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**THE IMPACT OF INFORMATION PRESENTATION FORMATS AND TYPES
ON DECISION PERFORMANCE: AN EXPERIMENTAL STUDY OF
COST-BASED DECISION MAKING**

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ABSTRACT

This study examines the impact of cost information presentation formats and types on decision performance using an experimental method. Using a customer profitability report generated from activity-based costing presented in tabular or graphical format and digital or manual type, subjects in this experiment have the task to determine price which can influence company profitability. The design used in the experiment is 2X2X2 between subjects, with 60 managers in a food manufacturing industry as participants. The results show that information presented digitally or manually in the format of tabular or graphical, has significant impact for decision makers and lead to different profit performance. Further analysis also shows that decision maker's nature of work is the factor which has an impact on decision making process instead of knowledge.

Key words: ABC Information, Digital and Manual Types, Table and Graphical Formats, Decision Performance, Cost-Based Decision Making



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INTRODUCTION

Previous studies related to the presentation format of accounting information show the increasing importance of presentation format effect on decision making (Vessey and Galletta, 1991; Ramarapu et al., 1997; Frownfelter-Lohrke, 1998; Hodge, 2001; Dull et al., 2003; Hodge et al., 2004; Hodge and Pronk, 2006). A more recent study by Cardinaels (2008) indicates there is an interaction effect between accounting sophistication of information users (i.e. cost accounting knowledge) and presentation format on cost-based decision making. The results of Cardinales' study suggest the impact of accounting information presentation formats on decision making may be affected by other contextual variables. Our study aims to investigate the effect of other contextual variable, namely the types of cost information (digital versus manual), on the association between cost information presentation formats and decision performance.

Examining the impact of digital and manual presentation formats on decision performance is important for some reasons. First, the impact of digital and manual format need to be reviewed because in accounting context, the increase of digital technology has a significant effect on information dissemination and financial reporting (Lymer and Tallberg, 1997; Lymer, 1999; Ashbaugh et al., 1999; Oyelere et al., 2003; Smith, 2003; Fisher et al., 2004; Hodge and Pronk, 2006). New technology enables report preparers to expand the media they use from merely hard copy format to digital reporting format. Previous studies (e.g. Beattie and Pratt, 2003; Hodge et al., 2004) suggest digital format has the ability to show more transparency in financial reporting. Secondly, prior research have



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not evaluated whether there is a difference in decision performance taken by decision makers when information is presented in digital or manual type in the format of tabular or graphical. While previous studies (e.g. Ghani et al., 2008) have examined the effect of different types (i.e manual versus digital), they did not study the formats (tabular versus graphical). On the other hand, while others (e.g. Hodge et al., 2004 and Cardinaels, 2008) have examined presentation formats they did not examine the effect of different types of information. Particularly relevant to our study, Cardinaels (2008) find that format of information does matter. However, the information in his study is delivered to his subject using computer media; meaning, the information is presented in digital format. There is possibility such type of information may have confounding effect (Abdolmohammadi et al., 2002). Cardinales' findings, therefore, need to be re-tested to find out whether there will be a difference if the information is presented in the form of hard-copy (manual) type.

Overall, the objectives of our study are twofold. First, it replicates and validates Cardinaels' study using very different subjects. While cardinaels's study using students as subjects, our study uses actual managers as the subject. Secondly, our study extends Cardinaels' study to include different types of presentation types.

The rest of the paper is organized as follows. The next section is review of previous relevant studies and hypotheses development. This will be followed by research design and then presentation of findings. The final section is conclusion, limitatations and suggestion for future research.



