Creating a Financial Viability Model among Cooperatives Using Management Practices as Predictors

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Abstract
The contribution of cooperatives in the Philippine economy has been increasingly felt as it generated millions of business volume from various sectors and thousands of direct employment among Filipinos, however, only few continue to exist. This paper used management practices as predictors in creating a financial viability model among cooperatives. This paper clustered the multipurpose cooperatives operating in a Philippine province into large, medium, and small cooperatives based on their asset size and chose the top two as representative cooperatives in each cluster for a total of six out of 42 multipurpose cooperatives. This study assessed the management practices using these dimensions, strategy, execution, culture, structure, talent, leadership, innovation, and strategic linkages and partnerships and measured financial viability using Altman's Z-score model. This study also applied regression analysis in creating a prediction model which revealed that only culture, structure, and strategic linkages and partnerships can significantly predict financial viability among cooperatives. The model suggests that cooperative's financial viability increases when it puts premium on improving its culture and structure. The model even suggests that cooperatives are discouraged in making strategic linkages and partnerships to become financially viable. In other words, this model proposes that closed-type cooperatives seem to be more financially viable than open-type cooperatives.

Keywords: Altman's model; Essential management practices; Regression analysis

Introduction
The Philippine financial sector has become stronger with the emergence of cooperatives providing more access to capital and other loan portfolios among Filipinos particularly in rural communities. Cooperatives' diversified business activities have created more opportunities to thousands of individuals seeking for employment. Cooperatives' services especially to the marginalized sector, continue to play a very important role in sustaining the economic growth of the country. However, the number of operating cooperatives is declining as some cooperatives were either closed or dissolved thereby limiting the cooperative sector's annual growth. Several literatures pointed it out to poor management practices as one of the reasons behind cooperative failures.

Management must carefully implement sound business practices in order to stay sufficiently viable in the cooperative industry. Brito and Sauan (2016) highlighted that management practices are strongly linked with profitability and growth of sales. Forth and Bryson (2018) found those small and medium-sized enterprises which used formal
management practices demonstrated growth and increased productivity. Using different management practices among firms around the world had led to varying barometer in measuring productivity (Bender et al., 2018). In summary, superior performance were clearly manifested among better managed firms (Grover et al., 2019). Linking management practices and financial performance in research literature have been centered mostly among private companies and only few had focused on cooperatives.

This gap has put this study to utilize management practices in predicting financial viability among cooperatives. This study attempts to use regression analysis in evaluating which management practices that could have significant influence to financial viability, which would then be the basis in creating a simple financial viability model among cooperatives out of these management practices to be taken advantaged among low performing and failing cooperatives.

Theoretical and Conceptual Framework

In order to sustain superior performance, firms must in excel the four primary management practices, namely: 1.) strategy, 2.) execution, 3.) culture and 4.) structure, and also must exhibit excellence in any two of the four secondary practices which include: 5.) talent, 6.) leadership, 7.) innovation and 8.) mergers and partnerships (Nohria, Joyce & Roberson, 2003). These eight essential management practices must be exhibited among firms in order to achieve business success. In the cast identified, practice through strategic linkages and partnerships, instead of mergers and partnerships are used as this term sounds more appropriate for cooperatives.

Meanwhile, to determine the financial viability of cooperatives, Altman, Hartzell and Peck (1995) had modified the original Z-score model (Altman, 1968) and Z’-score model (Altman, 1983) to include non-manufacturing and emerging non U.S. companies. A number of literatures cited the importance of this model in analyzing the financial situation among business firms. In fact, several studies have been conducted applying this model among various companies and confirmed its strength and ability to predict business failure (Alareeni & Branson, 2013; Soon, Mohammed & Mostafa, 2014; Primasari, 2017; Panigrahi, 2019).

In this study, the management practices are investigated deeply on its relationship to financial viability that would then be the basis of the creation of a model.

Methodology

This study utilized a descriptive research design as it described the management practices and the financial viability of cooperatives including its relationship. It also described which particular management dimensions have significant influence towards financial viability.

