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APPLICATION OF A PERFORMANCE BAROMETER ON A SMALL SCALE VETERINARY PRACTICE

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ABSTRACT: *Performance barometers that depict the performance of certain food and agriculture-related activities has been developed and implemented wherein relevant indicators are selected and weighted according to their importance. The current paper hypothesized the applicability and suitability of the performance barometers to a small scale veterinary practise as a model for a business enterprise. Performance indicators were developed, and results were assigned retrospectively from the business data base. Weights were assigned to the developed indicators and a business barometer was developed using the relevant methodologies. The findings of the paper strongly support the hypothesis that a performance barometer could easily and successfully be used to portray the results of any business following the prioritization and weighting methodology of the key performance indicators. A business barometer is a facet that easily and clearly illustrates the attributes of increase and/or decrease of the performance of an enterprise without the need of referral to other documents.*

KEYWORDS: Balanced Scorecard, Business Barometer, Performance Management, Performance Indicator

INTRODUCTION

Kaplan and Norton (1992) developed the balanced scorecard (BSC) as an evaluation tool for business efficiency, since then it was further developed and has been widely used as a basis for strategic management for many business enterprises globally in both the commercial organizations and non-profit and governmental institutions (Kaplan and Norton (1996); Kaplan (2001); Niven (2003) and Marr and Creelman (2014). Anand, Sahay and Saha (2005) reported that the BSC adoption rate is 45.28 % in corporate India compared to 43.90% in the United States of America. Many authors reported the usefulness of the BSC for the development of strategic management systems in a diversity of businesses such as libraries (Brui ,2018), healthcare (Hanawi,2018), economics (Ayangeadoo and Zungwe, 2018), banking industry (Mohammed ,2015) and Farokhi, Roghanian and Samimi (2018), construction companies (Ali , Al-Sulaihi and Al-Gahtani (2013) and Zaidi *et al* (2018), bioenergy (Dale *et al* ,2013), public purchasing (Smith, 2006), fresh produces (Martinez and Poole, 2004) and hotels (Harris and Mongiello, 2001).

LITERATURE REVIEW

David (2015) classified indicators that measure the performance of a business into four categories based on what is measured, these are performance indicators (PIs), key performance indicators (KPIs), result indicators (RIs) and key result indicators (KRIs). Even though different KPIs have different weights, yet this has so far not been considered when measuring

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the performance of businesses using BSC or similar applications. Anand, Sahay and Saha (2005) reported that the difficulty in assigning weightage to the different perspectives and establishing cause-effect relationship among these perspectives were the most critical issues in the implementation of the BSC in corporate India. Furthermore, Chakravarthy (2011) reported that measures based on a firm's profitability only are not sufficient for evaluating its strategic performance.

The fact that different performance indicators are not equally important and shouldn't be looked at similarly has been considered and implemented in the development of technical barometers that measure the performance of countries and concerned authorities in food safety (Baert *et al*, 2011) and animal health (Depoorter *et al* 2015).

Moreover, it is not quite uncommon to evaluate the performance of a business using tools other than performance management (PM) tools. Dinçer, Yüksel, and Martínez (2018) used the integrated multidimensional quality measurement approach together with the quality function deployment for the evaluation of the performance of the European energy investment policies. Ayangeadoo and Zungwe (2018) assessed the role of the agricultural sector in the economic growth in the Economic Community of West African Countries (ECOWAS) whereas Awe, Kulangara and Henderson (2018) investigated the relationship between outsourcing and performance measures of firms and found that outsourcing enhances the firm performance. Maalouf (2018) studied the impact of improved supply chain management on innovation in Lebanon.

Small and medium scale enterprises constitute a vast percentage of the private business sector worldwide. In 2014, small and medium scale enterprises represented 97.4% of the private sector and provided 36.7% of the private sector employment in Australia (Gilfillan, 2015). Weimei and Feng-e (2012) reported that small and medium scale enterprises in China have no PM systems with a variety of problems in those having PM systems, whereas Stanciu (2014) concluded that the application of a PM system in small and medium enterprises helps accomplishing the best results from the employees.

The aim of this paper is to check the suitability of the implementing the principle of KPI weighting in developing a barometer that measures the performance of a small-scale veterinary practise as a model for a business enterprise.

