

Materials Management as a Panacea for the Performance of SMEs:

Comment [w1]: Use

Evidence from Kogi State

ABSTRACT

This study focused on the effects of materials management on the performance of SMEs in Kogi State. For this study, the method used was research survey design. The population of the study comprised of the SMEs in food processing and manufacturing industries in the Eastern Senatorial District of Kogi State. A multi-stage sampling was used to select 384 SME owners in Kogi State. Descriptive statistics, Multiple Regression and Ordered Probit Regression were used for analysis. Findings show that material planning and over-stocking of materials have significantly positive effects on profitability of SMEs in Kogi State; while under-stocking of materials have significantly negative effect on profitability of SMEs in Kogi State. Finding further shows that persistent material under-stocking significantly causes customer's satisfaction of SMEs in Kogi State to decrease. The study concluded that materials management is critical to the achievement of desired performance of SMEs. It was recommended that SME owners should engage in effective material planning and keep over-stocking of materials moderate. The implication of this is that profitability and customer's satisfaction of SMEs in Kogi State will be enhanced if materials are properly managed.

Keywords: Inventory, Inventory Control, Customers' Satisfaction, Procurement, Profitability, Business Environment

1. INTRODUCTION

Recently, Small and Medium-size Enterprises (SMEs) appears to have faced material procurement, inventory and supply challenges. These are crises obviously posed by the economic recession to SME sector. According to Asaolu, Agorzie and Unam (2012), SMEs invest "a considerable amount of capital on materials". This investment on material is essentially required for the survival of SMEs. It is also back up with the fact that operations of SMEs must be unobstructed, and the enterprise their competitive power must be established. Unfortunately, SMEs are observed often engaged in the procurement of low quality materials and unaplaudable inventory managerial approach to reduce cost. The SME owners are not conversant with the fact that material costs are varying parameters. In previous study, Ogbadu (2009) tried to establish that apart from basic price of materials, other varying costs attached to materials acquisition are purchasing cost, marketing cost, obsolescence and wastages.

However, It may be wrong for SME owners to focus only on the procurement of the best quality materials without adequate attention on material planning and control. The application

37 of planning and control to the management of materials is for effective operations of SMEs.
38 Akindipe (2014) posited that the significant of material management to the effective and
39 efficient operation of SMEs cannot be disputed.

40 The management of materials by SME owners requires a very good attention in order to
41 achieve uninterrupted production runs and enhanced performance in operations (Khalid,
42 2008). The performance of SMEs (in terms of customer's satisfaction and profitability) is
43 believed to also depend on material management and functions. Akindipe (2014) stressed that
44 the "material management function is assumed to be organised and operated on an integrated
45 basis and is also presumed to be responsible for material forecasting, planning, inventory
46 control, scrap control and disposal; providing management information regarding purchases
47 and inventories within the framework of the financial policies and norms" (p.37). The main
48 rationale behind inventory control in material management is to prevent materials
49 understocking and overstocking.

50 Though, there have been studies conducted on the effects of material management on the
51 performance of SMEs in many countries. Oyebamiji (2018) added that previous studies have
52 convergent opinions on the relationship between the materials management and organization
53 performance. The effects of materials understocking and overstocking on the performance of
54 SMEs still lack research attentions. It is observed also that the relationship has not been
55 extracted in Nigeria, due to the interplay between the controllable and uncontrollable
56 environment of SMEs (controllable- organizational design, key workforce, functions and data
57 base; and uncontrollable- political, technological and economic). Interestingly, it is observed
58 that SMEs adopt low quality and quantity approach to cope with the hit by the interplay of
59 these factors in order to adapt with change in the business environment. For instance the bans
60 on imported materials have led many SMEs into finding alternative local materials; planning
61 and controlling inventories cheaply to pursue increased customer's satisfaction and
62 profitability in the Nigerian Business Environment (NBE). SMEs are likely to face threat in
63 material management when the uncontrollable factors overpower the uncontrollable factors.
64 Contrarily, opportunities are likely to be utilized when the controllable factors are favourable
65 and exceed the uncontrollable factors. The factors have much influence on material of the
66 right quality and quantity.

