DOCUMENT RESUME

ED 474 555 IR 021 910

AUTHOR	Cap, Ihor
TITLE	Motivational Design Quality, Internal Benchmarking and Statistical Analysis of Corporate Information Materials: A Pilot Study.
PUB DATE	2002-10-00
NOTE	21p.; Paper presented at the Annual General Meeting of the American Society for Quality - Manitoba Section (Winnipeg, Manitoba, Canada, October 30, 2002).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Employers; Employment Services; Evaluation Methods; Foreign Countries; *Material Development; Mental Retardation; Nonprofit Organizations; *Printed Materials
IDENTIFIERS	Manitoba; Motivational Design

ABSTRACT

This paper reports on an exploratory pilot study at Network South Enterprises (NSE) (Manitoba), a non-profit, community-based organization with the purpose of providing employment services for adults with mental disabilities. The study used a focus group, an open-ended questionnaire, and a 36-item InfoMMS scale to determine the motivational appeal of NSE print materials and contents. Seven employers took part in the pre-benchmarking phase of the study to determine any difficulties with the current performance levels of NSE corporate information materials. Another seven employers were later used to determine the performance levels and the effects of newly developed treatment materials and contents. The study provided vital internal pre-benchmarking stage pretest data for: (1) estimating the reliability of the InfoMMS administration; (2) estimating the performance levels or usefulness of existing corporate materials; (3) clarifying design, development, and use of future corporate information materials and preferences; and (4) providing a ready bank of baseline control data against which future materials and associated benchmarking partner data can be compared. (MES)

MOTIVATIONAL DESIGN QUALITY, INTERNAL BENCHMARKING AND STATISTICAL ANALYSIS OF CORPORATE INFORMATION MATERIALS: A PILOT STUDY

By

Ihor Cap, Ph.D.

A Paper Presented at the Annual General Meeting of The American Society for Quality - Manitoba Section October 30, 2002, held at The Viscount Gort Hotel,Winnipeg, Manitoba, Canada

Ihor Cap is Program Development Coordinator with Manitoba Education, Training and Youth, Apprenticeship Branch. He holds an Education Specialist degree and Ph.D. in Comprehensive Vocational Education from the Florida State University and a Masters of Education in Instructional Technology from the University of Manitoba. He is a Member of the Ukrainian Academy of Arts and Sciences in Canada, and Chair of the American Society for Quality - Manitoba Section.

12 Wisconsin St.
Winnipeg, Manitoba
Canada R2M 4N7
ihorcap@hotmail.com

INTRODUCTION

When you choose to read a printed page, you think there is some intrinsic quality about it, and this conception of the "quality" is part of a motivational structure which establishes priorities about your reading experience. To ask what an individual wants to read is to a large extent to ask what this person wants to experience. When this journey must be planned, the effective designer asks what catches a reader's eye or what does a reader find useful, memorable and gratifying, for these are the essential features which nourish quality and give rise to a climate for reading.

Many businesses, corporate conglomerates, profit and non-profit organizations are just beginning to reflect a renewal of interest to examine or incorporate these motivational aspects in the process of designing their promotional material, and or parallel practice. They have a huge role to play in marketing themselves and their services to their stakeholders. They can be quite boisterous and quick about letting us know about what marketing media they use to dispense such information. Brochures, employer information packages, posters, newspaper ads, video commercials are not unusual, and more recently web sites among them are frequently used. They are a little quieter, however, when it comes to telling us about whether the contents of their messages actually have any appeal to their stakeholders. Not Network South Enterprises, Inc.(NSE). That's because NSE has been busily engaged in upgrading their marketing initiatives in the hopes of improving their services. They not only want employers to receive their messages, but also expect employers to perceive these messages as motivationally appealing. As such, this NSE Business Advisory Council volunteer research consultant was specifically charged to focus on improving what worked, and provide recommendations to rectify what didn't while ensuring that the needs of NSE are best being served.

NSE is a non-profit, community based organization begun in 1991. NSE is funded primarily through the generous support of Human Resources Development Canada and Manitoba Department of Family Services. It was founded with the principal purpose of providing employment services for adults with mental disabilities. Their mission, then, is to support adults with mental disabilities to work and participate in the community, where they are respected and rewarded for their efforts, skills and accomplishments. They do this by working cooperatively with employers throughout the city of Winnipeg who share the same vision. Together they are making significant inroads in achieving the mission. Over 600 disabled workers were placed to date. That's a tremendous achievement and commitment to action.

This exploratory pilot study was limited to using a focus group, an open-ended questionnaire and a 36-item InfoMMS scale. The latter scale attempts to document the motivational appeal of print reading materials and contents in an objective format so that the researcher is able to understand and interpret the employer's experience as accurately as possible. As such, seven employers took part in the prebenchmarking phase of this study to determine any difficulties with the current performance levels of NSE corporate information materials. Another seven employers were later used to determine the performance levels and the effects of newly developed treatment materials and contents. Purposive or judgmental sampling was employed because NSE Business Advisory Council members appealed to their own judgement and experience to select people for the sample who would best attend to the research questions of the study. Owing to these limitations, the results of this inquiry should

be used primarily to inform and stimulate future research. As indicated above, the study used a two foci approach to internal benchmarking and product improvement. Quantitative and qualitative. The former using objective instruments, and the latter employing an open-ended questionnaire, a focus (reference) group of employers and a Business Advisory Council from NSE to guide the design, development and evaluation decision-making process. The report is subdivided into the pre-benchmarking stage and benchmarking stage. An analysis and discussion of results, observations and concluding comments are provided.