METHODOLOGY

Data Source:

The author owned a small-scale veterinary practise that provided veterinary services to livestock owners in the emirate of Abu Dhabi, United Arab Emirates during the period extending from 2001 to 2005. In 2003 all the daily activities related to the business were electronically documented and a data base had been established and maintained. This data is segregated and analysed for the purpose of this paper.

Performance Indicators:

During the actual run of the business no performance indicators were set, however the activities are easily classified as results of six performance indicators that are commonly used to assess

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the performance of any business. The developed indicators serve three of the four perspectives of a strategic plan (Kapalan,1992), these are the customer, financial and learning and growth, whereas none of the analysed data costumes as an indicator for the fourth perspective of a strategic plan (internal business processes). As the performance indicators are developed retrospectively, no thresholds and targets were available except for the budget variance (PI-5) for which the author considered the yearly ±10% payment allowance accepted by the supplying companies as a target.

Weighting of Performance Indicators

A methodology of weighting performance indicators exists (Gore ,1987). This had been used for the development of technical barometers by Baert *et al* (2011and Depoorter *et al* (2015). The performance indicators used for the development of the business indicator in this paper are developed retrospectively. To assign weights for them, a RANDBETWEEN function in excel was used to allocate weights from the weights of the 30 key performance indicators used for the development of the food safety barometer by Baert *et al* (2011).

Calculation of the Performance Results:

For the development of a business barometer, the results of the six developed performance indicators are treated as follows:

Weight (business) = sum of the weights of the 6 indicators.

Percent difference between years = (year 2 result-year 1 result)/year 1 result*100

e.g. (2004 result-2003 result)/2003 result*100.

Percent difference between years (business) = average percent difference for all the 6 indicators.

Weighted Percent difference = Percent difference between 2 years*weight of the indicator.

Weighted Percent difference (business) = average value of the weighted percent difference for the six indicators.

RESULTS:

Performance results:

The data pertinent to the daily activities of the private veterinary practise during the years 2003, 2004 and 2005 are assigned as results of six performance indicators as follows:

PI-1: Laboratory Reports Issued on time: all the data related to the laboratory reports issuance are considered as results of this performance indicator. The results of the indicator are calculated as follows:

[Reports issued within the same day of sample receiving/ Total reports issued during a year] *100

The results of this indicator for the years 2003, 2004 and 2005 are 83.5%, 86.4% and 91.1% respectively.

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PI-2: Customer Satisfaction: no surveys were conducted to measure the satisfaction of the customers against the received services. The complaints against the services and/or the staff received during 2003-2005 were deducted from the total number of the customers who were served in the particular year.

% of Customer Satisfaction = [(number of complaints-number of served customers)/number of served customers] *100

The customers were mostly satisfied in 2005 (86.0%) compared to 2004 (81.0%) and 2003 (65.0%).

PI-3: Response to service requests: the requests received for services that were responded to were subtracted from the total service requests received by the clients to set the nominator of this indicator calculation method.

% of response to service requests = [(number of requests responded to-total number of received requests)/total number of received requests] *100

In 2004 a staff veterinarian resigned, it took longer than it should to hire a new one, this is had been reflected in a decline in the result of the indicator in that year compared to the two other years (2003 and 2005).

PI-4: Budget Variance:

% of budget variance = [(actual expenses- budgeted amount)/budgeted amount] *100

Suppliers of the pharmaceutics and consumables agreed on a ±10% as an acceptance limit of variation for the purchases, this limit is considered by the author as a thresh hold for this indicator and accordingly the results of the performance during the years of the study are interpreted. The computed results of the indicator are 8.6%, 18.3% and 3.8% for the years 2003, 2004 and 2005 respectively.

PI-5: Staff Receiving Training: the staff training was conducted internally covering the professional areas of the business. A minimum of two trainings were conducted per year and the staff is considered trained upon attendance and completion of one training program.

% of staff trained = [(number of staff trained-total number of staff)/Total number of staff] *100

Table (1) shows that the lowest of the indicator results was reported in 2003 whereas the best of the results was in 2004 with a percentage of 83.3.

