The Key Influencing Factors of the Popular Educational Product: LEGO

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***Abstract*—LEGO has always been a wonderful and educational building block toy with influences in various fields, including education and technology. The purpose of this study was to investigate the main reasons why consumers love and buy LEGO products. One hundred questionnaires were collected based on psychology, action and basic understanding of LEGO. Respondents of different ages, occupations, income levels and family conditions were asked to provide their opinions to ensure that there would be no samples and bias. The research finds that most consumers adore LEGO and choose it as a gift because LEGO bricks are relatively high-end and high-quality products in their minds. After data analysis, it was also found that the most critical factor affecting consumer purchase is that LEGO products can stimulate imagination. If the pieces are not put together according to the instructions, a unique work may be created.**

***Keywords*—LEGO, psychology, education, consumer behaviors**

I. Introduction

In today's society, there are a variety of entertainment toys on the market, the most popular toy type has always been DIY goods, that is, players need to make the finished toys. LEGO, it is one of the oldest DIY toys, and consumers all over the world are keen to buy their products. LEGO Toy companies have their own set of independent operating philosophy, which will support it in no matter what kind of economic development background, can do basically no loss. Its comprehensive ability is also very satisfied with consumers, which can not only meet the comprehensive needs of consumers, but also constantly challenge all kinds of new toy modes, such as connecting the mobile phone Bluetooth can control the operation of their own building block robot, or add more interesting way in the traditional toy matching process.

LEGO players will buy a lot of LEGO models to build, which will let them enjoy the fun of building, but also give them a sense of accomplishment and satisfaction when the building is completed. If a child player completes a very difficult model, it will also make their parents very shocked and proud of their child's hands-on ability. Although the sales data of LEGO given on the Internet and official website is a very large number and their players are all over the world, from the perspective of consumers, even children consumers, we can study the specific impact that buying LEGO can bring to them and why do consumers love LEGO.

In the literature review part can learn in detail, LEGO is not just a toy, is a comprehensive analysis of LEGO to the influence of different areas, one of the most noteworthy, psychologists even directly developed a kind of called "LEGO therapy" psychological treatment, mainly for teenagers with psychological disorders or diseases, help them out of the woods, its treatment effect is very obvious.

This paper used the Credamo Platform to make the questionnaire and used SPSS software to analyze the collected data, hoping to make a more comprehensive analysis of the specific factors that affect consumers' attitudes towards LEGO.

II. Literature Review

LEGO, as a very popular hands-on creation toy, has been loved by players. Many people who don't know much about LEGO may think that it is just a toy for fun, and even more complex than some of the building blocks. Putting together three-dimensional models of cars or buildings, for example, is much more difficult than other toys. For example, LEGO launched a series of building models in 2022; the degree of reproduction of the building is no less than the real building, which makes many players discouraged.

However, if LEGO's use value ware only for entertainment, its popularity would certainly fall far short of today's level. Therefore, LEGO has also been used as a tool for many research projects, such as studying the purchase of LEGO itself and the operation system of the company, and whether the cost of the product matches the price it is sold for. What is more surprising is that psychologists and educators have used LEGO to stimulate the important role of creativity and communication skills of research subjects, and have developed specific solutions for the treatment of adolescent mental illness, which has made a huge contribution to modern psychology and education, such as LEGO Therapy (Celestine, 2021).

A. Basic Information of LEGO

1) History of LEGO

LEGO has a long history of brand development. LEGO, founded in 1932, is a world-renowned toy manufacturer. By 2022, LEGO will have around for 90 years. Its trademark "LEGO" was used in its early days, meaning "play well" in Danish. Later, LEGO quickly developed into a synonym for high-quality toys. The latest LEGO icon represents the brand's first production site, a red house in Denmark, where LEGO began (Baidu, n.d.). The success of LEGO was not always smooth. The founder, Mr. Christiansen, started out as a worker. Because of the Great Depression in Europe, he had to become a craftsman. At that time, people did not pay attention to children's toys, but he applied his fine wooden craft and artistic sense to wooden toys. He hung a wooden sign in his factory with his motto: "Only the best is good enough." This motto remains the first principle of LEGO to this day. On April 9, 1940, Denmark was occupied by the German army, and the war gave LEGO an opportunity to

