

Pharmacist Service Activities Development : Application of Levitt's Total Product Concept to Event Based of Patient Demand Practice Environment

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Abstract

The objectives of this study were to 1) identify, group and label pharmacist service activities into pharmacist service construct, and 2) apply and test Levitt's Total Product Concept Model to the domain of pharmacist service activities. Data for the analysis were gathered in winter 1999 by mail survey in Dane County, Wisconsin, USA. Systematic random sampling was applied in selecting 500 samples from the purchased mailing list. Twenty-nine pharmacist service activities identified primarily from previously developed scales for community pharmacy patronage were used in this study. The respondents were asked to rate the importance of each pharmacist service activities (of scale 1 = of no importance to 5 = great importance) and check the experienced box provided at the end of the importance scale if they had ever experienced it. Factor analysis was conducted as an exploratory technique to examine the dimensional structure of the constructs and the designation of individual pharmacist service activities to measure the dimensions. Then, total product concept groupings based on extent of consumers' experience with each pharmacist service constructs were applied. The response rate was 58.80 percent. Four factors above the break in the scree-plot were found to explain 57.94 percent of the variation. Eigenvalues for each of these four factors were equal or greater than 1.225. The factors extracted represented four

dimensions and were labeled as 1) Non-prescription Drug Consultation and Monitoring Activities, 2) Medication Consultation and Monitoring, 3) Medication Administration and Management Activities, and 4) Educational and Informatic Activities. Based on Levitt's model of the Total Product Concept using consumers' percent experience criteria, Prescription Drug Consultation and Monitoring Activities fitted in Expected Product/Service Component. While Medication Administration and Management could fit well under Augmented Product/Service Component, and Non-prescription Drug Consultation and Monitoring Activities and Education and Informatic Activities Dimensions could fit well into the Potential Product/Service Components.

Key words : pharmacist service activities, Levitt's total product concept, patient demand

Introduction

The role of the pharmacist has changed dramatically over the past century from an “apothecary” whose rudimentary task was to procure, prepare, and evaluate medicinal drugs to one of a sophisticated clinical specialist utilizing a formalized knowledge base to maximize patient benefits (Cipolle et al., 1998). A beneficial outcome of this transition has been the advent of the pharmaceutical care paradigm. Pharmaceutical care is an increasingly important part of modern pharmacy practice. It has been defined as “the responsible provision of drug therapy for the purpose of achieving definite outcomes intended to improve the patient’s quality of life.” (Hepler and Strand, 1990) The concept has since been redefined as “a practice in which the practitioner takes responsibility for a patient’s drug related needs and holds him or herself accountable for meeting these needs.” (Pharmaceutical care, 1997)

Due to the implementation of pharmaceutical care, pharmacists started to incorporate new service activities into their practices. Examples of new pharmacist service activities are: mail or telephone refilled medication reminding service, medication follow up calling, medication and health related consultation service (Wiederhold, 1987; Youstra et al., 1993; Gore and Thomas, 1995; Fain 1996; Metge 1996; Metge et al., 1998; APhA Pharmacy Practice Activity Classification, 1998; T. Sriwong, 1999). Upon reviewing the pharmacist service activities cited above, it becomes self-evident that pharmacists, do indeed, play an integral role in both the provision of pharmacist services development and success.

Pharmacists have been implementing pharmacist services since the 1970s. However, few pharmacists have devoted comparable level of effort to creating an awareness of, and demand for, pharmacist cognitive services to consumers. Metge et al. (1980) found only 15% of consumers suggested that their pharmacist did offer pharmacist services. This implied that consumers are uninformed about what pharmacists do. In other words, consumers lacked of experiences or awareness of pharmacist services development.

Based on previous research findings, it is important to learn from consumers' perspectives about what pharmacist services they experienced and expected from pharmacist. Also, it is an opportunity for pharmacists to expand their services by applying Levitt's total product concept into their community practices. Levitt, in his book, *Marketing Imagination*, points out graphically the products/services development process using the Total Product Concept (Theodore, 1983) The model has four components: 1) Generic Core Product/Service, 2) Expected Product/Service, 3) Augmented Product/Service, and 4) Potential Product/Service. (See Figure 1)

The generic core or center represents the basics necessary to enter the market place. For the pharmacy, it is the pharmaceutical product and knowledge of pharmacist. The nearest circle to the generic core is the expected product or service circle. This circle depicts what the consumer expects to receive. This may vary by consumer type and by the pharmacy. Next from the expected product or service circle is augmented product or service circle. The augmentation of products or services is differentiation; augmented products or services are designed to segment the market by satisfying specific consumer needs and problems by going beyond the expected product/service. Many of the skills and tasks associated with the providing of pharmaceutical care are considered to be augmented activities. The outer circle, potential product or service, is not a true concentric circle, because it represents value-added activities which are new, innovative or may be not have been developed yet.

