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1 Financial Performance Measurement of Manufacturing Small and 2 Medium Enterprises in Pretoria, South Africa: A Multiple 3 Exploratory Case Study

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7

8 **Abstract**

9 This article focuses on the financial performance measures used by manufacturing small and
10 medium enterprises (SMEs) in Pretoria, South Africa. The objectives were to identify the
11 financial tools that are used by SMEs to measure their financial performance, and recommend
12 improvements (if any) and training interventions that would possibly be needed to measure
13 financial performance successfully.

14

15 **Index terms**— bankruptcy prediction models, financial management, financial performance measurement,
16 manufacturing smes, ratio analysis

17 **1 Introduction**

18 The lack of managerial skills (including financial performance measurement skills) and training is one of the most
19 widespread causes of general business failure among small and medium enterprises (SMEs) in South Africa (Arasti,
20 2011, Christian, 2008& Mbonyane, 2006). Christian (2008) found that 90% of a sample of 1000 entrepreneurs
21 "believe that small businesses fail due to the lack of managerial skills". The problem may become more acute
22 when it comes to the specific financial performance management used in the SME sector, and to the question
23 of whether SMEs are using the available tools (financial ratio analyses and bankruptcy prediction models) for
24 the purposes of performance management. The characteristics common to unsuccessful enterprises are directly
25 related to personal decision-based characteristics of the owner, such as inflexibility and lack of insight; managerial
26 deficiencies, such as lack of management skills and appropriate managerial training; and financial shortcomings,
27 such as no accounting background, cash flow analysis and financial records (Arasti, 2011).

28 The contribution of SMEs around the globe is undeniable, especially in developing countries, and the SME
29 sector serves as an engine of job creation and economic growth. Creating opportunities for SMEs can advance
30 development and reduce poverty (Ebrahim, Ahmed & Taha, 2010; International Finance Corporation, 2011).
31 Precisely because of the importance of the contribution of SMEs to economies throughout the world and in South
32 Africa in particular, many studies have been conducted on financing these SMEs, or on the obstacles that they
33 face in obtaining finance. It appears, however, that very few studies have been undertaken on how SMEs manage
34 their finances and especially how they measure their financial performance. Even top South African companies
35 do not use the full arsenal of financial tools available to measure their financial performance (Mosalakae, 2007).
36 Financial performance management forms an important part of the business management field, and financial
37 measurement is also crucial for the survival of businesses. It must be noted though, that financial measures alone
38 are not enough to measure companies' performance, since a number of non-financial performance measures also
39 play an important role in their overall performance. However, this article will focus on financial measures only.

40 The present article has the potential to benefit managers and owners of SMEs by encouraging them to
41 reconsider their current financial performance measurement tools (if any) and consider training on how to use
42 these tools, especially if their businesses are not doing well. It may serve to preserve many of these SMEs from
43 failure. It could help them to foresee failure and change their course of action in time to prevent it. This article

5 C) FINANCIAL RATIO ANALYSIS

44 could contribute by raising awareness of the importance of studying financial management (as a whole) in the
45 SME context and also persuade researchers to shift the emphasis away from obstacles to accessing finance to
46 financial performance measurement or financial management as a whole.

47 Finally, this article may help fill the gap in the literature pertaining to financial performance measurement.
48 The researchers investigated the financial performance measures used by manufacturing SMEs in Pretoria, which,
49 as one of the country's three capital cities, serves as the executive and de facto national capital of South Africa.

50 2 II.

51 3 Literature Background a) The importance of successful SMEs

52 SMEs are defined differently across regions or countries. In South Africa, manufacturing SMEs are defined by
53 the National Small Business Act No 102 of 1996, as amended in 2003, as those businesses employing a maximum
54 of 200 full-time employees, with a turnover of a maximum of 51 million rand and a maximum total asset value
55 of 19 million rand (Olawale, Olumuyiwa & George, 2010). As SMEs play an important role in global economies,
56 governments focus on the development of SMEs to promote economic growth. South African SMEs contribute
57 56% of private sector employment and 36% of the gross domestic product (Olawale & Garwe, 2010). The
58 importance of SMEs in the economy naturally raises the question of their success and failure. According to
59 Statistics South Africa (2012), the number of insolvencies in South Africa ranged from around 120 in 2008 to
60 700 in 2009, and dropped again to just over 100 in 2012. The number of liquidations was in the region of 150
61 in 2008, rising to just under 500 in 2009 and dropping again to 200 in 2012. Before they are able to contribute
62 to the economy, SMEs must sustain themselves and grow. This sustainability and growth is generally measured
63 by their financial performance, hence the importance of SME financial performance measurement. Financial
64 performance management forms an important part of business management, and it is also crucial for the survival
65 of businesses. The question in this regard is whether manufacturing SMEs in Pretoria are using the appropriate
66 tools (financial ratio analysis and bankruptcy prediction models), which have been available for many years.