PRE-BENCHMARKING STAGE

The Research Design

The prebenchmarking stage of research was conducted in March 23, 1999 using a small focus group of employers and a posttest only group design. This was required to set the stage for development. A Focus Group session was held to establish baseline measurement data of existing NSE corporate information materials and contents from an employer's perspective. The measurement data in this stage is called baseline because they show the employers' natural responses to existing NSE materials and contents without experimental manipulation. The Focus Group also responded to three open ended survey questions about the existing materials. What did they like best about the existing NSE Employer Information Package? What did they like least about it? What recommendations did they have for improvement? A face to face discussion followed immediately afterward, the results of which were tabulated in Table 4 of the Appendix. This researcher examined over 30 Corporate Information Brochures in the interim.

The benchmarking stage of research was conducted in November 29, 2000 using a small alternate group, a small experimental group and a posttest two-group crossover or counterbalanced design. In the counterbalanced design, two treatments (i.e., 2 newly designed brochures) were administered in November 29, 2000 to each employer. The order of treatments was varied across subjects to control possible confounding of treatment effects with order effects. That is, employers received treatments in either of the sequences X_1, X_2 or X_2, X_1 depending on what side of the table they sat on when they walked in to the boardroom. Each treatment was followed up with a means measurement of the study's dependent variable, the InfoMMS scale. Comparisons were then made on the effects of these two treatments using the March 23, 1999 baseline group data as the "control." The basic pattern of the counterbalanced design can be diagrammed as follows:

Period 1	X_1 Alternate Brochure	→	O	→	X_2 Experimental Brochure → O
Period 2	X_2 Experimental Brochure	→	O	→	X_1 Alternate Brochure → O

Where: X_1 = Alternate treatment brochure
X_2 = Experimental treatment brochure
O = means measurement or observation (posttest)

The two periods in this pilot test were the same lengths (of time). Thus, both treatments were administered in each time period rendering the comparisons between treatments free of

period effects. In other words, rotating the sequence in which different treatments were presented to subjects was done in an effort to control for extraneous carry-over variables, such as practice and fatigue effects. Relevant to the choice of design under discussion, Borg and Gall (1989) indicate the following advantages of employing counterbalanced experiments.

> The advantage of assigning subjects to several treatments is that the experiment can be done with fewer subjects. Thus, subject recruitment is easier, and financial expenses of conducting the experiment may be reduced. Another advantage is that the statistical analysis of the data is more sensitive because each subject is "matched" with himself across treatments. (p.709)

The Model

The study used the ARCS research-supported motivation model which considers four essential human characteristics and the motivational strategies associated with them (Keller, 1987a, 1987b). They include: (1) strategies that would mobilize and sustain the ATTENTION of your audience, (2) strategies that would facilitate RELEVANCE to their personal needs or goals, (3) strategies to assist CONFIDENCE, or the audience's expectancy for successful understanding of contents, and (4) SATISFACTION strategies linked to the process or outcomes of the experience.

Instrumentation

A posttest analysis was used to ascertain the perceptions of employers as to whether or not the contents presented in NSE's existing Employer's Information Package were motivationally appealing or useful. Evidence of usefulness was based upon participants' responses to the modified Instructional Materials Motivation Survey (Keller, 1990). The validity of this scale's four motivational components has been supported by concurrent validity and field testing of the ARCS model which defines each of these components (Keller, 1987a, p.2). Minor wording changes to this scale were completed by this researcher to facilitate interpretation of information contents rather than instructional contents. As such, the instrument, a 36-item questionnaire, surveyed four variable employer motivations (i.e., attention, relevance, confidence, and satisfaction) in relation to the information contents given. Overall reactions to the 36 statements on this questionnaire were rated on a Likert scale (1 or A=not true, 5 or E=very true). The scoring procedure was reversed for statements keyed in negatively. The reliabilities of the modified scale, hereafter referred to as the Information Materials Motivation Survey (InfoMMS), within the March 23, 1999 reference study sample showed good internal consistency. The revised InfoMMS Scale proved to be very sensitive. While reliability of one subclass scale (Confidence) was only moderately high, the remaining subclass scale reliabilities were high for the Attention and Relevance categories, and very high for the Satisfaction category. Evidently, the InfoMMS Scale gains in effectiveness by the inclusion of all its content areas (subscales). Reliabilities as measured by Cronbach's alpha coefficient are given in Table 1.

Pearson's Skewness (nonsymmetry) coefficient, given by SK=3(mean - median)/standard deviation, for the distribution of the InfoMMS scores was found to be .41.

This suggests that the attribute termed motivational appeal or usefulness of contents presented was symmetrically distributed and approaching normality within the March 23, 1999 baseline study sample. The fact that coefficient values must fall between -3 and 3, with a value of 0 yielding a perfectly symmetrical distribution undoubtedly encourages this finding (Freund & Williams, 1982, p.59). Accordingly, the tendency for InfoMMS raw scores to show a normal distribution adds considerably to any description or interpretation of study data. The attribute was considered a comprehensive or representative set of interrelated ideas pertaining to the four variable motivational categories within the InfoMMS instrument: Attention, Relevance, Confidence and Satisfaction.

