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Planning a Reader-oriented Strategy for a Publishing Company: A Case Study[†]

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ABSTRACT

Scientific research in the sector of press readability and specifically magazines is not particularly extensive. This paper suggests a framework for the development of strategic decisions based on reader satisfaction measurements. The methodology is illustrated through a real-world application, i.e. customer-oriented strategy planning for the leading monthly IT magazine in Greece. This study implements the MUSA (Multicriteria Satisfaction Analysis) method to evaluate reader satisfaction, in order to support the editor in making decisions while planning his editorial strategy. Reader satisfaction was analysed based on a tree containing seven main criteria and 32 sub-criteria. Readers proved to be very satisfied and non-demanding, which results in narrower margins for efficient improvement suggestions. However, the evaluation of the MUSA results led to putting forward suggestions that could support the editor in making amendment decisions. Some of these suggestions were successfully implemented within the scope of a new strategy. This revealed the need for two separate editions, an IT magazine for pupils and students as well as an IT magazine focused on women. The decision maker received suggestions on what these new publications' features should be, deriving from the study's quantitative results. Copyright © 2007 John Wiley & Sons, Ltd.

KEY WORDS: reader satisfaction; quality management; MCDA

1. INTRODUCTION

In planning their strategies, with a view to support decision making, enterprises and organizations increasingly adopt customer-oriented decision-making methods. A customer-oriented firm commits to providing competitive products and services of exceptional quality. Its goal is to satisfy the customers' needs and desires, in a specific market sector. Such a firm analyses market characteristics in order to offer products that satisfy ascertained needs, considering its customers to be the final judges for its products.

Product quality constitutes a necessary but not sufficient condition for customers' satisfaction. Satisfaction constitutes a complex 'perception' of customers which is not directly available. Considerable effort is needed for its measurement, analysis and explanation. For this reason, custo-

mer's satisfaction measurement and analysis may contribute to strategy planning by delivering to the decision maker objective, measurable information regarding the market. This analysis can shape 'barometers' of satisfaction which at the same time (1) constitute indicators for the output of the firm; (2) contribute to the improvement of the firm; (3) point out market opportunities; and (4) shape a different perception of satisfaction, globally. Other advantages that arise from the satisfaction measurement are: the explicit determination of improvement actions; the bidirectional communication with customers, personnel, shareholders, etc.; the determination of advantages and disadvantages for the firm; and the increase in productivity (see, for instance, Engel *et al.*, 1978; Yi, 1991; Dutka, 1995; Naumann and Giel, 1995; Vavra, 1997). Strategies based on customer satisfaction could be characterized as 'therapeutic', since they try to correct undesirable conditions that have already occurred.

Scientific research in the sector of press readability and specifically magazines is not particularly extensive. However, all relative research indicates that reader satisfaction is a complex, multi-variable experience, which constitutes the

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resultant of a rich bunch of distinguishable dimensions. Research that was held in 2001 in the USA with the support of the Newspaper Association of America and the American Society of Newspaper Editors indicated the existence of four 'cornerstones' of reader satisfaction: 'content', 'brand', 'service excellence' and 'constructive culture'. Research in 100 USA magazines attributed a classification of 39 dimensions of reader satisfaction (Calder *et al.*, 2003). Magazine use was found to influence 39 'experiences' that readers think and feel when they read the magazine. Some of those are 'suspensive factors' for magazine's reading and purchase, while the rest are 'motivational factors'. The first five 'motivational' experiences were: 'I get value for my time and money', 'It makes me smarter', 'It's my personal timeout', 'I often reflect on it' and 'The stories absorb me'. Overall reader satisfaction drivers for content area 'Science, technology and environment' were 'increased quantity', 'international focus', 'length/complexity', 'feature-style stories' and 'more, bigger photographs'.

In this paper, we propose a framework for the development of strategic decisions based on reader satisfaction measurements. Reader-oriented decision support for the editor is a practice adopted by press firms in an accelerated pace, making the reader's needs and expectations an integral, fundamentally important part of the firm.

This methodology is illustrated through a real-world application regarding the planning of a customer-oriented strategy using multicriteria analysis of reader satisfaction for RAM, the leading IT monthly magazine in Greece. RAM's first issue was circulated in 1988. RAM extracted fast the first rank in circulation, with a significant range from the second magazine onwards, among all rival publications. It has kept up this leading role in its entire 'circle' as product. RAM circulation in Greece, in the month our research was conducted (May 2005), was 45 000 copies. The conduct of a reader-oriented research was judged as particularly useful for the magazine at that particular time, because of the competition's increasing intensity.

The paper is organized as follows: Section 2 describes the publishing company's existing strategy. Section 3 presents the objectives and criteria of readers' satisfaction, the applied methodology for customer satisfaction evaluation (MUSA, Multicriteria Satisfaction Analysis system) and

the basic results. Section 4 outlines some propositions for decision support regarding the development of new publishing strategies. Finally, Section 5 winds up the results and offers proposals for future research.

2. DESCRIPTION OF A PUBLISHING COMPANY STRATEGY

In order to detect RAM's existing editorial strategy, we interviewed the magazine's managerial executives. These are the people who suggested the magazine's publication and led it through import in the market (introduction stage), growth stage and maturity stage.

For the operation of RAM, the concept 'following the trend' was adopted. The waves of personal computer (PC) distribution as a mass mean of work, entertainment and learning were followed with intelligent, long-term acts, instead of mechanical reactions and opportunistic tactics. In this way, the various waves of information technology (IT) could be exploited while the wave was on the rise. This led to securing a new, bigger cliental base which could maintain its size even when the wave appeared to fade. RAM, as a product, is shaped so as to get into the hands of a lot of people because of the trend but later on remain in those hands because of its real value. The objective of RAM is to create a hyper-product that can stay in the hands of as many readers as possible for the maximum amount of time because of its value.

