
THE ROLE OF MARKETING KNOWLEDGE ENGINEERING IN IMPROVING CUSTOMER RESPONSE: AN ANALYTICAL STUDY OF THE OPINIONS OF A SAMPLE OF PHARMACISTS IN AL-DIWANIYAH GOVERNORATE

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Abstract

This research aims to identify the role of marketing knowledge engineering, across its dimensions (multiple types of marketing knowledge, multiple types of marketing experience, multiple methods of representing marketing knowledge, and multiple methods of using marketing knowledge), in improving customer response across its dimensions (word-of-mouth/verbal advertising, and customer intent to convert) among a sample of pharmacists in Al-Diwaniyah Governorate. The research sample consisted of 165 pharmacists. The descriptive analytical method was used to achieve the research objectives and develop its instruments, using the statistical software programs AMOS version 29 and SPSS version 29. The results showed that pharmacists' reliance on marketing knowledge systems and principles helps in identifying patients' needs and preferences more accurately, enabling the provision of more specialized and higher-quality services, and contributing to enhanced customer satisfaction and response.

Keywords: Marketing knowledge engineering, customer response.

Introduction

Marketing knowledge engineering is a modern trend in organization and promotion. It seeks to participate knowledge administration techniques with promotion processes to boost officialdoms' ability to appreciate and respond more effectually to patron needs(Alsamydai, 2019). This attitude is particularly imperative in the medical sector due to the landscape of the service, which trusts on scientific exactness, rapid evidence conveyance, and the connection amongst procuring decisions and complex healthiness aspects(Nitisiri et al., 2023). Hence, apothecaries are mandatory to adopt unconventional information apparatuses that contribute to cultivating customer contact, providing truthful advice, and ornamental trust in the services offered(Cova & Cova, 2002). This schoolwork aims to investigate the role of promotion knowledge industrial in cultivating customer sensitivity by surveying a sample of pharmacologists in Al-Diwaniyah Governorate. The goalmouth is to regulate their awareness of information tools, the extent to which these apparatuses are hand-me-down in daily publicizing observes, and the bearing of this on enlightening the proficiency of re-joining to shopper needs(Garland, 2002:). The study also objects to provide an methodical framework that helps categorize acquaintance and presentation gaps within this dynamic sector, qualifying pharmaceutical societies to develop knowledge-based stratagems to develop both service quality besides customer consummation.

Part One: Research Methodology

First: The Research Problem

Despite the speedy advance of knowledge supervision tools and their presentation applications, many dispensaries still outside clear encounters in employing publicizing knowledge industrial to enhance their ability to rejoin effectually to shopper needs. Current follows in the curative sector indicate acquaintance gaps interrelated to the machineries for collecting acquaintance from customers, procedures for analyzing it, besides the extent to which it is functional to afford more truthful and higher-quality therapeutic services. A feebleness is practical in the incorporation between posologists' professional acquaintance and present presentation tools, which depressingly impacts the eminence of response, purchaser satisfaction, and the swiftness of gratifying their chucks. The research delinquent lies in the dearth of clarity apropos the level of presentation of marketing acquaintance engineering indoors apothecaries in Al-Diwaniyah Governorate and its actual bearing on enlightening customer rejoinder. This leads to a set of requests, the most bulbous of which are:

- 1- What is the level of application of marketing knowledge engineering among pharmacists?
- 2- To what scope do these presentations subsidize to enlightening customer comeback?
- 3- What is the landscape of the rapport between presentation knowledge industrial and response gages from the pharmacists' standpoint?

Second: The importance of the research

- 1- The reputation of the study lies in announcing the considered sample to the landscape of marketing acquaintance and the obligation and importance of enjoying presentation

knowledge engineering by firstborn managing teams, and the heroine of this in collective the level of shopper rejoinder.