67 4 b) Financial management and performance measurement

68 Financial management focuses on the decision regarding the quantities and types of assets to acquire, how to
69 raise the capital needed and how to run the firm so as to maximise its value (Brigham & Houston, 2012). Jacobs
70 (2001) notes that this is an area that requires knowledge, skills and experience and whose goals include maximising
71 profits and sales, capturing a particular market share, minimising staff turnover and internal conflicts, survival
72 of the firm, and maximising wealth.

73 According to Codjia (2010), a statement of financial performance is an accounting summary that details a
74 business's revenues, expenses and net income. He goes on to say that "a statement of financial performance is
75 also referred to as statement of profit and loss or statement of income; and a corporation may prepare a statement
76 of financial performance on a monthly, quarterly or annual basis". As part of business management (Business
77 Dictionary, 2010), financial performance measurement can be one of the biggest challenges faced by businesses
78 in the SME sector, especially with regard to their survival if management is not trained in how to manage
79 finance and measure performance. Performance measures are the lifeblood of organisations, since without them
80 no decisions can be made (Mosalakae, 2007).

81 Performance measurement can be split into financial and non-financial measures. Financial performance
82 measurement generally looks at firms' financial ratios (derived from their financial statements) such as liquidity
83 ratios, activity ratios, profitability ratios, and debt ratios.

84 Non-financial performance measurement is more subjective and may involve customer service, employee
85 satisfaction, perceived growth in market share, perceived change in cash flow, and sales growth (Haber & Reichel,
86 2005).

87 A business needs to assess whether or not it has performed well over a certain period. From its profit and
88 loss account, analysts can observe the profit it has generated. It is also necessary to know whether a business
89 is in a good short-term financial position, and whether it is in a good financial position for long-term growth.
90 One of the most common means of analysing accounts is the use of financial ratios. According to Jacobs (2001),
91 a ratio is the simplest mathematical expression of two magnitudes which are meaningfully related, and which
92 are expressed in relation to each other (as a quotient). Ratio analysis and interpretation can be used by many
93 different stakeholders, especially those outside the organisation who want to invest. Ratios can also be used to
94 compare an enterprise's current position with its past. Roberts (2012) identifies the four basic types of financial
95 ratios as liquidity ratios, activity ratios, profitability ratios and leverage ratios.

96 5 c) Financial ratio analysis

97 Financial ratio analysis is defined by Lasher (2010) as a general technique based on some relatively standard
98 methods used to analyse information, and developed by people who make judgements about businesses by reading
99 their financial statement. Enterprises measure their financial performance differently, but financial ratio analysis
100 is the traditional approach to analysing and interpreting the financial position of an enterprise (Jacobs, 2001).

101 Ratios are derived from the financial statements of an enterprise and enable analysts to develop a picture of the
102 financial position of an enterprise.

103 As early as 1970 Edmister (1970) cited the following ratios as significant predictors of business failure:

104 1. Current ratio (current assets to current liabilities); 2. Net working capital to total assets; 3. Debt to total
105 assets; 4. Total assets turnover (sales to total assets); 5. Net sales to net working capital; 6. Net operating
106 margin (net working capital to total assets); 7. Earnings after tax to total assets; 8. Market value of equity to
107 book value of total debt; 9. Cash flow to total debt; 10. Trend breaks of net quick assets to inventory; 11. Net
108 quick assets to inventory; and 12. Rate of return to common shareholders.