The magazine's operation is characterized by moderate economic risk. This choice results from the acknowledgement that the timing and the impact of new IT trends cannot be known beforehand—hence, continuous vigilance and quantity survey are required for maximization of results, exploitation of opportunities and avoidance of loss. At the same time, the magazine's operation is the result of a beam of factors. These include: the productive capacity; a reliable and efficient distribution network; a mechanism that can detect and implement the long-term strategy; as well as the economies of scale that can be provided by the largest press organization in Greece.

The growth principles that are adopted by RAM aim at circulation growth, revenue increase and, finally, participation in value maximization for the stakeholders. The adopted strategy includes two

1 stages, analysis and synthesis. At the analysis
 3 stage, a favourable economic situation is realized
 5 because of (a) the perennial market for hi-end
 7 products, (b) the creation of a market for 500-euro
 9 desktop PCs and 600-euro laptops, (c) the creation
 11 of a new market for digital photography, (d) the
 13 strengthened interest for IT applications in the
 15 small to medium-sized firms, (e) an interest in
 17 children IT specialized applications and (f) an
 19 interest for IT introductory books. The synthesis
 21 stage comprises the product invigoration and
 23 expansion and afterwards its strong promotion.

15 3. MEASURING READER'S SATISFACTION

17 **3.1. Objectives and criteria of reader's satisfaction**
 19 The planning of the reader satisfaction research
 21 constitutes one of the basic stages for the develop-
 23 ment of a satisfaction measurement system. The
 25 process of planning the satisfaction research is
 27 composed of six basic steps (Kessler, 1996). These
 29 include the determination of the research objec-
 31 tives, the satisfaction dimensions and their hier-
 33 archical structure, the measurement process, the
 35 choice of the sample and of the research process,
 37 the questionnaire formation and, finally, the
 39 questionnaire proof.

31 The goal of this study was to measure, track and
 33 analyse RAM reader's satisfaction and demand
 35 with regard to the satisfaction dimensions. Steps
 37 include checking for the existence of special
 39 demand profiles in segments of the population
 (namely students, women and readers with high/
 low income), and finally formulation of specific
 suggestions to the publisher, originating exclu-
 41 sively from this research's quantitative, measur-
 43 able results, for utilization in his strategic
 45 planning.

41 Attention was paid to the satisfaction criteria, as
 43 well as their hierarchical structure. According to
 45 Keeney (1992), this structure should be 'essential',
 'controllable', 'complete', 'measurable',
 'operational', 'decomposable', 'non-redundant',
 'concise' and 'understandable'. Following Dutka
 47 (1995), as criteria of customer satisfaction are
 49 pointed out, the characteristics of output are
 51 related with: the product (price-quality corre-
 53 lation, product quality, product advantages, product
 characteristics, product design, product reliability,
 variety of products or services); the service
 (guarantee, delivery, complaints' management,
 problems resolution); and the market (complexity,

1 communication, acquisition facilitation, fame of
 3 company and sufficiency of company).

3.2. Research methodology

5 *3.2.1. Planning of the research.* Research planning
 7 was based on the following four basic steps, which
 9 were designed and implemented successively (Gri-
 goroudis and Siskos, 2002).

- 11 (1) *Preliminary stage:* This first stage included
 13 identification and definition of the need for
 15 the development of a reader-oriented strat-
 17 egy, followed by a preliminary analysis of
 19 readers' behaviour and needs.
- 21 (2) *Development of a questionnaire and gallop poll:*
 23 In this stage, the research pattern was
 25 determined, the coding of the necessary
 27 information into questions was prepared and
 29 the carrying out of the research took place.
- 31 (3) *Analysis:* The third stage included data
 33 processing, using MUSA methodology.
- 35 (4) *Results:* During this last stage, the results
 37 from the processing of the questionnaires
 39 were estimated and evaluated.

3.2.2. *Definition of satisfaction criteria.* Satisfac-
 tion dimensions for the reader of RAM were
 specified taking into account (a) the relevant
 international literature (Calder *et al.*, 2003;
 Calder and Malhouse, 2004; Carlson, 1985;
 Katcher, 1995; Nesbitt *et al.*, 2002; Various,
 2001, 2002, 2003) and (b) the viewpoints of the
 magazines' executives, collected and ascertained
 through interviews. Thus, satisfaction dimensions
 for the reader of RAM (in total seven criteria and
 32 sub-criteria) were determined according to
 Figure 1. The criteria reflect the following in
 more detail:

- 41 (1) *Culture:* It refers to the magazine's objectiv-
 43 ity, its publishing independence, its response
 45 to the reader's needs and expectations, the
 47 variety and range in content coverage, the
 49 effectiveness in the management of change
 51 and the degree of participation notion
 53 cultivation.
- 55 (2) *Content:* It concerns the magazine's editorial
 57 content disaggregated into editorials, science
 59 and technology columns, news reports, user
 61 guides, comparative tests, market guide,
 63 IT introductory books, special supple-
 65 ments (IT for kids, digital photography, IT
 67 for SME, games and gadgets), CD-ROM

