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STRATEGIC MANAGEMENT ACCOUNTING AND INFORMATION FOR MANAGERIAL DECISION MAKING IN SELECTED MANUFACTURING FIRMS IN KWARA STATE

Adigbole, Ezekiel A. (Ph. D.)*

Osemene, Olubunmi F. (Ph. D.)

&

Fakile, Grace. O

Abstract

In this competitive business environment, firms required financial and non - financial information to be able to effectively make strategic decisions that can enhance competitive advantage. The traditional management accounting techniques that some manufacturing firms in Nigeria continue to use cannot deliver this type of information and so there is need to implement non - costing Strategic Management Accounting (SMA) techniques. The specific objectives of this study were to: assess the influence of: Strategic Planning, Control and Performance Measurement (SPCPM) and Competitor Accounting (COMA) on the provision of information for managerial decision making. Survey research design was employed and questionnaire used in collecting primary data from accountants in 28 sampled manufacturing firms in Kwara State. Ordered logistic regression was used in data analysis. The study found that: SPCPM has a positive significant impact on information for managerial decision making ($\beta = 0.4485$, $p < 0.05$); and COMA has no significant influence on information for managerial decision making ($\beta = 0.0617$, $p < 0.10$). The study concluded that strategic management accounting especially SPCPM is relevant for the provision of information for managerial decision making. It is recommended that manufacturing firms that are not implementing SMA should do so to access complete information.

Keywords: Strategic management accounting, information, decision – making

Introduction

The accounting systems form the information life wire of a business and so it must be up to date so that it can provide the needed information that is broad and accurate enough to enable business firms compete well in the market place. In a company, the system of accounting that focuses attention on the provision of relevant information for internal use by management in performing their functions of decision making, planning, controlling and directing is the management accounting (Hopper, Northcott & Scapens, 2007). Management accounting discipline which grew from Cost accounting in the 1940's as a result of the industrial revolution has an internal orientation in the provision of information (Roberts, 1989). However, over the years the traditional management accounting was discovered to be inadequate in this modern business competitive environment as the information emanating from it was not broad and accurate enough for use in strategic decision making (Roslender & Hart, 2003).

* Department of Accounting, Faculty of Management Sciences, University of Ilorin, Ilorin, Kwara State, Nigeria

In the 1980's several accounting professionals and academics began to observe the obsolescence of the traditional management accounting (Shah, Malik & Malik, 2011). It was observed that the information from the accounting system was too large, too aggregated and too distorted to be relevant for strategic planning and control decisions making (Noordin, Zainuddin, Mail & Mail, 2014). It was contended that management accounting information was based on the existing financial accounting system thereby making information provided to be restrictive, less accurate and incomplete (Baines and Langfield-Smith, 2003). Cooper (1996) and Parker (2002) observed that management accounting makes little use of strategic management. It was also argued by Ahlstrom and Karlsson (1996) that management accounting had not advanced to take advantage of innovative technologies in the field of management.

There is also the need for management accounting to take a strategic orientation in this present business environment that is characterized by intensive competition, and shorter product life cycle (Burstahler, Horngreen, Schatzberg, Stratton & Sundem, 2007; Noordin, Zainuddin & Tayles, 2009). The improvement in technology resulting to production of diverse products by firms further necessitates the need to improve the sophistication of cost and management control systems (Chai-Amonphaissal & Ussahawanitchakit, 2010).

Notwithstanding the attention given to Strategic Management Accounting (SMA) since 1981, there is still limited consensus on the exact meaning of the term "strategic management accounting" and what constitutes it is also still a matter of debate as various authors have come up with various techniques that are contained in SMA 'tool box' (McManus, 2013). Some studies such as those of Cinquin and Tenucci (2010); and Guilding, Cravens and Tayles (2000) have concluded that SMA use is still very low and developing. Hence, there is need for continuous research on the various techniques of SMA and particularly its relevance for the generation of information for managerial decision making.

From the previous studies on SMA mentioned above, research have been carried out in developed countries (Europe and the USA) and the empirical works on SMA conducted in Nigeria is still very few and some of these include those of Ojua (2016a); Egbunike, Ogbodo and Onyali (2015). In Nigeria, it is still not clear as to what use SMA has been put in manufacturing firms as most of these firms still rely on the traditional management accounting to generate information for management use despite the changing business environment. Information so generated from such accounting system is not relevant for taking strategic decisions. Hence, there is the need for manufacturing firms to focus attention on a new management accounting system that can deliver accurate and relevant information for effective managerial decision making.

