

## 2.0 Literature Review

### 2.1 Introduction

This chapter provides a review of the literature and secondary data that already exists in relation to corporate performance management and monitoring, the various software systems that relate to this, and how they can be applied to SME's. Accordingly this chapter will initially discuss the components of a BPM system; it will then move on to describe and analyse the evolution of BPM in response to organisational demand and technological development. This chapter will also provide an analysis of the current penetration of BPM software and the BPM market in more general terms in order to provide a context for analysis and future usage. The concept of BPM is closely linked to that of Business Intelligence (BI), although the two are different, and thus there will also be an analysis of how these two concepts function within the concept of SME's. Finally, there will be a critical analysis of the benefits and challenges of implementing a BPM system in an SME, and a consideration of the failures of BPM implementation and the implications of this.

### 2.2 Definitions and Components of a BPM System

The concept of Business Performance Management (BPM) has been in existence for many years, based on the old management adage, "you can't manage what you can't measure" (anon). Accordingly, there are various descriptions of and definitions of BPM in existence. BPM has been variously defined as "*a set of management and analytic processes that enable the management of an organisation's performance to achieve one or more pre-selected goals*" (Dresner, 2007:12), and also as "*the area of business intelligence (BI) involved with monitoring and managing an organisation's performance, according to key performance indicators (KPIs) such as revenue, return on investment (ROI), overhead, and operational costs*" (Cokins, 2009:17). According to Dresner (2007) and Cokins (2009) BPM is also variously referred to as "Business Performance Management" (BPM) and /or "Enterprise Performance Management (EPM), with the terms used almost interchangeably. For the purposes of this research study the definition provided by Cokins (2009) will be adopted as BPM is a part of wide business intelligence and serves as a platform through which to manage it. Although historically BPM has been used to manage the financial aspects of an

organisation's performance, practitioners such as Kaplan and Norton (1992) have long recognised that successful firm performance embraces a wider range of skills and competencies.

It is useful to briefly consider the various components of a BPM as these can affect the success (or otherwise) of the system. According to Menasce and Almeida (2002) a BPM is fundamentally identical in concept to any other Management Information System (MIS) insofar as it captures and stores organisational information for subsequent manipulation and interpretation. The components of any MIS include hardware, software and users, and of course it is also critically important to ensure that any MIS system has a secure and stable interface with existing legacy systems in order to capture and manipulate any data as it is generated (Menasce and Almeida, 2002). However, a BPM has certain unique additional components and facets which distinguish it from other MIS's. These include financial and budget applications and pre-loaded Key Performance Indicators (KPI's) which can assist and organisation looking to benchmark its own performance.

Cokins (2009) notes that most other MIS's lack the pre-loaded KPI functionality as this would typically fall under the heading of customisation and would therefore attract costly alteration and amendment fees. BPM's also typically have Extract, Load and Transform (ELT) features which allow the extraction and manipulation of data into various useable report formats so that they can be utilised as a management tool. Kaplan and Norton (2000) pioneered the concept of the dashboard (also known as a 'scorecard') in their 1992 research, and this has now come to be regarded as a standard instrument in any BPM. The dashboard typically extracts data from the management transaction reports in graphical format for easy interpretation and display, and these dashboard reports can also be configured to suit the unique parameters of the business.

### **2.3 Evolution of BPM**

Thus, having examined the components of a BPM and determined a suitable definition for this research, it is necessary to understand the evolution and growth of BPM and how the development of technology and client demand has shaped its expansion.

Historically the BPM marketplace was characterised by a number of smaller, more specialist vendors who would focus on one narrow and discrete area of BPM (Wade and Recardo, 2001). As noted previously in the definitions, BPM can be regarded as an umbrella term and thus as it encompasses a range of organisational management tools it was understandable that specialists would position themselves in the marketplace in order to attract organisations with their specialist capabilities. Whilst this approach was suited for certain organisations, a considerable number of small and medium enterprises (SME's) found it frustrating that they were unable to bring all of the necessary software components together and instead they had to rely on costly middleware and unstable software platforms which would often be incapable of supporting the cross-functional data that they wished to analyse. Moreover, it made software implementations costly and unnecessarily complex (Cokins, 2009).