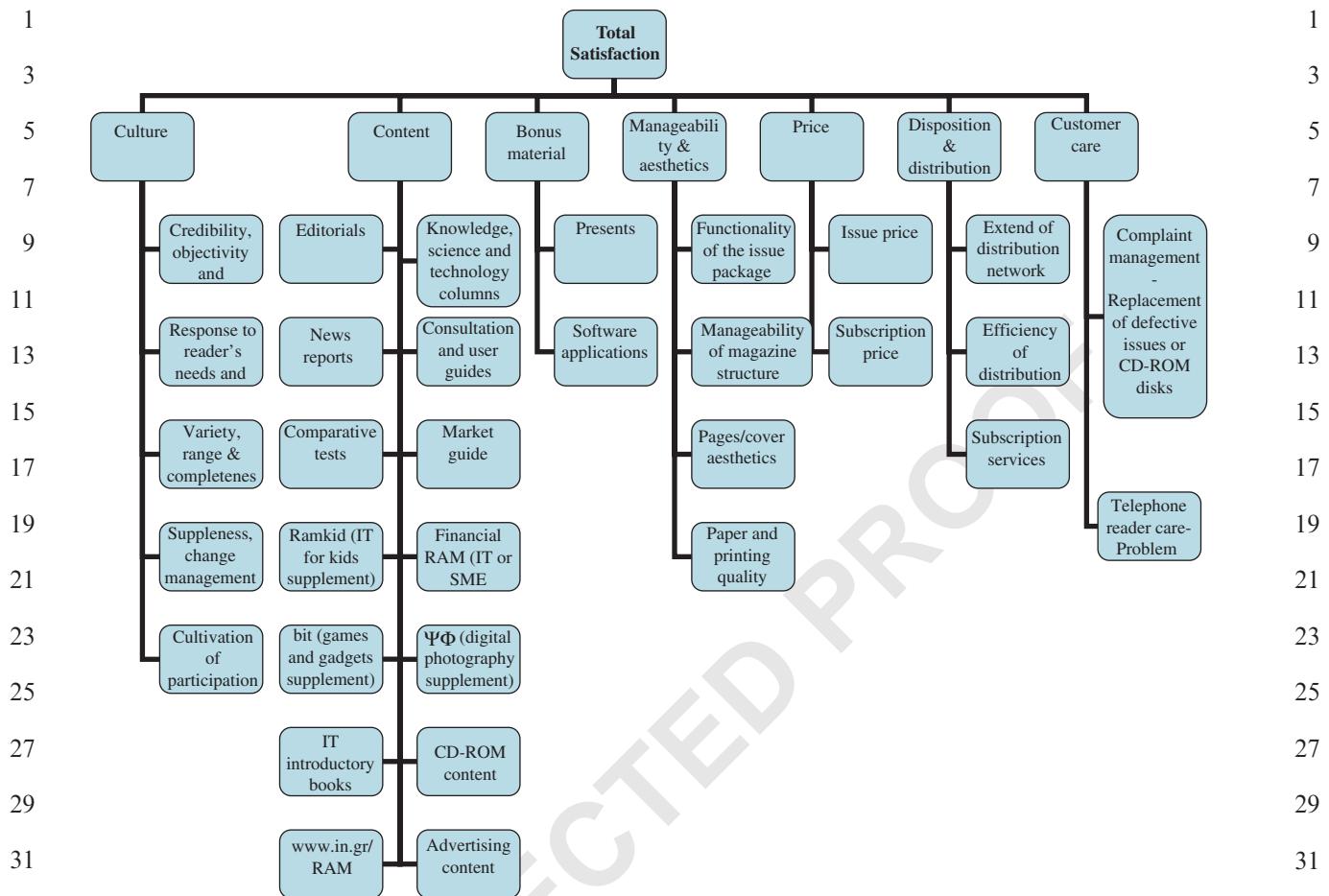


Figure 1. RAM reader satisfaction criteria and sub-criteria tree.

content, internet content and advertising content.

- (3) *Bonus material*: It comprises occasional presents (such as books and movies), and free software applications.
- (4) *Manageability and aesthetics*: This criterion refers to the functionality of the magazine issue as a 'package', the manageability of its structure, the aesthetics of pages layout and cover, and also the quality of printing and paper used.
- (5) *Price*: It refers to the reader's satisfaction from issue price and subscription price.
- (6) *Disposition and distribution*: It concerns the extent of the distribution network (area coverage), the efficiency of this network and also the satisfaction from the subscription services.

(7) *Customer care:* It refers to the reader's satisfaction regarding complaint management, replacement of defective magazine issues or CD-ROM disks, and also telephone reader care/problem-solving services.

3.2.3. Development of the questionnaire. A four-page detailed questionnaire was developed, based on the above-mentioned satisfaction dimensions. It included the following three parts:

- (1) Instructions.
- (2) *Personal data*: This section includes questions regarding readers' demographic and personal data such as birth date, sex, marital status, education, income, and home address which are imperative for segmentation reasons (Dutka, 1995; Naumann and Giel, 1995; Vavra, 1997).

1 (3) *Questions concerning satisfaction:* This is
 3 the questionnaire's main part, comprising
 5 questions related to the degree of the
 7 reader's satisfaction from each criterion
 9 and sub-criterion. More precisely, for the
 11 questions aimed at the readers' satisfaction
 13 evaluation for each and every criterion,
 15 and sub-criterion a 5-point ordinal (qualita-
 17 tive) scale was used comprising the gradations:
 19 'Dissatisfied', 'Rather dissatisfied', 'Neither
 satisfied nor dissatisfied', 'Rather
 satisfied', 'Satisfied'. This same scale was
 used for the measurement of 'global satisfac-
 tion' from the magazine as a whole, which
 comprises a key issue for the MUSA method
 evaluation). Graphics representing feelings
 and opinions (☺ ☻ ☻) were used as an
 additional guide, in order to facilitate the
 questionnaire filling.