Statistical Analysis

Descriptive statistics were used to determine central tendency. Missing data within a given dimension of the 36-item InfoMMS scale were replaced with the overall mean - i.e., the sample mean across all cases for a given scale item making up the scale. This was performed for 2 Attention subscale items (#17 and #22) in the Alternate Group for Case participant number 9 in the November 29, 2000 study results. Analysis of variance (ANOVA) was used to investigate the significance of motivational differences between treatment conditions that were being compared. The ANOVA replaced the t-test because "F and t are directly related and the analysis of variance is an extension of the test" (McCall, 1975, p.263) to accommodate two or more groups. The index Effect Size (ES), defined as "the mean difference between the treated and control subjects divided by the standard deviation of the control group," (Smith, Glass & Miller, 1980, p.68) was used to evaluate the magnitude of experimental and alternate group brochure effects against the reference (focus) study group (used here as the "control") in standard deviation units. The reference study group was convened at the pre-benchmarking stage session as part of the Focus Group in March 23, 1999 to establish measurement baseline data of existing NSE corporate information materials and contents in a format (i.e., Information Materials Motivation Survey and Open Ended Questionnaires) for ease of subsequent comparison at the benchmarking stage (i.e., November 29, 2000 treatment group effects determination and advanced analyses). ES outcomes and standards were already reviewed by Schermer (1988) and adopted by this researcher to facilitate consistency in the interpretation of outcomes. In quantitative terms, point size estimates of less than .2 were considered "small" effects, .5 as "medium" in size and higher than .5 as "large." With these benchmarks in mind, an estimate of the effect magnitude was calculated over the posttest InfoMMS measure. In general, the researcher set a hypothesis presented in null form based on standard educational research conventions. Namely, that there would be no motivational brochure appeal difference between the alternate brochure and experimental brochure employers. The reader should know that the researcher's preferred outcome was to show no motivational brochure appeal difference between alternate and experimental group employers since these were newly designed brochures. The intent was to obtain equal appeal between both groups of readers. The hypothesis would be rejected or not rejected according to a standard decision rule, as described by Brewer (1986, p.5-23).

If p is less than or equal to α, the H_0 is rejected

If p is greater than α, the H_0 is not rejected.

In this context, the probability value was increased to the .10 level of significance in order to reduce the chances of making a Type II error. Along with manual calculations, all data were analyzed using the Statistical Package for the Social Sciences version 8.

March 23, 1999 Small Focus (Reference) Group Study Results

The InfoMMS was used to establish reference or baseline group data and to ascertain the overall "usefulness" of contents presented or motivational appeal engendered by the existing NSE Employer Information Package as perceived by the employers. Descriptive statistics and overall reactions to the InfoMMS questionnaire are shown in Table 1 below.

Table 1 - Descriptive Baseline Statistics Relevant to March 23, 1999 Small Focus (Reference) Group Employer Session (N=7)

Variable	Possible Score	Mean Score/(%)	SD	Median	Mode	Mean Likert Rating	Cronbach's Alpha
InfoMMS	180	126 (70%)	22.16	123	120	3.5	0.9171
Attention	60	38.71 (65%)	7.70	38	28	3.2	0.7673
Relevance	45	29 (64%)	7.72	29	25	3.2	0.8368
Confidence	45	37.57 (84%)	4.47	40	41	4.2	0.6417
Satisfaction	30	20.86 (70%)	5.55	20	20	3.5	0.9199

Table 1 reveals that all of the components were at the moderate to high level in each motivational category. Together, the four motivational categories averaged 126 points (standard deviation = 22.16) for a moderate percentage performance of 70%. From the "sample percentage ± 2 Standard Errors " (Freedman, Pisani & Purves, 1978), we learn that the 95% confidence interval for this percentage ran from 66% to 74%. On this basis, there was no convincing evidence that the population percentage or percentage performance in other samples would exceed a high degree of acceptance or fall below a moderate level of acceptance should the same or similar NSE Employer Information materials continue to be used. Here, the "population percentage" means the percentage of all female or male employers between 20 to 59 years of age who prefer to read in English, have no disability themselves, may or may not have a family member with a disability and know someone with a disability.

The author labeled percentages between 0 and 50 as very low, 51 to 70 as low, 71 to 86 as high and above 86 as very high for the purposes of educational research. These short classifying phrases facilitated consistency in the interpretation of acceptance of brochure contents (i.e., direction and intensity of appeal) or percentage performances for the instrument used in this study.

BENCHMARKING STAGE

November 29, 2000 Small Alternate Group and Experimental Group Study Results

The InfoMMS was used to ascertain the overall "usefulness" of contents presented or motivational appeal engendered by the Alternate and Experimental Group Employer brochures. The InfoMMS scale surveyed four variable employer motivations (i.e., attention, relevance, confidence, and satisfaction) in relation to the contents given. Overall reactions to the four motivational categories contained within the InfoMMS questionnaire were rated on a Likert scale (1 or A=not true; 5 or E=very true). The resulting performance levels (i.e., uppercase or capitalized for Alternate Group and lowercase for Experimental Group) were compared in terms of the scale's four motivational components and portrayed on an inverted-U curve as Figure 1 below.