It is important to realize that this total product concept model is not static; it is a dynamic model. Expected products and services can evolve to become generic core activities and augmented products and services can soon become expected products. For example, under OBRA'90 regulations, counseling on new prescription for Medicaid patients is mandated; thus, what some pharmacists once were doing to augment their products and services, now becomes a generic core product for Medicaid patients.

The objectives of this study were to:

- 1) Identify, group and label pharmacist service activities into pharmacist service construct.
- 2) Apply and test Levitt's Total Product Concept Model to the domain of pharmacist service activities.

Methods

Data Collection

Data for the analysis were gathered in winter 1999 by mail survey in Dane County, Wisconsin. The sample size of 500 was determined by the sufficient number of respondents needed for data analysis and the amount of funding available. The name and address of the residents was purchased from the Mailing List Company. Systematic random sampling was applied in selecting 500 sample from the list.

Scale Development

A list of twenty-nine pharmacist services was identified primarily from previously developed scales for community pharmacy patronage by Wiederholt (1987), Lipowski and Wiederholt (1987), Smith and Coons (1990), Gore and Thomas III (1995), Fain's Dissertation (1996), Metge et al. (1998) and also from Pharmacy Practice Activity Classification (American Pharmaceutical Association 1998).

For each of the pharmacist service activities, the respondents were asked to rate the importance of that pharmacist service activities (of scale 1 = of no importance to 5 = great importance) and check the experienced box provided at the end of the importance scale if they had ever experienced it.

Evaluation of Construct and Sample of Items

Factor analysis was conducted as an exploratory technique to examine the dimensional structure of the constructs and the designation of individual pharmacist service activities to measure the dimensions (Kom and Mueller, 1978; Nunally, 1994). Because of the exploratory nature of this procedure, the data set was

evaluated to determine if it was suitable for factor analysis (Stewart, 1981; Norusis, 1985). To prevent the inappropriate application of factor analysis, several criteria were applied such as Barlett's test of sphericity, Kaiser-Mayer-Olkin measure of sampling adequacy, a plot of latent root, and an examination of the communality estimates etc. (Stewart, 1981; Norusis, 1985). Factor extraction was performed by Maximum Likelihood Method followed by Oblimin Kaiser Normalization Rotation.

Instrument and sub-scale reliability was tested by the internal consistency method using Cronbach's alpha as a measure (Nunnally, 1994; Carmines and Zeller, 1979). A mean score was calculated for each dimension using only those pharmacist service activities that loaded on the dimension.

Total Product Concept Grouping Based upon Consumers' Experiences

Total product concept groupings based on extent of consumers' experience with each pharmacist service constructs were applied. First, percent experienced for each pharmacist service activities was calculated. Second, then percent experienced for pharmacist service activities within each dimension were totaled and divided by number of pharmacist service activities within that dimension to generate total mean percentage experienced score for each dimension. Next, the experienced interval arbitrarily was assigned as:

- ≥ 70 % Experience = Expected Product/Service
- 31 % - 69 % Experience = Augmented Product/Service
- ≤ 30 % Experience = Potential Product Service

Results and Discussion

Of 500 surveys in the initial mailing, 483 (96.6%) were delivered, and 284 (58.8%) were returned. Nine responses were unusable leaving 275 surveys available for data analysis. Demographics of the respondents were shown in Table 1. The average age of respondents was 51.8 years, and 71% were females. Over 81 % had at least a high school graduate or

equivalent degree, and more than 50 % earned at least technical or bachelor's degree or higher education. The median income was in the \$ 35,000 to \$ 49,900 category.

Exploratory Factor Analysis for Pharmacist Service Dimensions

Four factors above the break in the scree-plot were found to explain 57.94 percent of the variation. Eigenvalues for each of these four factors were equal or greater than 1.225. Table 2 contained the final statistics for the factor analysis. The factors extracted represented four dimensions and were labeled as Non-prescription Drug Consultation and Monitoring Activities, Medication Consultation and Monitoring, Medication Administration and Management Activities, and Educational and Informatic Activities.