67 According to Akindipe (2014), 'the availability of the material in the right quality and
68 quantity will determine to a reasonable extent the availability, quality and quantity of the

69 resultant output'. Meanwhile, it is expected that inventory control as an aspect of material
70 management will have positive effects on the profitability of SMEs in Kogi State. It is in this
71 regard that this study will be designed in relation to the business environment of Kogi State.
72 The study of Gelagay and Hora (2018) has found that higher levels of inventory management
73 practice can have positive effect on improved organizational performance. The challenge here
74 is that the actual aspect of the organizational performance is unknown. Other studies
75 (Ramakrishna, 2005; Ogbadu, 2009; Ondiek, 2009) identified turnover as a measure of
76 performance, and have shown that materials account for more than 50% percent of it in the
77 manufacturing firms. Thus, material management is believed to have effects on the
78 performance of SMEs (profitability and customer's satisfaction), and studies in this regard
79 have not been explored in Kogi State. On the general belief, high quality materials attract
80 high costs of production which may in turn have effect on profitability; but customer's
81 satisfaction is likely to improve. Few SME owners may adopt quantity increase approach
82 with high regard for low price. This has the tendency of influencing profitability and
83 customer's satisfaction. The nature of this influence has not been ascertained in Kogi State.
84 This study bridged this gap. Thus, the main objective of the study was to investigate the
85 effects of material management on the performance of SMEs in Kogi State. The specific
86 objectives of the study were to:

- 87 i. Investigate the effect of material management (material planning, understocking and
88 over-stocking) on the profitability and customer's satisfaction of SMEs in Kogi State.
- 89 ii. Ascertain the effects of factors (increasing purchasing cost, increased marketing cost,
90 obsolescence due to over-stocking, wastages due to over-stocking and loss of
91 customer's patronage) on the profitability of SMEs in Kogi State.

92

93 **2. REVIEW OF RELEVANT LITERATURE**

94 Material management is so much connected with value chain and efficiency in the operations
95 of SMEs. According to Aina *et al.* (2017), "materials management encompasses all
96 operations management functions from purchasing of raw materials through the production
97 processes to the final delivery of the end products". This implies that the management of
98 materials is critical to delivering values to customers. For instance, the management of
99 materials takes account of what customers really need, how can materials be sourced, what
100 quantity and quality must be supplied, how can the material supplied be used effectively and
101 efficiently to deliver a customer's desirable value. Ondiek (2009) added that materials

102 management brings ‘together under one management responsibility for determining the
103 manufacturing requirement, scheduling the manufacturing processes and procuring, storing
104 and dispensing materials’.

105 Gopakakreshnan and Sundaresan (2006) stressed that material management is concerned with
106 all activities which are related to the flow of materials, from the supplier’s plant through the
107 manufacturing process, into finished goods warehouse and on to the ultimate users of the
108 product. In another way, Donyavi and Flanagan (2009) expressed that “material management
109 is concerned with system for planning and controlling to ensure that the right quality and
110 quantity of materials and equipment are specified in a timely manner” (p.12). Based on their
111 view, it is also depicted that material management is planning and control task that takes into
112 account acquisition cost and on-time delivery to avoid operations shutdown, increase average
113 cost of producing goods, out-of-stock, and so on.

114 Effective and efficient management of material has so much implication on the overall
115 performance of SMEs. The management of raw material in a manufacturing organization
116 therefore deserves attention and critical study in order to achieve uninterrupted production
117 runs and enhanced performance (Khalid, 2008) in terms of profitability, customer’s
118 satisfaction, reduced cost and high quality. Aina-David *et al.* (2017) asserted that materials
119 management is a tool to optimize performance in meeting customer service requirements at
120 the same time adding to profitability by minimizing costs and making the best use of
121 available resources. Thus, materials management is the process which integrates the flow of
122 supplies into, through and out of SMEs to achieve a level of service which ensures that the
123 right materials are available at the right place at the time in the right quantity and quality and
124 at the right cost.