PI-6: Attended Scientific Events: attending scientific events is considered as a continuous learning tool. It could be incorporated in the staff training indicator, nevertheless it is set as a separate performance indicator to increase the number of variables in the calculation of the business barometer.

% of attended scientific events = [(number of events attended-total number of events invited to)/ total number of events invited to] *100

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Table 1. Results of the Performance Indicators Computed from the data of the years 2003, 2004 and 2005

Performance Indicators	Result 2003	Result 2004	Result 2005
Customer Perspective:			
PI-1: Laboratory Reports Issued on time	83.5%	86.4%	91.0%
PI-2: Customer Satisfaction	65.0%	81.0%	86.0%
PI-3: Response to service requests	100.0%	92.1%	100.0%
Financial Perspective:			
PI-4: Budget Variance	8.6%	18.3%	3.8%
Learning & Growth Perspective:			
PI-5: Staff Receiving Training	60.0%	83.3%	80.0%
PI-6: Attended Scientific Events	68.0%	91.0%	62.0%
Average Performance Result (Business)	**64.2%**	**75.4%**	**70.5%**

Table (1) shows that the overall business performance result i.e. the average of the results of the performance indicators is 64.2% ,75.4% and 70.5% for the years 2003, 2004 and 2005 respectively.

Business Barometer:

Table (2) shows that there was an increase of 0.33% in the business performance in 2004 versus 2003 whereas a decrease of -0.16% in 2004 versus 2005 performance is illustrated.

Table 2. Results of the Developed Performance Indicators and Calculated Business Barometer (2003 versus 2004 and 2004 versus 2005)

Key Performance Indicators	Result 2003	Result 2004	Result 2005	Weight	2004/2003 Percent Difference	2004/2003 Percent Difference	2004/2003 Weighted Difference	2004/2003 Weighted Difference
PI-1	83.5%	86.4%	91.0%	0.94	3.47%	5.36%	0.03%	0.05%
PI-2	65.0%	81.0%	86.0%	1.65	24.62%	6.17%	0.41%	0.10%
PI-3	100.0 %	92.1%	100.0 %	0.98	-7.86%	8.53%	-0.08%	0.08%
PI-4	8.6%	18.3%	3.8%	0.75	113.79 %	-79.23%	0.85%	-0.59%
PI-5	60.0%	83.3%	80.0%	0.41	6.81%	6.63%	0.03%	0.03%
PI-6	68.0%	91.0%	62.0%	1.88	33.82%	-31.87%	0.64%	-0.60%
Business	**64.2%**	**75.4%**	**70.5%**	**6.61**	**34.27%**	**-15.83%**	**0.33%**	**-0.16%**

Figure (1a) demonstrates that the increase in the performance result in 2004 versus 2003 is attributed to an increase in the performance results of PI-4 (budget variance) and PI-6 (attended scientific events).

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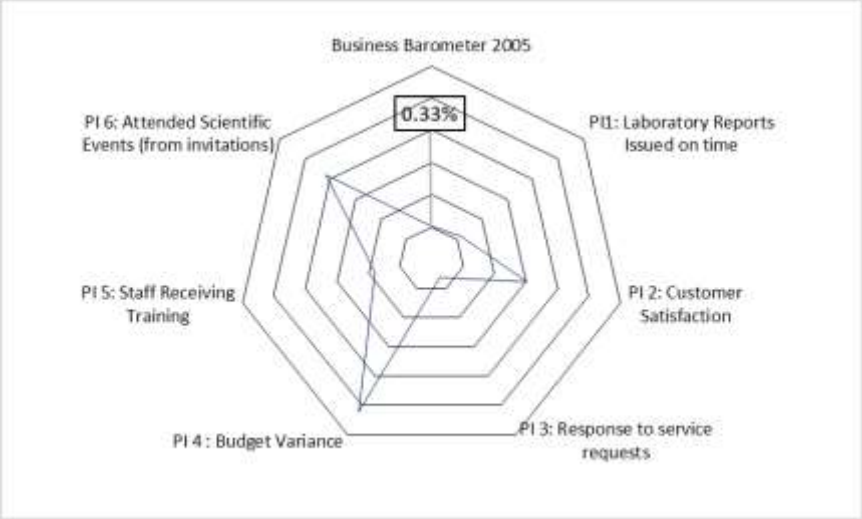

Figure 1*a*. Illustration of the Business Barometer (2004 versus 2003)

Figure (1b) clearly attributes the decrease in the performance result in 2004 versus 2005 to a decrease in the results of the same indicators which enhanced the performance result in 2004 versus 2003, that is PI-4 (budget variance) and PI-6 (attended scientific events).

