Increasing the Number of Inductive Stove Users in Indonesia Using Cognitive Intervention Model to Support Industry 4.0 Implementation at PT PLN (Persero)

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Abstract. Indonesian government electricity utility company, PT PLN (Persero) has applied the application towards Industry 4.0. One of its application is promoting inductive stove among households, in terms of modernizing Indonesian people’s life behaviour. Inductive stove users in Indonesia is still low, because of its bad quality of promotion. So, the authors will try to provide suggestions to improve the quality of inductive stove promotion using cognitive intervention methods. This method is expected to increase inductive stove users in the households sector by changing the mindset of the society by cognitive intervention method and supports PT PLN (Persero) to apply industry 4.0 in Indonesia especially for the households sector.

1. Introduction

Industry 4.0 marked by technology that influence the business behaviour development of PT PLN (Persero) to modernize society behaviour which related into the company vision. Right now, PT PLN (Persero) is doing the program to encourage society preference of using inductive stove than gas stove. The encouragement of PT PLN (Persero) to maximize inductive stove users aims to variate the energy use of Indonesian people. This program is also support Indonesian government to save the burden of subsidizing Liquid Petroleum Gas (LPG) in 2020 state budget amounted Rp 50.6 trillion (Data Principles of State Budget 2020).

So far, less than 0.1% of PT PLN (Persero) customers whose already use inductive stoves. Data obtained from inductive stove sales trend from the last two years (2018-2019) which only 5% inductive stoves sold by all kind of stove sales in Indonesia. Lack of knowledge about inductive stove benefits compared to gas stove has to be solved by PT PLN (Persero) to encourage Indonesian people especially households sector of using inductive stove.

PT PLN (Persero) has already been promoting using various media social tools, such as the website and social media (Twitter, Instagram, and YouTube) to improve the promotion effectiveness. But, it is not really affected people in Indonesia to use inductive stove. The number of inductive stove users will be increase with the increasing number of products buyers. Customer is willing to buy a product based on their consideration, while customers consideration and decision influenced by several factors. The decision to purchase of a product is influenced by a variety of factors like marketing mix, environment stimulation (economics, technology, politics and culture), customers characteristics (cultural, social and personal), and the consumer phycology (motivation, perception and attitude) [1]. Customer reasons
to buy a product is determined by psychologically factors from the quality perception and attitude towards the brand. Customers psychology contains of basic psychology concept which determine the behaviour of individuals and affect its consumption \[2\].

Cognitive perception express that humans is always potential about getting any idea which may rational or irrational. Irrational thought encourages the emergence of emotions and behaviours disturbance \[3\]. Ergonomics cognitive intervention considered as the key aspect and used to affect the decision of purchasing inductive stove which also supports the industry 4.0 implementation at PT PLN (Persero).

This research goal is to develop a cognitive intervention model in line with industry 4.0 implementation to be applied in the promotion of using inductive stove to increase its users.

2. Literature Review

2.1. Consumer Behaviors
The behaviours of the consumer is influenced by several factors such as culture, social, personal, and psychological \[4\]. While purchase decisions are influenced by four factors: motivation, perception, learning and beliefs. Purchase decision begins with the motives of purchasing a product. There are also four kinds of purchase motives: primary motive, selectivity motive, rational motive, and emotional motives \[5\]. Primary motives leads to a purchase based on general categories on a product. Selectivity motives affected by satisfaction of purchasing the selected products. Rational motives obtained from a product which customer has seen by themselves. Emotional motive is more related to individual feelings or emotions.

Purchasing behaviour generally has three steps; developing customer’s confidence about a product, developing positive thoughts about a product, and making a choice which has been deeply considered by customer. In this research, cognitive intervention to change the consumer behaviour is done by developing customer’s confidence about a product.