grow. First, the government banned the import of toys, and second, the government banned the use of metal and rubber in toys, which is undoubtedly a big boost for wooden toys. From 1940 to 1942, LEGO doubled its production. In 1942, a fire nearly destroyed the LEGO factory. Mr. Christiansen was almost ready to give up his career. A strong sense of responsibility to his children and his employees made him stand strong. With the help of his family and employees, the LEGO factory was miraculously rebuilt from the ashes. After the reconstruction, the LEGO factory added some large modern production facilities. However, the scale of the LEGO factory is still limited and there are not many employees. It is just like an organization of craftsmen. Everyone is honest and responsible, and everyone helps each other with a strong sense of cohesion and team spirit. Every morning before work began, all the employees and Mr. Christiansen would gather for a short prayer meeting, a custom that continued into the 1960s. That's why LEGO is still very successful today (Baidu, n.d.).

2) Reasons for nowadays situation

LEGO has a long history of about 80 years (Mazzarella *et al*., 2019). Why do LEGO products have such a high sales volume? A large part of it may lie in the series and gameplay of the products, which are very diverse and impressive. LEGO has come up with different building sizes and content series for different age groups. Most players under the age of 5 use big blocks and cartoon stories with educational messages as backgrounds, such as the classic Friends series and the Big Head series. For players aged 9–17, LEGO starts to expose them to information in real life: festivals, famous buildings around the world, and artistic creations. During the process of building, teenagers can fully understand some architectural structures and common knowledge of life. This is also a big reason for the popularity of LEGO, because it is realistic enough, and the details are exquisite. People over the age of 18 are not only satisfied with simple piecing, but also have the desire to collect famous movies, cartoon character IP, and LEGO's own IP. Besides, there are many parts of such LEGO products, which can reach tens of thousands of pieces, and it takes enough time and patience to present the final realistic effect. The product diversity and culture of LEGO are vividly demonstrated (Jimubanzi, 2023).

LEGO has been a hit with customers so far. In his paper, Greed or inflation? An economic analysis of LEGO price increases, Michael A. Craven, PhD, Professor of Accounting, states that since August 2022. The price of some LEGO sets has been rising by as much as 25%, which has upset many LEGO buyers. On Brickset's website, LEGO cites "rising raw material and operating costs" as the reason why inflation is behind the move. The longer LEGO products sit on the shelves, the greater the damage to the company. So Craven thinks that despite the consumer dissatisfaction with price increases, this is now the most optimal solution, suggesting that the result is acceptable to customers for the time being (Zhihu, 2022). The title "LEGO's Chinese Expansion: Rising Prices as It Sinks" gives a sense of how LEGO is currently operating in China. We have opened more offline stores in China's second-and third-tier cities, and found that the demand of consumers is not less than that of first-tier cities. Therefore, this is a good way to gain profits. As Shang mentioned, the reason for the high price rise is not only the rise of raw material prices. In this paper, it is also mentioned that many marketing costs, including labor costs, channel costs, and the establishment of offline stores, may also be one of the causes of the price rise. Along with the price rise, the market has also brought many chain reactions, such as some consumers take the opportunity to "sell for fun" (Shi, 2020).

LEGO plays an important role in different industries, the economy, psychology, and education.

