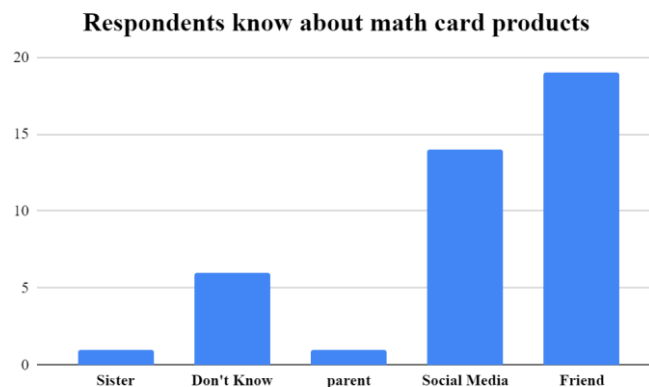


Figure 4. Respondents who know about math cards

Based on Figure 2 above, it is known that currently most respondents know about math card products from their friends. However, there were 6 respondents who did not know about math cards.

3. Trends in respondent interest are not only visible in the gender of the respondent and the source from which the respondent found out about the math card products being offered. The use of math cards by respondents also shows their interest in the products offered.

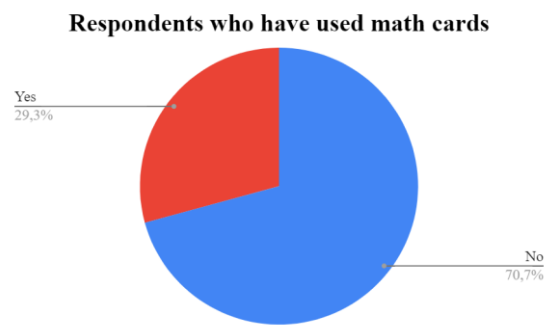


Figure 5. Respondents who have used math cards

Based on Figure 4 above, it shows that 29.3% of respondents have played math cards, while 70.7% of respondents have never played math cards. The reasons why respondents had never tried using math cards included not having math cards and not knowing how to play math cards. This research allows marketers to get precise information about the target market for a product, the things that usually have to be reset are popularity, age, gender, needs and desires and so on. Later, the products produced can be adjusted to suit the target market [11].

3.2 Similarity Analysis

Similarity analysis is the similarity of trends that occur between one class group and another class [9]. Primary data regarding the results of the questionnaire with similarity are as follows:

1. The facets or factors of mathematical cards are said to be interesting to buy

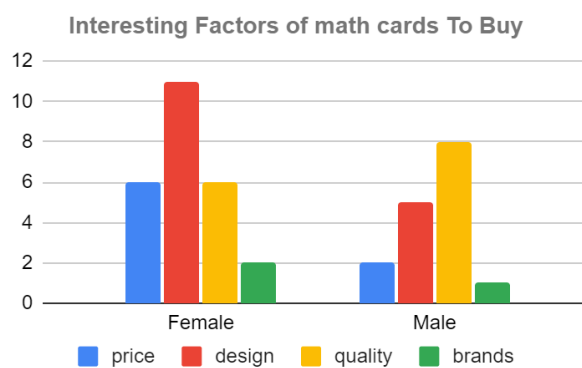


Figure 6. Factors influencing product interest from female and male respondents

Cultural, social, personal and psychological factors play a part in shaping consumer behavior in making purchasing decisions [14]. Several factors that attract consumers to buy a product are price, design, quality and brand. Factors that are considered attractive in products to be purchased by consumers between male and female respondents have similarities, namely design which is a factor that is assessed quite a lot by male and female respondents as many as 11 male respondents and 5 female respondents with factors or aspects. The second interest assessed by respondents is quality and price. There are also similarities between the answers from male and female respondents, where few consider the brand factor to be an interesting factor or aspect. Thus, it can be concluded that the brand factor does not have much influence on potential consumers' interest in purchasing educational game card products.

