SOLVING A MIXED PURCHASING PROCESS PROBLEM IN RETAIL MARKET: A PILOT STUDY IN TURKEY

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The details of mixed purchasing processes which consist of some of sales and marketing processes in a retail market are discussed in this pilot study. The purpose of this pilot study is to analyse purchasing AS-IS processes, to make benchmarking to the competitors for doing comparison, to determine criteria for alternative purchasing AS-IS processes, to develop TO-BE processes, to select the best suitable alternative by the help of BPR (Business Process Reengineering) Methodology, Decision Tree Analysis and Weighted Objective Method and finally, TO-BE processes of the Retail Market are mapped.

Keywords: benchmarking, Business Process Reengineering (BPR) Methodology, Decision Tree Analysis, Mixed Purchasing Process, Weighted Objective Method

Rješavanje problema mješovitog postupka nabave na tržištu na malo: ogledno istraživanje u Turskoj

Izvorni znanstveni članak

U ovom se oglednom istraživanju razmatraju detalji mješovitih postupaka nabave koji se sastoje od nekih od postupaka prodaje i marketinga tržišta na malo. Cilj je ovog istraživanja analizirati AS-IS postupke nabave, stvoriti konkurentima polazište u svrhu komparacije, odrediti kriterije za alternativne AS-IS postupke nabave, razviti TO-BE postupke, izabrati najprihvatljiviju alternativu pomoću BPR metodologije (Business Process Reengineering – redizajn poslovnog postupka), analize mogućih odluka (Decision Tree Analysis) i metode ponderiranog cilja (Weighted Objective Method) te su konačno razrađeni To-Be (oni koji će se primijeniti) postupci tržišta na malo.

Ključne riječi: analiza mogućih odluka, metoda ponderiranog cilja, metodologija redizajna poslovnog postupka, mješovitii postupak nabave, određivanje polazišta

1 Introduction

This pilot study starts with describing the system and the environment, and defines the problem in the retail market. Benchmarking is used to compare the competitors and to determine the solutions. While determining the alternatives, the advantages, disadvantages and risk factors are analysed. After that, the alternatives are evaluated by the help of Weighted Objective Method and Decision Tree Analysis. During this study, Business Process Reengineering (BPR) Methodology was followed.

To remain competitive many businesses in the 1990s have undertaken business process reengineering (BPR) projects reorganizing and restructuring their business operations [1]. This field research seeks empirically to explore the problems of implementing reengineering projects and how the severity of these problems relates to BPR project success [2].

First of all, the retail market's processes are analysed and according to the observations and analysis, it was stated that some retail markets have mixed purchasing processes which means purchasing processes include also some of the sales and marketing processes. This causes some problems between departments. The main aim for retail companies is to achieve customer's demand in a minimum lead time. However; this is not possible with these mixed processes.

The main aim of this pilot study is to redefine purchasing & sales processes and create marketing processes. BPR Methodology is selected for this aim in order to develop strategic purpose of the company, map AS-IS activity processes and analyse these AS-IS processes and develop and create TO-BE processes of the company.

The expectation of the company is to have clear and well-defined processes, to have stronger relationship between departments and to increase number of loyal customers. If the project becomes successful, promotion activities will be done more efficiently, customer satisfaction will increase, profit will increase and time consuming processes will decrease. According to these objectives, BPR (Business Process Reengineering) Methodology continues with Decision Tree Analysis and Weighted Objective Method that were used for selecting the best suitable alternative for retail market. Decision Tree Analysis helps decision makers to find the best alternative for solving the problem.

Some criteria are determined according to the meetings and negotiations with stores and purchasing managers of some retail companies. These criteria are cost, time, information and control, customer demand, profitability and product differentiation.

According to the benchmarking and criteria, two alternatives are developed for solving the problem. These alternatives are Alternative 1 (Develop Marketing Department and Redesign Sales and Purchasing Department) and Alternative 2 (Sales Department under Marketing Department and Purchasing Department). In the first alternative, the main aspect is to do Marketing, Purchasing and Sales departments to be the main departments. When these departments are separated, they have more efficient relations, clearer job definition and they work collaboratively. In the second alternative, Marketing and Purchasing departments will be main departments. Sales will be a sub department of Marketing Department.

