



Managing golf greens: Aligning golf green quality with resource inputs[☆]



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1. Introduction

Steadily decreasing golf revenues have a direct effect on golf course maintenance budgets. Most course managers have seen little, if any, budgetary for turf maintenance during the past 10 years, and many budgets have been significantly cut by as much as 10%–20% (Vavrek, 2010). Budgets have decreased despite increasing maintenance costs and players' ever-escalating expectations for perfect course conditions. In a report by England Golf (2014, p5) which highlights the results of a national survey for golf courses the headline title states "Club memberships are in a precarious position" and it goes onto point out the fact that club memberships continue to decline and this is still impacting on golf course income. Therefore, there is a need for golf course managers to manage their facilities more sustainably for both economic and environmental reasons. As Hoyle (2007, p10) puts it "**an organisation will survive only if it creates and retains satisfied customers and this will only be achieved if it offers for sale products or services that respond to customer needs and expectations as well as requirements**". Golf

greens are the most significant area on the golf course for both play and intensity maintenance practices (Adams and Gibbs, 1994). They are also one of the few areas of the golf course for which there are objective measurements of quality. Golf green quality is proposed by Emmons (1995) to be the most important factor by which players judge golf course "quality" (Emmons, 1995) which has been further corroborated by Syngenta (2013) in their survey of golfers in the UK. Measuring the quality of golf greens has been described by Windows and Bechelet (2009) who advocate the "Performance Measurement and Development" system developed by the Sports Turf Research Institute (STRI). The gap in knowledge identified in the current research concerns the issues lying between those who advocate the measurement of golf green performance as a tool for management (Windows and Bechelet 2009) and the views of the R & A (Isaac, 2012) who support the use of reduced inputs. We can measure inputs and the quality of surfaces but as yet no one has looked at these two factors together. The development of a performance measurement system for assessing maintenance inputs and their costs together with and against playing quality will potentially allow us to determine where managers are or are not achieving quality playing surfaces with particular level of inputs. This research has identified the significant quality and operational performance measures for golf greens and integrated them into a performance measurement system for use in practice.

Performance measurement is used to evaluate, control and improve production processes to ensure companies can achieve

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their goals and objectives (Ghalayini and Noble, 1996). Performance when viewed in operational terms has been concerned with making the best use of resources (meaning lowest cost) and achieving the highest level of profit. Brown et al. (2001) maintain that for any operation to be sustainable the economic value of inputs must be lower than the economic value of the output. This input–output approach or model is the mainstay of traditional performance systems. Ghalayini and Noble (1996) further state that there have been two distinct periods in the history and development of performance measurement systems. From the late 1880s through until the 1980s the focus of performance measurement was on productivity, profit and return on investment. Post 1980s and continuing to the present time, there has been a fundamental shift in approach as academics and practitioners faced with new technologies and systems such as just-in time and total quality management began to consider a more holistic approach to performance measurement. It was viewed that traditional performance measurement (pre 1980) was too limited for contemporary success and that there was a need to develop new performance measurement systems (Ghalayini and Noble 1996; Brown et al., 2001). Numerous other researchers have identified the limitations of using solely financial performance measures in performance measurement systems (Tangen, 2004). Tangen further asserts that there are many aspects of organisational performance which cannot be quantified in financial terms that often financial reports are inflexible, restricted to a specific format, and based on past performance and decisions as they are produced at the end of a month or quarter – what Ghalayini and Noble (1996) term lagging metrics as they also concur with this view. Tangen (2004) claims further that reliance on financial measures can lead to problems. These include the fact that they focus managers on short term results and do not consider long term strategies or goals. They also focus on controlling individual processes or functions in isolation without seriously considering the system as a whole. Today “shop floor” operators have more autonomy and control and are therefore more influential in customer satisfaction. Traditional methods of performance measurement do not suit newer methods of management. Brown et al. (2001) consider performance measurement from an operational perspective and state that inputs and outputs translate into operational performance measures of economy, efficiency and effectiveness. Economy here is about monitoring (reducing costs) as they state 70% of product or service costs are typically incurred within the operations function. Efficiency is about how well operations transform inputs into outputs and expressed as a ratio Input over Output. This has been, as already stated above, the traditional focus of performance with its emphasis on control and conformance reflecting the time and motion mentality of the mass production era. Effectiveness is seen here as a better than ether economy or efficiency measures as it is concerned with whether the right products or services are being produced in the first place rather than merely how they are produced. Examples of effectiveness include customer service and product quality criteria. Tangen (2004) still maintains that although there has been some progress in developing performance measurement systems which include measures other than financial metrics many companies still focus on traditional financial performance measures. The shift in focus with performance measurement systems from the 1980s has led to the development of more organisation wide or integrated models that more accurately reflect product variety, quality and customer service (Brown et al., 2001). Researchers have focused on developing more complex performance measurement systems including both cost and non-cost performance objectives argued to be more suited to businesses today (Tangen, 2004). However, in reviewing several current performance measurement systems (including SMART, Balanced Scorecard etc.), Ghalayini and Noble (1996) identify several common weaknesses or limitations of these systems for practice. These various approaches and frameworks have academic