21 Sample questionnaire questions:

23 (a) Regarding the criterion 'Bonus Material' with
 25 sub-criteria 'Presents' and 'Free software
 applications'

27 Q. How satisfied are you from 'Bonus Material' in
 total?

29 Possible answers (choose one from): 'Dissatisfied',
 'Rather dissatisfied', 'Neither satisfied nor dis-
 satisfied', 'Rather satisfied', 'Satisfied'

31 Q. How satisfied are you from 'Presents'?

33 Possible answers (choose one from): 'Dissatisfied',
 'Rather dissatisfied', 'Neither satisfied nor dis-
 satisfied', 'Rather satisfied', 'Satisfied'

35 Q. How satisfied are you from 'Free software
 applications'?

37 Possible answers (choose one from): 'Dissatisfied',
 'Rather dissatisfied', 'Neither satisfied nor dis-
 satisfied', 'Rather satisfied', 'Satisfied'

39 (b) General final question regarding global (over-
 all) satisfaction from RAM

41 Q. Taking into account all of the above, how
 satisfied are you from 'RAM' in total?

43 Possible answers (choose one from): 'Dissatisfied',
 'Rather dissatisfied', 'Neither satisfied nor dis-
 satisfied', 'Rather satisfied', 'Satisfied'

49 3.2.4. *Implementation of the research.* Prior to the
 51 questionnaire distribution, a trial was carried out
 53 in a sample of 20 readers. Corrections were carried
 out based on the observations. Those included a
 differentiation in the wording of certain questions

to become clearer, and to avoid errors and
 misapprehensions.

Finally, the questionnaire was distributed to
 RAM readers along with each copy of the May
 2005 issue (45 000 questionnaires). For readers'
 participation encouragement, the mailing of the
 answered questionnaire back to the magazine's
 offices was offered free of charge. Furthermore, 10
 annual subscriptions for RAM were offered as a
 present, drawn among the readers who would
 participate in the survey.

A total of 893 answered questionnaires were
 returned completely and consistently filled. A
 number of 24 questionnaires with missing values
 and/or inconsistent answers were disregarded.
 Observation of personal data affirmed that readers
 from a vast demographic spectrum (in terms of
 age, sex, income, education, home address, etc.)
 were well represented in this sample.

3.2.5. *Preliminary processes.* The collected ques-
 tionnaires were registered in an especially developed
 MS Access database. A validation check for typo
 mistakes was performed in a sample. The outcome
 showed a very low possibility of typing mistakes
 and it was decided not to perform further proofing.

3.3. The MUSA system

The collected data were analysed using MUSA
 methodology which was proposed by Grigoroudis
 and Siskos (2002). This methodology produces
 results that may be used directly for the formula-
 tion of specific proposals for the magazine's
 editorial policy regarding the planning of reader-
 focused strategy.

MUSA method is based on the multicriteria
 preference disaggregation philosophy that fully
 respects the qualitative form of customers' satis-
 faction data. Input data can be easily collected
 using a simple and short questionnaire. The basic
 principle of MUSA is the aggregation of indivi-
 dual judgements into a collective value function,
 assuming that customer's global satisfaction de-
 pends on a set of criteria representing service
 characteristic dimensions (Figure 1). The global
 satisfaction is denoted as a variable Y and the set
 of criteria is denoted as a vector
 $\mathbf{X} = (X_1, X_2, \dots, X_n)$.

The MUSA system uses a preference disaggre-
 gation model (Jacquet-Lagrèze and Siskos, 2001).
 In the traditional aggregation approach, the
 criteria aggregation model is known *a priori*, while
 the global preference is unknown. On the contrary,

the philosophy of disaggregation involves the inference of preference models from given global preferences.

This preference disaggregation methodology is implemented through an ordinal regression-based approach in the field of multicriteria analysis used for the assessment of a set of marginal satisfaction functions in such a manner, that the global satisfaction criterion comprised as much as possible customers' (in the case of this paper readers') judgements. Each customer is asked to express his/her own judgements, namely his/her global satisfaction (\bar{Y}) and his/her satisfaction with regard to a set of discrete criteria (\mathbf{X}). The problem is then approached as a problem of qualitative regression and solved via special linear programming formulations where the sum of deviations between global satisfaction evaluation explicitly expressed by customers and the estimated value function is minimized (see Appendix A).

The MUSA system is a survey-based software, which is able to provide complete and effective results to the user, through the evaluation of concrete and understandable indices of customer satisfaction (see also Grigoroudis and Siskos, 2003; Koilias, 2005; Siskos and Grigoroudis, 2002; Siskos *et al.*, 2000, for some real-world applications).

The determination of criteria weights is a typical issue of the multicriteria analysis that must be effectively confronted. In this study, the weight (importance) of every criterion and sub-criterion is provided directly as a result of the 'MUSA for Windows' software.

Through the 'MUSA for Windows' software application, the MUSA methodology also provides a series of normalized indices that may help in the in-depth analysis of the satisfaction measurement problem. These indices include (Grigoroudis and Siskos, 2002) the following:

- *Satisfaction indices*: These average indices show, in the range of 0–1, the level of customer global or criteria satisfaction; they may be considered as the basic average performance indicators (globally or per criteria) for the business organization.
- *Demanding indices*: They show in a range of –100% to 100%, the demanding level of customers globally and per specific criterion/ sub-criterion, according to the following:
 - demanding index 100%: extremely demanding customers
 - demanding index 0%: 'normal' customers

○ demanding index –100%: non-demanding customers

- *Improvement indices*: The average improvement indices are normalized in the interval [0, 1] and show the improvement margins on a specific criterion; the output of improvement efforts depends on the importance of the satisfaction dimensions and their contribution to dissatisfaction as well.