2. The recent study derives its hands-on consequence from the projected results and their potential involvement to providing all-inclusive reactions to the research enquiries.
3. Furthermore, bystanders note the repeated discussions immediate the marketing information engineering of pharmacologists in Al-Diwaniyah Governorate, reflecting the growing concentration in this area between authorities, consultants, and academics. This supports the study added closely with comprehensive inclinations.
4. The study's importance also lies in its attempt to adapt internationally recognized metrics, long a focus of research, to the realities of the healthcare sector. It also contributes to the development of a standardized framework for marketing knowledge engineering.

Third: Research Objectives

- 1- To diagnose the level of adoption of marketing knowledge engineering among the research sample.
- 2- To diagnose the level of customer responsiveness among the research sample.
- 3- To highlight the type and nature of the correlation between possessing marketing knowledge engineering and the level of customer responsiveness.
- 4- To test the impact of marketing knowledge engineering on improving customer responsiveness among the research sample.

Fourth: Hypothesis Framework and Hypothesis Development

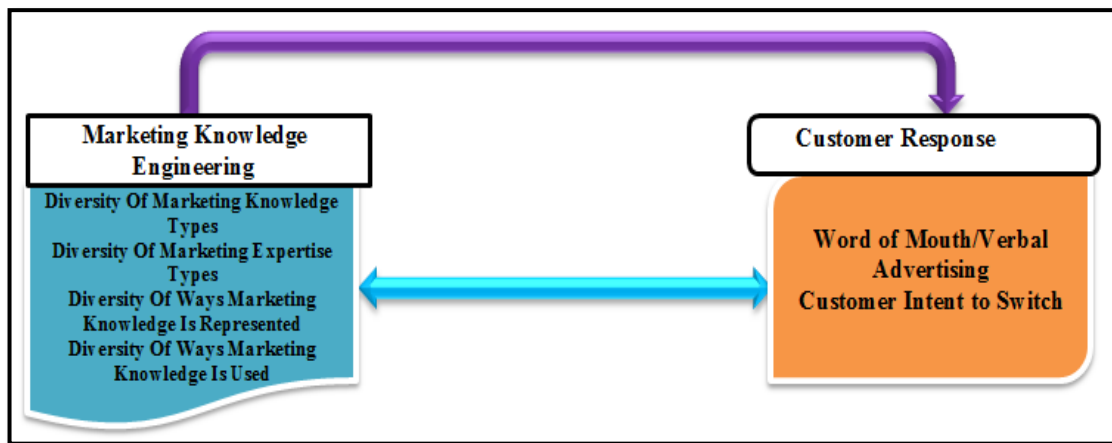


Figure (1) Hypothetical study plan

Main Hypothesis 1: There is a statistically significant correlation between marketing knowledge engineering and customer response. This hypothesis leads to several sub-hypotheses:

- 1- There is a statistically significant correlation between the variety of marketing knowledge types and customer response.
- 2- There is a statistically significant correlation between the variety of marketing experience types and customer response.

3- There is a statistically significant correlation between the variety of ways marketing knowledge is represented and customer response.

4- There is a statistically significant correlation between the variety of ways marketing knowledge is used and customer response.

Main Hypothesis 2: Marketing knowledge engineering has a statistically significant effect on customer response. This hypothesis leads to several sub-hypotheses:

1- The variety of marketing knowledge types has a statistically significant effect on customer response.

2- The variety of marketing experience types has a statistically significant effect on customer response.