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LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The results of previous studies concerning the impact of different presentation format on decision performance show various evidence (Vessey, 1991). As cited by Ghani (2008), some studies indicate that specific presentation format improves decision making process (Stock and Watson, 1984; Dickson et al., 1986; Iselin, 1988; Vessey, 1991; Mackay and Villareal, 1987; Hard and Vanacek, 1991; Stone and Schkade, 1991; Anderson and Kaplan, 1992; Ramarapu et al., 1997; Frownfelter-Lohrke, 1998; Almer et al., 2003; Hodge et al., 2004). Others argue that decision makers experience lower decision performance in completing their task if they use improper presentation format (Vessey, 1991; Vessey and Galletta, 1991; Umanath and Vessey, 1994; Speier et al., 2003).

Related to decision performance, Cardinaels (2008) tests the joint effect of cost accounting knowledge and cost information presentation format, arguing that graphical format, compared with tabular format, can give different effect on decision performance of knowledgeable decision maker. Tables offer analytical views of data which needs item-per-item evaluation. Conversely, heuristic decision makers or the ones who tend to look at overall problems will take advantage from graphical format which emphasize on the overview of the same data (Lucas, 1981; Vessey, 1991).

Some studies have focused on the dissemination of financial information through digital reporting technology as alternative of manual reporting (printed format) which is more traditional. Larkin dan Simon (1987) argue that information



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presented using digital format enhances data structure and enables user to be more effective and efficient in using the information. Abdolmohammadi et al. (2002) call for studies to investigate the effect of different digital reporting format (PDF, HTML dan XBRL) on their information processing features. They argue that Internet technology in the format of HTML/XBRL can improve the performance of financial report because HTML/XBRL format can make information easier to be accessed and to be compared so that it can enhance reported data transparency. Comparing PDF and XBRL format, Hodge et al. (2004) find that participants using PDF format (which is non-searchable), obtain more functional fixation compared with participants using XBRL format (which is searchable) in the initial stage of their decision process.

Ghani et al. (2008) extend the work of Hodge et al. (2004). They examine the relation between digital reporting format and functional fixation using three formats – PDF, HTML and XBRL. They use accounting in investment context and use professionals who actively involved in the investment decision making as the subject of the experiment. Ghani et al. (2009) studied the effect of digital reporting format (HTML, PDF, and XBRL) on decision accuracy and cognitive effort in an accounting context. By using experiment towards professionals, the study concludes that digital reporting format affects decision accuracy. This result support the notion in psychology literature that different presentation format will affect some aspects of presented information.

The theory basis in this study is cognitive fit theory from Vessey (1991). Based on the theory, relation between task and presentation format will increase



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task performance for individual users. In some research, cognitive fit theory can give explanation of performance difference among different presentation format, such as table, graph and schematic faces (Vessey, 1991, 1994; Vessey & Galletta, 1991; Umanath & Vessey, 1994). The theory also has been developed to information system domain to explain performance difference between users of map-based and table-based geographical information system, in terms of closeness and content of a task (Dennis and Carte, 1998; Smelcer and Carmel, 1997).

Parallel to the theory, literature in decision making gives input to reduce cognitive load by adjusting users and decision aids they use (Rose & Wolfe, 2000; Rose, Douglas, & Rose, 2004). Some researcher find that compared with table, graphical format can decrease cognitive burden of a decision maker (Stock and Watson, 1984; Moriarity, 1979), because of a fit to analogue graphical representation that are stored in memory which will facilitate data retrieval and in turn will improve decision performance (Lucas, 1981). Cardinaels (2008) provides evidence that decision makers with limited cost accounting knowledge show better decision performance using graphical format whereas decision makers with higher cost accounting knowledge show an adverse condition, will be better using table format.

Some research have focused on information dissemination through digital reporting format as alternative of print-based traditional reporting. In their research, Hodge et al. (2004) have found that proper digital presentation format will minimize functional fixation. The reason is, if information presentation with



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specific style (that is digital presentation format) enhance data structure, this will enable user to be more effective and efficient in retrieving and using information (Larkin and Simon, 1987). Mackay et al. (1992) also found that the more familiar someone with specific presentation format, the better his performance will be in achieving optimum decision outcome. Hence, it is possible that digital presentation format knowledge of a decision maker will have an impact on decision (Roberts, 2002 dalam Ghani, 2008; Hodge et al., 2004).