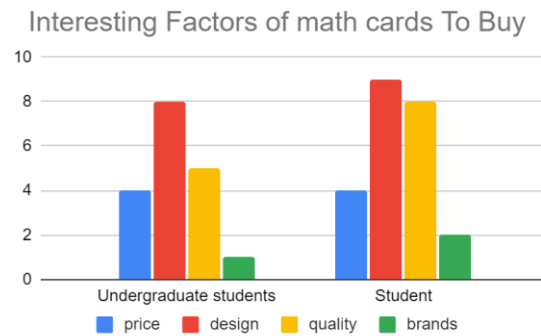


Figure 7. Factors influencing product interest from Undergraduate student and student respondents

Another subject, namely employment status, where in this Undergraduate students and students also have similarities in the answers to the questionnaire given. The product interest factors between Undergraduate students and student respondents have similarities, namely assessing design as an attractive factor in purchasing a product, followed by quality, price, and finally the brand aspect.

2. Product which makes respondents like/dislike it compared to other cards
 ExShapes is an educational game card that contains flat shapes and a description of the exponent numbers in each flat shape. The steps or method for playing ExShapes cards are similar to playing cards or uno. Responses from some respondents in this research said that ExShapes had similar characteristics to similar game cards and others said that they had never found educational game cards that were similar to ExShapes educational game cards. So it is known that there are no game cards that have a concept like the ExShapes educational game cards. Pembelajaran dengan menggunakan media kartu membutuhkan suasana yang menyenangkan dalam belajar sehingga perlu menggabungkan antara pembelajaran, media, dan permainan dengan kartu tersebut, sehingga kegiatan pembelajaran dengan banyak permainan tentunya lebih disukai siswa karena tidak membosankan [15].
3. The opportunity that respondents will recommend the product to other parties

The opportunity for consumers to recommend the product

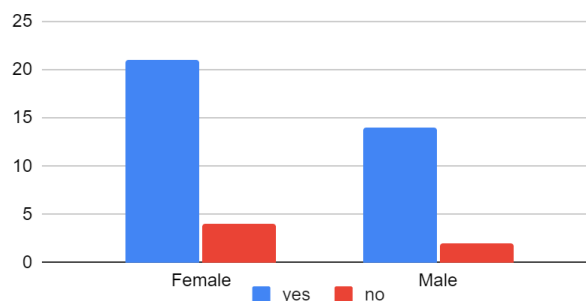


Figure 8. Probability of female and male respondents recommending a product

The majority of female and male respondents gave the answer "Yes" to the question "Would you recommend the products we sell to your friends?" So we can see that respondents or potential customers, both men and women, have the opportunity to recommend products.

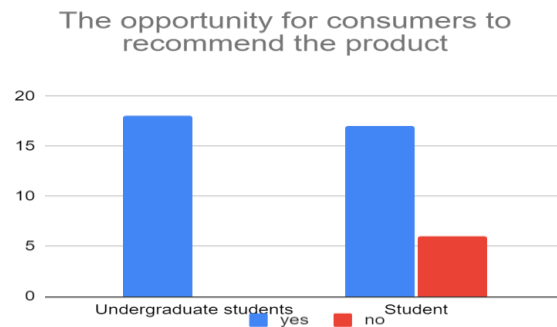


Figure 9. opportunity for Undergraduate students and student respondents to recommend a product

Of Undergraduate students and student respondents, it was found that the majority of Undergraduate students and student respondents gave the answer "Yes" to the question "Would you recommend the products we sell to your friends?". So we can see that respondents or potential customers, both Undergraduate students and students, have the opportunity to recommend products to other people.

4. How interested respondents in the math card products

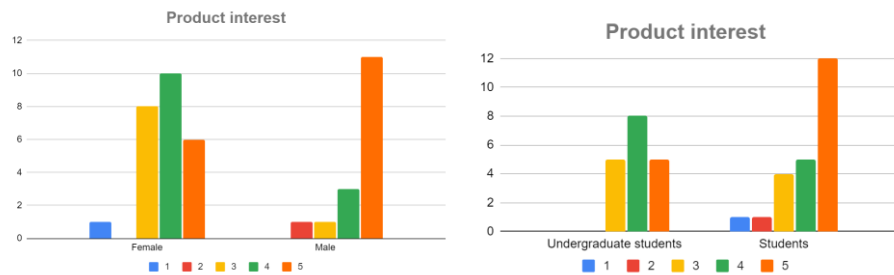


Figure 10. Respondents' interest scores towards the product

There were 16 respondents out of 25 female respondents who gave scores of 4 and 5 as statements of interest in the product being offered, on the other hand, 14 respondents out of 16 male respondents also gave scores of 5 and 4 which indicated high interest in the product being offered, namely cards. Exshapes educational game.