grounding and are philosophically sound and do provide some guidance on how an organisation can design its unique performance measurement system but, perhaps most significantly, none of them provide a specific tool that could be used to model, control, and monitor and improve the activities, for example, at the factory shop floor. Tangen (2004, p 736) states that **“the measurement practitioner still has to translate the framework into practical measures. He/she is still left to decide how each performance measure should be specified, how often it should be measured, and at what level of detail. Thus, these newer frameworks show what to measure, but give little guidance when it comes to the question of how to measure it”**. Tangen (2004) offers advice for developing a performance measurement system stating that the system needs to support strategic objectives with clear links from senior management to the shop floor. Further, those measures should not be based on solely financial metrics and that all should be devised with clearly defined specifications and timeframes for achievement. There should be a limited number of criteria which are easy to understand and interpret. Maskell (1989, p32) offers seven principles for performance measurement system design which support the above. Thus Tangen (2004) and Maskell (1989) both offer advice on developing performance measurement systems but it is left to the manager to develop their own specific performance measures for their own practice. To manage quality one needs to be able to effectively measure it. Whether it be quality of a product, service, process or system without measurement we will not know if we are getting better, worse or staying the same (Hoyle, 2007). Measurement is a process whereby numbers can be ascribed to physical quantities and phenomena. Abstract characteristics such as quality need to be translated into quantities so that they can be measured. Standards expressed in measurable terms can be measured for conformity. Measurement is vital to the achievement of quality and this must be done with measures or tools that are fit for purpose. If measurement is done with instruments that are not fit for purpose results will be misleading or not valid. Valid measurements allow for decisions to be made on the basis of facts and whether standards or targets have been met. There must be a target value with which to compare results, measurements without such are meaningless (Hoyle, 2007). Measurement tells us whether there has been a change in performance.

2. The conceptual framework

This research proposes a performance measurement system for golf course managers to enable them to better manage their golf greens. The stated aim is to arrive at an optimum level of quality with the minimal level of input and thereby reduce costs and environmental impact whilst improving quality for an identified golf course. In considering existing systems in the literature it has been found that there has been limited attention paid to this research subject area for use at an operational level. Primary maintenance methods for golf greens have been identified from widely available literature which give recommendations for golf green operations. Of significance here is that their application in practice varies (McCarty, 2001; Beard, 2002; Ryan, 1999; Adams and Gibbs, 1994; Turgeon, 2002; Brown 2005). This variation is not an issue in itself as conditions on the ground vary with different golf courses as do the level or resources available, but what is relevant is that inputs do affect outputs, for example the level of quality achieved. Thus the systematic measures of performance here for golf green can be identified as maintenance practices (type and intensity), input costs and the standards for green quality. Fig. 1 below illustrates the Conceptual Model devised for this research.

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