Based on Cardinaels (2008) research's result and the impact of digital type versus manual type as referred to some previous research above, we argue that decision maker with high cost accounting knowledge level and familiar with digital presentation format will produce better decision performance if using tabular format information presented in digital type, whereas decision maker with low cost accounting knowledge level and familiar with manual presentation format (hard-copy and print-based format) will produce better decision performance if using graphical format presented in manual type. From that argument, we hypothesize as follows:

H1a Profit performance of high knowledge decision makers with digital presentation type and tabular cost information format is higher than those with manual presentation type and tabular cost information format.

H1b Profit performance of high knowledge decision makers with digital presentation type and graphical information format is lower than those with manual presentation type and graphical cost information format.



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H2a Profit performance of low knowledge decision makers with digital presentation type and tabular cost information format is lower than those with manual presentation type and tabular cost information format.

H2b Profit performance for low knowledge decision makers with digital presentation type and graphical cost information format is higher than those with manual presentation type and graphical cost information format.

RESEARCH METHOD

To test the hypotheses, this study is designed using 2X2X2 between subjects experiment. Presentation format is manipulated as the between subject factor. Participants receive profitability report presented digitally or manually, in tabular or graphical format.

Participants

Participants in this study are managers (professional users) in junior, middle and senior level who frequently use cost information as the basis of their daily decision making. Previous research (Hodge, 2001; Dull et al., 2003; Hodge et al., 2004) mostly use students as the proxy of professional users because students are participants who always be ready for researcher, be ready to join the research and have had accounting skill in a specific level (Libby et al., 2002). However, using students as the proxy of profesional users has weaknesses due to students' limitation in advanced accounting skill, investment skill and practical experience (Birnberg and Nath, 1967; Anderson, 1988; Vera-Munoz et al., 2001). The way to obtain information between students and profesional users also



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different (Bouwman et al., 1995; Hunton and McEwen, 1997). Students generally have limited working experience and less analytical technique if compared with business practitioners (Vera-Munoz et al., 2001). Hence, the use of professional users as participants in this study give more contribution because of the participant's deeper understanding on the impact of digital presentation format on decision making process.

The managers participate in this study are managers of various divisions within a food manufacturing company. Participant's level of cost accounting knowledge is measured from total correct answers in multiple choice question list adopted from cost and management accounting text book. The measurement process is performed before experimental task is started.

Task and Procedures

Participants review company description and its customers (A, B, C) in the experiment. Receiving task description together with activity-based customer profitability report, participant performs profit improvement by changing the price for each customer in a specific range. ABC report is updated in the end of each eight trials, and then each decision is inputted in trend chart (for graphical format) or in table. Functions, parameters, and underlying assumptions used in this experiment which is adopted from Cardinaels (2008) can be seen in the attachment.



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Variables and Their Measurements

Performance

To measure decision making performance, we use deviation of realized profit from optimum profit (average from eight trials). The lower the deviation, the better the performance revealed. Here we define PROFIT as $PROFIT = \sum_j (\pi^* - \pi_j) / 8$, where π^* is optimum profit and π_j is realized profit by participant.

Presentation formats

Participants are divided into groups, receiving digital information in tabular format, digital information in graphical format, manual information in tabular format and manual information in graphical format. All formats contain the same ABC cost information, including crucial informations customer-specific costs: sales visit, internal logistics, and product delivery.

Control variables

Previous research shows evidence that working experience will increase skill which may affect performance (Cloyd, 1997; Libby, 1995). To see whether there is an effect on participant's performance, working experience is included as control variable. In addition, due to the use of computer and possibility of different computer acceptance among decision makers which will affect decision performance, users acceptance also included as control variable, measured by instrument from Davis (1989).