B. The Effect of LEGO on Various Industries

1) Education

STEM education is an emerging educational concept that provides innovative solutions to talent needs to solve global problems and plays a vital role in achieving the Sustainable Development Goals, in particular. The success of STEM education in America causes other countries to follow suit. Our country also introduced the STEM education concept early on, and has been developing and exploring. According to the document "Exploring STEM Capabilities in the 21st Century" published by the International Education Department of UNESCO (IBE-UNESCO), STEM competencies have been "defined" to form a STEM competency framework, which provides a theoretical basis for our research. The research shows that children of different ages, different learning time of LEGO, different frequency of attending classes, and different time of building LEGO at home have different situations of acquiring STEM ability. Learning LEGO can better exercise children's thinking ability, which is the knowledge that textbooks cannot give them (Hao, 2020). Middle school students utilize LEGO to produce the LEGO robots it has become an experiment to study the academic achievement, attitude, and computational thinking skills of the learners towards science (Üşengül & Bahçeci, 2020).

2) Psychological and medical aspects

LEGO not only allows teenagers to get logical exercise in education, but also has profound psychological and medical effects. There is a treatment in psychology called LEGO therapy, a powerful intervention designed to support children with autism and communication difficulties to develop language and collaboration skills, and these simple DIY toys are now being used by adults to overcome stress and become therapeutic tools. Psychologist Daniel LEGOff stumbled upon LEGO as a therapeutic intervention. In the experiment, three children played the roles of an engineer, supplier, and manufacturer of a LEGO building, and used everyday conversations and behaviors to help autistic children express their opinions. Studies have shown that LEGO therapy often benefits the interests and motivation of autistic children, making it a very effective form of therapy. After joining the LEGO Therapy club, the children made many friends and were more willing to initiate social interactions, promoting their social confidence and independence. In addition, family games and shared modeling therapy can actively help children have more say in their lives and express their opinions. For example, when building a shared model, members of the group need to establish goals together and work together to complete them. This behavior is difficult for autistic children, who are afraid to express themselves but have many ideas in their hearts. At this time, they may be able

to show their inner views by building LEGO models. Let the group know what they are thinking about and work together to accomplish it. LEGO has a great therapeutic effect on mental illness. At this time, LEGO is no longer a simple toy (Celestine, 2021). In addition, using LEGO as a tool of communication, Chinese college students have also conducted relevant experiments to prove that LEGO can indeed be used as a prop in experiments to reflect the inner activities of autistic or insecure children or to analyze their personalities. In the group experiment stage, social workers used LEGO bricks to carry out running games, rule building and self-creation, and the subjects' self-confidence was basically increased by 50%, which showed obvious effects. The use of LEGO therapy to enhance the self-confidence of children in difficulties can enable the children who are not good at expressing themselves and the children who are timid to fully express their feelings and ideas in the process of building the match, and communicate with social workers and other team members in a relaxed and happy environment (Huang, 2023). LEGO therapy not only to become a way to treat the children, but also can improve the relationship between the family and friends (Huskens *et al.*, 2015).

3) Technique and business

However, scientists also use the production of LEGO to help inspire creativity to develop the internet apps, and digital leadership can be built by choosing the right LEGO production and complete it (Varela-Aldás *et al.*, 2019; EI Sawy *et al.*, 2020).

LEGO has revealed several benefits in the educational context, not only helping the teaching of mathematics, which helps to cultivate algorithmic thinking and self-efficacy in students (Altakhayneh, 2020), but also making possible the development of several abilities, such as self-supervised learning, communication skills (Zhao *et al.*, 2022).

In addition to education, LEGO has also found the best scenario regarding Computational Learning Theory, which has continuously been a very active research field (Souza *et al.*, 2018).

The simplest robot that are directly built from the widely used LEGO Education EV3 core can support a range of science and chemistry experiments for education and even researches (Souza *et al.*, 2018). Also, the psychological diseases will be treated (Lindsay, 2017).

LEGO ® therapy shows profound promise as an intervention for children and youth with ASD.

To sum up, up to now, many economists and professionals in other academic circles at home and abroad have studied the significance of LEGO in public life. People may buy this product because of their love for LEGO or simply because of its shape. As mentioned above, functional requirements have been greatly developed. The reasons and motivations for people to buy can reflect the psychological activities of the parties at a higher level and indirectly see the emotional details, which are the so-called spiritual needs. The following details will be described in detail in the paper, and the research methods will be introduced.