2.2. Marketing Strategy
Definition of marketing Strategy is making the best decisions about the cost of marketing, marketing mix, environment condition analysis to get market allocation and the competition conditions. Marketing Strategy is a statement regarding to the goals expected to be achieved in terms of demand where the target market is determined \[6\]. Strategic marketing how marketer will approach customer to sell their product or service. The goals is to create a long term sustainable business, connected with customers and continue to growth. This marketing element are often referred to as 7-P, product, price, place, promotion, participant/people, process, and physical evidence.

2.3. Promotion
Promotion is one of the companies activity to introduce about a product to its target. Promotion variables such as sales promotion, advertising, sales force, public relations, and direct marketing, commonly called as marketing communication mix \[7\]. The purpose of promotion is to identify and attract new customers, introducing a new products, increasing the number of customers, informing the consumer about improvement products quality, invite customers to store and motivate customers to buy a product. This research is focused to improve the promotion quality.

Word of mouth is the communication between people about a product with no commercials used. Its goal is to transfer experience between people that can be a reference to shape the expectations of customers. Word of mouth is a conversation that it naturally occurs between people or can be said as the talks between customers about its product experiences by them \[8\].

2.4. Cognitive Intervention
Cognitive Intervention is a psychological intervention and therapeutic counselling exercise using various media and attempting to change people thought in different ways. There are three main aspects
to implementing the cognitive intervention: didactic aspects (education), cognitive techniques, and behavioural interventions\[^9\].

Human Cognitive intervention is a psychological intervention and counselling therapeutic exercises which conducted to humans. Cognitive intervention is way different from cognitive therapy. Cognitive intervention is more for a short term goals, while cognitive therapy is classified as nature long term and continuously\[^10\]. Cognitive intervention used several methods to change someone’s point of view about something.

The approach on didactic aspects, emphasize that cognitive therapy should be done by individuals about a way to explain their intention. The purpose of cognitive therapy is how to form a good way of thinking. Cognitive techniques teach someone to know more about what is up on their mind and how to response emotionally as well as modify or change their thoughts automatically\[^11\].

2.5. Industry 4.0

Industry 4.0 is tend to speed up the information availability on the world, it is more like an industrial environmental where the whole entity is always connected and easily share about an information with another \[^12\]. There are six Industry 4.0 design principles: interoperability, virtualization, decentralization, real time capabilities, service oriented and tend to be modular. The application of industry 4.0 in the marketing or promotions is applying the digital marketing, which has become the key strategy and already applied on some companies throughout the world.

3. Methods

3.1. Research Object

The sampling methods is using accidental sampling techniques, where we were taking respondents as a sample by coincidence. The samples were defined as:

a. Customers of PT PLN (Persero) in household sectors;

b. Customers of PT PLN (Persero) whom already use the inductive stove

c. Customers of PT PLN (Persero) whom have not been use the inductive stove;

d. Customers of PT PLN (Persero) aged 17 years old and older.

3.2. Data Collecting Methods

The data collection methods used in this research is the questionnaire method, by distributing questionnaires to research samples. The questionnaires distributed is the questionnaires using the Likert Scale.

3.3. Research Design

Research design used is using a one-group before and after or usually said as pre-test and post-test group. Its design provides a treatment without any class comparison, before: (X) samples are given pre-test (O\(_1\)) and then continued by giving a treatment to the sample. After that, the sample is given a post-test (O\(_2\)). On pre-test, the Likert scales questionnaire aims to determine the condition of the inductive stove promotion which already been conducted by PT PLN (Persero) focused on its range, quality and attraction. Meanwhile, the post-test conducted is to determine the effect of cognitive intervention implementation towards quality promotion to influence the decision of purchasing inductive stove.