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INSERT TABLE 1 ABOUT HERE

RESULTS AND DISCUSSIONS

In the experiment, eight cells are formed and 60 participants are divided into groups in performing the experimental task, with the following data:

INSERT TABLE 2 ABOUT HERE

To test the hypothesis, we use ANCOVA (Analysis of Covariance) as the tools of analysis, using PROFIT as dependent variable, with information presentation type (digital,manual), presentation format (table,graph) and knowledge (high,low) as fixed factors and working experience, computer ease of use and computer usefulness as covariates.

INSERT TABLE 3 ABOUT HERE

Using 60 real managers instead of students as participants (see data of demography characteristics in table 3), we obtain different result from statistical analysis if compared with previous research's evidence, as can be seen in table 4.

INSERT TABLE 4 ABOUT HERE

As indicated in table 4, the impact of knowledge and joint effect of knowledge and presentation format on profit is not significant. Result of our further test, is presented in table 5 (effects of working experience, perceived usefulness and



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ease of use of decision makers have been tested by including those variables as covariates).

INSERT TABLE 5 ABOUT HERE

Table 5 indicates that main effect of knowledge (KNOW) variable is not significant ($F=2.229$, $p=0.142$). However, the main effect of TYPE (digital,manual) variable ($F=136.666$, $p=0.000$) and FORMAT (table,graph) variable ($F=23.214$, $p=0.000$) are both significant. Table 6 summarizes means of PROFIT resulted from participants in the experiment. Mean of Low Knowledge is 12.803, High Knowledge is 12.969, the difference is not significant ($p=0.142$). Mean of Digital TYPE is 12.236, Manual TYPE is 13.536. The difference is significant, 1.300, with $p=0.000$. Mean difference for TABLE (mean of PROFIT=12.619) and GRAPHIC (mean of PROFIT=13.153) is also significant, with $p=0.000$ ($p<0.05$).

INSERT TABLE 6 ABOUT HERE

Interaction between Variables

Interaction Between KNOW and TYPE (KNOW*TYPE)

Table 5 also reveals evidence that interaction between KNOW (high,low) and TYPE (digital,manual) is not significant ($F=0.955$, $p=0.333$). See also means of PROFIT for each, with no significant difference in table 7.

INSERT TABLE 7 ABOUT HERE

Graphically, interaction between KNOW and TYPE (digital,manual) can be seen in figure 1.

INSERT FIGURE 1 ABOUT HERE

The insignificance of interaction between knowledge and type lead to a conclusion that the effect of TYPE (digital, manual) on profit decision does not depend on level of knowledge of a decision maker.

Interaction between KNOW and FORMAT (KNOW*FORMAT)

Interaction between Knowledge and FORMAT is not significant ($F=0.811$, $p=0.372$). Mean of PROFIT and graphical plot for interaction between KNOW and FORMAT is as follows:

INSERT TABLE 8 ABOUT HERE

INSERT FIGURE 2 ABOUT HERE

Interaction between TYPE and FORMAT (TYPE*FORMAT)

Interaction between TYPE (digital,manual) and FORMAT (table,graph) shows significant result ($F=141.602$, $p=0.000$). Mean of PROFIT data for the interaction also shows supporting result:

INSERT TABLE 9 ABOUT HERE

Graphically, interaction between TYPE and FORMAT is presented as follows:



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INSERT FIGURE 3 ABOUT HERE

Post Hoc Test

Result of analysis on groups can be seen in the following data.

INSERT TABLE 10 ABOUT HERE

INSERT TABLE 11 ABOUT HERE

1. Mean difference between group 1 (KNOW=high, TYPE=digital, FORMAT=table) and group 3 (KNOW=high, TYPE=manual, FORMAT=table) is significant ($p=0.000$). Therefore, hypothesis 1a is supported
2. Mean difference between group 2 (KNOW=high, TYPE=digital, FORMAT=graphical) and group 4 (KNOW=high, TYPE=manual, FORMAT=graphical) is not significant. Therefore, hypothesis 1b is not supported.
3. Mean difference between group 5 (KNOW=low, TYPE=digital, FORMAT=table) and group 7 (KNOW=low, TYPE=manual, FORMAT=table) is significant, but mean of group 5 is higher than group 7. Therefore, hypothesis 2a is not supported.
4. Mean difference between group 6 (KNOW=low, TYPE=digital, FORMAT=graphical) and group 8 (KNOW=low, TYPE=manual, FORMAT=graphical) is not significant. Therefore, hypothesis 2b is not supported.