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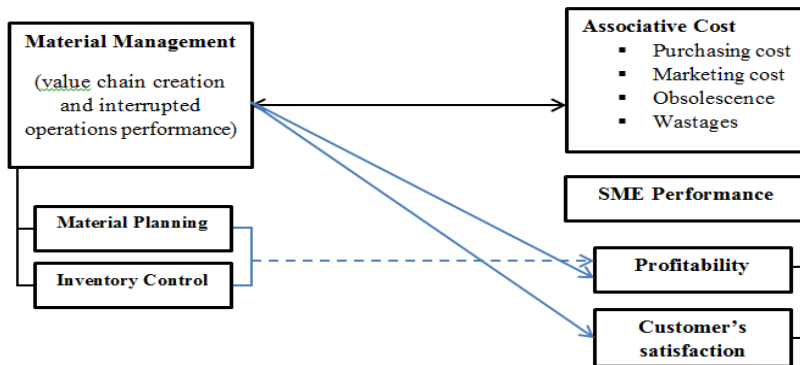
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131 **Fig. 1: Conceptual Framework of Materials Management and Performance**



132

133 **Source:** Adopted from Gopalakrishnan and Sundaresan (2006); Ogbadu (2009); Salome
 134 (2014)

135 Anichebe and Agu (2013) expressed that material management and material planning are
 136 used interchangeably. It is worthy of note that material planning is an arm of material
 137 management. It is in this regard this present study treats material planning as an aspect of
 138 material management. However, it is observed that most SMEs invest largely on material.
 139 This is in no doubt that the operations of the SMEs are grossly dependent on materials to
 140 provide goods that are demanded by customers in a unique way. Ondiek (2009) is of the
 141 opinion that such a large investment requires considerable planning and control so as to
 142 minimize wastage which invariably affects the profitability of organizations. Material
 143 planning is a scientific way of determining the requirements starting with raw materials,
 144 consumables, spare parts and all other materials that are required to meet the given
 145 production plan for a certain period. Though a study (Monday, 2008) considered Materials
 146 Requirements Planning (MRP), purchasing, procurement of materials, inventory control,
 147 storage, materials supply, transportation and materials handling as the activities which affect
 148 the performance of SMEs. In this study, effort is only premised on material requirement
 149 planning and inventory control. These two activities are observed to be influencing the
 150 operations performance of SMEs in Kogi State. SMEs need the materials at the right price
 151 (affordable), at the right quantity (sufficient for operations), in the right quality and at the
 152 right time. Aina *et al.* (2017) expressed that these will help SMEs to co-ordinate and schedule
 153 the production activity in an integrative way for an industrial undertaking.

154 It has been proven in previous studies that effective material management has the tendency of
 155 positively affecting the performance of SMEs. The study conducted by JerutoKeitany,

156 Wanyoike and Salome (2014) provided this evidence. Some of these studies did not
157 decompose the organizational performance in the course of their survey. Those studies which
158 decomposed organizational performance only used profitability as a parameter. For instance,
159 Ibegbulem and Okorie (2015) discovered that material management has the propensity to
160 contribute to the profitability of organizations. The study of Nwosu (2014) had revealed that
161 material management has significant effect on profitability of organizations. It is observed
162 that these studies were conducted on large firms and enterprises. Little or no effort has been
163 asserted to investigate the same effect on SMEs. This is quite a big loophole, particularly in
164 Nigeria. In fact, there appears to be a big gap even in the context of large enterprises because
165 the effect of material management on customer's satisfaction has not been investigated or not
166 adequately researched. In this study, it is expected that effective material management will
167 have effect on customer's satisfaction of SMEs in Kogi State. This a-priori expectation
168 follows the assertion of Achison (1999) who maintained that material management as a
169 concept requires an organizational structure which often unifies into one functional
170 responsibility- the systematic planning and control of all material from identification of the
171 need through delivery to customers. This study upholds that effective material management
172 can fast-track the supply and management of quality materials that can enhance the
173 production of quality goods that can satisfy the identified need of the customers.

174 **3. RESEARCH METHODOLOGY**

175 **3.1 Research Design**

176 For this research, the method used was research survey design. The design focused on the
177 collection and data analysis from the study population which enabled the researcher to look
178 into the causal association connecting the identified variables. The instrument that was used
179 for the collection of relevant data for the study was be questionnaire.