In view of the forgoing, the following research questions are raised: How does strategic planning, control and performance influence the provision of information for managerial decision making; and what is the impact of competitor accounting on the provision of information for managerial decision making.

The objectives of this study are to: examine the influence of strategic planning, control and performance measurement on the provision of information for managerial decision making;

and assess the impact of competitor accounting on the provision of information for managerial decision making.

The following hypotheses stated in null term were formulated based on the objectives of the study:

- H₀₁: Strategic planning, control and performance measurement does not significantly influence the provision of information for managerial decision making.
- H₀₂: Competitor accounting does not significantly influence the provision of information for managerial decision making.

The rest of this paper is organized into - literature review; methodology; data analysis and discussion of results; and lastly, conclusion and recommendation

LITERATURE REVIEW

Conceptual Review

Strategic Management Accounting

Strategic management accounting was coined by Simmonds (1981) who defined it as the provision and analysis of management accounting data about a business and its competitors for use in developing and monitoring business strategy. Bromwich (1990) defined strategic management accounting as the provision and analysis of financial information on the company's product markets, competitors' costs, cost structure and the monitoring of strategies of the enterprise and its competitors over a period of time. Langfield (2008: 206) defined strategic management accounting as "strategic management accounting entails taking a strategic orientation to generation, interpretation and analysis of management accounting information and competitors' activities provides the key dimension for comparison".

From the above definitions, there is seems to be no agreement as to the specific meaning of strategic management accounting, but all the definitions agree on the strategic approach of the new subject. These definitions thus proved clearly that the scope of the traditional management accounting has been greatly extended (Adigbole, 2017).

Strategic Management Accounting (SMA) Techniques

For any management technique to be included in strategic management accounting such technique must have a strategic orientation as strategy connotes long-term future-oriented time frame and an externally focused perspective (Porter, 1996; Guildsing, et al, 2000). Therefore, strategic management accounting techniques are techniques that demonstrate the following orientations: environmental (outward-looking); or long term (forward-looking) and /or market focus (Cadez & Guilding, 2008).

The techniques that qualified as SMA given by Guilding et al. 2000; Cadex and Guilding (2008); and Fowzra, (2011) can be classified into five classes as: Costing techniques; planning, control and performance measurement; strategic decision making; competitor accounting; and customer accounting.

Costing class include- Activity – based costing / management, target costing, life- cycle costing, quality costing, and value chain costing.

Planning, control and performance measurement class which has external strategic orientation towards competitors contained these techniques - Bench marking (Cinquinni & Tenucci,

2007); and Integrated performance measurement (Kaplan & Norton, 2000; Nixon and Burns 2012).

Strategic decision-making class contained - Strategic costing (Shank & Govindarajan, 1992); Strategic pricing (Alnawaiseh, 2013; Novianty, 2015); and Brand valuation (Budgeting and monitoring) (Alnawaiseh, 2013).

Competitor accounting class comprised of: Competitor cost assessment (Ward, 1992); Competitor performance appraisal based on published financial statements; and Competitive position monitoring (Ciquini & Tenucci, 2010).

The last class, Customer accounting comprised of: Customer profitability analysis (Zeithaml, 2000);

Life time customer profitability analysis (Cadez & Guilding, 2008); and Valuation of customers as assets (Cadez & Guilding, 2008; McManus, 2013).

Information for Managerial Decision Making

Managers take various types of decision during the day-day operation of a business as well as in planning for the future (Warren, Reene & Duchac, 2009). As one of the major functions of management is decision making, it is very important that relevant information are supplied to perform this function. Decision making involves the selection of a course of action from among two or more possible alternatives so as to arrive at a solution for a given problem (Trewartha & Newport, 1982). Effective decision can only be made when the right information is supplied at the point of making such a decision. It has been noted that when a system is designed to provide correct information to managers, decision processes work extremely well and task will be accomplished (Trewartha & Newport, 1982).

SMA is designed to provide relevant and broader information to the managers for making strategic decisions. Some of the decisions that can be taken with the use of SMA information are product cost and pricing decisions; strategic cost management decisions (Monden, 1989); profit planning decisions and capital investment decision (Bhimani, Horngren, Datar, Foster, 2008); marketing decisions (Roslender & Hart, 2003) etc.

The three important elements of SMA information from available literature are: competitor information, customer information and product related information (Noordin, Zainudin, Mail, F, Mail & Sariman, 2015; Noordin et al 2009; Al-Mawali & Amoush, 2013).