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FURTHER ANALYSIS

Three way interaction result between Knowledge, TYPE (Digital-Manual) and FORMAT (Tabel-Grafik) is not significant ($F= 2.695$, $p=0.107$). The result shows that the effect of tabular-graphical format on profit decision will depend on the presentation type, whether it is presented digitally or manually, and will not depend on the level of knowledge of decision maker.

From the experiment, there is an indication that instead of knowledge, daily task can be a factor which can affect manager in decision making process. To test this indication, we further analyze the impact of participant's nature of work. In accordance with their nature of work, task in each field under each manager's responsibility is different each other. From demographic data, there are two main classification of participant's nature of work, that is field operation work characteristic and desk-top work characteristic. In detail, information of description, frequency and percentage of managers participating in this experiment is shown as follows:

INSERT TABLE 12 ABOUT HERE

31 managers of total 60 managers participating in the experiment are classified into field-operation work manager, because their daily work nature and type forced them to get involved in the field, take tactical decision in the field and have very limited analysis time. The rest 29 participant managers are those classified into desk-top work managers, because of their nature of work which is very analytical and mostly performed in the office, has longer decision making time and usually has detail data support.



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The effect of Nature of Work on presentation type and format and decision performance is tested by adding NATURE (field work, desk-top) variable in the research model. The result can be seen as follows:

INSERT TABLE 13 ABOUT HERE

The above table indicates that interaction between NATURE, TYPE and FORMAT is significant.

**CONCLUSIONS, LIMITATIONS, AND SUGGESTIONS FOR FUTURE
RESEARCH**

This experimental study shows an evidence that the addition of two presentation types, digital and manual, do reveal different results. If Cardinaels (2008) find evidence that the impact of ABC report presentation format in tabular and graphical on profit will depend on level of cost accounting knowledge, this research, which tests the effect of adding digital and manual presentation types, shows:

- Level of cost accounting knowledge of user is not significantly affect relation between presentation format and profit.
- The impact of ABC report presentation format in graphical and tabular form on profit will depend on given presentation type, whether in digital or manual type.

In this research, information presented in digital and manual type give significant effect on decision making which can lead to the difference in their



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decision performance. Profit performance for decision makers using digital presentation type and tabular cost format is higher than those using manual presentation type and tabular cost information format, and profit performance for decision makers using digital presentation type and graphical information format is also higher than those using manual presentation type and graphical cost information format.

Relevant with previous research, information presented in digital format will enhance data structure, and this will enable user to be more effective and efficient in obtaining and using the information (Larkin dan Simon, 1987). In XML/XBRL digital format, information is easier to be accessed and be more comparable, which can improve reported data transparency. HTML, PDF and XBRL digital presentation format also have an impact on decision accuracy and cognitive effort in accounting context (Ghani et al., 2009). By using experiment on professionals, Ghani et al. (2009) conclude that digital reporting format affect decision accuracy.

Cardinaels (2008) argument that cost accounting knowledge is critical factor which can explain whether graphical versus tabular presentation format will increase or decrease decision performance in cost-based decision making is not supported in this study. By using managers as subject in the experiment to test the impact of information presentation format on decision performance, this research shows different result.

Some limitations indicated in this research are as follows: 1. Type and complexity of the decision making in real business field are more varied, if



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compared with the task in the experiment, which can affect the relation between information presentation and decision performance; 2. Participants used in this research are professionals from only one industry, therefore any results revealed should be generalized with caution; 3. Digital format used in the experiment is limited to on screen information display using excel worksheet. Different digital information type may give different result if applied in the same research, related to familiarity of decision maker on that format and the ease of use of the format.