3. The variety of ways marketing knowledge is represented significantly affects customer response.

4. The variety of ways marketing knowledge is used significantly affects customer response.

Part Two: Theoretical Aspect

First: The Concept of Marketing Knowledge Engineering

Marketing knowledge is a new vision that emerged in the mid-20th century, representing a qualitative shift in organizational focus. It stimulated from a concentration on operative aspects to aligning with bazaar trends and decrees, a response to the authenticity faced by inclusive organizations: the difference between their designs and market opportunities (Kwong et al., 2013:202), principal to product publicizing bombs. This dictates the search for applies and explanations to complete objectives, which institutes the essence of publicizing knowledge (Alsamydai, 2019:353). This is often accompanied by challenges in knowledge conservation, pressure the development of a knowledge industrial attitude. This approach relies on various mechanisms based on principles and techniques to address these problems. It utilizes technology to gather knowledge with the assistance of specialists who develop programs, databases, and knowledge bases to benefit society and address consumer issues (Lyubanova et al., 2020:3). Therefore, knowledge creators strive to identify areas that contribute to and assist participants in understanding This includes knowledge that reduces societal problems, as well as the use of ontology in personal knowledge, which can be beneficial for acquiring and developing knowledge (Wagner & Zubey, 2005:406).

Accordingly, marketing knowledge can be defined as a fundamental and crucial element in the discipline of marketing work (Brambila-Macias et al., 2018:8), and an objective foundation for formulating successful marketing plans based on the wisdom of reason to measure market variables. It represents a set of ideas, judgments, impressions, and mental images ingrained in the organization's management regarding market variables and current and potential customers (Diehr & Wilhelm, 2017:13).

(Nitisiri et al., 2023:692) indicated that marketing knowledge engineering is the experience and skills acquired by people based on experience, theoretical or practical education, or understanding of a subject, in addition to increasing individuals' knowledge through experts who have sufficient experience and knowledge of negative or inappropriate practices and warning individuals of the consequences they are exposed to

Second: The Importance of Marketing Knowledge Engineering

Marketing knowledge engineering, through collaboration with modern information systems, contributes to supporting the administrative structures of organizations by providing appropriate solutions to marketing problems, promoting products, and providing relevant information for decision-making. This helps in providing suitable products to customers and beneficiaries, achieving their complete satisfaction (Stalidis et al., 2015:106). This leads to the appropriate development of the administrative structure, which strengthens the competitive position and achieves future growth (Ferguson et al., 2014:13).

Marketing knowledge engineering represents the basis of success in new organizations in our present era because it is the basis for satisfying customers and fulfilling their desires and aspirations for the new and useful (Yun et al., 2020:792), especially since these needs and requirements change with the change of tastes, desires and new aspirations (Jovanov & Stojanovski, 2012:133). This has imposed attention to it and its study as a basic requirement because of the leading role it plays at the present time, especially in the fields of marketing. If any organization adopts it, it will be able to achieve good results in market transactions and competition, unlike the results of organizations that embrace traditional ideas (Peñalba-Aguirrezabalaga et al., 2022:209). On the other hand, the importance of software engineering's contribution to supporting knowledge engineering after identifying activities used to make a better sense of the areas that promote latent understanding based on weak connections with good familiar concepts and identifying unfamiliar concepts provided by the natural physical world, while taking advantage of technology that contributed to discovering the roadmap for knowledge engineering (Karim & Rahman, 2013:199).

Third: Dimensions of Marketing Knowledge Engineering

The marketing knowledge engineering variable is measured through four dimensions (Schilstra, 2001):

1- The multiplicity of types of marketing knowledge

Thinkers and philosophers have sought to identify different types of knowledge in an attempt to distinguish between declarative knowledge and procedural knowledge (Nitisiri et al., 2023:693). In knowledge engineering, these two types are often referred to based on a fixed pattern, with reference to specific methods for classifying knowledge, whether abstract or specific (Stalidis et al., 2015:107). To develop methods for acquiring specific knowledge, it must be more abstract and allow for much to be done based on the cognitive effort of knowledge engineering teams (Schilstra, 2001:94). This principle does not differentiate between the average person and the specialist, each according to their personal perceptions. Everyone possesses types of knowledge, even if simple, as far as daily actions like shopping, comparing competing products, and recognizing marketing deception, etc. This necessitates that the individual pay attention to the explicit and implicit knowledge of each store and product. A market that deals with these products avoids the marketing deception it might encounter if it lacked a knowledge base about them and had diverse and multiple knowledge alternatives to counter the risk of marketing deception (Alsamydai, 2019:353).