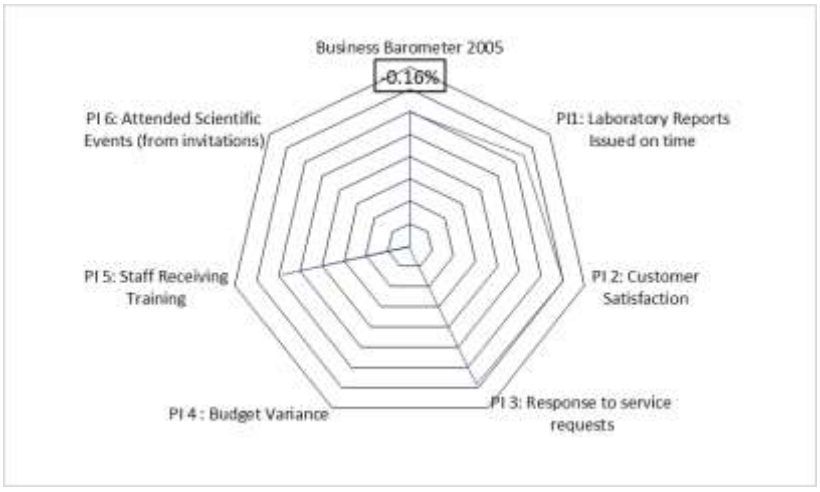

Figure 1*b*. Illustration of the Business Barometer (2005 versus 2004)

DISCUSSION

The current paper hypothesized the applicability and suitability of the methodology of developing a measurement barometer to a small scale veterinary practise as a model for a

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business enterprise. The business performance indicators are retrospectively developed i.e. lagging indicators according to Peng *et al* (2007), and their results were computed from the 2003, 2004 and 2005 existing data. The obtained results of developing a business barometer for a small scale veterinary enterprise are in similar to those reported by Baert *et al* (2011) for the food safety barometer and Depoorter *et al* (2015) for the animal health barometer.

Although a statistical analysis to check the relation between the weights of the performance indicators and their results "weighted percent difference between years" was not performed, yet they look interconnected. The contribution of the performance results of PI-4 (budget variance) and PI-6 (attended scientific events) in the business performance result in 2003 versus 2004 and 2005versus 2004 is illustrated in figures 1*a* and 1*b*. Budget variance (PI-4) is a decreasing performance indicator, that is the lower the obtained result within the set indicator threshold the better the performance of the enterprise. Unless the threshold is exceeded, the achieved result is always 100% whereas results above and below the threshold of the indicator should be considered accordingly. The threshold of PI-4 is set at ±10%. The results of year 2003 (8.6%) and 2005 (3.8%) are within the set threshold whereas that of year 2004 (18.3%) exceeded the set limit, however illustration of the results without considering the aforementioned property of the indicator is doubtlessly reflected on 2004 average performance result and 2004 versus 2003 barometer as well as 2005 versus 2004 barometer and render them fallacious reflections of the business performance.

Implication to Research and Practice

The findings of this paper strongly encourage all businesses (small, medium and large scale) to adopt the principals and methodologies of developing business barometers to measure their performance. This will reflect the actual business performance based on the prioritization-risk-based methodology of selecting performance indicators. The decreasing property of a performance indicator should be considered when measuring the final results of the performance of a business if its BSC contains such an indicator.

CONCLUSION

The concept of performance barometers was developed and applied to technical businesses and had never been implemented to other businesses. It is concluded that performance barometer is a robust endeavour that any business enterprise could easily adopt and apply to measure and illustrate the results of its performance.

Future Research

The findings of this paper showed the crucial need of finding a realistic practical way to illustrate the results of a performance indicator with a decreasing property. Further, the application of a business barometer on assessing the performance of a business prospectively is needed.

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