The study was conducted among the 42 active and operating cooperatives in Southern Leyte that are registered in the Cooperative Development Authority (CDA). To get the required assessments at the desired level of precision with the given resources, cluster sampling technique with asset size as the basis was utilized. Only the top two of each cluster or six of the total multipurpose cooperatives were selected. The names of the cooperatives were not disclosed and were identified as Cooperative A, Cooperative B, Cooperative C, Cooperative D, Cooperative E and Cooperative F.

A validated management survey research instrument (Cronbach’s alpha = .962) was utilized to assess the extent of management practices employed by cooperatives using the aforementioned eight dimensions, with each dimension containing eight describing statements and were distributed to management and staff of the chosen cooperatives with a total of 157 out of 184 (85.33%) respondents who actually
participated in the survey. Mean score for each indicator was obtained and interpreted as not practiced \( \mu =1.00-1.75 \), moderate extent \( \mu=1.76-2.50 \), great extent \( \mu=2.51-3.25 \) and very great extent \( \mu=3.26-4.00 \).

In assessing the financial viability of the cooperatives, secondary data were gathered through annual reports from 2011 up to 2015 combined with the researcher’s validation and were used in computing the Z”-scores using the Altman’s formula:

\[
Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4,
\]

where, “\( X_1 = (\text{Current Assets} - \text{Current Liabilities}) / \text{Total Assets} \)”, “\( X_2 = \text{Statutory Reserves} / \text{Total Assets} \)”, “\( X_3 = \text{Net Surplus} / \text{Total Assets} \)”, “\( X_4 = \text{Book Value of Equity} / \text{Total Liabilities} \)”.

The first factor measured the liquid assets in relation to the size of the cooperative while the second factor measured profitability that reflects the cooperative’s age and earning power. The third factor measured earning ability of firms as a critical factor to long-term viability. The fourth factor measured the ratio of equity comparing to total debts or liabilities.

These ratios were multiplied by the corresponding weight as shown in the formula, and the results were added together to arrive at the final Z”-score. A cooperative is in the safe zone which means bankruptcy is very unlikely to happen when the Z”-score is above 2.6. A cooperative is in the gray zone if the Z”-score ranges from 1.1 to 2.6 which means that cooperative should exercise caution as bankruptcy may happen. Lastly, a cooperative is in the distress zone when the Z”-score is below 1.1 which means that the cooperative financial status is very poor and bankruptcy is very likely to happen.

Simple linear regression analysis was used to test the significance of the relationship between management practices manifested by the cooperatives and financial viability. Fitted line plot was utilized to determine the extent of each independent variable, what contributes to the dependent variable, and to what extent each independent variable accounts for the changes in the dependent variable. In this study, independent variables were the dimensions of management practices and the dependent variable was the financial viability. Stepwise regression particularly the forward selection of terms was used in analyzing the most fitting regression model in which significant predictors were considered. In this process, each variable was tested if it can statistically improve the chosen model fit criterion. Same process was done until no variable statistically improved the model.
Results and Discussion

Preliminary Analysis

It is noteworthy to mention that Cooperative E practiced all the management dimensions to a very great extent compared to the rest of all cooperatives with structure being the highest rated as revealed in Table 1. Small organizations incline to have a simple structure that can be easily understood among its people. Furthermore, small operations require simple structures with simple tasks. This may eventually lead to immediate response to clients' needs resulting to high satisfaction rate. In other words, small cooperatives tend to be more efficient and effective in meeting member's satisfaction.

Meanwhile, Cooperative A practiced strategy and execution to a very great extent while Cooperative D exhibited a very great extent in structure. On the other hand, Cooperative F showed the lowest rating in the leadership dimension which simply means that the leaders of this particular cooperative have not totally satisfied their employees. This result suggests that leaders may need to reexamine their leadership styles to be effective as this dimension is essentially linked to the sustainability of cooperatives (Binaoro, 2016).

On the average, cooperatives equally rated strategy and structure as the highest among all dimensions while talent was appraised as the lowest. This simply means that cooperatives have evidently practiced strategy in their operations and their structure was clearly well-embraced and executed. However, cooperatives fell short on the talent dimension which may connote that their talent management was not highly regarded among management and staff. This calls for cooperatives to revisit their policies if it can really promote and retain great talents.