Empirical Review

Noordin, Zainuddin, and Tayles (2009) explored the level of SMA information usage among Malaysian Electrical and Electronic companies in Malaysia. It examined the usage of SMA information – competitor information analysis, customer information analysis, and product-related information analysis. The study conceptualized SMA information as competitor information, customer information and product-related information. The study sampled 23 manufacturing companies and used mailed questionnaire in data collection. Descriptive analytical method was employed in data analysis. The findings of the study sheds light on the development of SMA information usage among the sampled companies. It was found out that the widely-utilized information was competitor information analysis. Customer information and product-related information use was negligible.

Ranijak and Rogosik (2012) investigated the practices of SMA in Croatia and their implication on provision of relevant and timely information for management use. It also examined the synergistic effect of the different SMA techniques on cost control and reduction. The study sampled 65 companies in Croatia and collected data using questionnaire mailed to the accounting manager in each firm. Data collected were analyzed descriptively and Man Whitney test statistics and one way ANOVA were used in testing the hypotheses formulated. The study found that activity-based costing, quality costing are the most widely used SMA techniques in Croatian sampled companies. The study also shows that the fundamental purpose of SMA of providing relevant and timely information was fulfilled. It further shows a positive synergistic effect of the different SMA techniques implementation on cost control and reduction.

Noordin, Zainuddin, Mail F. and Mail (2014) examined the current development of SMA and its uses in selected manufacturing companies in Malaysia. The study examined the use of SMA information – competitor information analysis, customer information analysis, and product-related information analysis. The study sampled 30 manufacturing companies in Malaysia. Questionnaire was used in data collection. Descriptive statistics were used in analyzing the data collected. The study shed some lights on the development of SMA information usage of the sampled firms. It found out that the most widely-utilized information was competitor information. While other SMA information (such as customer information, and product-related information) was rather negligible, thus supporting the study of Guiding et al (2000). However, the results of the study show some progress in the usage of SMA information among firms. This study introduced a set of 26 items scale for measuring SMA information elements. The study concluded that manufacturing companies are using SMA information to adopt to the needs of competitive market.

Noordin, Zainudin, F. Mail, Mail and Sariman (2015) explored the progress of SMA information usage within electrical and electronics companies in Malaysia. The study investigated the extent of SMA information usage among the sampled companies and its influence on performance of the companies. The survey method was employed and structured questionnaire used in data collection from 595 companies sampled. SMA information usage was measured by competitor information and market information. Data collected were analyzed using descriptive statistics, factor analysis and inferential statistics such as multiple regression analysis. The results of the study show that companies use SMA information to high extent.

Egbunike, Ogbodo and Onyali (2014) investigated the use of SMA techniques for sustainability performance measurement. It examined whether the use of SMA techniques would provide information for environmental performance measurement, social performance measurement and economic performance measurement. The study sampled 81 accountants distributed across product-sector organizations. Questionnaires were used in collection of data for the study. Multiple regression analysis was the main method of analysis used. This study revealed that sustainability performance measurement is a multi-faceted activity, requiring managers to implement strategic techniques capable of capturing information from diverse areas of corporate environment. The study further found that SMA techniques is capable of providing information for environmental performance management, social performance measurement and economic performance measurement and management. The study

concluded that sustainability is at the forefront of modern business corporations, as enlarged stakeholder interest necessitates that managers of corporations should go beyond meeting shareholders' interest (economic interest) to a more broader scope encompassing social and environmental concerns. This study however lacks study area and not linked to any theory.

Ojua (2016a) studied management perceptions of the role of SMA techniques in decision-making in selected petroleum marketing firms in Nigeria. The study sampled fifty (50) petroleum marketing firms in Apapa area of Lagos randomly. Data used were collected through the administration of questionnaires. Both descriptive analysis (by mean and standard deviations) and Pearson Product Movement Correlation Co-efficient were used in analysing the data collected. The result of the study indicated that there is limited trust by managers on the use of SMA techniques for decision-making and pricing policies. This study concluded that management have reservations in applying SMA techniques in decision-making. There is the need for further research to confirm or refute this study.

Ojua (2016b) investigated the extent of application of SMA practices by local Nigerian manufacturing enterprises in making effective decision. The study sampled ten (10) manufacturing companies operating in Agbara Industrial Estate, Ogun State. Structured questionnaire was used in collecting primary data from the sampled firms. The study employed the Pearson Movement Correlation Co-efficient in data analysis. This study shows that there is no significant relationship between the adoption of SMA practices and decision-making system of the sampled management firms. The entire results show that the use of SMA practices in many Nigerian manufacturing enterprises is not only low, but also management knowledge about the tools and importance are yet to be appreciated. This study calls for a further research to determine the sustainability of this assertion.