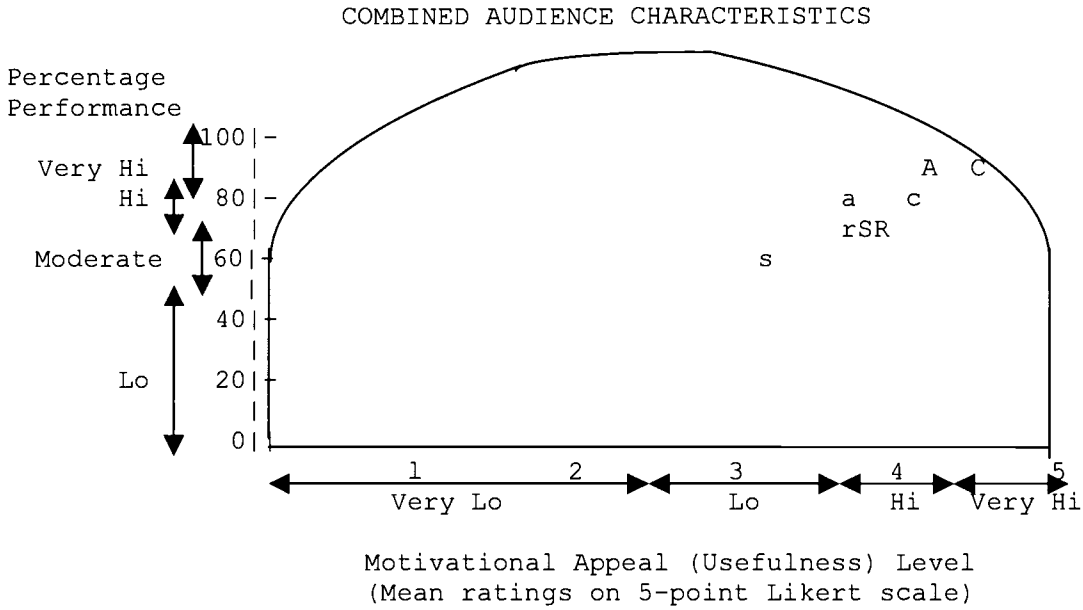

Figure 1. November 29, 2000 InfoMMS POSTTEST GRAPH SHOWING MOTIVATIONAL APPEAL OF ALTERNATE GROUP (N=7) AND EXPERIMENTAL GROUP (N=7) BROCHURE ACCEPTANCE LEVELS AS PERCEIVED BY EMPLOYERS

It reveals that the Alternate Group Employer brochure mobilised and sustained the Attention of employers to a high degree (of acceptance). The 49.9 average (or 4.2 Likert rating) along this dimension translated into a high percentage performance of 83%. The contents were Relevant to their personal needs or goals to a high degree to an established average of 34.1 points (3.8 Likert rating) or a percentage performance of 76%. Confidence, or the employers' expectancy for successful recall or understanding of contents averaged a very high 40.6 (4.5 Likert rating or 90%), and Satisfaction with the process or outcomes of the experience averaged a high 22 (3.7 Likert rating or 73%). It is of interest that all of the components were at high to very high levels in each motivational category. None of the employers were undermotivated in the process or as a result. Together, the four motivational categories averaged 146.57 points (standard deviation = 13.58) for a high percentage performance of 81%.

The Experimental Group Employer brochure mobilised and sustained the Attention of employers to a high degree (of acceptance). The 43.6 average (or 3.6 Likert rating) along this dimension translated into a percentage performance of 73%. The contents were Relevant to their personal needs or goals to a high degree to an established average of 33 points (3.7 Likert rating) or a percentage performance of 73% as well. Confidence, or the employers' expectancy for successful recall or understanding of contents averaged a high 36.6 (4.1 Likert rating or 81%), and Satisfaction with the process or outcomes of the experience resulted in a low performance averaging 18.4 points (3.1 Likert rating or 61%). Motivational performance levels ranged from low to high. Together, the four motivational categories averaged 131.57 points (standard deviation = 16.98) for a high percentage performance of 73%.

The overall Alternate Group InfoMMS sample mean 146.57 or overall sample percentage 81% estimates the average of a population, but to indicate the precision of this estimate this researcher gave a confidence interval. From Freedman, Pisani, & Purves (1978, p.345) we learn that the interval "sample percentage ± 2 Standard Errors" has a confidence level of about 95%. The 95% confidence interval for this percentage ran from 75% to 88%, as illustrated in Figure 2 below. Thus, the researcher can be reasonably confident of detecting a high to very high overall percentage performance between 75% and 88%.

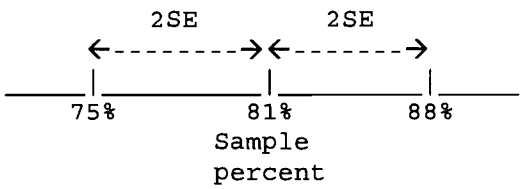

Figure 2. 95% Confidence interval on overall Alternate Group InfoMMS Sample Percentage.

The range of this estimate is exact given a normal population distribution and "... is approximately correct for large n in other cases" (Moore & McCabe, 1989, p.512). On this basis, there was no convincing evidence that the population percentage or percentage performance in other samples would exceed a very high degree of acceptance or fall below a high level of acceptance should the same or similar Alternate Group Employer brochure materials continue to be used. Here, the "population percentage" means the percentage of all female or male employers between 20 to 59 years of age who prefer to read in English, have no disability themselves, may or may not have a family member with a disability and know someone with a disability.

The overall Experimental Group InfoMMS sample mean 131.57 or overall sample percentage 73% estimates the average of a population, but to indicate the precision of this estimate this researcher gave a confidence interval here as well. The 95% confidence interval for this percentage ran from 64% to 82%, as illustrated in Figure 3 below. Thus, the researcher can be reasonably confident of detecting a low to high overall percentage performance ranging between 64% and 82%.