180 **3.2 Population**

181 The 'complete set of cases from which a sample was selected is called the population whether
182 it describes human beings or not' (Saunders *et al.*, 2007). For the purposes of this study, the
183 population comprised of the SMEs in food processing and manufacturing industries in Kogi
184 State. It appears that there is no adequate record of SMEs regarding Kogi State. There are
185 many SMEs that are not registered in Kogi State. Thus, this study considered the population
186 infinite.

187 **3.3 Sampling Technique**

188 A multi-stage sampling was used to select 384 SME owners in Kogi State. The first stage was
189 the stratified sampling method. This involved grouping the SMEs according to their location.
190 The second stage involved the use of sampling by sectors, and lastly, the stage involved the
191 use of simple random sampling method to pick the respondents from SMEs' clusters in Kogi
192 State. The simple random technique was used to ensure equal opportunity for the
193 participation of SME owners in the population and to prevent unnecessary bias in the
194 selection process. The total sample size was 384. This cuts across gender, age, marital status,
195 educational qualification and work experience.

196 Cochran's (1977) method outlined in Bartlett, Kotrlik, and Higgins (2001) was adopted to
197 determine the sample size. The formula is presented below.

$$n_0 = \frac{t^2 \times p \times (1 - p)}{d^2}$$

198

199 Where;

200 n_0 is the minimum estimated sample size

201 t is the value of the t -distribution corresponding to the chosen alpha level – for .05 this is 1.96

202 p is the estimate of population proportion*

203 d is the margin of error – Bartlett *et al.* recommend using 5%

204 *When p is unknown, generally it is best to set it at .5

205 Therefore,

$$\frac{(1.96)^2 \times 0.5 \times (1 - 0.5)}{0.05^2}$$

206

$$\frac{3.8416 \times 0.5 \times 0.5}{0.0025} = 384.16 = 384 \text{ Approximately}$$

207

208 **3.4 Validity and Reliability of Instrument**

209 To establish the instruments' validity, a panel of experts was consulted. To establish the
210 instrument reliability, the Cronbach Coefficient alpha (α) was used. The Cronbach

211 Coefficient results are materials planning ($\alpha = 0.78$), materials under-stocking ($\alpha = 0.81$),
 212 materials over-stocking ($\alpha = 0.70$), profitability ($\alpha = 0.71$), customer's satisfaction ($\alpha = 0.75$),
 213 increasing purchasing cost ($\alpha = 0.72$), increased marketing cost ($\alpha = 0.80$), obsolescence due
 214 to over-stocking ($\alpha = 0.70$), wastages due to over-stocking ($\alpha = 0.77$) and loss of customer's
 215 patronage ($\alpha = 0.82$).

216 **3.5 Method of Data Analysis**

217 The descriptive method of data analysis was employed as analytical tool for the study.
 218 Descriptive statistics is a potent method used in social science research to describe the
 219 features of the research sample like percentage, means, and standard deviations (SD). In
 220 addition this study used Multiple Regression and Ordered Probit Regression for analysis. The
 221 model that was used in ascertaining the effects of the independent variables on the dependent
 222 variables of the study has been specified as:

223 **Objective One: Multiple regression model**

224 $Y = f(X)$

225 $y_1 = f(x_1, x_2, x_3) \dots\dots\dots 1$

226 $y_2 = f(x_1, x_2, x_3) \dots\dots\dots 2$

227 $y_1 = \alpha_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \mu \dots\dots\dots 1$

228 $y_2 = \alpha_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \mu \dots\dots\dots 2$

229 Where:

230 y_1 = Profitability

231 y_2 = Customer's Satisfaction

232 X_1 = Material Planning

233 X_2 = Under-Stocking

234 X_3 = Over-Stocking

235 **Objective Two: Ordered Probit Regression Model**

236 $Y^* = x^1\beta + e_1$

237 Where y^* is the exact but unobserved dependent variable

238 X is the vector of independent variables and

239 B is the vector of regression coefficients which is estimated.

240 $Y = (X_1 + X_2 + X_3 + X_4 \dots\dots\dots X_n) + e$

241 X_1 = Increasing Purchasing Cost

- 242 X_2 = Increased Marketing Cost
 243 X_3 = Obsolescence Due To Over-Stocking
 244 X_4 = Obsolescence Due To Over-Stocking
 245 X_5 = Loss of Customer's Patronage
 246 Y^* = Profitability
 247 e = Error term