Considering the aforementioned limitations, this research offers avenues for future research as follows. First, future studies should use different experimental task and varying the complexity of the task to see whether there will be difference in the result. Second, future study should apply experiment to professionals from different industries. Third, future study should utilize different types of digital information from the one used in this experiment to see whether it will make a different results.

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Table 1 Summary of Research Variables

VARIABLES	DESCRIPTION
Dependent Variables	
PROFIT:	profit deviation: mean distance of total realized profit with optimum profit from the average of 8 trials
Independent Variables	
Knowledge	Level of cost accounting knowledge
KNOW	mean split: high versus low, based on cost accounting knowledge level
Presentation	ABC cost information presentation type and format:
TYPE	digital : cost information is presented on screen in computer monitor using excel format; user can explore, calculate and refer to each part of the information automatically
	manual : cost information is presented in print-based form, user explore, calculate and review the data using hard-copy information
FORMAT	table : cost information is presented using table format
	graphic : cost information is presented using graphical format
Covariate Variables	
WORKEXP	participant's working experience obtained from demographic data filled by each participant
EASE	computer ease of use perception measured by Davis instrument
USE	computer usefulness perception measured by Davis instrument

Table 2 Experimental Group

		Type and Presentation Format			
		Digital		Manual	
		Table	Graph	Table	Graph
Knowledge	<i>High</i>	Group 1 N=5 Profit Mean =11.598	Group 2 N=6 Profit Mean =13.0583	Group 3 N=6 Profit Mean =14.0033	Group 4 N=6 Profit Mean =13.3117
	<i>Low</i>	Group 5 N=10 Profit Mean =11.156	Group 6 N=9 Profit Mean =13.2522	Group 7 N=9 Profit Mean =13.8322	Group 8 N=9 Profit Mean =12.9189

Table 3 Participant's Demography Characteristics

Description		Frequency	Percentage
Sex	Male	48	80%
	Female	12	20%
Age	≤ 25	2	3%
	25.1 - 35	22	37%
	35.1 - 45	21	35%
	45.1 - 55	14	23%
	> 55	1	2%
Academic Background	Accounting	22	37%
	Non Accounting	38	63%
Working Experience	0 - 1 year	2	3%
	1 - 5 years	36	60%
	5 - 10 years	15	25%
	> 10 years	7	12%
Nature of Work	<i>Field-Operation Work</i>	31	52%
	<i>Desk-Top Work</i>	29	48%

Table 4 Test Result of Cardinals Variable's Effect

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	5.860 ^a	4	1.465	1.347	.264
Intercept	814.845	1	814.845	749.211	.000
WORKEXP	.033	1	.033	.030	.863
KNOW	1.236	1	1.236	1.137	.291
FORMAT	2.989	1	2.989	2.748	.103
KNOW * FORMAT	.538	1	.538	.494	.485
Error	59.818	55	1.088		
Total	9994.113	60			
Corrected Total	65.678	59			

Table 5 Test Result of All Research Variable's Effect

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	57.413 ^a	10	5.741	34.040	.000
Intercept	182.204	1	182.204	1.080E3	.000
WORKEXP	.903	1	.903	5.354	.025
USE	.248	1	.248	1.471	.231
EASE	.089	1	.089	.526	.472
KNOW	.376	1	.376	2.229	.142
TYPE	23.051	1	23.051	136.666	.000
FORMAT	3.915	1	3.915	23.214	.000
KNOW * TYPE	.161	1	.161	.955	.333
KNOW * FORMAT	.137	1	.137	.811	.372
TYPE * FORMAT	23.883	1	23.883	141.602	.000
KNOW * TYPE * FORMAT	.455	1	.455	2.695	.107
Error	8.265	49	.169		
Total	9994.113	60			
Corrected Total	65.678	59			