3.4. Development Models

Research development models is built based on the cognitive intervention design which affect the psychology of the customers decision to purchase a product. It consist of purchase motivation, perceived quality, and positive thoughts about the brand. This model is expected to influence directly to respondents regarding the decision of purchasing inductive stove, which tend to increase the number of inductive stove users in Indonesia.
Figure 1. Cognitive intervention model to increase the number of inductive stove users in Indonesia

This model starts from a case study and collecting data regarding the promotion conditions held by PT PLN (Persero). Data obtained from the pre-test results shows the promotion categorized as “Bad”, then it is being used to determine the models of designing a promotion using posters and videos. Posters and videos used as cognitive intervention design based on literature review and today’s sales conditions. After that, the cognitive intervention design is applied to respondents and being used to analyse developed model’s reability. Pre-test and post-test result is rated based on the factors which influence the promotion of using inductive stove.

4. Results
This results consist of information based on data collected and its processed data results. The research results of pre-test data and post-test data is obtained from Likert scale questionnaire with scale of 1 to 5, where the data will be processed to determine the highest and lowest values:

\[
Highest\ value = Amount\ of\ respondents \times Highest\ scale\ value
\]
\[
= 100 \times 5 = 500
\]

\[
Lowest\ value = Amount\ of\ respondents \times Lowest\ scale\ value
\]
\[
= 100 \times 1 = 100
\]

Again, this data used to determine the interval of satisfaction classes level and divided into 5 classes in Likert scale as follows:

\[
Range = \frac{Highest\ value – Lowest\ value}{Amount\ of\ classes}
\]
Range = \frac{500 - 100}{5} = 80

So, the class interval is divided into 80 data and also classified in five classes, it is describe the promotion quality of using inductive stove held by PT PLN (Persero) as follows:

| Interval classes | Category   |
|------------------|------------|
| 421 – 500        | Very good  |
| 341 - 420        | Good       |
| 261 – 340        | Poor       |
| 181 – 260        | Bad        |
| 100 – 180        | Very bad   |

The value of table 1 will be used as comparison of pre-test and post-test’s data results. Results from this research is composed from promotion quality of using inductive stove held by PT PLN (Persero) on pre-test results, cognitive intervention design, promotion quality of using inductive stove by PT PLN (Persero) on post-test results, analysis of normality test, paired sample t-test and analysis of difference affected before and after cognitive intervention applied in promotion of using inductive stove by PT PLN (Persero) that may increase the number of inductive stove users in Indonesia.

4.1. Analysis of promotion quality of using inductive stove by PT PLN (Persero) (pre-test results)
The pre-test held to determine promotion quality of using inductive stove held by PT PLN (Persero), divided into the assessment of poster quality (design, colour, font), quality information delivered by using inductive stove and diction selection. Pre-test is held before designing cognitive intervention and used as basis to prepare design of cognitive interventions on this research.

Quality measurement promotion of using inductive stove by PT PLN (Persero) conducted by sampling to 100 respondents who are PT PLN (Persero)’s customers in households sector whom already used inductive stove or not and aged ≥17 years.

The average pre-test results are 182.44 which classified as "Bad" category. It shows that promotion quality of using inductive stove by PT PLN (Persero) still need improvement at poster quality (design, colour, font), quality information delivered by using inductive stove and diction selection in order to influence product purchase decisions that can increase the number of inductive stove users in Indonesia.

4.2. Cognitive intervention design
Promotion quality improvement of using inductive stove by PT PLN (Persero) with the implementation of cognitive intervention design through poster re-designing and making a video to influence the decision of using inductive stove. Then, post-test will be held by used same questionnaires. Implementation of cognitive intervention is to affect respondents psychologically in inductive stove purchasing decisions. Although the poster is already used as promotion media, researchers conduct to repair its design based on pre-test results.

Implementation of cognitive intervention by do some discussion with 100 respondents to give information about promotion using poster, video, and discussion. Besides, the discussion is combined with word of mouth application which become the reference for shaping customer’s expectations. Implementation of cognitive intervention is held using online based discussion, which supports the Industry 4.0 implementation in PT PLN (Persero).