Cooperatives A and B fell on gray zone on several years as reflected in Table 2 which means that these cooperatives may or may not experience bankruptcy in the near future. This result only indicates that these cooperatives should exercise caution in its operations. Further analysis revealed that this result can be attributed to its low liquidity, profitability, and solvency measures although these cooperatives have relatively more assets and high membership levels than the rest of the cooperatives under studied.

Bation (2016) suggested that low liquidity and solvency was due to the increase in deposit liabilities, share capital, and current liabilities. Moreover, Ripas, Rivas and Madamba (2016) sought challenges in cooperative's liquidity in the long run if its declining trend continued. In other words, being a large cooperative does not guarantee remarkable results as it clearly shows in the scores. Moreover, being a small cooperative does not mean they cannot perform well. On the other hand, Cooperative E exhibited the highest Z’-scores among the cooperatives which connote that this cooperative is financially healthy. Likewise, Cooperatives C, D, & F fell on the safe zone which also means that bankruptcy is very unlikely to happen.

Regression Analysis

Figure 2 presents the generated fitted line plot using the primary dimensions of management practices as predictors of financial viability which include strategy, execution, culture, and structure.

As shown in the figure, every level of extent in employing strategy in management practices contributed 14.07 in financial viability. Further, strategy accounted for 83.3% change in financial viability. On the other hand, execution provided 10.78 contributions to financial viability and it accounted 59.2% for any change in financial viability, although not statistically significant at 5% significance level. Culture shared 15.28 to financial viability and it registered for 94.1% on any changes in financial viability. Furthermore, structure contributed 11.41 to financial viability and it accounted for 83.1% change in the financial viability level.
Table 1. Distribution of management practices among multipurpose cooperatives

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Cooperatives</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strategy</td>
<td>WM</td>
<td>3.37</td>
<td>VGE</td>
<td>3.03</td>
<td>GE</td>
<td>2.97</td>
<td>GE</td>
</tr>
<tr>
<td>2. Execution</td>
<td>WM</td>
<td>3.28</td>
<td>VGE</td>
<td>2.98</td>
<td>GE</td>
<td>3.24</td>
<td>GE</td>
</tr>
<tr>
<td>3. Culture</td>
<td>WM</td>
<td>3.22</td>
<td>GE</td>
<td>2.95</td>
<td>GE</td>
<td>3.13</td>
<td>GE</td>
</tr>
<tr>
<td>4. Structure</td>
<td>WM</td>
<td>3.13</td>
<td>GE</td>
<td>2.97</td>
<td>GE</td>
<td>3.01</td>
<td>GE</td>
</tr>
<tr>
<td>5. Talent</td>
<td>WM</td>
<td>2.89</td>
<td>GE</td>
<td>2.80</td>
<td>GE</td>
<td>2.98</td>
<td>GE</td>
</tr>
<tr>
<td>6. Leadership</td>
<td>WM</td>
<td>3.12</td>
<td>GE</td>
<td>2.84</td>
<td>GE</td>
<td>3.02</td>
<td>GE</td>
</tr>
<tr>
<td>7. Innovation</td>
<td>WM</td>
<td>2.94</td>
<td>GE</td>
<td>2.92</td>
<td>GE</td>
<td>3.08</td>
<td>GE</td>
</tr>
<tr>
<td>8. Strategic Linkages and Partnerships</td>
<td>WM</td>
<td>2.97</td>
<td>GE</td>
<td>2.92</td>
<td>GE</td>
<td>2.99</td>
<td>GE</td>
</tr>
</tbody>
</table>

Legend: 1.00-1.75 – Not Practiced (NP); 1.76-2.50 – Moderate Extent (ME); 2.51-3.25 – Great Extent (GE); 3.26-4.00 – Very Great Extent (VGE)

Table 2. Financial viability analysis of multipurpose cooperatives using Altman’s model