Leading software service providers such as SAP, Oracle and IBM were quick to recognise this gap in the marketplace for a one-stop-shop solution for BPM needs, and in consequence they either acquired or developed the proprietary software which they then positioned as a complete BPM solution for SME's and some larger multi-site operations. This holistic solution can be regarded as BPM for the modern business as it encompasses the needs of the greater majority of organisations and ensures that they can adopt a holistic approach to their own performance management and improvement.

According to White (2009), the reason that the most recent developments in BPM have been so revolutionary is that they allow organisations to adopt an enterprise-wide approach to management and monitoring which is in line with the initial work of Kaplan and Norton (2000) who highlighted that simply monitoring one aspect of firm performance (eg finance) is in fact likely to lead to a distorted and possibly ill-informed result and can in fact have adverse consequences on management decisions that do not incorporate an analysis of other aspects. For example, within different industries it is quite normal that there will be different profit margins and ratios, and therefore failing to cross-analyse these ratios across the business will give a distorted view of the performance of the business. This is something that a true BPM can help companies to avoid. As noted previously, as BPM also sits under the concept of BI, it is also necessary to understand how data gathered and analysed by BPM

tools can be used to good effect within a business. This is something that will be analysed in greater depth later in this chapter.

### **2.4 The Value of BPM Software**

Despite the recognised advantages and benefits of BPM, a review of the literature in this area reveals that adoption of BPM has in fact been relatively low (Kelly, 2010). This is one of the areas of challenge that this research project seeks to address, however before this can be measured and an accurate research instrument designed, it is also useful to understand the state of the BPM market and the current level of penetration.

It is clear from the literature that BPM and organisational effectiveness are closely aligned. Typically the latter is measured by means of tailored KPI's which provide a snapshot view of the 'health' of an organisation when set against the parameters as defined and required by its senior executive. For example in a sales and marketing driven firm, the KPI's would be entirely different from a manufacturing and distribution firm (Cokins, 2009). Thus holding in mind that BPM and organisational performance are inextricably linked, it is useful to understand from the literature how this relationship can be leveraged to enhance firm performance. According to McNamara (2010), BPM can be used to align organisational operations, activities and processes with the overall goals, aims and objectives of the organisation. McNamara (2010) states that BPM can be used to help identify and clarify the organisational goals, the results needed to achieve those goals, the subsequent measures of effectiveness or efficiency (outcomes), and means (drivers) to achieve the stated goals. Patel and Hancock (2010) share the view that clear performance management functions and tools such as BPM can support organisations when they are seeking to translate strategy into action, and that BPM can provide a useful framework through which to implement this action.

In contrast to McNamara (2010), Patel and Hancock (2010) adopt a view that is more strongly focussed on performance objectives and action as opposed to straightforward identification. They argue that if BPM is to deliver true value to an organisation then it should be fully integrated and used in a consistent manner across the firm in order to ensure that the performance measures as identified through BPM have genuine meaning and value for the organisation, and that they can also be auctioned in a manner that will bring results.

Patel and Hancock (2010) further argue that BPM should be used by the organisation in question to develop short, medium and long term goals and objectives that are regularly reviewed if they are to provide true business efficacy. They state that some of the core uses of BPM value-adding attributes of BPM are as follows:-

- To gain consensus in respect of strategy
- To effectively communicate the chosen strategy throughout the organisation
- To cascade KPI's and other performance measures down through the organisation

They suggest that the value derived from BPM is far greater than the financial figure attached to its worth, because it enables a firm to work cohesively and address holistic issues that no other business tool is currently capable of providing. It is therefore quite surprising that the use of BPM is regarded as being quite low. Ratkowski (2009) has determined that firms who correctly utilise BPM have a distinct advantage over their competitors because the advance visibility of their performance measures enables them to act proactively and address potential issues before they become genuine problems. Similarly, vom Brocke and Rosemann (2010) state that the use of BPM can also help some firms to anticipate their market so that they are able to respond rapidly to shifts in consumer demand and in some cases even anticipate the market and gain even greater market share. Thus it is quite surprising that so few firms have considered the value of investing in BPM.