109 Of the twelve ratios, Edmister notes that five (iii, ix, x, xi, xii) are generally the best indicators of failure.
110 Daya (1977) in his study also mentions three of these five. Three of the five ratios used by Altman (2000) in the
111 Z-score are also included in the twelve variables mentioned by Edmister. Other popular ratios mentioned in the
112 literature as failure predictors are:

113 ? Retained earnings to total assets; ? Profit after tax (PAT) to total assets; ? Shareholders' funds to total
114 assets; ? Turnover to total assets; ? Operating profit to operating assets; ? Inventory to sales; ? Quick assets to
115 current liabilities; ? Receivables to inventory; and ? Equity/total capital. ??allely (2008) states that with regard
116 to liquidity difficulties, the most important indicators include liquidity/solvency ratios, particularly the current
117 and quick ratios. A consideration of how these ratios change over time and how they relate to the recommended
118 averages may indicate whether or not a liquidity problem and potential corporate collapse are looming. Over the
119 years, to overcome the shortcomings of financial ratio analysis, some authors (Altman, 1968 and Edmister, 1970)
120 have suggested the grouping of similar ratios to develop meaningful bankruptcy prediction models.

121 **6 d) Bankruptcy prediction models**

122 Mosalakae (2007) defines a bankruptcy prediction model as a tool that can be used to assess whether or not
123 a firm will be able to continue its operations. These models feature among the tools available for measuring
124 financial performance. A number of researchers have tried to predict company failure based on the company's
125 financial ratios, and ratios have been used to develop bankruptcy prediction models for this purpose. Examples
126 of bankruptcy prediction models are Altman's Z-score and the ZETA credit models. The reason for singling
127 these two out is that the Z-score is widely used and the ZETA credit risk model has a high prediction accuracy
128 up to five years prior to failure. Daya (1977) reports that Altman discusses three generic terms which are often
129 used to describe "corporate problems", these being failure, insolvency, and bankruptcy. He describes failure
130 as represented by the situation where the realised rate of return on invested capital, with allowances for risk
131 considerations, is significantly and continually lower than prevailing rates on similar investments. The state of
132 insolvency exists when a firm cannot meet its current obligations, signifying a lack of liquidity. Bankruptcy can
133 be of two types: the state of insolvency, and the declaration of bankruptcy in court accompanied by a petition
134 to either liquidate the entity's assets or attempt a recovery programme.

135 **7 i. Altman's Z-score model**

136 Professor Altman developed the Z-score more than 40 years ago, and it is still widely used today. He researched 66
137 companies in the United States that experienced corporate failure between 1946 and 1965 to determine whether
138 or not their failure could have been predicted. The model is used by investors and analysts to assess the financial
139 risk associated with potential investments. In developing his models, Altman chose multiple discriminant analysis
140 (MDA). This technique has been utilised in a variety of disciplines since its first application in the 1930s. During
141 those earlier years, MDA was used mainly in the biological and behavioural sciences. In recent years, this
142 technique has become increasingly popular in the practical business world and in the academic environment.
143 MDA is a statistical technique used to classify an observation into one of several a priori groupings on the basis
144 of the individual characteristics of the observation. It is used primarily to classify and/or make predictions in
145 problems where the dependent variable appears in qualitative form, for example, male or female, bankrupt or
146 non-bankrupt.

147 ii. The ZETA credit model ??1977) In 1977, a second-generation model with several enhancements to the
148 original Z-score approach was constructed. The purpose was to "construct, analyze and test a new bankruptcy
149 classification model which considers explicitly recent developments with respect to business failures" (Altman,
150 2000). The new study also incorporated refinements in the utilisation of discriminant statistical techniques. The
151 new ZETA model for bankruptcy classification appears to be quite accurate for up to five years prior to failure,
152 with successful classification of well over 90% of the sample one year prior to failure and 70% accuracy up to five
153 years prior to failure. It is also observed that the inclusion of retailing firms in the same model as manufacturers
154 does not seem to affect the results negatively. This is probably due to the adjustments to the data based on
155 recent and anticipated financial reporting changes. The ZETA model has been found to outperform alternative
156 bankruptcy classification strategies in terms of expected cost criteria utilising prior probabilities and explicit
157 cost of error estimates (Altman, 2000). Altman (2000) states that in other studies a number of financial ratios
158 and other measures have been found to be helpful in providing statistical evidence of impending failures. The
159 analysis covered 27 variables based on their use in credit analysis. After a careful process of reducing the number
160 of variables, a sevenvariable model was selected which not only classifies the test sample accurately, but also

161 proves the most reliable in various validation procedures. That is, adding more variables could not significantly
162 improve on the results, and no model with fewer variables performed as well (Altman, 2000). The seven variables
163 for the ZETA model are: return on assets, stability of earnings, debt service, cumulative profitability, liquidity,
164 capitalisation and size.