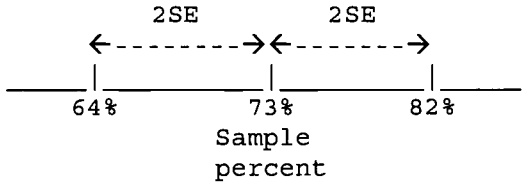

Figure 3. 95% Confidence interval on overall Experimental Group InfoMMS Sample Percentage.

Accordingly, there was no convincing evidence that the population percentage or percentage performance in other samples would exceed a high degree of acceptance or fall below a low level of acceptance should the same or similar Experimental Group Employer brochure materials continue to be used. The low performance in Satisfaction appears to undermine the overall high percentage performance of the Experimental Group Employer brochure. Here, the "population percentage" means the percentage of all female or male employers between 20 to 59 years of age who prefer to read in English, have no disability themselves, may or may not have a family member with a disability and know someone with a disability.

SUPPLEMENTARY RESULTS

Observed Significance Levels

Table 2

ANOVAs for the Posttest on Information Materials Motivation Survey (InfoMMS) as a Dependent Variable

		Sum of Squares	Mean Square	df	F Value	p
InfoMMS	Between Groups	787.500	787.500	1	3.333	0.093 *
	Within Groups	2835.429	236.286	12		
		3622.929		13		
A	Between Groups	138.286	138.286	1	4.478	0.056 *
	Within Groups	370.571	30.881	12		
				13		
R	Between Groups	4.571	4.571	1	.282	0.605
	Within Groups	194.857	16.238	12		
		199.429		13		
C	Between Groups	56.000	56.000	1	6.497	0.026 *
	Within Groups	103.429	8.619	12		
		159.429		13		
S	Between Groups	44.643	44.643	1	1.957	0.187
	Within Groups	273.714	22.810	12		
		318.357		13		

* Significant at the .10 alpha level

Only 14 observations were used in this analysis. The omnibus analysis of variance revealed a significant difference by group, df=1, F=3.333, p=0.093. It can be seen in Table 2 on the analysis of variance that the group variable was significant at the .10 alpha level. Thus, the null hypothesis of no motivational brochure appeal difference between the alternate and experimental conditions was rejected according to the decision rule. Supplementary ANOVA results also showed significant differences between the groups on the Attention (p=0.056) and Confidence (p=0.026) sub-component categories. The analysis did not reveal any significant differences for the Relevance (p=0.605) and Satisfaction (p=0.187) sub-component categories.

Effect Sizes

The initial observations show that the two treatment brochures differ significantly in usefulness but tell us little about their effectiveness. On this basis, it is premature to conclude the treatments (that is, the newly designed experimental and alternate brochures and contents) had any effect. So, to estimate how large the treatment effects could really be, this researcher compared the average effect sizes for the Alternate and Experimental Groups against the reference data from the Focus Group session which was used as the baseline "control." These are outlined in Table 3 below.

Table 3

SPSS Summary Statistics for Post Study Groups on Information Materials Motivation Survey (InfoMMS) as a Dependent Variable versus Reference (Focus) Study "Control" Group

	Reference "Control" Group (N=7) March 23 1999 Study	**Alternate Group** (N=7) Nov 29, 2000 Study	**Experimental Group** (N=7) Nov 29, 2000 Study
Attention Factor	X=38.7 SD=7.70	X=49.86 SD=4.74 ES=1.5	X=43.57 SD=6.27 ES=.63
Relevance Factor	X=28.8 SD=7.72	X=34.14 SD=3.58 ES=.69	X=33 SD=4.44 ES=.54
Confidence Factor	X=37.6 SD=4.47	X=40.57 SD=3.51 ES=.66	X=36.57 SD=2.23 ES=.23
Satisfaction Factor	X=20.9 SD=5.55	X=22 SD=4.44 ES=.2	X=18.43 SD=5.09 ES=-.45
IMMS Totals	X=126 SD=22.16	X=146.57 SD=13.58 ES=.93	X=131.57 SD=16.98 ES=.25

Effects of Alternate Group against Reference "Control" Group

There was an overall effect size gain of .93 standard deviation units - a large effect. Thus, the ES of .93 also demonstrates that Alternate Group InfoMMS change has been increased to a large degree. An estimate of the effect magnitude was calculated over the posttest InfoMMS measure, per motivational usefulness factor as well. Effect size gains were distributed as follows: 1.5 standard deviations (SDs) for Attention - a large effect, .69 for Relevance - a large effect, .66 for Confidence - a large effect, and .2 SDs for Satisfaction - approaching a small effect. More importantly, these measures consistently reflect some gains in each of the brochure content areas.

The immediate overall effect size gain of .93 on the InfoMMS scale also means that the "average" employers receiving the untreated baseline brochure who scored at the 50th percentile level would see their usefulness (or motivational appeal) scores rise to the 82nd percentile level if provided the alternate treatment brochure. This represents a gain of 32 percentile points over the untreated "control" condition. It also suggests that the overall effect of the alternate treatment brochure is very engaging. As for interpreting effect sizes by way of percent of nonoverlap (See Cohen, 1988, pp.21-23) of the alternate treated group's scores with those of the untreated baseline "control" group, the ES of .93 indicated a nonoverlap of about 52% in the two distributions.