### **2.5 The use of BPM in Business and Enterprise**

In order to fully appreciate the reasons for the low adoption of BPM, especially amongst SME's where it can add the greatest value it is useful to analyse the current utilisation rates. Kugel (2007) analysed a series of firms with over 10,000 employees and found that approximately half had chosen to invest in BPM software. He further established that the smaller the company (as measured by the number of employees), the lower the rate of BPM adoption. Moreover, Kugel (2007) also determined that a vast number of SME's were still using 'old-fashioned' methods of budgeting and performance management, and that they seemed unable break away from their reliance on spreadsheets and traditional methods. The reasons given for this reliance were not the focus of the Kugel (2007) study; however Ballantine (2001) and Leech (2007) also found a similar situation. Ballantine (2001)

attributed this reliance on spreadsheets to a general fear of change, whereas Leech (2007) suggested that the root cause of this reliance was more prosaic and could be attributed to the fact that many organisations failed to perceive the true value of BPM systems for budgeting and planning. Cokins (2009), has also suggested that there could in fact be a societal cause insofar as there is generational gap. Bearing in mind that computer technology has only become commonplace in schools in the last 15 to 20 years, there are at least two generations of people who are not entirely confident in the use of PC's and are in fact largely self-taught. Cokins (2009), indicates that the limited adoption of BPM may be partially explained by the fear of change (in line with Ballentine) and also because there is a general fear of technology caused by a lack of understanding.

This further aligns with a second study conducted by Kugel (2007) which established that many firms that do have BPM are failing to utilise it to its maximum potential. For example, Kugel (2007) determined that approximately 50% of large enterprises and 25% of SME's in his study did have some form of BPM, however the vast majority of firms only use a tiny proportion of its capability, preferring to apply only the budgeting, planning and forecasting functionality and ignoring the more sophisticated and strategic applications. Chandler, Rayner & Van Decker (2010) observe that nearly 50 % of large enterprises and 75 % of midsize companies still continue to use spreadsheets or legacy applications to handle their core management process for the purposes of budgeting, planning and forecasting, financial consolidations, and financial reporting. Curtis and Cobham (2008) and Bocij et al (2008) have found a similar scenario regardless of the type of MIS in use, and so it would seem that this problem is not limited to BPM.

### **2.6 Acceptance of Technology**

It has been noted by Lee (2009:61) that "*the development of online tools and the use of performance management systems ... are accelerating due to the improvement of the interactive features of Web 2.0*". He further expands that over the last 10 to 20 years there has been a gradual acceptance of technology in the commercial sector, but over the last few years this has actually slowed as there is less money to invest. Furthermore, Weller (2007) also indicates that there is a risk in assuming that all technology platforms are accepted and equally understood and he argues that this is evidenced by the fact that in some areas there is

in fact limited penetration. Weller (2007) also argues that it is unwise to assume that technology automatically enhances the performance of a firm or commercial enterprise when there are limited tools that can assess the true effectiveness of technology at improving business processes and enhancing knowledge. When reviewing the literature in respect of technology acceptance in commercial enterprise, it is clear that there has been increasing acceptance as younger generations who are more comfortable with technology have moved into the working arena (Lee, 2009). Having reviewed the literature and secondary evidence it seems that there is seldom a specific technological or hardware issues with the systems, but rather either a reluctance to use the system itself (Weller, 2007), or a reluctance to change established processes (Lee, 2009). These non-quantifiable factors are clearly influential, despite that fact that they are seldom elucidated.

### *2.6.1 The Acceptance of Technology – Conceptual Frameworks*

It is apparent from the literature that not only is there several trends which have emerged in recent years as regards the emergence, use and acceptance of technology, there are also a number of conceptual frameworks which have emerged which examines various aspect of acceptance, integration, use and expansion. These conceptual frameworks are continuously evolving as the technology itself changes, and it is also noted that many of these frameworks actually rely quite heavily on existing theories of change management as it seems that a fear of change or a reluctance to adjust established processes is often the root cause of issues. Accordingly this section of the literature review will focus on three specific models which are considered to have the greatest relevance to the subject matter of the research. These models have emerged as stable generic models which can be applied to any form of technology or system, but each chooses to focus on a slightly different aspect of acceptance. Accordingly these three conceptual models are the ASSURE framework, (Gustafen and Branch, 2002) the LoTi Model (Moersch, 2004) and the Technology Acceptance Model or TAM (Liu et al, 2005). These three conceptual models will be compared and contrasted below.