248 **4. DATA ANALYSIS AND RESULTS**

249 **Table 1 Questionnaire administration**

Questionnaire	Frequency	Percentage
Administered	384	100.00
Returned	263	68.49
Unreturned	121	31.51

250 **Source:** Field Survey (2019)

251 Table 1 indicates that 384 questionnaires (100%) were administered; 263 questionnaires
 252 (68.49%) were returned while 121 questionnaires (31.51%) were not returned. Based on the
 253 result, the study analyzed data on the returned questionnaires.

254 **Table 2 Showing demographic characteristics**

Gender	Frequency	Percent
Male	149	56.7
Female	114	43.3
Total	263	100.0
Age	Frequency	Percent
Below 20 Years	21	8.0
21-25 Years	19	7.2
26- 30 Years	76	28.9
30-35 Years	55	20.9
36- 40 Years	36	13.7
40- 50 Years	27	10.3
Above 50 Years	29	11.0
Total	263	100.0
Certificates	Frequency	Percent
Primary	30	11.4
Secondary	49	18.6

College of Education	96	36.5
University	88	33.5
Total	263	100.0
Business Experience	Frequency	Percent
Below 1 Year	20	7.6
1-2 Years	31	11.8
2-4 Years	88	33.5
4-6 Years	75	28.5
6-10 Years	20	7.6
10-15 Years	20	7.6
Above 15 Years	9	3.4
Total	263	100.0

255 **Source:** field survey, 2019

256 Table 2 above shows the gender of respondents. It is observed that 149 respondents (56.7%)
 257 were male; and 114 respondents (43.3%) were female. The implication of this is that majority
 258 of respondents in the study area were male.

259 Table 2 above shows the level of education of respondents. It is posited that 30 respondents
 260 (11.4%) were Primary School Certificate holder; 49 respondents (18.6%) were Secondary
 261 School Certificate Holder; 96 respondents (36.5%) were College of Education Certificate
 262 Holder; and 88 respondents (33.5%) were Bachelor of Science Certificate Holder. It is opined
 263 that majority of respondents in the study area were College of Education Certificate Holder.

264 The table 2 above shows the age bracket of respondents. It is observed that 21 respondents
 265 (8.0%) were below 20 years; 19 respondents (7.2%) were within 21-25 Years; 76 respondents
 266 (28.9%) were within 26- 30 Years; 55 respondents (20.9%) were within 30-35 Years; 36
 267 respondents (13.7%) were with 36- 40 Years; 27 respondents (10.3%) were within 40- 50
 268 Years; and 29 respondents (11.0%) were above 50 years. This denotes that the majority of
 269 respondents in the study area were within 26- 30 Years.

270 Table 2 above shows years involved in business. It is studied that 20 respondents (7.6%) were
 271 below 1 year; 31 respondents (11.8%) were 1-2 Years; 88 respondents (33.5%) were 2-4
 272 Years; 75 respondents (28.5%) were 4-6 Years; 20 respondents (7.6%) were 6-10 Years; 20

273 respondents (7.6%) were 10-15 Years; and 9 respondents (3.4%) were above 15 years. It is
 274 observed that majority of respondents in the study area were 2-4 Years.