Table 6 Mean Value and Difference

Variabel		Mean	Mean Difference	Sig.
KNOW	High	12.969	0.165	0.142
	Low	12.803	-0.165	0.142
TYPE	Digital	12.236	1.301	0.000
	Manual	13.536	-1.301	0.000
FORMAT	Tabel	12.619	0.534	0.000
	Grafik	13.153	-0.534	0.000

Table 7 Mean of PROFIT in KNOW*TYPE Interaction

KNOW	TYPE	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Low	Manual	13.399 ^a	.098	13.203	13.596
	Digital	12.207 ^a	.095	12.016	12.399
High	Manual	13.673 ^a	.119	13.435	13.912
	Digital	12.264 ^a	.128	12.008	12.520

Table 8 Mean of PROFIT in KNOW*FORMAT Interaction

KNOW	FORMAT	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Low	Grafik	13.120 ^a	.098	12.923	13.316
	Tabel	12.487 ^a	.095	12.297	12.677
High	Grafik	13.186 ^a	.119	12.947	13.425
	Tabel	12.751 ^a	.126	12.497	13.005

Table 9 Mean of PROFIT in TYPE*FORMAT Interaction

TYPE	FORMAT	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Manual	Grafik	13.147 ^a	.109	12.927	13.367
	Tabel	13.926 ^a	.109	13.708	14.144
Digital	Grafik	13.159 ^a	.109	12.941	13.377
	Tabel	11.312 ^a	.115	11.081	11.544

Table 10 Group's Analysis - One Way Analysis of Variance

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	56.225	7	8.032	44.183	.000
Within Groups	9.453	52	.182		
Total	65.678	59			



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Table 11 Post Hoc Test Result

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	3	-2.40533*	0.25818	0.000	-3.4166	-1.3941
2	4	-0.25333	0.24617	0.993	-1.2175	0.7109
5	7	-2.67622*	0.1959	0.000	-3.4435	-1.9089
6	8	0.33333	0.20099	0.902	-0.4539	1.1206

Table 12. Participating Manager's Description

No	Classification	Description	Frequency	Percentage	
1	Field/Operation Work	Regional Sales Manager	2	3%	
2		Area Sales Manager	2	3%	
3		Unit Manager	8	13%	
4		Regional Marketing Manager	4	7%	
5		District Marketing Manager	2	3%	
7		Plant Manager	3	5%	
8		Production Line Manager	4	7%	
9		Logistic Manager	2	3%	
10		Health, Safety & Environment	2	3%	
11		Supply Chain Manager	2	3%	
				31	52%
1	Desk-Top Work	Production Planning Manager	1	2%	
2		Procurement Manager	3	5%	
4		R&D Manager	4	7%	
5		Quality Assurance & Control	3	5%	
6		Operation Development Manager	2	3%	
7		HR, Management Organization Development, Training	3	5%	
8		Compensation & Benefit Manager	1	2%	
10		Legal & Corporate Affairs	1	2%	
11		Information Technology Manager	1	2%	
12		Financial Controller	1	2%	
13		Financial Planning & Reporting	3	5%	
14		Financial Analyst	3	5%	
15		Accounting & Tax	3	5%	
				29	48%
			TOTAL	60	100%

Table 13. Test Result of NATURE Variable

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	59.855 ^a	10	5.985	50.369	0.000
Intercept	179.418	1	179.418	1.51E+03	0.000
WORKEXP	0.172	1	0.172	1.449	0.235
USE	0.01	1	0.01	0.086	0.771
EASE	0.019	1	0.019	0.156	0.695
NATURE	0.007	1	0.007	0.06	0.808
TYPE	24.328	1	24.328	204.722	0.000
FORMAT	4.114	1	4.114	34.621	0.000
NATURE * TYPE	0.631	1	0.631	5.31	0.025
NATURE * FORMAT	1.262	1	1.262	10.616	0.002
TYPE * FORMAT	26.502	1	26.502	223.016	0.000
NATURE * TYPE * FORMAT	2.769	1	2.769	23.301	0.000
Error	5.823	49	0.119		
Total	9994.113	60			
Corrected Total	65.678	59			
a. R Squared = .911 (Adjusted R Squared = .893)					