Effects of Experimental Group against Reference "Control" Group

There was an overall effect size gain of .25 standard deviation units - a moderate effect. Thus, the ES of .25 also demonstrates that Experimental Group InfoMMS change has been increased to a moderate degree. As well, an estimate of the effect magnitude was calculated over the posttest InfoMMS measure, per motivational usefulness factor. Effect size gains were distributed as follows: .63 standard deviations (SDs) for Attention - a large effect, .54 for Relevance - a large effect, .23 for Confidence - a moderate effect, and -.45 SDs for Satisfaction - a negative effect. Except for the moderately negative Satisfaction measure, these data consistently reflect some gains in each of the brochure content areas.

The immediate overall effect size gain of .25 on the InfoMMS scale implies a 50th to the 60th percentile gain in the direction and intensity of usefulness (or motivational appeal) scores by the average experimental treatment brochure employers. This represents a gain of only 10 percentile points over the untreated "control" condition. It also suggests that the overall effect of the experimental treatment brochure is not that motivating. Interpreting the effect size by way of percent of nonoverlap of the experimental treated group's scores with those of the untreated baseline "control" group, the ES of .25 indicated a nonoverlap of about 18% in the two distributions.

DISCUSSION OF RESULTS AND FINDINGS

Summary of Overall Study Findings

There appear to be four major findings in this exploratory pilot study. The overall findings of this study were that

1. In general, both newly designed treatment brochures experienced positive effect size gains when compared to the untreated baseline "control" condition contents.

2. The immediate overall effect size gain of .25 on the experimental treatment brochure InfoMMS scale implies a 50^{th} to the 60^{th} percentile gain in the direction and intensity of usefulness (or motivational appeal) scores by the average experimental treatment brochure employers. The gain of only 10 percentile points over the untreated "control" condition suggests that the overall effect of the experimental treatment brochure was not that motivating. The ES of .25 also indicated a nonoverlap of about 18% of the experimental treated group's scores with those of the untreated baseline "control" group.

3. There was an immediate overall effect size gain of .93 on the alternate treatment brochure InfoMMS scale. This means that the "average" employer receiving the untreated baseline brochure who scored at the 50^{th} percentile level would see their usefulness (or motivational appeal) scores rise to the 82^{nd} percentile level if provided the alternate treatment brochure. The gain of 32 percentile points over the untreated "control" condition suggests that the overall effect of the alternate treatment brochure was very engaging. The ES of .93 also indicated a nonoverlap of about 52% of the alternate treated group's scores with those of the untreated baseline "control" group.

4. Supplementary ANOVA results showed a significant difference by group. This confirms that employers who received the alternate treatment brochure perceived it as significantly more useful (or motivationally appealing) than the experimental treatment brochure.

Observations

The overall F-test result showed significant differences between the Alternate Group employers' and Experimental Group employers'. From the point of view of the ARCS model, employers perceived Alternate Group materials and contents much more positively because they significantly mobilized and sustained their attention by a much higher degree, the contents were perceived as more relevant to their personal needs or goals, their confidence levels for successful understanding of contents were significantly higher and as a result, they were more satisfied with the process or outcomes of this experience. Thus, there is some support for Arredondo's (1991, p.22) truism that "if it doesn't get and keep their attention, it can't be meaningful, memorable, or activating." The proportionally greater effect size gains in all ARCS model subcomponent motive factors favouring the Alternate group support this view. Effect size gains for the Alternate Group brochure and its contents as a whole was .93 standard deviation units (- a large positive impact with about 52% nonoverlap) compared to .25 standard deviation units (-a slightly moderate positive effect with about 18% nonoverlap) for the Experimental Group brochure. In retrospect, while both brochures engendered greater "usefulness" or motivational appeal among employers than the initial Baseline "Control"

Group employer information materials, it seems clear that the results favoured the alternate brochure group of employers.

Conclusions and Recommendations

The results of this exploratory study may have practical implications. It has been found that corporate produced information materials can be more readily accepted into a client's motivational schema if the target audience itself has input into the change (or learning) process. As such, it is not inconceivable that a wider degree of generality may eventually be found in similar research situations and samples. Given the complexities of corporate, employer and researcher values and the prohibitive costs of undertaking educational research, it is recommended that a focus group be used as a qualitative supplement to any corporate decision-making change effort dealing with formative evaluation. The focus group gave useful feedback and suggestions for revision of existing materials and contents. This phase of the study provided vital internal pre-benchmarking stage "pretest" data for (1) estimating the reliability of the InfoMMS questionnaire, (2) estimating the performance levels or usefulness of existing corporate materials, (3) clarifying design, development and use of future corporate information materials and preferences, and (4) providing a ready bank of baseline "control" data from which future materials and associated benchmarking partner data can be compared against. Researchers, practitioners and program planners are encouraged to use these findings in conjunction with a focus group in the design of future activities related to corporate information materials and contents development. For all practical intends, formative production and evaluation efforts should seriously consider using multiple samples and repeated testing procedures to ensure materials are interpreted in the way intended. Central to this post-benchmarking process is the calculation and reporting of effect sizes which provide objective and standardized measures of mean differences attributed to the exposure of groups treated to a modification in comparison to a reference (baseline) or "control" group that does not receive a quality design change opportunity. Newly established effect sizes should be discussed for effectiveness and further usefulness. The results of these analyses showed that the experimental brochure and the alternate brochure in particular were more useful than the baseline "control" brochure. The degree of usefulness was represented by an effect size of .95 for the Alternate Group and .29 for the Experimental Group, both of which were positive. For the larger effect size, the difference in the distributions was obvious and there was very little overlap. For the smaller effect size, the two distributions overlap a great deal and the effect was difficult to see. Accordingly, the experimental brochure had a weaker effect and is susceptible to further instability. Thus and so, the alternate group effect sizes are recommended as the re-calibrated standard (i.e., updated future reference benchmark). Alternate group data showed that the employer was more likely to react positively on the posttest InfoMMS measure if the employer performs in the high range on each subcomponent ARCS factor. Additional supporting evidence showed that the 95% population percentage for the Alternate Group was 81%, and the likely range was 75% to 88%. In other words, the percentage performance in other samples would not tend to fall below a high level of acceptance should the same or similar Alternate Group employer brochure materials continue to be used. This tendency can be verified by a larger sample of subjects to provide a narrower precision of the likely range. However, unlike significance