2- The Multiplicity of Marketing Expertise

There are not different types of knowledge, but rather different types of expertise and experts. Scholars have found that knowledge architecture indicates the variability of experts in their ability to articulate their knowledge (Nitisiri et al., 2023:693). Furthermore, there are differences in the ability to articulate knowledge, and experts vary in their success in recalling information within a specific context. In other words, marketing expertise is the ability to utilize experts in the marketing field, especially those with marketing knowledge regarding marketing deception techniques and how to counter or overcome them (Stalidis et al., 2015:107). Information can be obtained from them and compiled to form a comprehensive knowledge base about the product (Schilstra, 2001:94).

3- Multiple Methods of Representing Marketing Knowledge

Methods of representing marketing knowledge include the ability to understand product specifications and utilize marketing intelligence, such as the internet, to gather data and information about products, their characteristics, features, specifications, advantages, and disadvantages. This aims to prevent deception, fraud, exploitation, and interference by marketers (Schilstra, 2001:94). Developing diverse methods of knowledge representation is a vital component of artificial intelligence (Stalidis et al., 2015:107). The multiplicity of knowledge representation methods in the marketing field has given rise to the concept of marketing intelligence, which is the cornerstone of artificial intelligence. This necessitates that individuals and organizations leverage this intelligence and avoid relying on a single source of knowledge regarding product specifications (Nitisiri et al., 2023:693).

4- Multiple Ways to Use Marketing Knowledge

Knowledge is acquired based on models that define the types of knowledge that constitute the inputs and outputs of this task (Schilstra, 2001:94). This principle focuses on how to use marketing knowledge and avoid marketing deception that customers can benefit from, and on knowing the most important good products, their sources of production and distribution, their business relationships, and any other information. This is achieved by using knowledge between customers, companies, and their good, high-quality products (Nitisiri et al., 2023:693). This knowledge is acquired by competent marketers, not deceivers, by finding methods to avoid marketing deception, developing non-intervention strategies, and reducing the impact of exploitation (Stalidis et al., 2015:107).

Fourth: The Concept of Customer Response

Customer response is of paramount importance because it highlights an organization's brand. Most organizations now focus on understanding how customers respond to their services, as this impacts profitability and competitiveness. Customer answer incorporates the intellectual, emotional, and corporal activities regulars engage in once selecting, procuring, and spending products or amenities that meet their requirements and necessities (Litvin et al., 2008: 458-468). Aalami et al., 2010: 243-250 explained that customers may respond to failures in certain situations, including non-response, engaging in activities such as spreading negative publicity, taking legal action and seeking compensation, and searching for and switching to another brand that meets their expectations. Customer

rejoinder embodies a feedback to the services providing. It is largely independent on the speed with which facility providers manage purchaser requests and examinations (Siddiqi, 2011: 12-36). Fuchs & Schreier (2011: 17-32) stated that patrons respond completely by energetically sharing with others in choosing new foodstuffs or amenities for products, as well as by allotment necessary evidence that underwrites to the progress of the new product or package, thus growing the brand's assessment, otherness, and upright. The customer understandings service as an discussion based on whatever they pay and whatever they collect in arrival. The customer impressions satisfied while their potentials are met, and vice versa (Kotler & Armstrong, 2012: 20). Pappas et al. (2014: 187-204) branded four stages in purchaser response to amenities or products: discernment (the customer's awareness of the product or package, which stimulates motivation), kindness (the advance of interest after recognizing the benefits), concentration (the customer's yearning resulting from scrutinizing evidence about the merchandise or service to variety an optimal procurement decision), and lastly, answer (the customer's final decision apropos the offer's benefits, value, and price-to-performance ratio, all of which influence purchasing decisions). Additionally, this method reflects a encouraging discernment constructed on accurate acquaintance of the value of harvests and services offered concluded these conduits (Megdadi et al., 2023: 1).