275 **Table 3: Multiple regression analysis of the effect of Material Planning, Under-stocking**
 276 **and Over-stocking**

Variables	Column I Profitability			Column II Customers' Satisfaction		
	Coef	t-stat	P-Value	Coef	t-stat	P-Value
Material Planning	.480	28.505	.001	-.064	.255	.775
Under-Stocking	-.160	7.064	.001	-.275	3.872	.022
Over-Stocking	.376	16.795	.001	-.436	.923	.338
Multiple R	.772			.628		
R – squared	.595			.394		
Adjusted R-Squared	.583			.382		
F-Statistics	46.739			33.385		
P-value	.001			.001		

277 **Dependent Variable:** Profitability and Customers' Satisfaction of SMEs

278 **Predictors:** Material Planning, Under-stocking and Over-stocking

279
 280 The Multiple R (0.772) in table 3(I) indicate strong linear relationship between the variables.
 281 The coefficient of determination ($R^2 = 0.595$) show the spread of data on the regression line.
 282 The R-square indicates that 59.5% variation in the profitability of SMEs is explained by the
 283 predictor variables (such as material planning, under-stocking and over-stocking of
 284 materials). The remaining 40.5% shows that there are other variables that account for
 285 variations in the profitability of SMEs in Kogi State.

286 Table 3(I) shows the levels of variability within a regression model and forms the basis for
 287 tests of significance. The *P*-value for the *F* test statistic ($F = 46.739$) is 0.001, providing
 288 strong evidence against the null hypothesis. The squared multiple correlation $R^2 = SSM/SST$
 289 $= 156.613/263.000 = 0.772$, indicating that 77.2% of the variability in "profitability" variable
 290 is explained by "material planning, under-stocking and over-stocking of materials" variables.

291 Table 3(I) shows the relationships between each of the independent variables and profitability
 292 of SMEs in Kogi State. The material planning in the regression model is 0.480 with the *p*-
 293 value less than 0.001. This coefficient represents the mean increase in profitability for every
 294 additional material planning activity. Thus, 48.0% increase in profitability of SMEs in Kogi
 295 State is as a result of the significantly proportional change in material planning activity.
 296 Under-Stocking in the regression model is -0.160 with the *p*-value less than 0.001. On the

297 contrary, the coefficient represents that the mean decrease in profitability is significantly
298 caused persisting under-stocking of materials. Unaddressed increase in under-stocking is
299 likely to significantly cause dwindling profitability in almost the same proportion. The over-
300 stocking in the regression model is 0.376 with the p-value less than 0.001. This coefficient
301 represents that the mean increase in profitability is significantly brought about by every
302 increase in over-stocking of materials. Thus, 37.6% increase in profitability of SMEs in Kogi
303 State is as a result of the significantly proportional increase in over-stocking of materials.

304 The Multiple Coefficient of Determination ($R = 0.772$) in table 3(II) indicates strong linear
305 relationship between the variables. The coefficient of determination ($R^2 = 0.394$) shows the
306 spread of data on the regression line. The R-square indicates that 39.4% variation in the
307 customer's satisfaction of SMEs is explained by the predictor variables (such as material
308 planning, under-stocking and over-stocking of materials). The remaining 60.6% shows that
309 there are other variables that account for variations in the customer's satisfaction of SMEs in
310 Kogi State. The *P*-value for the *F* test statistic ($F = 33.385$) is less than 0.001, providing
311 strong evidence against the null hypothesis. The squared multiple correlation $R^2 = SSM/SST$
312 $= 103.559/263.000 = 0.394$, indicating that 39.4% of the variability in "customer's
313 satisfaction of SMEs" is explained by "material planning, under-stocking and over-stocking
314 of materials" variables.

315 Table 3(II) shows the relationships between each of the independent variables and customer's
316 satisfaction of SMEs in Kogi State. The material planning in the regression model is -0.064
317 with the p-value more than 0.05. This coefficient represents the mean increase in customer's
318 satisfaction for every decrease in material planning activity. Interestingly, 48.0% increase in
319 customer's satisfaction of SMEs in Kogi State is not significantly brought about by
320 proportional decrease in material planning activity. Under-Stocking in the regression model is
321 -0.275 with the p-value less than 0.05. Also, the coefficient represents the mean decrease in
322 customer's satisfaction of SMEs for every persisting under-stocking of materials.
323 Unaddressed increase in under-stocking significantly causes customer's satisfaction of SMEs
324 in Kogi State to decrease in almost the same proportion. The over-stocking in the regression
325 model is -0.436. This coefficient represents the mean increase in customer's satisfaction of
326 SMEs for every decrease in over-stocking of materials. Interestingly, 37.6% increase in
327 customer's satisfaction of SMEs in Kogi State is as a result of the proportional decrease in
328 over-stocking of materials; but this appears to be insignificant.