In the light of the empirical review made, the following gaps have been identified to be filled by this present study. Firstly, the conceptualization of SMA in this is not common in the empirical study of SMA in Nigerian. And secondly, SMA information elements has not been well researched in Nigerian which this study sought to achieved.

Methodology

The study employed a cross-section survey design as it allows generalization to be made from large population when representative samples are drawn.

Population and Sampling

The population of this study is made up of thirty (30) manufacturing firms in Kwara State that are registered with and paid up members of the Manufacturers Association of Nigeria (MAN), Kwara State branch as at December, 2016. These firms are focused on because of their standardized accounting system which is one of the requirements for registration with MAN.

The study sampled 28 (twenty – eight) manufacturing firms using purposive sampling as only these firms out of the population were available for sampling, others could not be reached due to lack of access.

Data type and Data Collection Procedure

This study employed primary data which were collected using a structured questionnaire. The questionnaire is structured into six sections to capture all the questions relating to all the variables under study. Three (3) copies of the questionnaire were distributed to each of the 28

sampled manufacturing firms. Thus, a total of 84 copies of questionnaires were distributed. The target audience were cost accountants, management accountants and financial accountants / chief accountants / Finance directors of the firms selected for the study. These officers in the companies were chosen because they are believed to be knowledgeable in cost and management accounting.

Out of the total copies of questionnaire administered only 51 copies were returned after several visits to the sampled firms. Of the received figure, only 49 copies were properly and completely filled. This translate to about 58% success rate of return which according to Baruch and Holtom (2008) is satisfactory.

Variable Measurement

Dependent variable - Information for Managerial decision making (INFM).

This variable which relates to strategic management accounting information was conceptualized as: product related information, competitor information, and customer information. This study measured information for managerial decision making using 19 items of strategic management accounting information adopted from Noordin et al (2009); Noordin et al. (2014) and Noordin et al (2015) with some little modification to suite the purpose of this study. Each respondent was required to indicate the extent to which strategic management accounting of provide: product related information, competitor information, and customer information for managerial decision making. This was anchored by a seven-point Likert scale ranging from '1' (NO extent) to '7' (Great extent).

Strategic Management Accounting Techniques (SMAT) Usage

The degree of SMATs usage was measured with the instruments of Guilding and Mc Manus (2002); Cadez and Guilding (2007, 2008) using the following question: "To what extent does your organization use the following 17 SMA techniques grouped into five classes". The 17 SMA techniques grouped into five classes: strategic planning, control and performance measurement (SPCPM)- 2 techniques; and Competitor accounting (COMA) - 3 techniques are listed and anchored with a Linkert scale ranging from "1" (Not at all) to "7" (To a great extent)..

Validity and Reliability

The data collection instrument used was subjected to content validity by the initial draft being vetted by season researchers and some post graduate lecturers in accounting. Besides, most of the variables used were adopted from previous studies done in developed countries.

The reliability test was carried out and the results of the Cronbarch alpha statistics for all the 7 variables measured are presented in table 1. From the table it can be seen that the Cronbach's alpha statistics of the variables vary from 0.644 to 0.904. These scores are high as they are more than the suggested minimum of 0.60 and the results indicate a very strong internal stability and consistency with which the instrument measured the concepts (Sekaran, 2003).

Table 1: Reliability Statistics

Items	Cronbach's Alpha	Number of Items
Strategic Planning, Control and Performance Measurement (SPCPM)	0.644	2
Strategic Decision Making (SDM)	0.824	3
Competitor Accounting (COMA)	0.775	3
Customer Accounting (CUSA)	0.894	3
Information for managerial decision – making (IFMD):	0.900	19

Source: Researcher's STATA analysis results (2017)

Ordered Logit Regression Model

Information for managerial decision making = f (Strategic management accounting) (1).

The above model is stated in ordered logistic form as:

$$\text{Prob (IMDM} \leq j|x) = a + \beta_1 \text{ SPCPM} + \beta_2 \text{ SDM} + \beta_3 \text{ COMA} + \beta_4 \text{ CUSA} + U$$

Where:

a = intercept

j = order of response range 1 to 7

x = independent variable in the model

$\beta_1 - \beta_4$ = parameter of estimate

IMDM = Information for managerial decision making

SPCPM = Strategic planning, control and performance measurement

SDM = Strategic decision making

COMA = Competitor accounting

CUSA = Customer accounting

Method of Data Analysis

The data collected in the study have been analysed using ordered logistic regression. This technique was used as both dependent and independent variables are all ordered variables.