Fifth: The Importance of Customer Response

Customer response can be a function of branding. More explicitly, a well-defined variety enhances customer enthusiasm and approval (Erkmen & Turegun, 2022:151). Patron rejoinder also helps in evolving new harvests or modifying remaining ones to meet budding customer requests and potentials (Olsson et al., 2013:89). Customer response involves an organization's desire to learn more about its customers, proactively and actively preparing to develop solutions tailored to specific customer needs (Islam et al., 2020:2). Customers constantly provide feedback on the product or service offered, the organization, their experiences with the brand, and other related matters. The organization then reviews and monitors this information, using it to create a product or service that best meets current customer needs (Setapa et al., 2020:41).

Sixth: Dimensions of Customer Response

Customer response is measured through two dimensions (Silverman, 2001:26):

1- Word-of-Mouth Communication (Word-of-Mouth Advertising)

Customers are exposed daily to numerous influences that can affect their purchasing behavior. Despite the multitude of marketing communication channels that influence customer decisions, conversations have a greater impact on consumer decisions, and word of mouth is considered more credible than other marketing communications. Furthermore, word-of-mouth communication will be used to eliminate confusion, and news will be used to identify what is most beneficial based on past experiences and information provided by specialists, email, websites, and conferences (Silverman, 2001:26). Furthermore, (Cova & Cova, 2002:595-620) indicate that comments made on social media influence customers more than traditional marketing activities and can be adopted by customers. Word-of-mouth

advertising is a critical factor in customer perception of service quality, and it is difficult to control, as it is an independent factor that depends on the customer's experience.

2- Customer Switching Intention

Due to fierce competition between companies, each company tries to develop customer-oriented methods in order to increase customer retention and attract new customers (Manandhar, 2021:35-42). Commercial competition leads to a shift in customer behavior towards loyalty to one product or service and then to another, due to dissatisfaction or other reasons (Satriadi et al., 2022:67-73). Switching intention has been defined by many researchers as the decision made by the customer to stop purchasing a service or to cease dealing with the organization entirely (Garland, 2002:317-325).

Part Three: The Practical Aspect

First: Coding and Describing the Study Variables

The study consists of two main variables: the independent variable, which is the marketing knowledge architecture, which was measured in four sub-dimensions, and the dependent variable, which is the customer's response, which was measured through two dimensions. Therefore, it is necessary to code these variables and their sub-dimensions in order to facilitate dealing with them in analyzing the data and interpreting the results. Table (1) shows the coding and description of the study variables included in the statistical analysis.

Table (1) Variable Coding and Description

| Coding | Sub-dimensions | Key variables |
|--------|---|---|
| DMKT | Multiple types of marketing knowledge | Marketing Knowledge Engineering MKE |
| DMET | Multiple types of marketing experience | |
| DWMKR | Multiple ways of representing marketing knowledge | |
| DWMKU | Multiple ways of using marketing knowledge | |
| WOW | Word of mouth/verbal advertising | Customer response |
| CIC | Customer intent to convert | CUR |

Second: Testing the Normality of the Data

One of the important topics to consider is determining the probability distribution followed by the sample data (the response variable or the dependent variable). This can be achieved by using several methods, the most important of which is the Kolmcroft-Smirnoff goodness-of-fit test, which is used to test whether the distribution of the sample data matches one of the theoretical continuous distributions (the normal distribution in this case). The null hypothesis to be tested is:

H0: The sample data distribution matches the normal distribution.

Against the alternative hypothesis:

H1: The sample data distribution does not match the normal distribution.

The null hypothesis H0 is rejected, and the conclusion is that the data distribution does not match the normal distribution, or conversely, that the data distribution matches the normal distribution, based on the above test results. The researcher found the test values and placed them in Table (2), which shows that all sig values are greater than the significance level of 5%. This means accepting the null hypothesis H0, and we conclude that the sample is drawn from a population with a normal distribution, with an arithmetic mean and standard deviation equal to the corresponding values for each variable in Table (2).