### 2.6.2 The ASSURE Framework

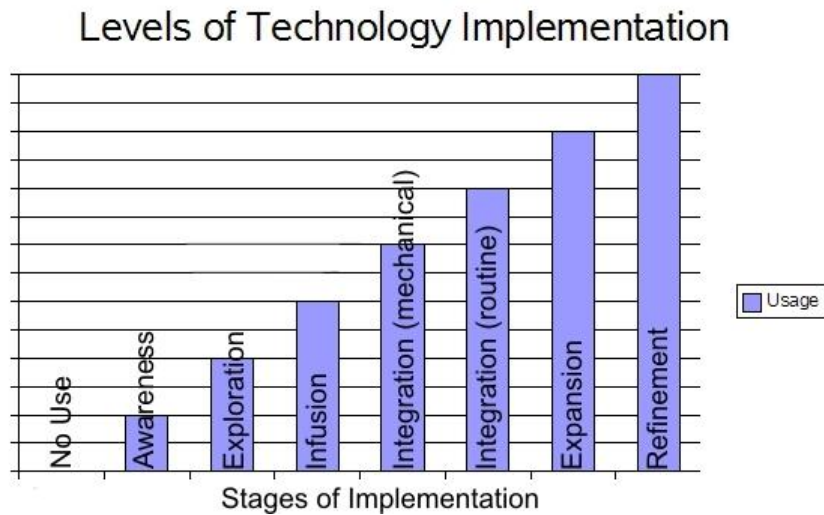
The ASSURE framework is a model which assesses the level of technological acceptance in variety of situations. It is an acronym for “Assess, State, Select, Utilise, Require and Evaluate” (Gustafsen and Branch, 2002) and it effectively describes the process which an organisation can use to assess the level of technology knowledge and comfort within a business, and therefore the gap between actual and expected usage. The theoretical model is comprehensive and focuses almost exclusively on the human learning process (that is to say the means by which certainly individuals absorb knowledge more effectively), and thus this can allow an organisation to measure and then bridge any gaps which might exist in the most effective manner. Through this process it also allows a firm to assess the likelihood of technology acceptance. There is relatively limited criticism of the framework as it does not seem to be used a great deal (possibly because it is so complex). However, from the criticism that does exist, Honey (2006) indicates that its complexity means it is better suited to smaller firms in order to provide them with a holistic picture of their technological capability that they may otherwise be lacking.

### 2.6.3 LoTi Framework

The LoTi Framework is shorthand for “Levels of Technology Implementation”, and the framework was developed by Moersch (2004). This differs slightly from the ASSURE model in that it does not look to assess levels of acceptance by the employees of the organisation, but rather to assess how effectively the technology is being used. Initially the LoTi framework sought to cover a wider range of issues, but eventually it was determined that by focussing on the level of actual use of technology and the effectiveness of its use it was possible to measure with a high degree of accuracy how well technology had been accepted. Curtis and Cobham note that, “*several iterations later, the original LoTi Framework has transformed into a conceptual model to measure organisational implementation of the tenets of digital-age literacy*” (2008:109). The model as shown in **figure 1** overleaf demonstrates how levels of technology integration and acceptance are measured on a ranking scale of 0 to 6, with 0 being no use whatsoever, and 6 meaning that technology is used seamlessly within



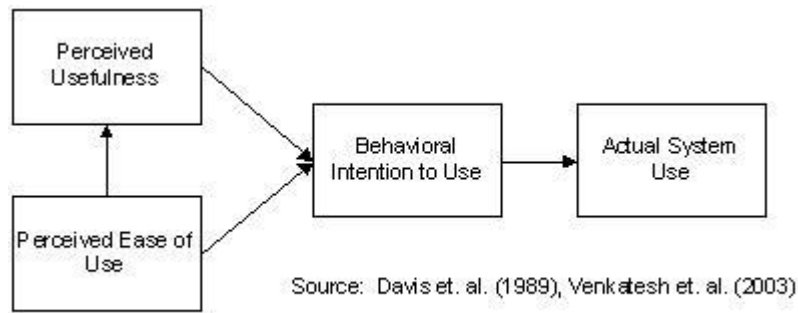
the business. Elements of this framework will be applied in the primary research study when assessing the level of integration of BPM systems.



*Figure 1: The LoTi Framework (adapted from Moersch, 2004)*

### 2.6.4 Technology Acceptance Model (TAM)

Finally, it is useful to consider the Technology Acceptance Model (TAM). This conceptual model (as shown in **figure 2** below) is more generic and wide ranging and seeks to examine how users of the technology perceive it, which in turn indicates their propensity to use the software and systems correctly to deliver the best possible results. Landry et al state that “the TAM posits that perceived usefulness and perceived ease of use determine an individual's intention to use a system with intention to use serving as a mediator of actual system use” (2006:88). As can be seen from the schematic the perceptions of the system strongly influence the likely behavioural intent and thus suggest what change management tools and techniques should be applied in order to encourage correct usage of the system in question.