165 These models are used as a basis for ratio analysis and interpretation. They use a combination of similar
166 ratios to give a single score that can be interpreted to efficiently predict business failure. The ZETA credit model
167 has a much higher accuracy than the MDA model more than two years prior to bankruptcy, but the former is a
168 proprietary model, available only to subscribers to ZETA Services Inc.

169 8 III. Objectives and Research Design

170 The main objective of the study reported on in this article was to investigate the financial performance measures
171 used by manufacturing SMEs in Pretoria, South Africa.

172 The secondary objectives of the research were to:

173 ? identify financial tools currently used by manufacturing SMEs in measuring their financial performance;
174 ? recommend necessary improvements to financial performance measures used by manufacturing SMEs; and
175 ? recommend necessary training interventions for manufacturing SMEs that would be needed to successfully
176 measure financial performance.

177 This article is based on an exploratory case study approach and qualitative research. However, a mixed
178 qualitative-quantitative method was used in the data analysis. The units of analysis were the members or
179 elements of the population, in this case manufacturing SMEs in Pretoria, South Africa. The units of observation
180 were the people interviewed, namely the managers or owners of the manufacturing SMEs. Taking into account
181 that there is no complete list of SMEs in South Africa, judgement (purposive) sampling (a nonprobability form
182 of sampling) was used to select a sample. Ten owners or managers of the selected SMEs were interviewed. There
183 is no ideal sample size for qualitative studies, but the number of participants in this case is in keeping with the
184 guidelines set for both case studies and interviews. Eisenhardt (1989) proposes between four and ten, and Creswell
185 (2002) three to five. Guest, Bunce and Johnson (2006) suggest that between six and twelve interviews should
186 suffice. The small sample is also congruent with the interpretivist research philosophy as proposed by Saunders,
187 Lewis and Thornhill (2009), as is the data collection technique of interviewing. Guest et al. (2006) maintain that
188 saturation, the point at which no new information or themes are added, especially at a meta-theme level, can
189 occur as early as six interviews. The unit of analysis was the individual Generation X participant interviews at
190 the theme level (Babbie, 2007; Perry, 2001). Semistructured interviews were used to collect data at the premises of
191 the participant SMEs, using an interviewer-administered questionnaire. Information from the interviewed SMEs
192 was gathered, analysed and interpreted. Given the information sought, thematic content analysis appeared to
193 be the most appropriate analysis technique. Qualitative content analysis goes beyond merely counting words
194 or extracting objective content from texts to examine meanings, themes and patterns that may be manifest or
195 latent in a particular text. Qualitative content analysis is mainly inductive, grounding the examination of topics
196 and themes, as well as the inferences drawn from them, in the data. In some cases, qualitative content analysis
197 attempts to generate theory (Zhang & Wildemuth, 2011).

198 IV.

199 9 Results

200 10 a) Characteristics of SMEs

201 The SMEs studied were from various sectors of manufacturing, classified in terms of the products manufactured;
202 these included steel components and hand tools, automotive parts, industrial ovens, corrugated boxes, rubber,
203 exhaust systems and accessories. Table 1 From Table 1, it may be observed that of the 10 SMEs studied,
204 according to their sizes, 7 were small businesses and 3 were medium businesses. Four of the participant SMEs
205 had been operating for over 10 years, one for 20 years, one for over 40 years, two for over 50 years, one for 7 years,
206 and one for 2 years. The fact that these companies had been in business for such a long time means that the
207 information obtained from them can be accepted as meaningful, since the age of the companies could be seen to
208 indicate that they were doing fairly well financially, and could suggest that information gleaned would therefore
209 be helpful to the research objectives. A large majority of the participant businesses reported that they measured
210 their financial performance on a monthly basis on their own, and then discussed the issue with auditors yearly.
211 Two companies reported that measurement was done weekly, one reported that measurement was done daily,
212 and one reported six monthly measurements. The majority of participants reported that they had an internal
213 financial officer and had auditors come in once a year. However, the three medium companies reported that
214 they had auditors in monthly. Half of the participants indicated that their current financial performance was
215 satisfying for the following reasons:

216 ? The business was still profitable, with room for improvement. ? Re-facility margins were improved.