DATA ANALYSIS, TESTING OF HYPOTHESES AND DISCUSSION OF RESULTS

Data Analysis and Testing of hypotheses

Table 2: Strategic Management Accounting Techniques and Information for Managerial decision making

Dependent variable: Information for Managerial Decision (IMDM)

Independent Variables (Non - Costing Techniques of SMA):	Coefficient	Marginal effect	Standard Error	Z- Statistic	P- Value
Strategic Planning, Control and Performance Measurement (SPCPM)	0.4485	0.0308	0.0123	2.47	0.012
Competitor Accounting (COMA)	0.0617	0.0042	0.0161	0.26	0.793
Pseudo R ²	0.1246				
LR-chi2	28.89				
Prob (chi2)	0.0000				

Source: Extract from the Researchers' STATA analysis results (2017)

Strategic planning, control, and performance measurement (SPCPM) and the provision of information for managerial decision making (IMDM).

Table 2 shows the ordered logit regression results of model 1 can be seen. From the table, the coefficients of SPCPM with a value of 0.4485 indicates that it has a positive effect on the provision of information for managerial decision making (IMDM). Hence, the more SPCPM usage improve the more IMDM will improve. The marginal effect in the results with a value of 0.0308 indicates that a unit increase in the usage of SPCPM techniques will give rise to the probability (likelihood) that information for managerial decision making (IMDM) will improve by 3.1%. These results therefore show that strategic planning, control, and performance measurement techniques of SMA significantly affect the provision of information for managerial decision making since it has a p-value of 0.012 at 5% level of significance.

With the above results, the hypothesis (H_{01}) that: Strategic planning, control and performance measurement does not significantly affect the provision of information for managerial decision making is not accepted.

Competitor Accounting (COMA) and the provision of information for managerial decision making.

Result from Table 2 shows the coefficients of COMA to be 0.0617, this indicates that it has a positive influence on the provision of information for managerial decision making (IMDM). This implies that the more SDM usage improve the more IMDM will improve. The marginal effect in the results with a value of 0.0042 indicates that a unit increase in the usage of COMA techniques will give rise to the probability (likelihood) that information for managerial decision making (IMDM) will improve by 0.04%. These results are not significant enough as COMA has a p-value of 0.793 at 10% level of significance.

The above results indicate that the hypothesis (H_{02}): Competitor accounting does not significantly affect the provision of information for managerial decision making is accepted.

Discussion of results

The discussion of the findings of this study is done in line with the objectives of the study.

Firstly, to assess the influence of strategic planning, control and performance measurement on the provision of information for managerial decision making, the result of testing hypothesis one is that strategic planning, control and performance measurement of SMA significantly influence the provision of information for managerial decision making. It thus implies that the use of strategic planning, control and performance measurement techniques of: Benchmarking and Integrated performance measurement can enable a manufacturing firm provide product related, competitor, and customer information. This finding is in agreement with Noordin et al (2014) and Noordin et al (2015) that found out that product related information, competitor information and customer accounting information are generated from strategic management accounting (SMA) system. It also supports the study of Ranijak and Rogosik (201) who found out that the use of composite SMA techniques can generate relevant and timely information relating to products, competitors and customers.

Secondly, to evaluate the effect of competitor accounting on the provision of information for managerial decision making, the result of testing hypothesis two is that competitor accounting

does not significantly affect the provision of information for managerial decision making. It thus implies that the usage of competitor cost assessment, competitor performance appraisal based on published financial statements and competitive position monitoring (Competitor accounting class of SMA) cannot necessarily translate to the provision of product related, competitor, and customer information. This finding is at variance with the study of Noordin et al (2014). It could be that the sampled manufacturing firms have not been using these techniques properly. Otherwise they should at least lead to the provision of competitor information.

Conclusion and Recommendation

This study investigated the extent of implementation of non – costing techniques of strategic management accounting and its impact on the provision of information for managerial decision making in selected manufacturing in the sampled firms. The data used in the study were primary data collected through questionnaire and analysed using ordered logistic regression. The study found that planning, control and performance measurement; of SMA can enhance the provision of information for managerial decision making. It was also found that competitor accounting techniques of SMA may not enhance the provision of information for managerial decision making in the sampled firms.