For evaluation of both criteria and alternatives, the weighted objective method and decision tree analysis are used. By the help of weighted objective method, the most

important criterion is found and by the help of decision tree analysis, the best suitable alternative is found.

This paper is divided into six sections. The next section explains the literature review. The 3rd section explains materials and methods which are mainly BPR, Weighted Objective Method and Decision Tree Analysis. The results of these methods are explained in Section 4. The conclusions are provided in Section 5. Finally, the future study is mentioned in the last section.

2 Literature review

The concepts of reengineering traces its root back to management theories developed as early as the 19th century [3]. During the early 1990s, BPR was consistently ranked as the most important issue for chief information officers (CIOs) because of the opportunities it was believed to create for businesses [4]. Business process reengineering (BPR) is the redesign of processes, typically using information technology (IT), in order to gain significant improvements in key areas of performance such as service, quality, cost and speed [5]. Business processes may deal with customers, business partners, internal departments and suppliers across the entire company [6].

Business Reengineering Implementation can be characterized as the implementation of deliberate and fundamental change in business processes to achieve breakthrough improvements in performance [7].

The broad organizational focus and deliberate nature of BPR suggest a planned change in which a successful BPR project requires preparation and deliberate action, support from management, technical competence, and mitigation of resistance to the change [2].

Business process can be defined as a set of logically refined tasks performed to achieve defined business actions [8]. Business process reengineering (BPR) does not appear to qualify as a scientific theory because among other things, it is not duplicable and it is limited in scope [9]. BPR initiatives usually aim to integrate separate functional tasks into complete cross-functional processes [5]. An enterprise not only faces challenges in external global competitions but also faces root challenges of internal business process [10].

Thus, BPR can be compared relative to past administrative and technical organizational implementtations however, is there unlimited control over organizational and technological consequences [2].

Through implementation, this planned *organizational imperative* may yield to a more emergent perspective involving complex indeterminate interactions among people, technology, and the need for change [11]. Research shows that implementation problems are in fact multidimensional, involving elements of both planned and emergent change [2].

3 Method
3.1 Participants

Data were collected from 8 Sales & Purchasing Managers of the retail markets. There were two types of surveys. The first one was applied to determine the criteria that will be important for improving the processes. The second was applied to determine alternatives of mixed purchasing processes. Both of the surveys consist of open-ended questions.

3.2 Business Process Reengineering (BPR) methodology

The aim of this study is to define the most optimal and proper process with using BPR. Business Process Reengineering is one of the more popular methodologies used to redesign existing applications [12].
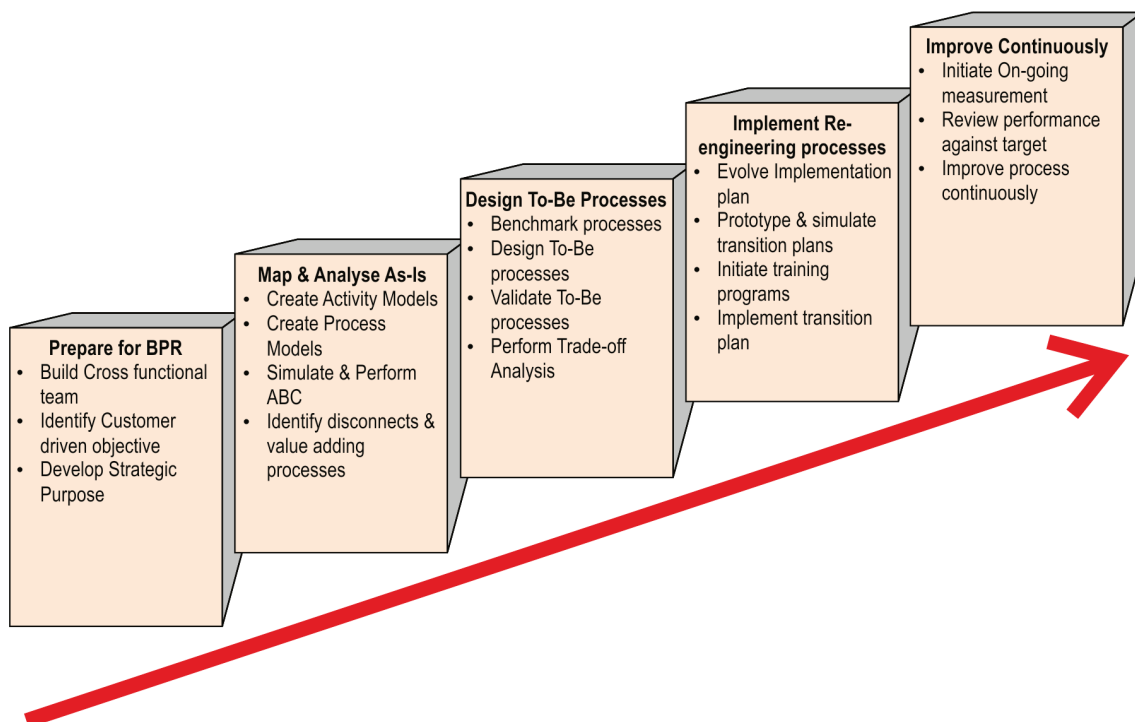