III. Method

This study used an online survey to investigate the impact of LEGO purchases on consumers, consumer evaluations of LEGO, and more importantly, educational factors. This paper presented the survey subjects in the form of scale questions from eight different perspectives, namely, LEGO's brand reputation, views on LEGO products, the fun of LEGO stories, whether LEGO can cultivate imagination, whether LEGO can cultivate hands-on ability, whether LEGO can provide an autonomous environment, whether LEGO can promote family affection and whether LEGO is suitable for gifts. I edited and published my questionnaire on the survey website Credamo and got 100 useful responses. Participants included 87% women and 16% men. The questionnaire consists of 21 questions and is expected to be completed in 3–5 minutes.

A. Sample

From the data analyzed, the survey respondents were all Credamo users, and most of them were 26 to 40 years old (97%); only two were 19 to 25 years old and one was 41 to 55 years old. It is clear that LEGO is now one of the toys for young people. More specifically, it can be seen that all adults answered my questionnaire and were Chinese in China or abroad.

In addition, this paper added the marriage and childbearing status of the respondents to the basic information question, which is divided into four categories: single, unmarried in love, married and childless. Of these, 98 respondents chose to have children, and one respondent chose to be single and in a relationship. This suggests that most respondents responded to the questionnaire from the perspective of their parents.

In the selection of career options, this paper provides a variety of options, from students to foreign-funded enterprises, and there are enough options for respondents to choose the most suitable career type. According to the analysis, 52 of the respondents are currently working in private enterprises, accounting for 52% of the total number of respondents (the total number of respondents is 100), 36% are working in state-owned enterprises, 6 are in foreign enterprises, 4 are civil servants, and the last two are in public institutions.

It can be seen that the respondents are already working young people, because they are older, so their work units are better, and their income level is gradually increasing because of the degree of their work units.

B. Questionnaire Design

This questionnaire survey is composed of three parts, which are basic information of consumers, basic purchase information of consumers, and consumers' love for LEGO. I set up six questions to get basic information about the consumer to predict what they will fill out next. After that, this research sets up three purchase information questions, such as their gender, age, diploma, and monthly salary. They were asked to answer how they learned about and bought LEGO, how often they bought it, and the maximum budget they were willing to give to LEGO. I believe these problems are related to each other.

In the final part of the investigation of consumer perception, the author divided the analysis into eight perspectives, including brand reputation, product quality, product inner spirit, whether the product can stimulate imagination, whether the product can stimulate people's hands-on ability, whether the product can provide people

with an autonomous environment, and whether it can promote parent-child relationship and parent-child education. Because if the respondents are asked to write their own ideas, they must have their own unique characteristics and have their own logic and reason. Although the collected data is effective, it is very difficult to make statistics; thus, the author adopted the way of scale questions to set questions. This paper has set up three descriptions for each perspective, so that consumers can choose whether to agree or disagree based on their own understanding. 1–5 five levels are from low to high for them to choose from.

C. Instrument and Procedure

This paper sent out 100 questionnaires through the Credamo questionnaire platform. After about 2 hours of waiting, the platform notified by message that all questionnaires have been collected. After that, the author needed to check their answer time to make sure whether they have answered the questions seriously rather than perfunctorily. Then exported and saved the selected questions into two versions: of numerical serial number version and a text description version. This paper used SPSS, a data analysis software, to conduct regression analysis and summary of the data of the numerical serial number version, and obtained the final numerical result. After exporting into excel format, the author could study and summarize the impact of various factors on consumers from the tables and whether there is a significant impact between related factors.