Moreover, in the context of the MUSA methodology and with the aid of 'MUSA for Windows' software, a series of additional diagrams may be developed, based on the aforementioned results.

- *Action diagrams*: These 'Performance/Importance' diagrams are developed through the combinations of criteria weights and satisfaction indices; they are similar to SWOT analysis and may represent the strong and the weak points of the business organization and indications regarding the satisfaction dimensions that should be improved.

- *Improvement diagrams*: Combining improvement and demanding indices, a series of improvement diagrams may be developed that may be used to rank improvement priorities; since the action diagrams can only indicate which satisfaction dimensions should be improved, these diagrams can determine the output or the extent of improvement efforts.

In this study, the collection of a large number of answered questionnaires (893) gave the opportunity of implementing MUSA in specific segments of the total population of RAM magazine readers for the production of conclusions useful in understanding the manner in which the satisfaction parameters of readers belonging to different segments are altered.

3.4. Basic results

Global satisfaction for the readers of RAM magazine was found to be 94.510% (Figure 2), while the demanding index was found to be –76.898%. These results denote 'very satisfied' and 'non-demanding' readers. All criteria weights and partial satisfaction indices are shown in Figures 2 and 3. Sub-criteria weights and partial satisfaction indices are summarized in Table I.

Moving on to conclusions and improvement suggestions to the editor, we note that there is a strong indication of leverage opportunity regard-

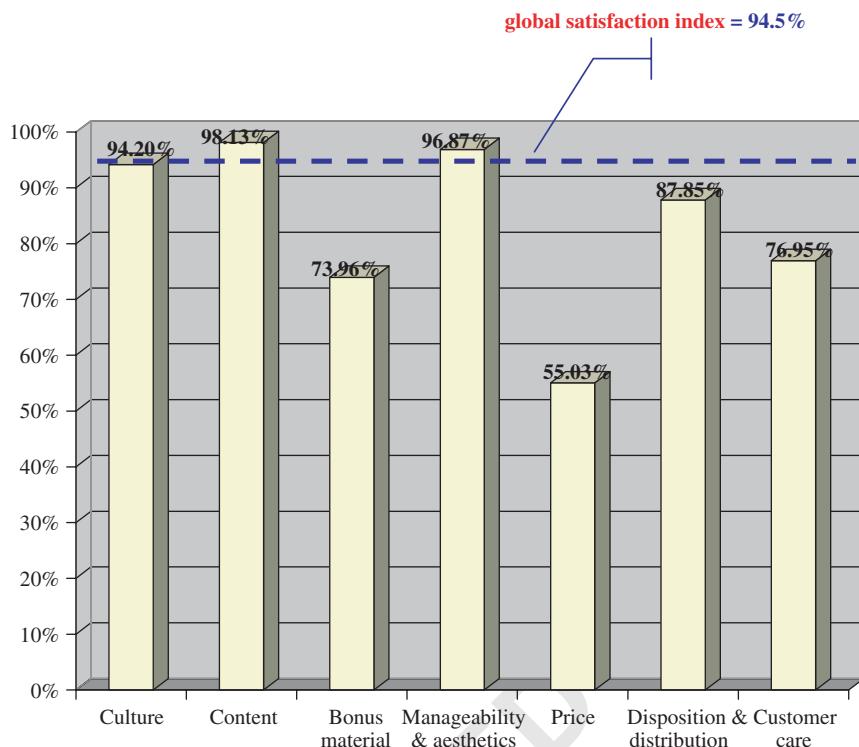


Figure 2. Average satisfaction indices per criterion (all readers).

ing criteria 'Content', 'Manageability and aesthetics', and 'Culture' as all three are found to be criteria of both high performance and high importance. There is action opportunity regarding 'Bonus material', 'Price' and 'Customer care' which are criteria of relatively high importance but with moderate performance. Resources should be transferred from 'Disposition and distribution' (criterion of high performance and low importance).

Regarding sub-criteria there were findings in the 'tree' of each and every criterion, with the most remarkable being those relating to 'Content'. Specifically, a leverage opportunity was denoted for 'News reports', 'Consultation and user guides' and 'IT introductory books'; action opportunity arises for the improvement firstly of the magazine's website ('www.in.gr/ram') and secondly for 'Comparative tests', 'Digital Photography' supplement, 'Knowledge, science and technology columns' and 'Editorials'. Resources should be transferred from the expensive 'ramkid (IT for kids)' supplement. Regarding sub-criteria of 'Bonus Material' there is leverage opportunity

for 'Presents', and resources should be transferred from 'Software applications'.

Another interesting finding has to do with 'Price', specifically with sub-criterion 'Issue price', which has a weight of 94.6% and satisfaction index of 85.8%. Therefore, the potentiality of funding a reader-oriented improvement of the magazine by a rise in price could be examined, since readers do not denote 'dissatisfied' with the current issue price (7.50).

Combining weights and satisfaction indices, a 'Performance/Importance' diagram was developed. This action diagram shows that there are no criteria located in the critical (bottom-right) quadrant (Figure 4). On the other hand, the improvement diagram indicates that the dimensions that should be improved at 1st priority are: Price, Bonus Material and Customer Care since these dimensions are highly effective and readers are not demanding (Figure 5).