Figure 1 Methodology of BPR

Reengineering is the fundamental rethinking and radical redesign of the process to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed [13]. Another formal definition of BPR is a requirement to study fundamental business processes, independent of organization units and information systems support, to determine if the underlying business process can be significantly streamlined and improved [12].

A Consolidated methodology has been developed from the five methodologies previously presented and an IDEFO model was developed to provide a structural approach and to facilitate understanding [14]. These five methodologies are:
1) Prepare for the BPR
2) Map and Analyse As-Is Process
3) Design To-Be Processes
4) Implement Reengineered processes
5) Improve Continuously.

This methodology is shown in Fig. 1.

By the help of BPR Methodology, the AS-IS processes are mapped, analysed and defined. There are 11 main processes in purchasing. These are determination of suppliers, contract with supplier, negotiation with suppliers, giving order, receiving goods, pricing, promotion, waste & destroy goods, distribution, visual presentation & sales and feedback. Before designing TO-BE processes, the alternative processes are generated according to symptoms, mission and strategy for improving competitiveness of the company. These possible alternatives must be easily understandable, pure and applicable for reorganizing company's organization structure and business processes. Two alternatives are designed for solving the problem. The first alternative is Develop Marketing Department and Redesign Sales and Purchasing Department. The second alternative is Sales Department under Marketing Department and Purchasing Department. These alternatives are developed according to the company's aim and strategy. These alternatives are analysed and the best alternative is selected by using Decision Tree Analysis and Weighted Objective Method.

3.3 Weighted Objective Method

According to the investigations and survey results the important criteria are determined. These criteria are Cost, Time, Profitability, Information & Control, Product Differentiation and Customer Demand. These criteria are analysed by the help of survey result and according to the survey result; these criteria are sorted by the help of weighted Objective Method. According to the weighted objectives, the highest and the most important criterion is determined as profitability. The weighted objectives of these criteria are shown in Tab. 1.

Table 1 Weighted objective of criteria

Criteria	Weighted objectives
Cost	0,20
Time	0,14
Customer Demand	0,17
Profitability	0,25
Information & Control	0,12
Product Differentiation	0,12
	1,00

These objectives are determined according to these steps:

1ˢᵗ step: A set of questionnaire is applied to the sales & purchasing managers and they are asked to sort the criteria from 1 to 6 according to the importance;

2ⁿᵈ step: According to the survey results, each criterion according to each participant is collected by the help of Weighted Objective Method;

3ʳᵈ step: Weighted Averages are found according to the total of each criterion;

4ᵗʰ step: The highest criterion is found.

3.4 Decision Tree Analysis

Decision Tree Analysis is a formal, structured approach which eases the knowledge-acquisition for decision making [15]. Decision trees help decompose a complex problem into smaller, more manageable undertakings which allow the decision makers, in our specific case the information analysts, to make smaller determinations along the way to achieve optimal overall decisions [16].