IV. Results

The study used a questionnaire to investigate the influence factors of buying LEGO products on consumers. At the beginning of the questionnaire, a question "Do you know LEGO?" was asked. If the answer is "not", the sample will be excluded. This paper also excluded participants who failed the attention check. To conduct this check, it used a 7-point scale was used with an instructed response item that reads "To show that you are reading the instructions, please choose number one." Participants who do not select number one will be excluded. The total sample was 100 after exclusion.

A. Descriptive Data

The questionnaire is divided into three sections of questions, which are demographic characteristics, purchasing characteristics, and the liking level of LEGO from different perspectives. As can be seen from the results of the analysis, because the respondents who answered this questionnaire are LEGO lovers, when they checked the level of their love for LEGO, they all checked the option 4 or above (the level of love from low to high, 1–7).

Table 1. The basic information of a LEGO lover

	Mean Value	Number of Case	Standard Deviation	Median	Minimum Value	Maximum Value
Gender	1.87	100	0.338	2	male	female
Age	2.99	100	0.174	3	19–25	41–55
Marriage	3.95	100	0.359	4	single	fathered
Career	3.9	100	1.494	5	State-owned enterprise	Foreign-funded enterprise
Education	5.44	100	0.538	5	Junior college	master
Income	3.94	100	0.422	4	5000–10000	30000–50000
Frequency	5.77	100	0.777	6	4	7
Maximum budget	1594.25	100	1859.121	800	188	10000

As shown in Table 1, most of them are between 26 and 40 years old, their occupational types are relatively superior, and their monthly income is basically between 10,000 and 30,000 yuan; and a few consumers have a monthly salary of more than 30,000 yuan. So they give the frequency of LEGO purchases between 5 and 7, with the majority at 6 (on a scale of 1 to 7 from low to high). The average budget that consumers would like to pay for LEGO is about 1549 RMB.

Consumers are generally willing to support legitimate LEGO products, which shows that LEGO is synonymous with matching toys in the minds of consumers. In addition, about 80% of consumers buy LEGO through Internet publicity, recommendations from surrounding friends, and because they are very interested. They are more willing to go to the offline physical store to buy, online flagship stores and overseas purchasers will also choose to buy when they cannot buy offline. only 8 consumers are willing to go to the second-hand market to buy the products that are no longer sold by LEGO, which shows their love for LEGO.

If we start from the love of LEGO, there are three questions derived from eight angles, a total of 24 questions. Results can be obtained from 8 angles, one by one. Because the project is searched from the angle of education and psychology.

As shown in Table 2, For instance:

Table 2. The factors of LEGO purchasers

	Mean Value	Number of Cases	Standard Deviation	Median	Minimum Value	Maximum Value
Reputation	4.47	100	0.16	4.33	4.33	4.66
Product	4.48	100	0.24	4.33	3.33	5
Spirit	4.44	100	0.2	4.33	3.66	5
Imagination	4.52	100	0.28	4.66	3.66	5
Operation	4.42	100	0.22	4.33	3.66	5
Autonomous environment	4.47	100	0.17	4.33	4.33	5
Parent-child relationship	3.62	100	0.28	3.66	2.33	4
Gift	4.5	100	0.21	4.33	3.66	5

REPUTATION: Among them,36% of consumers strongly agree that LEGO is famous, so they choose to buy, the remaining 64% are also somewhat agree with this view. In addition, among the 100 consumers, none of them disagrees with the opinions. LEGO's external reputation is excellent, so choose to buy LEGO products.

PRODUCT: Except for one consumer who agrees that LEGO's quality is superior among building blocks, all the rest of the consumers agree that the quality of its products is guaranteed, and the appearance of the products is in line with the public aesthetic. LEGO's fine workmanship and even small design to prevent scratches have made consumers very satisfied and thus enhanced their love for it.

In the remaining five perspectives, almost all consumers chose to agree with the proposed description of the factors that influence their liking for LEGO. In addition to consumers, from the perspective of LEGO, can promote parent-child affection in a neutral attitude.