In Table 3, Cronbach's alpha for the entire instrument was 0.948. Average importance scores for each dimension ranged from 4.30 for prescription drug consultation activities to 3.39 for educational and informatic activities. Also, the results of variance explained by the Non-prescription Drug Consultation and Monitoring Activities was 39.53%, which implied that these pharmacist service activities were still unfamiliar to consumers that in turn created the high percent variance in this dimension.

Extent of Consumers' Experiences with Each Pharmacist Service Dimensions

The results of extent of consumers' experience toward each pharmacist service dimensions were as followed:

Factor 1: Non-prescription Medication Consultation and Monitoring	=	26.1%
Factor 2: Prescription Medication Consultation and Administration	=	72.2%
Factor 3: Medication Administration and Management	=	43.1%
Factor 4: Educational and Informatics Activities	=	8.7%

When applying Levitt's Total Product Concept to classify these constructs based on extent of consumers' experience, it could be demonstrated in Figure 2.

Pharmacist Service Dimensions

By applying exploratory factor analysis, the four underlying pharmacist service dimensions were found to explain 57.94% of the variance.

Three pharmacist service activities in the Non-prescription Drug Consultation and Monitoring Activities, Factor 1 fitted perfectly to the extended non-prescription medication services provided in community pharmacy. The reason why the dimension accounted for 40% of the variance could be due to the fact that most consumers were not familiar with these services yet.

In Factor 2, Prescription Drug Consultation and Monitoring Activities, as the percent variance explained for this dimension was 8.056, it seemed that the Prescription Drug Consultation and Monitoring Activities were well known by consumers and they had stable preference over the pharmacist service activities under this dimension. Again, these pharmacist service activities were expected and preferred by consumers.

Pharmacist service activities under the Medication Administration and Management Activities, Factor 3, were the activities that most pharmacists regularly provided to every consumer in daily basis. Even though some activities, for example: “Describe the effect I should expect from my prescription,” seemed to fit into the Prescription Drug Consultation and Monitoring Activities, Factor 2. However, if considered from a consumer’s point of view, the activities might be perceived as general Medication Administration and Management Activities. Again, most of Factor 3 attributes were familiar to consumers so that the percent variance explained for this dimension was just 6.128.

Finally, Factor 4, Educational and Informatic Activities composed of eight underlying pharmacist service activities. It was logical to have all these activities loaded into this Education and Informatics Activities Dimension, since they were all related to health related information and instruction.

It was interesting to learn that pharmacist service activities that generally were implemented and labeled by pharmacists could be perceived by consumers to have different meanings and perspectives. Thus, perhaps due to perspective and labeling,

pharmacists and consumers have different “evoked sets” of service activities. It would be worthwhile if pharmacists could communicate and promote their expanded service activities to consumers, so consumers would have better understanding of the role of pharmacist in providing professional services.

Based on Levitt's model of the Total Product Concept using consumers' percent experience criteria, Prescription Drug Consultation and Monitoring Activities fitted in Expected Product/Service Component. While Medication Administration and Management could fit well under Augmented Product/Service Component, and Non-prescription Drug Consultation and Monitoring Activities and Education and Informatic Activities Dimensions could fit well into the Potential Product/Service Components.

The results of this study suggested several areas for future research. First, pharmacist service activities included in this study seem to capture most new expanded pharmacist service activities provided in community pharmacy; however development of new pharmacist service activities continues to evolve, so adjustment of pharmacist service activities for this questionnaire should be updated. Second, because non-prescription medication and self-care service activities were perceived by most respondents as moderately important, extensive research on this topic should be conducted to explore how the role of non-prescription and self-care service affects consumer preferences in selecting the pharmacy. Third, the results from this study showed that consumer of prescription medication perceived the pharmacist service activities in different view from pharmacists expect or even misunderstood what pharmacist service activities were about. The research should be conducted to find the effective way how to communicate directly with consumers about pharmacist service activities. Finally, pharmacist service dimensions found from this study can serve as hypothesized dimensions for confirmatory factor analysis.

There were some limitations to this study. First, the sample for this study was limited to one metropolitan statistical area (MSA), Dane County, Wisconsin, USA, therefore, caution should be used

in generalizing beyond the study sample. Second, all of the data were based on respondents' reported recall of their past patronage patterns. Any errors in respondent recall might have affected the results.

Conclusions

For pharmacist service dimensions, four factors were extracted by maximum likelihood method, following by Oblimin-Kaiser normalization rotation, which explained 57.94 percent of the variation in response. These four dimensions were: (1) Non-prescription Drug Consultation and Monitoring Activities, (2) Prescription Drug Consultation and Monitoring Activities, (3) Medication Administration and Management Activities, and (4) Educational and Informatic Activities.