<table>
<thead>
<tr>
<th>Year</th>
<th>A</th>
<th>Z-score</th>
<th>Zone</th>
<th>B</th>
<th>Z-score</th>
<th>Zone</th>
<th>C</th>
<th>Z-score</th>
<th>Zone</th>
<th>D</th>
<th>Z-score</th>
<th>Zone</th>
<th>E</th>
<th>Z-score</th>
<th>Zone</th>
<th>F</th>
<th>Z-score</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1.40</td>
<td>2.29</td>
<td>Gray</td>
<td>4.95</td>
<td>5.17</td>
<td>Safe</td>
<td>8.99</td>
<td>Safe</td>
<td>5.21</td>
<td>Safe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>1.74</td>
<td>2.72</td>
<td>Gray</td>
<td>5.60</td>
<td>4.95</td>
<td>Safe</td>
<td>13.03</td>
<td>Safe</td>
<td>4.98</td>
<td>Safe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>1.50</td>
<td>2.45</td>
<td>Gray</td>
<td>5.73</td>
<td>4.27</td>
<td>Safe</td>
<td>13.16</td>
<td>Safe</td>
<td>4.80</td>
<td>Safe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>2.70</td>
<td>2.38</td>
<td>Gray</td>
<td>6.21</td>
<td>5.72</td>
<td>Safe</td>
<td>13.79</td>
<td>Safe</td>
<td>5.16</td>
<td>Safe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>2.57</td>
<td>2.04</td>
<td>Gray</td>
<td>6.75</td>
<td>4.76</td>
<td>Safe</td>
<td>12.61</td>
<td>Safe</td>
<td>6.16</td>
<td>Safe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>1.98</td>
<td>2.38</td>
<td>Gray</td>
<td>5.85</td>
<td>4.97</td>
<td>Safe</td>
<td>12.32</td>
<td>Safe</td>
<td>5.22</td>
<td>Safe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: Below 1.1 – Distress Zone; 1.1-2.60 – Gray Zone; Above 2.60 – Safe Zone

Figure 3 displays the created fitted line plot using the secondary dimensions of management practices as predictors of financial viability which included talent, leadership, innovation, and strategic linkages and partnerships. As revealed in the figure, talent contributed 11.57 to financial viability and accounts 73% on any changes in the financial viability while leadership shared 8.706 towards financial viability and it accounted for 63.9% change in financial viability, although such linear relation was not statistically significant at 5% significance level. On the other hand, innovation contributed 9.588 to financial viability and accounted for 59.9% change in financial viability, although not statistically significant at a significance level of 5%. Furthermore, strategic linkages and partnerships shared 12.29 towards financial viability and accounted for 70.8% change in financial viability.

As presented in Figure 3, strategic linkages and partnerships marked the highest contribution among the secondary dimensions towards financial viability while talent was recorded the highest percentage
as the main cause on any changes in financial viability. This implies that cooperative's engagement in strategic linkages and partnerships contributes significantly to its financial sustainability. This supports the study made by Bation (2016) that cooperative's longevity can be linked to its expansion activities such as branching, collaboration, and community involvement. Meanwhile, managing talents have potential effects to cooperative's viability which may also imply that talent can either make or break the cooperative's performance. Keeping great talents in cooperatives can be enhanced if employee's values are aligned with the organizational values (Olubiyi et al., 2019).

Table 3 portrays the model summary made using stepwise regression analysis particularly the forward selection of terms which carefully considered the independent significant predictors as shown in Figures 2 and 3 which included strategy, culture, structure, talent, and strategic linkages and partnerships. As shown in Table 3, only culture, structure, and strategic linkages and partnerships significantly predicted financial viability as shown in its p-value at 5% significance level.

The model shows that culture and structure positively contributed 14.80 and 6.287 respectively. This corroborates to the various studies made that culture and structure have significant effect on firm performance (Murphy et al., 2013; Polychroniou & Trivellas, 2018). Structure along with the efficient and effective distribution of responsibilities among its people is closely linked to organizational success (Chokheli, 2015). This model helped managers on what to focus more so as to increase financial viability level.