Table (2) represents the Kolmeicroft-Smirnov table for testing the goodness of fit of the sample data.

| One-Sample Kolmogorov-Smirnov Test | | | | | | |
|---|------|--------|--------|--------|--------|--------|
| | | DMKT | DMET | DWMKR | DWMKU | MKE |
| Sample size | | 165 | 165 | 165 | 165 | 165 |
| Normal Parameters ^{a,b} | Mean | 4.2361 | 4.2690 | 4.2972 | 4.2651 | 4.2651 |
| | S.D | .67976 | .58503 | .68941 | .57956 | .65951 |
| Test Statistic | | .188 | .171 | .200 | .184 | .185 |
| Asymp. Sig. (2-tailed) | | .982 | .521 | .511 | .9700 | .6615 |
| a. Test distribution is Normal. | | | | | | |

Third: Descriptive Analysis of the Study Data

Frequencies and their percentages were determined for the dimensions and variables of the questionnaire. In order to reveal the characteristics of the sample, the researchers also calculated some general statistics, represented by the arithmetic mean, standard deviation, coefficient of variation, and relative importance relative to the trend towards strong agreement, as follows:

Table (3) Frequencies and percentage of responses to items of the study variables

| variables | Mean | S.D | C.V | relative importance |
|-----------|------|-------|-----|---------------------|
| DMKT | 4.18 | 1.000 | 24 | 84 |
| DMET | 4.12 | 1.052 | 26 | 82 |
| DWMKR | 4.07 | 1.105 | 27 | 81 |
| DWMKU | 4.10 | 1.016 | 25 | 82 |
| MKE | 4.13 | 1.051 | 25 | 83 |
| WOW | 4.12 | 0.926 | 22 | 82 |
| CIC | 4.38 | 0.792 | 18 | 88 |
| CUR | 4.08 | 0.927 | 23 | 82 |

Fourth: Testing the Study Hypotheses

1- Correlation Hypothesis

First Main Hypothesis: There is a statistically significant correlation between marketing knowledge engineering and customer response.

From the results presented in Table (4), it is evident that the correlation value between the marketing knowledge engineering variable (MKE) and the customer response variable

(CUR) for the customer response variable was (0.722), which is a positive value with a significance level of 5%. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted. We conclude that there is a statistically significant correlation between marketing knowledge engineering and customer response.

Table (4) shows the correlations between the marketing knowledge engineering variable and customer response and their dimensions.

| Correlations | | | | | | |
|---------------------|---------------------|--------|--------|--------|--------|--------|
| | | DMKT | DMET | DWMKR | DWMKU | MKE |
| WOW | Pearson Correlation | .636** | .770** | .788** | .851** | .814** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 |
| | n | 165 | 165 | 165 | 165 | 165 |
| CIC | Pearson Correlation | .625** | .762** | .715** | .752** | .753** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 |
| | n | 165 | 165 | 165 | 165 | 165 |
| CUR | Pearson Correlation | .552** | .698** | .671** | .724** | .722** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 |
| | n | 165 | 165 | 165 | 165 | 165 |

** . Correlation is significant at the 0.01 level (2-tailed).

2- Effect Hypothesis

The second main hypothesis: Marketing Knowledge Engineering (MKE) has a statistically significant effect on customer response.

This section will examine the effect of the Marketing Knowledge Engineering variable on customer response. The results show a statistically significant positive effect (MKE) at a 5% significance level on the Customer Response variable (CUR), with an effect value of 0.79 and a critical value of 17.739. This value is statistically significant; in other words, a one-unit increase in the MKE value leads to a 0.79 increase in customer response.