According to the criteria, the alternatives are developed for solving the mixed purchasing processes. Two alternatives are determined as Alternative 1 (Develop Marketing Department and Redesign Sales and Purchasing Department) or Alternative 2 (Sales Department under Marketing Department and Purchasing Department). These alternatives are analysed and asked of the participant. Participant answered the open-ended question survey to determine which alternative was better. In this survey, participant sorted the criteria from 1 to 100 according to the alternatives. The average of each criterion was calculated. The expected Monetary Value of each alternative was found, the formula is shown in Fig. 2.

$$EMV(A_{2i}) = \sum_{i=1}^{6} \left(W_1 * A_{21} + W_2 * A_{22} + W_3 * A_{23} + W_4 * A_{24} + W_5 * A_{25} + W_6 * A_{26} \right)$$

Figure 2 The equation of Expected Monetary Value (from i = 1 to 6)

$$A_{ij} = \sum \left(W_i * A_{ij} \right)$$

Figure 3 The equation of Expected Monetary Value for Alternative 1 (from j = 1 to 6)
(i = number of alternative, j = number of criteria)

$$EMV(A_{1i}) = \sum_{i=1}^{6} \left(W_1 * A_{11} + W_2 * A_{12} + W_3 * A_{13} + W_4 * A_{14} + W_5 * A_{15} + W_6 * A_{16} \right)$$

Figure 4 The equation of Expected Monetary for Alternative 2 (from $i = 1$ to 6)

The expected Monetary Value (*EMV*) for Alternative 1 is calculated by the help of the formula that is given in Fig. 3.

The expected Monetary Value (*EMV*) for Alternative 2 is calculated by the help of the formula that is given in Fig. 4.

Total Monetary Expected Value is thus found and these results are shown in Decision Tree (Fig. 5). In this figure, the criteria are shown as A, B, C, D, E, and F. A indicates "Cost", B indicates "Time", C indicates "Customer demand", D indicates "Profitability", E indicates "Information Control" and F indicates "Product Differentiation".

Figure 5 Decision tree analysis of each alternative

4 Result

According to the Weighted Objective Method and Decision Tree Analysis, the most important criterion is profitability (25 %) and the best suitable alternative is selected as Alternative 1 (Develop Marketing Department and Redesign Sales and Purchasing Department) with the highest *EMV* = 74,13 (Fig. 5).

According to the Alternative 1, benchmarking and market research of retail companies, the processes are divided into three categories which are purchasing processes, marketing processes and sales processes. Purchasing processes become: Demand gathering, Determination of suppliers, Contract with suppliers, Giving order, Pricing, Receiving goods, Purchasing product recording and distribution. Marketing processes become a cycle which consists of Public Relations (PR), Customer Relationship Management (CRM), Event Management, Market Research and Budget Management. Sales processes analyse the previous year sales report, executive sales strategy for the New Year, assign sales budget in a direction of determining target, research and evaluation for using of external resource, visual presentation and sales.

5 Conclusion

In this pilot study, a real retail company's problem is solved by the help of some techniques. First of all, the general work processes of retail companies are reviewed.

The symptoms are analysed and the problem is observed that some companies have mixed purchasing processes.

It has been observed that companies have inadequate and uncontrolled business processes. According to the BPR Methodology, the AS-IS business processes are mapped, analysed with the competitors and some alternatives are developed for the problem. These alternatives are compared and most suitable business processes are chosen by the help of decision tree analysis. In addition, the findings of this study indicated that retail companies should have smooth business processes to become successful.
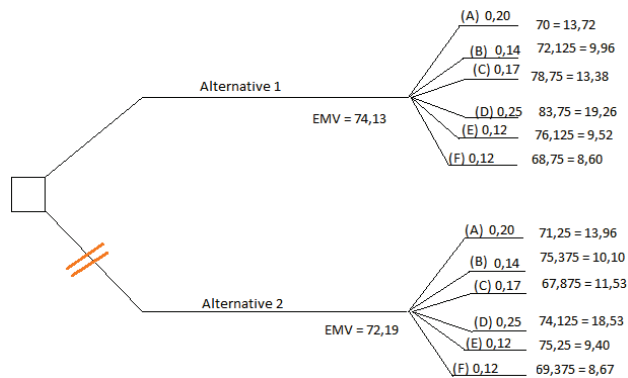
6 Future study

After the best alternative processes become ready to use for the company, the expectations of the company which are clear and well-defined processes, to have stronger relationship between departments and to increase number of loyal customers will be tested whether they become real or not. And also the profit mobility will be analysed. For these purposes, the Multi Criteria Decision Making Technique is selected.

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