As reflected in the model, the management must strengthen culture and structure as
Figure 3. Fitted line plot using secondary dimensions as predictor of financial viability

dimensions of management practices. This implies that management must find ways and approaches to enhance culture and structure to level up financial viability. Furthermore, culture sets the tone of the organization while structure upholds the control mechanisms including communication lines and authorities of the organization.

These two dimensions are very relevant to cooperatives as culture clearly defines more the characteristics of cooperative known to be member-owner and member-user as its core strength and its unique structure where the member upholds the highest authority within the cooperative. Good governance and management promotes active participation of its members in the cooperative thereby living up to the values of cooperativism and volunteerism (Quilloy & Luis, 2016). Great member’s participation in all activities of the cooperatives will surely produce magnificent results.

On the other hand, strategic linkages and partnerships negatively contributed at 6.46. This means that cooperatives must lessen its partnership activities to ensure viability. As the cooperatives expand, its membership level also increases which in turn, member’s participation tends to be limited as being a customer rather an owner. In this scenario, member’s suggested role of being active in the operations of the cooperative lessen as its mere participation is practiced more as a regular client not as a member-owner. Member’s involvement in the operations promotes high transparency and greater accountability among its leaders, thus, mismanagement issues on the resources of the cooperatives are prevented if not avoided.

Investigating deeply on the generated model, it can be proposed that closed-type cooperatives seem to be more financially
Table 3. Test results on creating a model using significant dimensions of management practices as predictor of financial viability

<table>
<thead>
<tr>
<th>Model Summary</th>
<th>S</th>
<th>R-sq</th>
<th>R-sq(adj)</th>
<th>R-sq(pred)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.302109</td>
<td>99.74%</td>
<td>99.34%</td>
<td>94.18%</td>
</tr>
</tbody>
</table>

Coefficients

<table>
<thead>
<tr>
<th>Term</th>
<th>Coef</th>
<th>SE Coef</th>
<th>t-value</th>
<th>p-value</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-41.250</td>
<td>1.800</td>
<td>-22.940</td>
<td>.002</td>
<td>5.540</td>
</tr>
<tr>
<td>Culture</td>
<td>14.800</td>
<td>1.350</td>
<td>10.990</td>
<td>.008</td>
<td>5.810</td>
</tr>
<tr>
<td>Structure</td>
<td>6.287</td>
<td>0.998</td>
<td>6.300</td>
<td>.024</td>
<td>4.810</td>
</tr>
<tr>
<td>Strategic Linkages &amp; Partnerships</td>
<td>-6.460</td>
<td>1.380</td>
<td>-4.660</td>
<td>.043</td>
<td>6.810</td>
</tr>
</tbody>
</table>

Regression Equation


Viable than those open-type cooperatives as evidenced from the results in which Cooperative E, a closed-type cooperative, exhibited better performance among all cooperatives which supports to the study made by Gevero and Bation (2016). Although, their membership level was small, their captured market and member’s participation in the actual operation was high which eventually promotes greater transparency and are very critical factors so as cooperatives to be financially viable. In this manner, closed-type cooperatives appear to be more financially viable than open-type cooperatives.

Conclusions

This study aimed to create a financial viability model among cooperatives using regression analysis with management dimensions as predictors. This study widened the application of linking management practices and financial performance to cooperatives which centered mostly on private firms.

The generated model revealed that among the eight management dimensions, only culture, structure, and strategic linkages and partnerships can significantly predict financial viability of cooperatives. The findings further revealed that culture and structure are positive predictors while strategic linkages and partnerships is a negative predictor.

This implies that cooperatives are highly encouraged to strengthen its culture and structure so as to increase viability level. On the other hand, cooperatives are cautioned of engaging strategic linkages and partnerships as it may pose risks to its viability. Furthermore, it can be proposed that closed-type cooperatives seem to be more financially viable than those open-type cooperatives.

In summary, this study has provided some management practices that can significantly predict financial viability of cooperatives.

Recommendations

With due consideration to a greater number of participating cooperatives, it is very much recommended that this study be replicated so as to verify the validity of this model. Likewise, a replication of this study may be done among micro, small and medium enterprises so as to widen its application.
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