tests, effect-size statistics are not dependent on sample size which makes their reporting essential to any research. It has been shown that to remain successful, promotional materials and contents need to achieve and maintain motivational acceptance standards in the high range, but only continued review processes will ensure continued effectiveness and usefulness.

In the final analysis, the presence of a negative aftereffect on audience response might be real. Such effects may or often go unnoticed on the radar screen because they tend to occur at the subcomponent level as opposed to a global one. So, it is incumbent upon designers and researchers to measure for these aftereffects or to measure the phenomenon susceptible of curtailing ill effects in favour of improving product and materials effectiveness or usefulness. Those who are dazzled by "attractive" or "smart" looking materials and contents may unintentionally markdown the "tame" looking ones when the latter may produce the most desirable effect/s. More research is needed to explain the sometimes uneasy choices that an audience makes. This study speaks to that void. The use of descriptive and inferential statistics, corporate advisory committees and focus groups each have something equally valuable to contribute to product development, and therefore should be used in conjunction with each other. The general conclusion to be drawn from this exploratory formative evaluation study is that the same or similar uses of internal benchmarking and statistical analysis provide one avenue to fostering quality in the motivational design of corporate information materials.

REFERENCES

Arredondo, L. (1991). How to present like a pro:Getting people to see things your way. New York: McGraw-Hill, Inc.

Borg, R.W., & Gall, D.M. (1989). Educational research: An introduction (5th ed.). White Plains, NY: Longman.

Brewer, K. J. (1986). Introductory statistics for researchers. Tallahassee, Florida: Bellwether Press, a Division of Burgess International Group, Inc.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. Hillsdale, NJ: Laurence Erlbaum.

Freedman, D., Pisani, R., and Purves, R. (1978). Statistics. New York, N.Y.: W. W. Norton & Company.

Freund, E.J., & Williams,J.F. (1982). Elementary business statistics: The modern approach (4th ed.). Englewood Cliffs, New Jersey: Prentice-Hall.

Keller, M.J. (1987a). Strategies for stimulating the motivation to learn. Performance & Instruction, 26(8), 1-7.

Keller, M.J. (1987b). The systematic process of motivational design. Performance & Instruction, 26(9), 1-8.

Keller, M.J. (1990). Manual for the Instructional Materials Motivation Survey. Unpublished manuscript, Occassional Paper (draft), Florida State University, Department of Educational Research, Tallahassee.

McCall, B.R. (1975). Fundamental statistics for psychology. New York: Harcourt Brace Jovanovich.

Moore, S.D., & McCabe, P.G. (1989). Introduction to the practice of statistics. New York: W.H. Freeman and Co.

Schermer, J. (1988). Visual media, attitude formation, and attitude change in nursing education. ECTJ, 36(4), 197-210.

Smith, L.M., Glass, V.G., & Miller, I.T. (1980). The benefits of psychotherapy. Baltimore, Maryland: The John Hopkins University Press.

APPENDIX
A

Small Focus (Reference) Group Baseline Session Data And Brochure Descriptions

Table 4.
Descriptions of Open Ended Survey and Qualitative Portion of March 23, 1999 Small Focus (Reference) Group Employer Session (N=7) Data by Frequency of Occurrence

What did you like best about the existing NSE Employer Information Package? (8 1/2" x 11" format)
Accomplishments/Achievements (N=2) Comprehensive Information (N=2) Honesty/Real Life Examples (N=2) History of Org. (N=2) Mission Statement (provides objectives to work with) (N=2) Employer's responsibilities/Needs of Participants (N=2) Systematic/Logical Sequence/Methodology (N=2) Easy reading (N=2) Newsletter (N=1) Frequently Asked Questions by Employers (N=1) Liked it all (N=1)
What did you like least about it?
Repetition (N=2) Literary usage lacks passionate appeal (N=2) About NSE info, introduced to late (N=1) First two pages somewhat daunting, tempted to skip them (N=1) The organisation chart, role, reporting, etc., unclear (N=1) Few graphics (N=1) Few examples (N=1) Design (N=1) Better understanding of message/information required (N=1) No uniqueness in service (N=1) Did not like much at all about it. (N=1)
Employer Recommendations for Improvement
Include Pictures/Graphs/Illustrations and/or the like (N=3) List/Describe Successes/Testimonials (N=2) List Current Employers/Companies using programs (provides prospective employers greater feeling of confidence) (N=2) About NSE info up front (N=1) Impact of NSE (N=1) Use colour (N=1) Back to back use of Information on Sheets (N=1) Supply Employer references at time of application (N=1) Use greater appeal in contents (N=1) Uniqueness/differences in services (N=1)
Format Preference
Pamphlet/Brochure = (N=3) Existing 8 1/2 x 11" = (N=3) No Response (N=1)