- Poster
  
  Digital poster will be uploaded in PT PLN (Persero)’s social media which consists of two different posters. Posters made based on the results of pre-test analysis. The first poster describe the
advantages of using inductive stove using attractive words that easy to understand, interesting, unique, and easy to remember. The second poster design is the comparison of the inductive stove and the gas stove. Cognitive intervention implemented on design improvement, colour, font, general illustration, easily delivered information and tend to persuasive/promotive to the customers. These two posters expected to provide information related to comparison between the gas stove and the inductive stove to gives better understanding for respondents.

- Video
  Video was made based on several variables like promotion quality of using inductive stove, products quality, comparison with gas stove and other persuasive information. Besides, added mascot and tagline used for the video. The tagline is "Inductive Stove, Cooking Revolution". The tagline and mascot are made with the purpose that respondents are easy to remember this product and interested to use an inductive stove. Implementation of cognitive intervention video is done by online based promotion, which will be distributed widely through PT PLN (Persero)’s website and social media to supports industry 4.0 implementation in PT PLN (Persero).

- Discussion
  Discussions were held on cognitive intervention implementation of the respondent’s reaction is done by showing videos and posters of using inductive stove. Besides, the discussion conducted based on word of mouth of the respondents who already use the inductive stove which will used as reference for shaping customers’ expectations. Discussion will provide information related, recommendation, and comments of customers about their experience of using inductive stove that may affect customers purchasing decision of this products.

4.3. Analysis of promotion quality of using inductive stove by PT PLN (Persero) (post-test results)
After implementation cognitive intervention, thus measurement of promotion quality of using induction stove by PT PLN (Persero) as post-test phase. This measurement used Likert scale questionnaire were the same as pre-test phase. Post-test result is 411.89 and classified for "Good" category. It is describe the conditions of quality promotion of using induction stove by PT PLN (Persero) after implementation cognitive intervention can influence the decision of products purchase that can increase the number of its users in Indonesia.

4.4. Results and analysis of normality test
Data normality test used SPSS 25.0 software to find out data is normally distributed or not. If the data is normally distributed, then the data used is represent the population. The result of normality test is performed using software SPSS 25.0 with error level (α = 0.05). The hypothesis is as follows:
1. $H_0$: Data was normally distributed
2. $H_1$: Data wasn’t normally distributed
3. $\alpha < 0.05$
4. Critical area : Sig. Kolmogorov-Smirnov < 0.05
5. Result :

| Step      | Sig. Kolmogorov-Smirnov | Decisions               |
|-----------|-------------------------|-------------------------|
| Pre-test  | 0.2                     | Data was normally distributed |
| Post-test | 0.2                     | Data was normally distributed |

Data is normally distributed if Sig. Kolmogorov-Smirnov is greater than 0.05 which is $\alpha$. The test results performed on the data normality already done in pre-test and post-test data results. Pre-test data result was normally distributed with Sig. Kolmogorov-Smirnov is greater than 0.05 which is equal
to 0.2. Post-test data results was normally distributed with Sig. Kolmogorov-Smirnov is greater than 0.05 which is equal to 0, 2.

4.5. Paired Sample T Test Results and Analysis

T-test included in class of statistical parametric were used in the testing of hypotheses and to find out whether the differences are significant from the two variables compared. This test can be conducted if the data is normally distributed. One of the t-test forms is paired sample t-test. Paired sample t-test is an analysis by involving two measurements on a subject which is equal about an influence or effect and specified increase or decrease. In the paired sample t-test, researchers are using two same samples, which is obtained from pre-test data and post-test data. Paired sample T-test is conducted by using SPSS 25.0 with the level of error (α = 0.05) and the hypotheses as follows

1. \( H_0 \) = There was no effect of cognitive intervention implementation to increase the number of user’s inductive stove in Indonesia.

2. \( H_1 \) = There was effect of cognitive intervention implementation to increase the number of user’s inductive stove in Indonesia.