Interpreting the results of this study, the editor of RAM did decide to proceed to a number of changes in the magazine's editorial strategy. These included the issue of a separate publication of

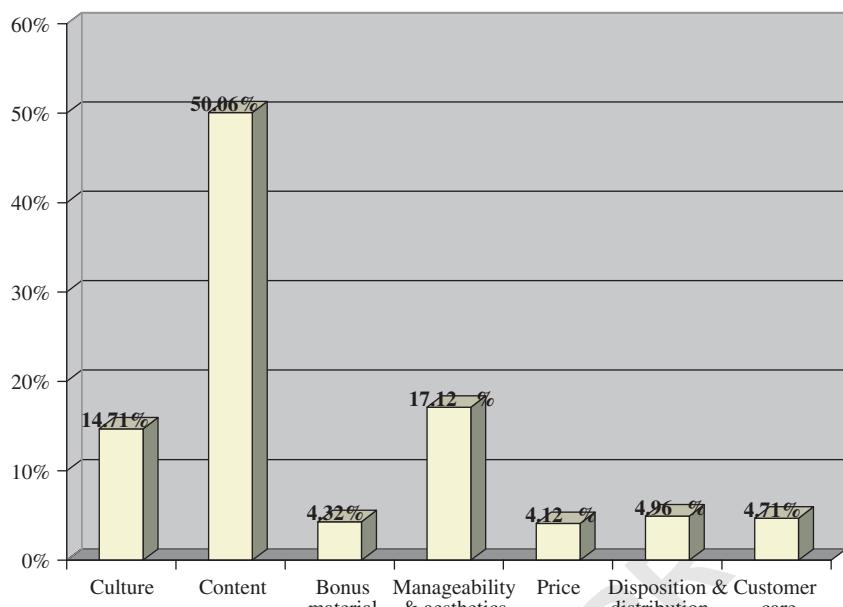


Figure 3. Weights of the criteria (all readers).

'ramkid' (for which our study suggests a 'transfer of resources'), specifically focused on kids, as well as the deletion of 'Financial RAM' supplement which, according to this study, has one of the smallest weights among the sub-criteria of 'Content' (4.50%) and also one of the most moderate partial satisfaction indices (70.70%). Resources that were spared were used to reinforce supplements 'Consultation and user guides' and 'IT introductory books', for which this study indicates, 'Leverage opportunity'.

The successful outcome of these changes (i.e. a boost of nearly 20% in circulation and the achievement of above average advertising profits in a time period of decline for other Greek IT magazines', both circulation and revenues) showed the credibility of this study.

4. DECISION SUPPORT FOR THE DEVELOPMENT OF NEW PUBLISHING STRATEGIES

4.1. Proposal of reader-oriented strategy for the segment 'Pupils & Students'

According to the demographics' findings of our survey, the participation of 'Pupils & Students' in the total population of RAM readers is rather small, equaling to a percentage of 18.25%. The

quite different values of criteria weights and partial satisfaction indices for this specific segment in comparison to the total (see Tables II and III) suggest that 'Pupils & Students' is a segment with characteristics that divert significantly from the rest of the population. It is obvious that a single strategy, which would satisfy both parties to a maximum degree, does not exist.

Therefore, we ascertain the existence of a market's need—which, of course, at the same time is an opportunity for the editor—for the separate edition of an IT magazine focused on pupils and students, in other words a 'RAM for students'. Pupils & students reflect, as leverage opportunity of RAM, the criterion 'Content' and would like 'RAM for students' to have the lowest possible price, well looked-after 'Editorials', 'Consultation and user guides' and 'Comparative tests'. For the implementation economy of this specific strategy, resources could be transferred from actions involved in 'Knowledge, science and technology columns', 'News reports', 'bit', 'Digital Photography' and 'IT introductory books'.

4.2. Proposal of reader-oriented strategy for the segment 'Women'

The participation of 'Women' in the total population of RAM readers is also small, equaling a percentage of 11.42%. The different set of criteria

Table I. Weights of sub-criteria and satisfaction per sub-criterion (all readers)

	Weight (%)	Satisfaction index (%)	Weight (%)	Satisfaction index (%)
<i>Culture</i>				
Credibility, objectivity and publishing independence	5.024	84.949	Bonus material	91.050
Response to reader's needs and expectations	20.200	95.329	Presents	95.054
Variety, range and completeness in content coverage	6.196	88.560	Software applications	8.950
Supplements, change management	64.213	97.778	<i>Manageability and aesthetics</i>	83.747
Cultivation of participation notion	4.368	67.819	Functionality of the issue package	92.301
			Manageability of magazine structure (contents-entities)	98.953
<i>Content</i>				
Editorials	5.104	85.433	Pages/cover aesthetics	81.917
Knowledge, science and technology columns	5.811	90.663	Paper and printing quality	5.254
News reports	25.617	97.037	Paper	91.442
Consultation and user guides	10.879	92.289	and printing quality	92.731
Comparative tests	6.335	88.898	<i>Price</i>	
Market guide	4.353	74.457	Issue price	94.596
Ramkid (IT for kids supplement)	4.468	80.335	Subscription price	5.404
Financial RAM (IT for SME supplement)	4.463	70.637	<i>Disposition and distribution</i>	
bit (games and gadgets supplement)	4.575	74.867	Extend of distribution network (area coverage)	98.904
$\Psi\Phi$ (digital photography supplement)	5.868	86.688	Efficiency of distribution network	80.025
IT introductory books	9.660	91.102	Subscription services	12.780
CD-ROM content	4.341	74.028	<i>Customer care</i>	7.195
www.in.gr/RAM	4.156	66.576	Complaint management—replacement of defective issues or CD-ROM disks	94.213
Advertising content	4.370	66.549	Telephone reader care—problem solving	85.816
				50.250
				93.508
				95.674

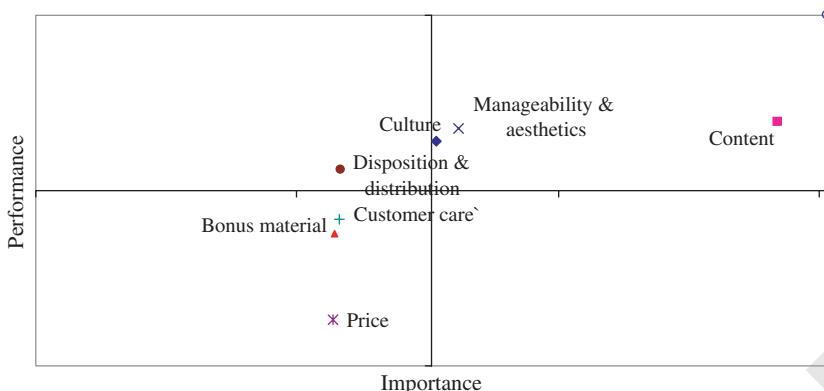


Figure 4. Action diagram.