217 ? One of the interviewees explained that the auditors' report was considered an indicator of the business's
218 financial performance, but that it was discussed with top management only. According to the financial controller
219 (interviewee) this was satisfactory, since the company took orders only after performing calculations and ensuring
220 that a particular order would result in an acceptable profit for the business. This strategy had always maintained

221 their finances at a very good level. ? Another owner reported growth of approximately 50% over the previous
222 18 months, with a net performance of about 15% before tax. ? Four participants indicated that their financial
223 performance was unsatisfactory for the following reasons: ? Two participants said they believed that there was
224 always room for improvement. ? The severe drop in the economy.

225 One interviewee reported that the business experienced recession during 2009 and 2010 and that because of
226 lower turnover and increased costs, in order to survive in the economy, it had been forced to lay off employees.

227 Six of the interviewees were financial controllers or financial directors, three were owners or co-owners and one
228 was the person in charge of the financial performance monitoring.

229 **11 b) Financial performance measurement**

230 Eight of the ten participants indicated that they used financial ratios (they used software packages such as
231 PASTEL and PRO ACC 5). The remaining two stated that they did not use them, and that they did not use
232 any of the measures given to them as other options either. All the participant SMEs, irrespective of whether
233 they used financial ratios or not, were familiar with many of the ratios mentioned in the literature and regularly
234 used, such as current ratio, net operating margin and cash flow to total debt. Although familiar with a large
235 number of ratios, those SMEs that used financial ratios made use of just a few of them. Table 2 shows the ratios
236 used by the participants. 1 Total assets turnover (sales to total assets) 1 Debt ratio (total debt to total assets) 1

237 In addition to the traditional ratios, one of the SMEs used a further ratio that it had found very useful in
238 maintaining its financial performance, and computed as (sale costs -throughput)/sales where throughput = sale
239 costs -(materials + direct costs). For the business not to be in financial trouble, this ratio should be 50% or more.
240 The business also carefully monitored what it called gross turnover (sales -cost of sales) tendency. If this ratio
241 was constant or showed an increase, management was happy. On the other hand, if it decreased, the business
242 had to consider other alternatives to improve its financial performance by broadening the product range and
243 market segment. The business examined financial ratios once a year with auditors as well to see how to improve
244 its financial performance.

245 Another participant SME also used other ratios, such as the solvency ratio (total assets to total debt), the
246 supplier days' ratio [(accounts payable*30*period/cost of sales)] and the customer days' ratio [(accounts receivable
247 *30*period/sales)].

248 In one of the participant SMEs, PASTEL software was used as a financial measuring tool. The owner was
249 very confident about its use and efficiency, and indicated that everything was done with the software. In another
250 participant SME, a complete computer software package called PRO ACC 5 was used to manage the business's
251 assets and financials results. The software uses most of the ratios used by the respondents and provides all the
252 information needed, such as sales, materials required, customer base and orders and inventory holding.

253 Two of the participant SMEs did not use any of the tools given to them as options to choose from, and used
254 specific tools for measuring their financial performance. One interviewee said that financial ratios were briefly
255 discussed by auditors and top management every month. However, no recommendation was given, suggesting that
256 certain ratios were favoured, but not in fact used to measure the business's financial performance. Only the rand
257 per ton (RPT) method was used by this SME to make sure that the business's financial performance remained
258 satisfactory. In terms of this method, an order from a client is considered, but before being accepted, the rand
259 per ton value of the material to be used to make the product is calculated. Knowing from its database that a
260 ton of material can produce a certain number of boxes of the specified dimensions, the SME is able to determine
261 whether the order is profitable or not. The order is then either accepted or rejected. By following this method,
262 the business makes sure that its cash flow is always good and its financial performance is maintained daily. Thus
263 the business never worries about ratios, bankruptcy prediction models or any other tool. The interviewee went
264 on to explain that auditors gave the business a monthly breakdown of all ratios, the following in particular: total
265 asset turnover (sales to total assets), cash flow to total debt, cash flow to total current liabilities, debt to equity
266 ratio (total liabilities/ stockholders' equity), profit after tax (PAT) to total assets (return on investment (ROI))
267 and gross profit margin ratio (gross profit to net sales). There is no recommendation that particular attention
268 should be paid to these ratios, and the business did not use them for measuring its financial performance. As a
269 tool, the RPT method was implemented daily with very good results, as demonstrated by the fact that it was
270 used by the business that had been in existence for 55 years.