329 **Table 4: Probit regression result of factors affecting profitability**

Variables	Coefficients	Standard Error	P> z
X ₁ Increasing Purchasing Cost	.234	.113	.000*
X ₂ Increased Marketing Cost	-.541	.259	.014*
X ₃ Obsolescence Due To Over-Stocking	-.179	.041	.000*
X ₄ Wastages Due To Over-Stocking	-.507	.270	.031*
X ₅ Loss Of Customer's Patronage	.063	.065	.384

330 **Source:** Field Survey, 2019

331 *Number of Obs*= 263
 332 *PR chi²* = 189.244
 333 *Prob > chi²* = 0.000
 334 *R² (Probit)* = 0.419

335 **NB:** Figures in the column of z-values* symbolize significance respectively.

336 The Table 4 shows the factors affecting the profitability of SMEs in Kogi State. The factors
 337 are increasing purchasing cost, increased marketing cost, obsolescence due to over-stocking,
 338 wastages due to over-stocking and loss of customer's patronage.

339 From the result of the Ordered Probit Regression on the table 4, the PR chi² is 189.244. The
 340 Pearson goodness-of-fit chi-square statistic tests the null hypothesis that the model
 341 adequately fits the data. The significance value of the test is small (less than 0.05 or equal to
 342 0.01); therefore, the model does adequately fit the data. It is thus appropriate to say that the
 343 data do not violate the model assumptions. Prob > chi² = 0.000 which implies that 100% of
 344 the changes in the profitability of SMEs were explained by the variables in the model. The R²
 345 (Probit) of 0.419 shows that about 41.9% of the profitability of SMEs is explained by the
 346 significant factors (increasing purchasing cost, increased marketing cost, obsolescence due to
 347 over-stocking and wastages due to over-stocking). The implication of this is that factors (such
 348 as increasing purchasing cost, increased marketing cost, obsolescence due to over-stocking
 349 and wastages due to over-stocking) affect the profitability of SMEs significantly among
 350 others. It is observed that 'increased marketing cost, obsolescence due to over-stocking,
 351 wastages due to over-stocking' entered the model with a negative sign, which implies that
 352 change in these factors would lead to a probabilistic inverse change in the profitability of
 353 SMEs in Kogi State. Only 'increasing purchasing cost' positively relate with the profitability
 354 of SMEs in Kogi State. Importantly, factor (such as loss of customer's patronage) appear to
 355 be insignificantly related to the profitability of SMEs in Kogi State.

356

357 **5. DISCUSSION OF FINDING**

358 Finding shows that majority of SMEs witness under-stocking and over-stocking of materials.
359 There is likelihood that SME owners have weaknesses relating to materials planning. It is
360 discovered that under-stocking and over-stocking of materials are inevitable in the operation
361 of SMEs. There are seen to have implications on the profitability rate of their enterprise.
362 SME owners appear to have stable and satisfactory profitability. Empirical investigation
363 proves that 59.5% variation in the profitability of SMEs is explained by material planning,
364 under-stocking and over-stocking of materials. It was found that material planning and over-
365 stocking of materials have significantly positive on profitability of SMEs in Kogi State.
366 Under-Stocking is discovered to have significantly negative on profitability of SMEs in Kogi
367 State. The studies of Ondiek (2009) and Miller (2010) are in agreement with the finding of
368 this study. Meanwhile, the finding of this present study provides clearer understanding of
369 specific constructs (material planning, under-stocking and over-stocking of materials) as they
370 reflect on profitability of SMEs in Kogi State. The finding of Ibegbulem and Okorie (2015)
371 and Nwosu (2014) provided a holistic empirical backing that material planning, under-
372 stocking and over-stocking of materials as core parts of material management significantly
373 contribute to the profitability of organizations.