Based on Levitt's model of the Total Product Concept, Prescription Drug Consultation and Monitoring Activities fits in Expected Product/Service Component. While Medication Administration and Management could fit well into Augmented Product/Service Component, and Non-prescription Drug Consultation and Monitoring Activities and Education and Informatic Activities Dimensions could fit well into the Potential Product/Service Components.

In conclusion, the product mix of pharmacist service activities continues to evolve and expand in practice. Also non-prescription medication and self-care services were perceived by most respondents in this study as moderately important, extensive research on this topic should be conducted to explore how the role of non-prescription and self-care service affect in consumer preferences in selecting the pharmacy. Finally, It seems that consumers do not understand the general preference cues for professional services.

Thus, pharmacists must develop promotional tools to educate consumers about pharmacist services and communicate their expanded services (especially those services that are grouped in augmented or potential categories) to consumers so that consumers would have clear understanding of the role of pharmacist in providing professional services.

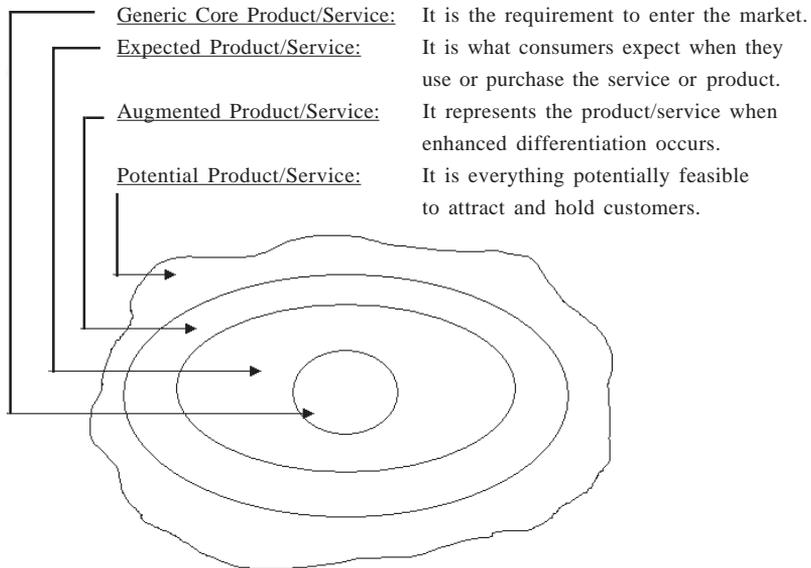


Fig. 1 Levitt's Total Product Concept

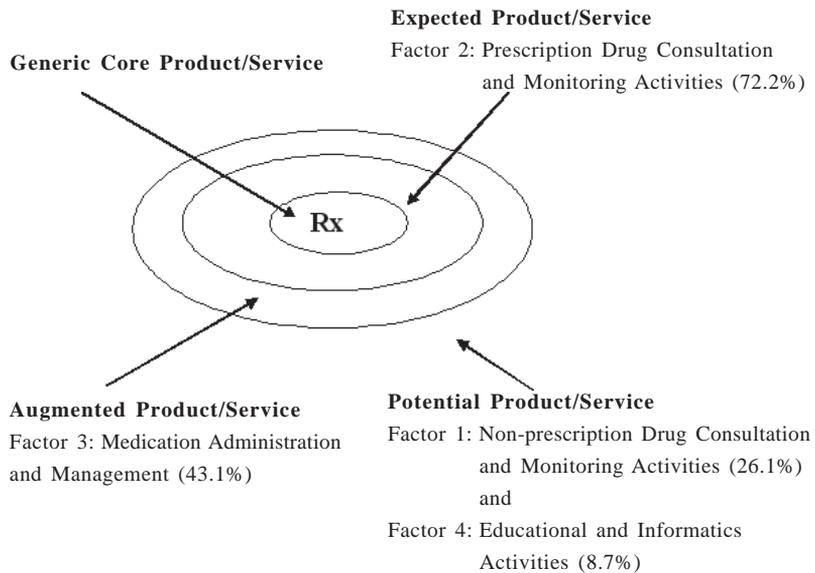


Fig. 2 Total Product Concept Assignment Based on the Extent of Consumers' Experiences with each Pharmacist Service Dimensions