B. Regression Testing

As shown in Table 3, the results obtained by SPSS data regression show that the first column in the table represents the coefficient B, that is, the value that can affect the change. It can be seen from the first column that gift, product quality are the most influential purchasing factors, and the coefficient of gift is 0.996, indicating that LEGO products can be used as an ideal gift for customers. In addition, product accounts for the second-highest proportion, whose coefficient is 0.732. It means that consumers are attracted to the product because of its quality and the shape of its manufacture.

Table 3. Regression analysis

Module	**Unnormalized coefficient**		**Standardization coefficient**	t	Significance
	B	Standard Error	Beta		
(Constant)	−12.182	2.734		−4.455	0.000
Reputation	0.510	0.406	0.108	1.256	0.212
Product	0.732	0.278	0.231	2.637	0.010
Spirit	0.326	0.346	0.083	0.943	0.348
Imagintion	0.691	0.237	0.251	2.912	0.005
Operation	0.427	0.302	0.121	1.414	0.161
Autonomous environment	0.035	0.374	0.008	0.092	0.927
Parent-child relationship	0.436	0.228	0.156	1.912	0.059
Gift	0.996	0.322	0.278	3.092	0.003

If you observe the last column in the table, you will find that it represents its significance value. Generally, the significance value should be below 0.05 to mean that its factors can be accepted or that there is little error. The significance values of only three factors of product quality, improving imagination and giving gifts are below 0.05, indicating that these three factors are significantly the main reasons why people adore LEGO.

Regarding educational reasons, enhancing operational ability, creating autonomous environments, and improving parent-child relationships are not significant reasons why people adore LEGO. As for the insignificant spirit factor, a few people will like it because LEGO is rich in its spiritual foundation, LEGO products often have some hidden in the model of the storyline, but for the general players, they may pay more attention to the overall shape and objectivity of the model, its storyline will be more ignored.

Specifically, we can see that the significance value of imagination is very small, only 0.005, and the coefficient is relatively large (0.691). Most of the respondents believe that buying LEGO products can improve the imagination of players. Improving imagination is the most important educational reason why many people like this product.

V. Conclusion and Practical Implications

In the past, most studies have looked at products like LEGO, similar to product sales or how companies operate. In short, this is to study marketing skills from the perspective of producers and manufacturers. However, very few people really think about the problem from the perspective of consumers, and even fewer will combined psychology and education. Therefore, for the study of a product, we should think from many aspects and learn to change positions, so that the influencing factors will be more and more comprehensive. Previous studies have basically started from the LEGO product itself, studied its sales mode or the company's operation mode, and the results have achieved certain results in various aspects.

However, if you look at the consumers who buy LEGO, you can draw a different conclusion. Data analysis can show that consumers have a lot of subjective factors for the purchase of LEGO. Through the investigation of their personal information and their income, we can roughly judge their daily needs and their love for LEGO. From the general situation of the data, most consumers with higher age and education, higher economic level, and better budget are willing to invest in LEGO products, and their frequency of

buying LEGO is much higher than that of other ordinary consumers. The more they like LEGO products, the more time and energy they are willing to spend on buying them on different platforms, similar to how they will go to second-hand LEGO markets where few people go or high-price stores to collect their favorite models, which is something that ordinary consumers will not do. The first two sections of the questions set up reasonably and logically link the personal information factor to the purchase factor, and the results found that the correlation was very clear. According to the conclusion of regression analysis by the SPSS system from the last 8 different angles, basically all consumers agree that LEGO has a very great impact on education, and we can see that the most vital factors of buying LEGO is that it can inspire imagination. The result suggests that parents or teachers should focus on developing children's imagination and encouraging creative LEGO play, rather than just letting them build a specific work under instructions.

After the completion of this project, it feels that only a small part of the study on the influence factors of LEGO purchase has been studied, from the perspective of education and partial economic research on consumers in society. For scientists and researchers who are currently studying product sales, the hope is that other perspectives can be approached so that future consumers can find the shopping environment that best suits their needs.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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