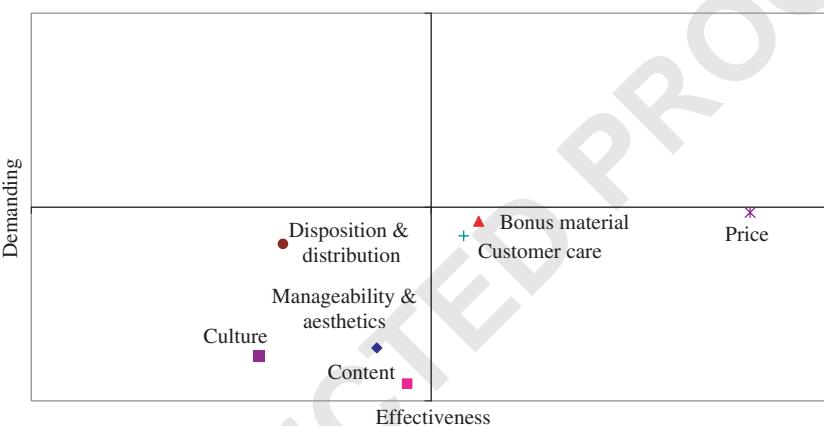


Figure 5. Improvement diagram.

Table II. Criteria weights and partial satisfaction indices for segment 'Pupils and Students'

	Criteria weights (%)	Partial satisfaction indices (%)
Culture	5.357	85.53
Content	52.295	98.651
Bonus material	4.339	74.546
Manageability and aesthetics	14.286	97.552
Price	4.08	47.695
Disposition and distribution	14.286	96.307
Customer care	5.357	80.834

weights and partial satisfaction indices for this specific segment in comparison to the total (see Tables IV and V) suggests that 'Women' is a segment with characteristics that divert significantly from

Table III. Comparison of 'content' sub-criteria weights: 'Pupils & Students' vs 'all readers'

	Weight (total) (%)	Weight (students) (%)
Editorials	5.10	41.44
Knowledge columns	5.80	4.77
News	25.60	4.62
User guides	10.90	5.25
Comparative tests	6.30	5.25
Market guide	4.40	4.16
Ramkid (IT for kids)	4.50	4.17
Financial RAM (IT for SME)	4.50	4.28
Bit (Games and gadgets)	4.60	4.42
Digital photography	5.90	4.62
Introductory books	9.70	4.39
CD-ROM content	4.30	4.21
www.in.gr/ram	4.20	4.08
Advertising content	4.40	4.35

1 Table IV. Criteria weights and partial satisfaction
2 indices for segment 'Women'

	Criteria weights (%)	Partial satisfaction indices (%)
Culture	50.69	98.49
Content	17.07	95.62
Bonus material	4.19	76.44
Manageability and aesthetics	14.33	96.55
Price	4.18	57.15
Disposition and distribution	4.77	88.33
Customer care	4.77	79.29

13 the rest of the population. A single strategy, which
15 would satisfy both parties to a maximum degree,
cannot be achieved.

17 Therefore, we ascertain the existence of a
19 market's need and an editor's opportunity for
21 the separate edition of an IT magazine focused on
23 women, a 'RAM for Women'. Women reflect, as
25 leverage opportunity of RAM, the criterion
27 'Culture' and secondarily 'Content' and
29 'Manageability and aesthetics'. They appear elastic
31 in terms of price. According to their preferences,
33 leverage opportunities of 'Content' are the sub-
35 criteria 'Editorials', 'News reports', 'CD-ROM
37 applications', 'IT introductory books' and
39 'Consultation and user guides'. For effective
41 financing of this separate edition, resources can
43 be transferred from 'Knowledge, science and
45 technology columns', 'Comparative tests' and
47 'Digital Photography'.

5. CONCLUSION

37 In the frame of the present study, the MUSA
39 method of multicriteria satisfactory analysis was
41 implemented for the satisfactory evaluation of
43 monthly IT magazine's RAM readers, aimed at
45 supporting the editor's decision making for his
47 editorial strategy planning. The relative satisfac-
49 tion dimensions were realized and they were
51 impressed in a tree of seven criteria and 32 sub-
53 criteria. Readers of RAM were found very
satisfied and non-demanding, a fact that narrows
the margins for efficient improvement suggestions.
Despite this, the evaluation of MUSA results
allowed proposals for the support of the editor in
amendment decision making. The adequacy of a
number of these proposals was practically verified,
after which a new strategy implementation was
based on them. In certain segments of the

1 Table V. Comparison of 'content' sub-criteria weights:
2 'Women' vs 'all readers'

	Weight (total) (%)	Weight (women) (%)
Editorials	5.10	22.97
Knowledge columns	5.80	5.11
News	25.60	9.64
User guides	10.90	7.14
Comparative tests	6.30	5.13
Market guide	4.40	4.71
Ramkid (IT for kids)	4.50	4.71
Financial RAM (IT for SME)	4.50	5.05
Bit (Games and gadgets)	4.60	4.71
Digital photography	5.90	4.71
Introductory books	9.70	7.78
CD-ROM content	4.30	9.64
www.in.gr/ram	4.20	4.36
Advertising content	4.40	4.35

19 population (RAM readers), opportunities were
21 ascertained for the separate edition of an IT
23 magazine focused on pupils and students, and
25 also for an IT magazine focused on women.
27 Suggestions were made to the decision maker for
the particular characteristics these new publica-
29 tions should have, in line with the quantitative
31 results of this study.