Facilitator Face to Face Portion of Focus Group Session Results

Package is easy to read
Package is well organised, it evolves or follows a logical order
Content should be condensed
More examples of clients we work with, less info on each company, but more company examples
Get endorsements from clients
Companies interested in knowing companies have used our services
Mention how long we have worked with a company, how long consumer employed by company
Examples/testimonials spread throughout document
Use company logos
Remove repetition from literature
Use more visuals
Info package was clear, it tells you what you need to know
Purpose of the org has to 1st thing you see
Use references
Network South Logo/mission statement should be on front of the folder
Box important information
Include info on screening applicants
    Do they fill out application forms (give example)
    Do we have evaluations (give example)

Some Elements Incorporated Into The Experimental Brochure

Panel 1 Outside Front Cover (Far Right)

- 3/4 " corporate logo (left justified), name of corporation (right justified) alongside corporate logo
- colours and hues of corporation adopted throughout
- single message tag line (right justified 3 inches below logo. It reads "Connecting your business to supported employment services"
- Also 3 black and white 1" x 1 1/4" pictures positioned below tag line vertically aligned and separated by 1/8" space each
- Bottom of brochure caption reads "An Information Guide For Employers"

Panel 2 Left Inside Cover

- Who Are We? 1/4" Header followed by information
- Philosophy 1/8" Sub-header and information
- Mission 1/8" Sub-header and information
- History 1/8" Sub-header and information

Panel 3 Middle of Inside Cover

- Why Hire From Us? 1/4" Header
- Benefits 1/8" Sub-header and information
- Employer Services 1/8" Sub-header and bulleted information
- Staff 1/8" and information

Panel 4 Far Right Inside Cover

- Two employer endorsements with statements enclosed in shaded box
- Programs 1/4" Header with bulleted information

Panel 5 Outside Cover (Far Left)

- Our Employer Partners Have Included… (Employers listed)

Panel 6 Middle Outside Cover

- Design and Layout donated by acknowledgements (top of panel)
- Printing Courtesy of acknowledgements (top of panel)
- 1/2" corporate logo bottom of panel with corporate name and contact address points etc…

Note: Inside Cover contents positioned NSE Inc. as experts in the field.

Some Elements Incorporated Into The Alternate Brochure

Panel 1 Outside Front Cover (Far Right)

- line bar on top on top of panel
- 2" x 2" corporate logo (top center location)
- colours and hues of corporation adopted throughout
- single message tag line (5 1/2" below top of panel). It reads "Building Positive Relationships With Local Business"
- Bottom of panel caption spells out corporation's name
- Line bar on bottom of panel

Panel 2 Left Inside Cover

- Mission Statement 1/4" Header only
- Philosophy 1/8" Sub-header and information
- Role and Mission 1/8" Sub-header and information
- Here Are The Facts: 1/8" uppercase Sub-header followed by 3 bullets of information

Panel 3 Middle of Inside Cover

- Network South Enterprises 1/2" Header across top of panel
- Here's How We Work uppercase 1/8" Sub-header followed by 4 bullets of information
- Soft Watermark of corporate logo spanning panels 2 through 4
- Employer Services 1/8" uppercase Sub-header followed by 2 bullets of information

Panel 4 Far Right Inside Cover

- Employer Benefits 1/8" uppercase sub-header and small description followed by 4 bullets of information
- Contact information bottom of panel

Panel 5 Outside Cover (Far Left)

- Here is what people have to say about Network South Enterprises Inc. Statement on top of panel followed by 1 Employer endorsement, 1 Parent endorsement, 1 NSE Graduate endorsement and 1 NSE Employment Consultant endorsement

Panel 6 Middle Outside Cover

- Brochure Set-Up and Design Courtesy of Acknowledgements (top center of panel)
- Brochure Printing Courtesy of acknowledgements (center of panel)
- NSE corporate name spelled out in addition to corporate support and sponsorship acknowledgement statements (bottom of panel)

Note: Inside Cover contents used less descriptive information statements and relied more on bulleted information points. No pictures or visuals outside the watermark supported the contents.

c/o Monica Todeschini
FAX 315-443-5448

U.S. Department of Education
Office of Educatonal Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

ERIC
Educational Resources Information Center

REPRODUCTION RELEASE
(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title:	MOTIVATIONAL DESIGN QUALITY, INTERNAL BENCHMARKING AND STATISTICAL ANALYSIS OF CORPORATE INFORMATION MATERIALS: A PILOT STUDY		
Authors:	Ihor Cap		
Corporate Source:	Not Applicable	Publication Date:	

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, Resources in Education (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options below and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will be affixed to all Level 2B documents
PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY SAMPLE TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY HAS BEEN GRANTED BY SAMPLE TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY SAMPLE TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 1	Level 2A	Level 2B
●	○	○
Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) and paper copy.	Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only.	Check here for Level 2B release, permitting reproduction and dissemination in microfiche only.
Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.		

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Signature: Ihor Cap	Printed Name/Position/Title: Ihor Cap/Program Dev. Coord./Dr.
Organization/Address:	Telephone: (204) 945-3346 FAX:
	E-mail Address: ihorcap@hotmail.com Date:

EFF-088 (Rev. 2/2001)

Send Form | Clear Form

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available throughb EDRS.

Publisher/ Distributor:	
Address:	
Price:	

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:	
Address:	

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:	ERIC Clearinghouse on Information & Technology Syracuse University 621 Skytop Road, Suite 160 Syracuse, NY 13244-5290 E-Mail ericft@ericir.syr.edu 315-443-3640 1-800-464-9107 Fax: 315-443-5448

Send Form | Clear Form