From the findings of this study it can be concluded that strategic management accounting techniques, especially planning, control and performance measurement of SMA when properly implemented, can provide product related information, competitor information and customer information for managerial decision making.

In the light of the findings of this study, the following recommendations are made.

- (i) To manufacturing firms that are yet to implement SMA, it is suggested that in the view of the fact that the examined techniques can provide relevant information for managerial decision making, they should consider implementing SMA techniques.
- (ii) Further research should be made on the implementation of competitor accounting of SMA to confirm or refute the findings of this study in respect of their usage in the provision of information for managerial decision making.

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APPENDIX

Appendix 1: STATA OUTPUT

Analysis of Demographic Variables of the Respondents

Table : Demographic Variables

Variables	Frequency	Percentage	Cumulative Percentage
Position in The Firm			
Cost Accountant	11	22	22
Management Accountant	25	51	73
Financial Accountant/ Chief Accountant/ Finance Controller or Director	13	27	100
Total	49	100	
Working Experience			
5 Years and Below	19	39	39
6 - 10 Years	20	41	80
11 - 15 Years	2	4	84
Above 15 Years	8	16	100
Total	49	100	
Qualifications			
Diploma/ NCE	2	4	4
B.Sc./BA/HND	27	55	59
M.Sc./M.A.	3	6	65
Ph. D.	-	-	65
ACA/ACCA & B.Sc. /HND/M.sc/MA/Ph. D	17	35	100
Total	49	100	
Gender			
Male	38	78	78
Female	11	22	100
Total			
Age			
Under 25	5	10	10
25 - 30 Years	19	39	49
31 - 40 Years	16	33	82
41 - 50 Years	7	14	96
51 and Above	2	4	100
Total	49	100	

Source: Researcher's (Adigbole, 2017) Survey results

STATA OUTPUT:

```

Ordered logistic regression              Number of obs   =       49
      LR chi2(6) = 28.89
      Prob > chi2 = 0.0000
Log likelihood = -66.37606              Pseudo R2       = 0.1246

```

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
imdm						
costg	.406014	.1918214	2.05	0.047	-.2699492	.4819771
spcpm	.4485303	.2075214	2.74	0.008	-.0562023	.953263
sdm	.3709212	.2289113	1.62	0.105	-.0777368	.8195731
coma	.0616506	.2320982	0.27	0.791	-.3932534	.5165547
cusa	-.4760961	.2032746	-2.34	0.019	-.874507	-.0776851
apsdm	.3472315	.115666	2.77	0.006	-.0362668	.7307299
/cut1	1.513074	1.457994			-1.344542	4.37069
/cut2	1.776494	1.444692			-1.05505	4.608038
/cut3	2.687283	1.441726			-.1384491	5.513015
/cut4	3.767276	1.483905			.8588754	6.675677
/cut5	5.270689	1.598346			2.137988	8.403391

```

. margins, dydx( costg spcpm sdm coma cusa apsdm)

```

```

Average marginal effects              Number of obs   =       49
Model VCE = OIM
Expression = Pr(imdm==2), predict()
dy/dx w.r.t. = costg spcpm sdm coma cusa apsdm

```

	dy/dx	Delta-method Std. Err.	z	P> z	[95% Conf. Interval]	
costg	.0272833	.0132965	2.01	0.049	-.033344	.0187773
spcpm	.0308148	.0129625	2.47	0.012	-.0719006	.010271
sdm	.0254829	.0177411	1.44	0.151	-.0602548	.009289
coma	.0042355	.0161006	0.26	0.793	-.0357922	.0273212
cusa	-.0327086	.0118207	-2.24	0.026	-.0022194	.0676366
apsd	.0438554	.0185083	2.54	0.011	-.0542511	.0065404

```

Ordered logistic regression              Number of obs   =       49
      LR chi2(2) = 11.50
      Prob > chi2 = 0.0035
Log likelihood = -72.073143            Pseudo R2       = 0.0495

```

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
smat						
mako	.3813958	.1251274	2.69	0.009	-.0598457	.8226373
tecg	.3460134	.1554849	2.17	0.026	-.0175303	.709557
/cut1	1.60164	1.613541			-1.560843	4.764122
/cut2	1.859819	1.603872			-1.283712	5.00335
/cut3	2.74225	1.613686			-.4205158	5.905016
/cut4	3.760927	1.660005			1.5073771	7.014477
/cut5	4.982443	1.727316			1.596966	8.36792