Figure 1 Graphical Plot for KNOW*TYPE
Interaction

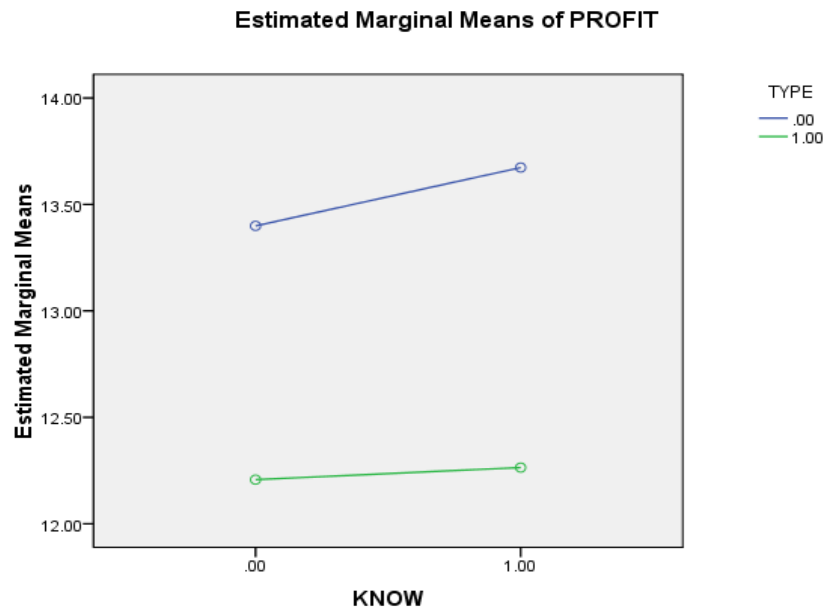


Figure 2 Graphical Plot for KNOW*FORMAT interaction

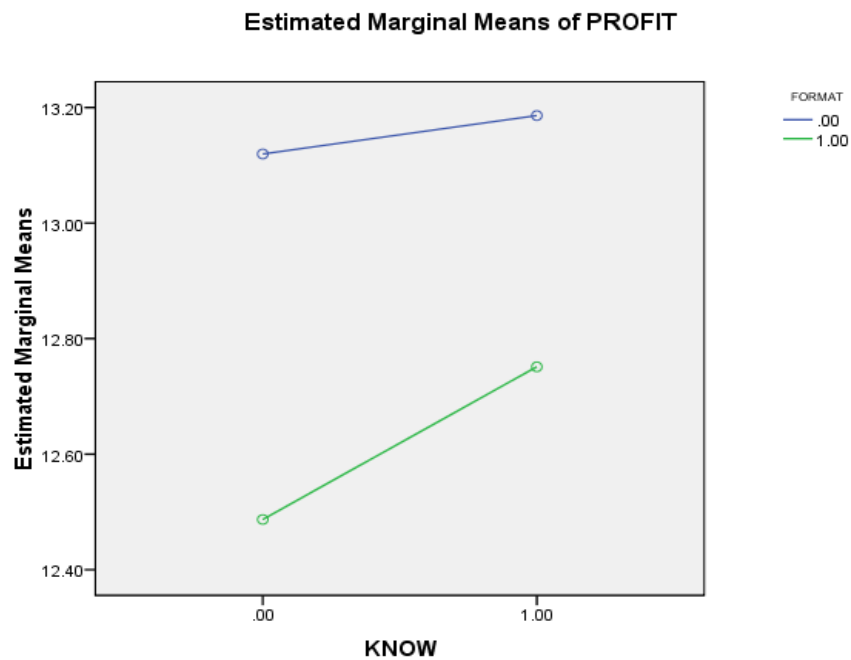


Figure 3 Graphical Plot for TYPE*FORMAT Interaction