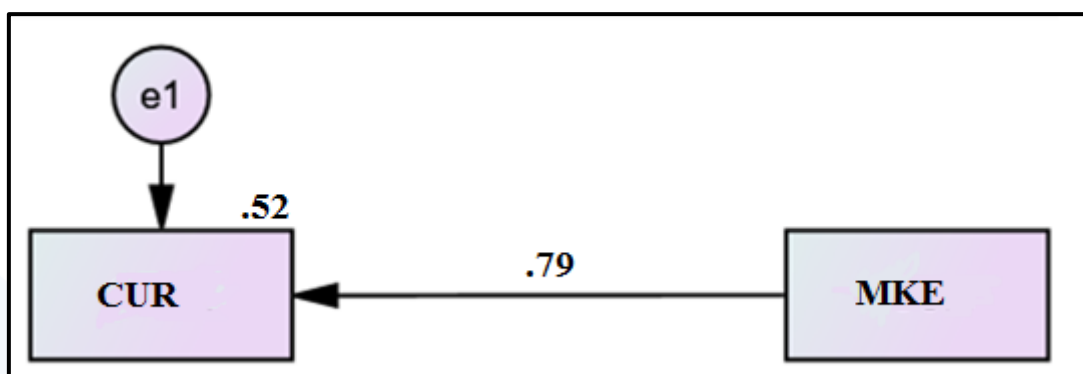


Figure (2) shows the structural modeling equation for the direct influence of a marketing knowledge engineering variable on customer response.

Table (5) Standard Direct Impact Values and Critical Ratio Test C.R.

| | Path | | R ² | Estimate | S.E. | C.R. | P |
|-----|------|-----|----------------|----------|------|--------|-----|
| CUR | <--- | MKE | 0.522 | .791 | .040 | 17.739 | *** |

Part Four: Conclusions and Recommendations

First: Conclusions

1- Apothecaries' reliance on advertising knowledge organizations and contexts helps them identify easygoing needs and penchants more correctly, enabling the establishment of more bespoke and higher-quality therapeutic services, and underwriting to increased customer happiness and awareness.

2- The convenience of planned and reliable evidence to posologists through familiarity engineering condenses decision-making time and boosts the ability to speedily address easygoing inquiries, thus enlightening the level of instantaneous rejoinder.

3- Pharmacists' proprietorship of organized acquaintance tools subsidizes to unindustrialized their statement skills, construction dialogue more translucent and precise, which intensifications customer trust and supports the interactive rapport between the two revelries.

4- Awareness engineering affords pharmacists with widespread information about therapeutic products and presented alternatives, empowering them to guide shoppers toward apposite and effective options, which subsidizes to improving the shopper's decision-making progression.

5. Customers converted more approachable and biddable with suppository advice and directives when they distinguish that the pharmacist enjoys organized and informed expertise, which boosts their loyalty and willingness to participate endlessly.

6. Unindustrialized the knowledge arrangement and acquaintance controlling systems within dispensaries is a strategic compulsion for enlightening service quality, accumulative approachability, and mounting marketing concert in line with the essentials of the local unrestricted in Al-Diwaniyah Governorate.

Second: Recommendations

1- The obligation of investing in the progress of digital knowledge administration systems, counting pharmacological folders and continuous produce updates, to support pharmacologists through up-to-date material that contributes to enlightening the eminence of customer service.

2- The obligation of organizing regular preparation sequencers aimed at improving pharmacists' facilities to use information industrial tools and employ them in taking customer needs and providing apposite solutions quickly besides effectively.

3- Adopting announcement strategies constructed on knowledge-based comfortable, such as illuminating brochures or microelectronic acquaintance consultation systems, to develop customer collaboration and increase their assurance in the evidence provided within the dispensary.

4- Expending data analytics and purchaser behavior investigation techniques to guide presentation decisions indoors pharmacies, which helps in accepting purchasing trends and enlightening the accuracy of comebacks to patient essentials.

5- Approving a clear policy for the nonstop updating of therapeutic product data and beneficial information, guaranteeing that apothecaries remain conversant of systematic and therapeutic advances, thus improving the superiority of responses to shopper examinations.

6- Establishment cooperation among pharmacies, academies and research midpoints to exchange systematic and publicizing knowledge, which subsidizes to building a durable acquaintance base that subsidizes to raising the quality of curative services and improving customer rejoinder in Al-Diwaniyah Governorate.

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