271 One firm used a cash flow system for financial performance measurement. The cash flow was done over a
272 year, but was updated weekly. When any change was made, the system showed whether there would be enough
273 money to implement this change, for instance for the next two months. If the business ever received less than
274 its monthly expenses budget and the system showed that there would not be enough money in the immediate
275 future, management would have to act fast and look for other sources of income so as to maintain the financial
276 performance. The cash flow system was monitored regularly and instant measures were taken whenever the
277 system predicted possible money shortage; in this way, the business kept running.

278 Table 3 shows the ratios that were found to be most useful by the participants.

279 **12 c) Reflection of ratio analysis results in actual operations**

280 It is important to realise that the results from financial ratios reflect in the actual operations of SMEs.

13 V. CONCLUSION AND RECOMMENDATIONS

281 Otherwise, what would high cash flow ratios mean, for example, if the money were not reflected in the business's
282 account? The responses of the participant SMEs that used ratios were fairly similar.

283 ? One stated that they did reflect in the business;

284 ? Two stated that they were 100% and 80% reflective of the actual operations respectively; ? One indicated
285 that they were very accurate; and ? Two others stated that they provided an accurate reflection of the actual
286 operations and were very good for current business operations.

287 The question of how helpful the results from the ratios were to the financial performance of participant SMEs
288 is a relevant one, since it would be interesting to know the extent to which ratio analysis contributed to the
289 financial performance of SMEs. The following responses were obtained:

290 ? One participant said that they were good measures for the business's budget and prepared the business for
291 any disruption that might have been signalled.

292 ? Another interviewee indicated that the results of ratio analysis helped to form strategy for the next period
293 by making it possible to take proper measures to correct any trouble shown by significant variations in some
294 ratios. ? An interviewee at another SME acknowledged that the results of ratio analysis helped the business
295 to perform better, not only financially but generally, since financial performance is the driver of the rest. ?
296 The other participants said simply that these results were very helpful. ? The business that used PRO ACC 5
297 indicated that manufacturing is a long-term process (whether at start-up or after a recession), and it can take
298 years of operations before any return can be seen as a reflection of what emanates from financial ratios. In other
299 words, the business may be growing, but it cannot see the money; only with time will the money become evident.
300 ? Another participant said that many ratios were not often used and that management accounts and cash flow
301 were much better accounting measures for the business's requirements. ? One participant said that ratios are
302 helpful, but would have to be adapted to new business strategies.

303 ? Seven of the participant businesses indicated that they knew nothing about bankruptcy prediction models.
304 One interviewee said that she knew very little about them. Another said she had some knowledge, but never
305 used them. Yet another said she had never heard of them. Consequently, all the questions about bankruptcy
306 prediction models were not applicable to the participant SMEs, since they could not use what they did not know.

307 13 V. Conclusion and Recommendations

308 The researchers endeavoured to explore and describe the financial performance measures used by manufacturing
309 SMEs in Pretoria. The study was undertaken because so many studies are conducted focusing on obstacles faced
310 by SMEs in obtaining finance, and not enough focus is placed on how these SMEs in fact manage their finances.
311 Studies have revealed that many SMEs find themselves in financial difficulties because their cash flow is not
312 properly managed (Kim & Sohn, 2010).

313 objective of identifying financial tools used by manufacturing SMEs in measuring their financial performance
314 was achieved during the field study. The findings revealed the following ratios to be the most widely used by
315 participants:

316 ? Cash flow to total debt (used by six participants); ? Current ratio (used by six participants); ? Working
317 capital to total assets (used by five participants); ? Cash flow to average total current liabilities (used by five
318 participants); ? Gross profit margin ratio (used by four participants); and ? Inventory turnover (used by four
319 participants).

320 Compared with the ratios identified by various authors in the literature as the best financial measures
321 (Edmister, 1970 and ??allely, 2008), current ratio, networking capital to total assets, and cash flow to total
322 debt are the ratios that appeared to be most widely used by the participants. Compared with the ratios used
323 in the bankruptcy prediction models presented, of the five ratios in the Altman Z-score, only working capital to
324 total assets, and sales to total assets were used by participants. As for the five ratios used to measure predictive
325 accuracy in Daya's second test, only cash flow to average total current liabilities and net income to total assets
326 were used by the participant SMEs. Some ratios were not emphasised by the above authors as being among the
327 best financial measures, but were found to be used by many of the participants. These were:

328 ? Gross profit margin ratio (used by four participants); and ? Inventory turnover (used by four participants).