3. Critical area = Ho is rejected if the Sig (2-tailed) < 0.05

4. Result:

| Table 3. Paired sample T Test Result |
|--------------------------------------|
| **Quality promotion of the use of inductive cookers by PT PLN (Persero)** | Sig. (2-tailed) | Decision |
|--------------------------------------|-----------------|-----------|
| There was effect of cognitive intervention implementation to increase the number of user’s inductive stove in Indonesia. | 0.000 | tailed) < 0.05 |

Paired sample T-Test has two hypotheses, the two hypotheses are \( H_0 \) there was no effect of cognitive implementation intervention to increase in the number of users stove inductive in Indonesia and \( H_1 \) is there is effect of cognitive implementation intervention to increase in the number of users stove inductive in Indonesia. The test results Paired sample T Test is the decision of \( H_1 \) there is effect of cognitive implementation intervention to increase in the number of users stove inductive in Indonesia with Sig (2 -Tailed) of less than 0.05).

4.6. Results and analysis of differences in before and after implementation of cognitive intervention on the promotion of the using inductive stove by PT PLN (Persero)

The difference in the results between before and after the cognitive intervention implementation can be seen from the results of post-test and pre-test about the promotion quality of the use of inductive stoves by PT PLN (Persero). The results of a pre-test-related promotion quality of using the inductive stove by PT PLN (Persero) amounted to 182, 44 which classified into interval "Bad". Then the implementation of cognitive intervention was carried out on the promotion of the use of inductive stove by PT PLN (Persero) so that it became 411.89 on the post-test and classified into the interval "Good", the following equation is the deviation that shows an increase in the quality of promotion of the use of inductive stove by PT PLN (Persero) using cognitive intervention model:

\[
\text{Deviation} (\Delta) = \text{total score after} - \text{total score before} \tag{4}
\]

\[
\text{Deviation} (\Delta) = 411.89 - 182.44 = 229.44
\]

\[
\text{Deviation} (\Delta) \% = 82.378 \% - 36.489 \% = 45.89 \%
\]

The increase of promotion quality shows deviations about 229.44, obtained from post-test and pre-test result and increasing percentage at 45.89 %. It shows the effectiveness of promotion using cognitive intervention models.
4.7. General Analysis
General analysis contains the general analysis about the effect of cognitive intervention methods used, the pre-test and post-test result as well as the increase of promotion quality about using inductive stove held by PT PLN (Persero) after cognitive intervention implemented. Table 4 below identifies general analysis of research

| Cognitive Intervention                  | Pre-test Result | Post-test Result | Increase Deviation | Increase Percentage Deviation |
|----------------------------------------|-----------------|------------------|--------------------|------------------------------|
| Poster                                 | 182.44 (Bad)    | 411.89 (Good)    | 229.44             | 45.89%                       |
| Video                                  |                 |                  |                    |                              |
| Discussion and Word of Mouth           |                 |                  |                    |                              |

Table 4 shows that before cognitive interventions applied, the pre-test result of the promotion quality amount to 182.44 which classified into class "Bad". But, after the implementation of cognitive interventions and post-test deducted, the result shows the number of 411.89 which classified into class "Good", the improvement of the promotion quality about the use of inductive stove by PT PLN (Persero) shows the increase 229.44 which obtained from the difference between the post-test and the pre-test result. Its presentation increase is 45.89%.

5. Conclusion and Recommendations
Promotion quality of using the inductive stove held by PT PLN (Persero) shows "Bad" result based on obtained pre-test. So, using the cognitive intervention methods with re-designing posters, videos and doing discussions, combined with word of mouth marketing can be used to improve the quality of the promotion. The result shows that applying these cognitive intervention methods may significantly increase the number of inductive stove users in Indonesia with the category of "Good". Cognitive intervention implementation can also be applied on the other media besides posters, videos, and discussions as well as another promotion to increase the number of PT PLN (Persero) customers outside this inductive stoves promotion, such as power addition, new instalment, etc.

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