33 Concluding with proposals for future research
35 we would like to note that it would be interesting,
37 as much as scientifically rewarding, to develop an
39 implementation of MUSA for the quantification
41 of reader satisfaction in the total product mixture
43 of a large, vertically organized press organization.
45 This would include newspapers (morning, evening
47 and Sunday editions; classified ads), magazines
49 (weekly, monthly, men's, women's, special), new
51 media (on-line publications, internet portals), etc.
53 A departmental application of MUSA in a
segment of the Greek publishing sector would
also be interesting, i.e. a comparative reader
satisfaction study for all IT magazines or for all
Sunday newspapers.

APPENDIX A: BRIEF PRESENTATION OF THE MUSA METHOD

49 The preference disaggregation model MUSA
51 assesses global and partial satisfaction functions
53 Y^* and X_i^* , respectively, given customers' judge-
ments Y and X_i . Following the principles of
ordinal regression analysis under constraints using

linear programming techniques, the ordinal regression analysis equation is as follows:

$$\begin{aligned} \tilde{Y}^* &= \sum_{i=1}^n b_i X_i^* - \sigma^+ + \sigma^- \\ \sum_{i=1}^n b_i &= 1 \end{aligned} \quad (\text{A1})$$

where \tilde{Y}^* is the estimation of the global satisfaction function Y^* , X_i^* are the partial satisfaction functions, σ^+ and σ^- are the overestimation and the underestimation error, respectively, and b_i is the weight of the i th criterion (Figure A1).

It should be noted that Y^* and X_i^* are monotonic functions normalized between 0 and 100. Also, in order to reduce the number of mathematical constraints, the following transformation equations are used:

$$\begin{aligned} z_m &= y^{m+1} - y^m \quad \text{for } m = 1, 2, \dots, \alpha - 1 \\ w_{ik} &= b_i x_i^{*k+1} - b_i x_i^{*k} \quad \text{for } k = 1, 2, \dots, \alpha_i - 1 \\ \text{and } i &= 1, 2, \dots, n \end{aligned} \quad (\text{A2})$$

According to the aforementioned definitions and the assumptions, the basic estimation model can be written in a linear program formulation as follows:

$$[\min] F = \sum_{j=1}^M \sigma_j^+ + \sigma_j^-$$

under the constraint s

$$\sum_{i=1}^n \sum_{k=1}^{x_i^j-1} w_{ik} - \sum_{m=1}^{y^j-1} z_m - \sigma_j^+ + \sigma_j^- = 0$$

for $j = 1, 2, \dots, M$

$$\sum_{m=1}^{\alpha-1} z_m = 100$$

$$\sum_{i=1}^n \sum_{k=1}^{x_i^j-1} w_{ik} = 100$$

$$z_m \geq 0, w_{ik} \geq 0 \quad \forall m, i \text{ and } k$$

$$\sigma_j^+ \geq 0, \sigma_j^- \geq 0 \quad \text{for } j = 1, 2, \dots, M \quad (\text{A3})$$

where M is the number of customers, n is the number of criteria and x_i^j, y^j are the j th level on which variables X_i and Y are estimated.

The preference disaggregation methodology consists also of a post-optimality analysis stage in order to face the problem of model stability. The final solution is obtained by exploring the polyhedron of near optimal solutions, which is

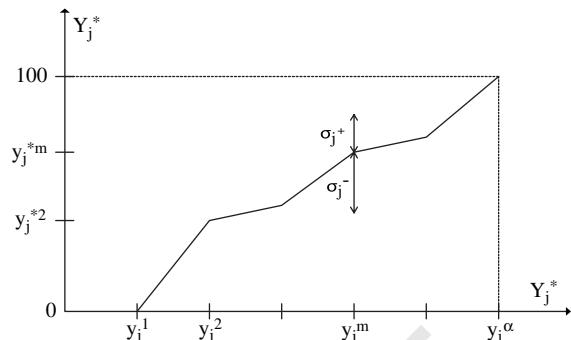


Figure A1. Satisfaction function and error variables for the j th customer.

generated by the constraints of the above linear program. This solution is calculated by n linear programs (equal to the number of criteria) of the following form:

$$[\max] F' = \sum_{k=1}^{\alpha_i-1} w_{ik} \quad \text{for } i = 1, 2, \dots, n$$

under the constraint s

$$F \leq F^* + \varepsilon$$

all the constraints of LP (3) (A4)

where ε is a small percentage of F^* . The average of the solutions given by the n LPs (4) may be taken as the final solution. In the case of non-stability this average solution is less representative.

The assessment of a performance norm may be very useful in customer satisfaction analysis. The average global and partial satisfaction indices are used for this purpose and can be assessed according to the following equations:

$$S = \sum_{m=1}^{\alpha} p^m y^{*m} \quad \text{and} \quad s_i = \sum_{k=1}^{\alpha_i} p_i^k x_i^{*k} \quad (\text{A5})$$

where S and s_i are the average global and partial satisfaction indices, and p^m and p_i^k are the frequencies of customers belonging to the y^m and x_i^k satisfaction level, respectively.

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