329 None of the participants used bankruptcy prediction models. In fact, almost all the participant SMEs
330 knew either nothing or very little about bankruptcy prediction models. The limited use of ratios and non
331 use of bankruptcy prediction models raises the issue of the second objective of the study, which was to
332 recommend necessary improvements on financial performance measurement of SMEs. This will be discussed
333 under recommendations. Interviewees' lack of knowledge of bankruptcy prediction models may necessitate
334 relevant training for the financial officers of SMEs. This touches on the third objective, which will also be
335 discussed under recommendations. The researchers found that most of the participants used financial ratios
336 to measure their financial performance, but to a very limited extent. Very few ratios were used by individual
337 SMEs, and most of the ratios used were not the best indicators identified in the literature. However, some of the
338 interviewees acknowledged the need to use more ratios.

339 It is recommended that SMEs use the bankruptcy prediction models not necessarily for predicting failure, but
340 as a tool to constantly assess how they are doing financially so as to take appropriate measures should a threat
341 be perceived. It was found that most of the participants knew nothing or very little about the models, which is
342 indicative of a need for relevant training. SMEs would benefit by using more ratios, especially those referred to in

343 the literature section, to improve their financial performance measures. SMEs should probably consider using the
344 six ratios mentioned above as the ratios most widely used by participants, since these seem to be working well not
345 only for the majority of participants, but for businesses in general. The owners and/or managers of SMEs should
346 enrol their financial staff at relevant institutions such as universities for training in bankruptcy prediction models.
347 The models presented in this article may be used by SMEs as well, since they are simple and inexpensive, and
348 should not pose problems to trained financial staff. Those SMEs that can afford it should try to use specialised
349 software (e.g. PASTEL or PRO ACC5), which was found to be effective by the small number of participants
350 who used such packages. The SMEs would then be able to use ratios that are computed from the software. This
351 article will contribute to filling the gap in the literature on SME financial performance measurement. If taken
352 seriously by SMEs, the information presented will help them in effective financial performance measurement by
353 drawing attention to the various tools that are available to them as well as the necessity of training financial staff
354 in various measures. ¹

13 V. CONCLUSION AND RECOMMENDATIONS

1

Characteristics of firms	1	2	3	4	5	6	7	8	9	10
Number of employees	40	120	20	26	21	83	16	130	48	15
Years of existence	12	55	20	13	43	13	2	14	53	7
Products manufactured	Industrial ovens	Corrugated boxes	Rock drill, blast-blasting and auto-motive parts	Steel com-ponent	Hand tools	Aluminium and fibre	Manganese metal	Rubber technology	Exhaust heat shields	Steel products and accessories
Interval of financial performance measurement	Weekly and yearly	Daily and yearly	Monthly and every 3 months	Monthly	Monthly	Monthly	Weekly	Monthly	Monthly	Six months and weekly update
Current financial performance is satisfying	Yes	Yes	No	No	Yes	Yes	Difficult to say	To be improved	To be improved	Yes
Importance of measuring financial performance	Very important	Very important	Very important	Essential	Very important	Very important	Very important	Very important	No priority	1 Very
Use of external or internal financial officer	Both	Both	Both	both	Both	both	Internal	Internal	Internal	Internal
Person interviewed	Financial controller	Financial controller	Owner	Co-owner and administrator	Financial controller	Financial controller	Managing Director	Financial Director	Project Manager	Owner

Figure 1: Table 1 :

2

Financial ratios	Number of respondents using them
Cash flow to total debt	6
Current ratio (current assets to current liabilities)	5
Cash flow to total current liabilities	5
Gross profit margin ratio (gross profit to net sales)	4
Inventory turnover (inventory to sales)	4
Operating profit to operating assets	3
Net working capital to total assets	2
Earnings after tax (PAT) to total assets	2
Return on equity (ROE)	1
Net profit ratio	1
Inventory, debtors, creditors' days	1
Times interest earned (income before interest and taxes [EBIT] to interest expense)	1
Net working capital (NWC)	

Figure 2: Table 2 :

3

Ratios	Number of respondents that found them more useful
Cash flow to total debt	3
Cash flow to total current liabilities	2
Current ratio	2
Net working capital to total assets	2
Net operating margin	1
Income before interest and taxes [EBIT]	1
Operating profit to operating assets	1
Inventory turnover	1
Debt ratio	1
Customer days ratio	1
Acid test ratio	1
Profit after tax (PAT) to total assets	1

Figure 3: Table 3 :

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13 V. CONCLUSION AND RECOMMENDATIONS

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