Table 1 Respondent Demographics Characteristics

AGE		<u>Respondent(%)</u>
21 – 34		32(11.89)
35 – 44		53(19.70)
45 – 54		89(33.09)
55 – 64		36(13.38)
65 and over		58(21.94)
	Total	269
GENDER		<u>Respondent(%)</u>
Male		78(29.00)
Female		191(71.00)
	Total	269
HEALTH		<u>Respondent(%)</u>
Poor		2(0.75)
Fair		29(10.82)
Good		90(33.58)
Very Good		105(39.17)
Excellent		42(15.68)
	Total	268
EDUCATION		<u>Respondent(%)</u>
Elementary School		0(0.00)
Some High School		5(1.86)
High School Graduate or G.E.D		46(17.10)
High School Graduate with some Collage		64(23.80)
Technical, Bachelor’s Degree		95(35.32)
Masters, Ph.D. or Professional		59(21.92)
	Total	269
INCOME		<u>Respondent (%)</u>
Less than \$ 10,000		6(2.35)
\$ 10,000 - \$ 14,999		7(2.74)
\$ 15,000 - \$ 24,999		26(10.19)
\$ 25,000 - \$ 34,999		43(16.86)
\$ 35,000 - \$ 49,999		52(20.39)
\$ 50,000 - \$ 64,999		42(16.48)
\$ 65,000 - \$ 79,999		32(12.55)
\$ 80,000 or more		47(18.44)
	Total	255

Note : Totals do not add up to 275 due to missing data.

Table 2 Exploratory Factor Analysis and Coefficient Alpha

	Item-Total Score Correlation	Coefficient Alpha
<u>Factor 1 “Non-prescription Drug Consultation and Monitoring Activities” (3 items)</u>		
		0.8321
Gives advice on precautions to follow when using non-prescription or other self-care treatments.	0.6511	
Helps me select non-prescription or self-care treatment that meet my needs.	0.7044	
Gives advice on side effects and medication interactions with non-prescription or self-care treatment.	0.7204	
<u>Factor 2 “Prescription Drug Consultation and Monitoring Activities” (6 items)</u>		
		0.8842
Tells me what the prescription medicine is and what it is used for.	0.6264	
Tells me when and how to take my prescription medicine.	0.7268	
Tells me about side effects or precautions about my prescription.	0.7102	
Tells me of any dangers in taking prescription medicines together.	0.5097	
Puts extra labels on the container telling me about my prescription.	0.4118	
Checks my understanding of prescription dosage directions.	0.5284	
<u>Factor 3 “Medication Administration and Management Activities” (12 items)</u>		
		0.8845
Contacts my doctor if needed.	0.5627	
Marks refills on my prescription label.	0.4955	
Checks if the prescription strength and dose are correct for me.	0.6339	
Explains any prescription filling delays if they occur.	0.5677	
Gives an emergency supply of prescription medicine if needed.	0.4684	
Describes the effect I should expect from my prescription.	0.7166	
Explains what to do if I miss a dose.	0.7295	
Gives written information about my prescription.	0.5192	
Keeps a computerized record of my prescription and allergies.	0.5550	
Checks for medication interaction.	0.5794	
Answers my questions either in person or by phone.	0.5938	
Teaches me how to watch for side effects of my prescription	0.6235	

	Item-Total Score Correlation Alpha	Coefficient Alpha
Factor 4 “Educational and Informatic Activities” (8 items)		0.8920
Keeps a computerized record of illnesses I have.	0.6282	
Teaches me how to use special devices to administer my medicine.	0.6098	
Teaches me how to use equipment such as a glucose meter.	0.6898	
Gives my doctor(s) a list of medicines that I take.	0.6806	
Interviews me to record a prescription history and any medication allergies I have.	0.6371	
Helps me coordinate taking my prescription when I have more than one prescription medicine to take daily.	0.7365	
Gives advice on whether or not I should see a doctor rather than treat the problem with non-prescription or self-care treatments.	0.6893	
Keeps a computerized record of non-prescription and self-care treatment I use.	0.6727	

Table 3 Identified Dimensions of Pharmacist Service Activities

Dimension	No. of Attributes	Eigenvalue	% Variance Explained	Mean Importance Rating	S.D.	Coefficient Alpha
1.Non-prescription Drug Consultation.....	3	11.46	39.53	3.67	1.10	0.83
2.Prescription Drug Consultation.....	6	2.34	8.06	4.30	0.88	0.88
3.Medication Administration	12	1.78	6.13	4.20	0.88	0.88
4.Educational and Informatic Activities.....	8	1.23	4.22	3.39	1.12	0.89

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