374 It was discovered that SME owners have achieved moderate customer's satisfaction.
375 Customer's often get what they need in good shape and in line with their value. Empirical
376 investigation shows that 39.4% variation in the customer's satisfaction of SMEs is explained
377 by material planning, under-stocking and over-stocking of materials. Empirical evidence
378 shows that persistent material under-stocking significantly causes customer's satisfaction of
379 SMEs in Kogi State to decrease. Material planning and over-stocking appear insignificant to
380 influence customer's satisfaction of SMEs in Kogi State. This finding aligns with that of
381 Planert (1999) that material resources planning do not significantly affect customer's
382 satisfaction. Kim (2014) opined that material resources planning can only predict customer's
383 dynamic behavior. With respect to the effect of materials under-stocking, Ewuola, Imoundo,
384 Ajibefun, daramola and Ayodeji (2005) buttressed that avoiding issues of under stocking
385 ultimately guarantee customer satisfaction.

386 It is found that there are several costs associated with poor material planning. Descriptive
387 analysis shows that increasing purchasing cost, increased marketing cost, obsolescence due to
388 over-stocking, wastages due to over-stocking, loss of customer's patronage and production

389 breakdown due to under-stocking associate with poor material management of Small and
390 Medium enterprises. Empirically, 'increased marketing cost, obsolescence due to over-
391 stocking and wastages due to over-stocking' negatively and significantly affect the
392 profitability of SMEs in Kogi State. It is found that only 'increasing purchasing cost'
393 positively and significantly relate with the profitability of SMEs in Kogi State. Empirical
394 investigation proofs that 'loss of customer's patronage' is insignificantly related to the
395 profitability of SMEs in Kogi State.

396 **6. CONCLUSION**

397 Materials management is critical to the achievement of desired performance of SMEs.
398 Considering some aspects of materials management, material planning, under-stocking and
399 over-stocking of materials have varying predicting power over varying dimensions of the
400 performance of SMEs. Though, material planning, under-stocking and over-stocking of
401 materials are practices of SME owners in their routine operation, but their implications are
402 different.

403 Based on the finding of the study, material planning and over-stocking of materials have
404 significantly positive implication on the profitability of SMEs in Kogi State. proper materials
405 planning has the propensity to influence profitability of SMEs. Also, over-stocking of
406 materials is seen to have short-run positive implication on the profitability of SMEs in Kogi
407 State. Under-Stocking of materials has significantly negative implication on the profitability
408 of SMEs in Kogi State. Factually, under-stocking of materials may cause production short-
409 down, and there may be gap in supply and meeting of customers' demand at the short-run.
410 This may make customers' to find alternative or substitute for their demanded products. The
411 consequence of this is that profitability of SMEs suffers a setback. The empirical evidence
412 provided by this study shows that persisting materials under-stocking will bring about
413 decreasing customer's satisfaction of SMEs in Kogi State. Material planning and over-
414 stocking have not been found instrumental to the increasing customer's satisfaction of SMEs
415 in Kogi State. Avoiding issues of materials under stocking will help to enhance customer
416 satisfaction.

417 However, increased marketing cost, obsolescence due to over-stocking and wastages due to
418 over-stocking have been found to negatively and significantly affect the profitability of SMEs
419 in Kogi State. In the case of 'increasing purchasing cost', profitability of SMEs is seen to

420 have direct relationship. The profitability of SMEs in Kogi State is in no way influenced by
421 'loss of customer's patronage'.

422 **7. RECOMMENDATIONS**

423 With respect to the findings of the study, the following recommendations are made that:

- 424 i. SME owners should engage in effective material planning and also keep over-
425 stocking of materials moderate. Over-stocking is evidently proven to be more
426 favourable to under-Stocking. Under-Stocking of materials should be discouraged; as
427 all these will boost profitability of SMEs in Kogi State if properly adhere to.
- 428 ii. SME owners should avoid persistent material under-stocking to enhance customer's
429 satisfaction in Kogi State. Material planning and over-stocking should be given less
430 attention if customer's satisfaction of SMEs in Kogi State will be achieved.
- 431 iii. SME owners should reduce marketing cost, minimize obsolescence due to over-
432 stocking and minimize wastages due to over-stocking to achieve increased
433 profitability in Kogi State. In addition, SME owners should purchase more materials
434 as this has positive effect on profitability of their enterprises in Kogi State.

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