Product interest scores can also be seen from Undergraduate students and student respondents. There were 13 Undergraduate student respondents out of 18 student respondents who gave scores of 5 and 4 on the product interest scale, and on the other hand there were 17 student respondents out of 23 student respondents. It can be concluded from the data obtained, that the interest scores of respondents, both men and women, as well as students and students, have high interest scores ranging from scores 4 and 5 on the product interest scale, namely ExShapes educational game cards.

3.3 Contradiction Analysis

Contradiction analysis is showing research results that are contradictory or inconsistent or that there are significant differences between respondents [9]. Based on the results of the analysis in this research, there are several considerations for respondents in choosing the products offered. With these contradictions, it is necessary to conduct a deeper analysis of the data obtained [12]. There is a difference in interest between male respondents and female respondents. There were 11 female respondents who made them interested in math card products based on the product design. Meanwhile, 8 male respondents were interested in math cards based on the quality of the product. The percentage of interest in product selection can be seen in the following image

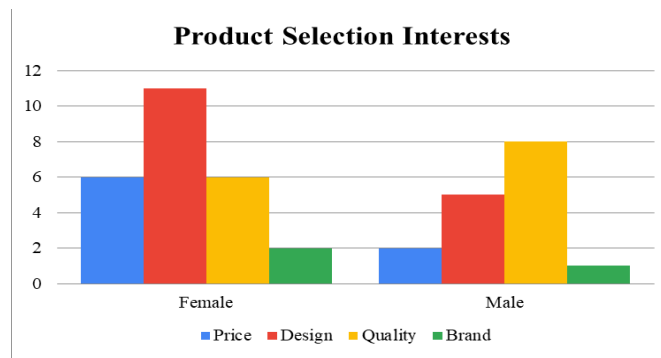


Figure 11. Respondents' Interest in Product Selection

3.4 Odd Grouping Analysis

With odd grouping analysis, companies can identify and serve market segments that may be missed by more traditional analysis approaches, thus creating more targeted and effective strategies. The results of the questionnaires that have been analyzed show that there are odd grouping answers, namely there are 22 female respondents and 13 male respondents who will promote math card products to others. In this case, business owners can later make math cards that are more varied in terms of design, price and product quality. This is also seen from input for business owners with the needs of the market segment that is the target consumer [4].

4. Materials and Methods

The research method starts from identifying problems regarding the need for educational teaching aids. Initial information was also obtained from the results of literature studies. In this research, the data source was obtained from secondary data sources. Data collection was carried out through online distribution of questionnaires to respondents who agreed to provide information. The sampling technique that researchers used in this study was simple random sampling. According to [13]) simple random sampling is said to be simple because taking sample members is done randomly without paying attention to the strata in the population. In this study, researchers sampled respondents from the age range of 7 to 22 years. Thus every individual who is included in the age category 7 to 22 years has the same opportunity to be selected as part of the sample. The sample in this study obtained 41 respondents who had filled out the questionnaire that had been distributed. The respondents selected in this study ranged in age from 7 to 22 years. The questionnaire results were analyzed by paying attention to trends, similarities, contradictions, and unusual clusters to gain market insight into ExShapes' math card products. Trend analysis aims to find responses with a high or low percentage of the answer options provided. Similarity analysis compares groups of respondents who have similar trends between one group or class with another group or class. Contradiction analysis identifies groups of respondents who provide inconsistent answers or facts that conflict with their demographics. Meanwhile, the unusual group will highlight the level of inappropriate or unusual answers from the respondent. Odd-grouping will later show that there is an unexpected level of respondent answers.

5. Conclusions

The conclusions in this research are in accordance with the research focus that has been determined, namely to obtain the results of market research analysis regarding educational mathematics cards. The results of the ExShapes mathematical card market research analysis are quite interesting for potential customers. This was shown based on the results of secondary data in the questionnaire data that the researcher distributed.

There are several things that can be concluded from the market research that has been carried out, namely the results of trend analysis regarding respondents' interest in ExShapes math cards based on the gender and profession of each respondent, then their sources of knowledge of math cards and the respondents' experience in using or playing math cards.

In the similarity analysis, there was respondents' interest in buying mathematics cards in terms of design, price, quality or brand. The results of the contradiction analysis are the respondent's interest in the product and the results of the odd grouping analysis are that the respondent will promote the ExShapes math card product to other potential customers.

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