**Figure 2:** *The Technology Acceptance Model (adapted from Davis et al, 1999).*

Although the model has been criticised by some for its simplicity, (Gefen and Straub cited in Curtis and Cobham, 2008), this simplicity also means that the model is quick and effective and can serve as a useful starting point when gauging the use and acceptance of technology in a new environment. It is for this reason that some elements of the TAM will be used in the primary research instrument in this study.

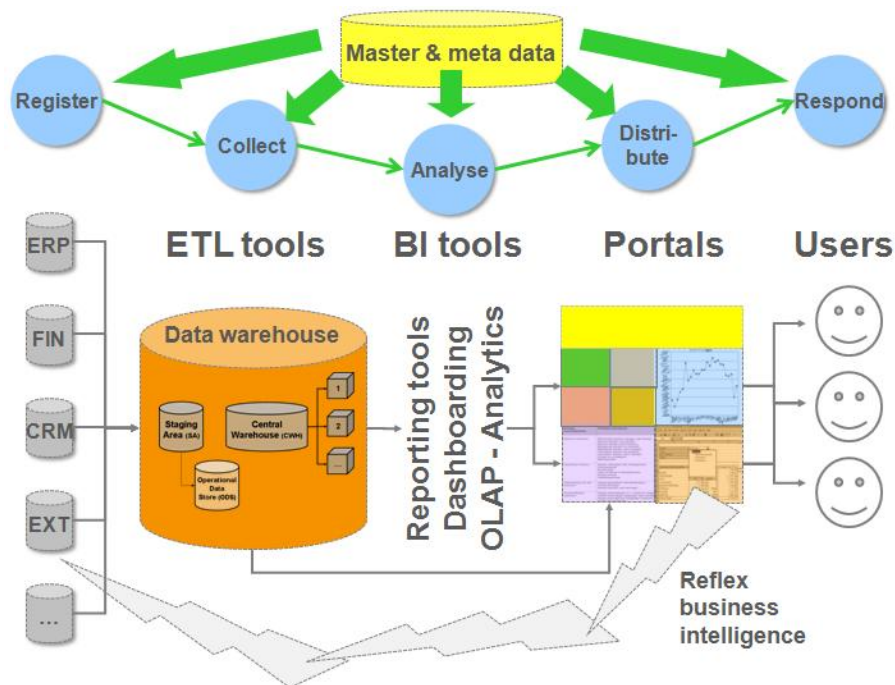
### **2.7 Business Intelligence**

As alluded to previously, BPM forms part of the concept generally referred to as Business Intelligence, or BI. Therefore it is useful to spend a short while analysing how BI and BPM impact on one another, and how aspects of BPM have evolved from BI concepts. BI has been variously defined by Neely et al (2002:89) as “*a collective term to describe the tools that enable users to analyse the data held in their data stores. Often these tools provide a means of displaying the data in a user-friendly format such as a chart or map*”. Further to this Khanna et al (2006:385) have defined BI as being “*... concerned with information technology solutions for transforming the output from large Data collections into Intelligence; usually through the integration of sales, marketing, servicing, and support operations*”. Indeed some scholars suggest that BI actually refers to the process of gathering the data, and still others consider that BI is only meaningful when taking this data using to align data and organisational strategy. However, it is easy to understand how BI and BPM are extremely closely related.

However, according to Rucci et al (2008) it is critically important to differentiate between the two. Rucci et al (2008) perceive that whilst BI refers to the collection and analysis of

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management and organisational data, BPM actually focuses on the processes that underpin the data and establishing how these processes can be used in conjunction with the BI data to add true value to organisations. According to White (2009) it is the combined application of BI and BPM that brings significant benefits to an organisation. He further states that BPM enables a business intelligence system to tap into and monitor business process events flowing through operational systems. These monitored events are then used to measure and manage business performance. He concludes that the integration of process event monitoring with BI is a key component of the overall BPM platform that enables a closed-loop solution that in turn enhances business performance and delivers competitive advantage. The following figure illustrates how BPM sits within the umbrella of BI.



*Figure 3: BI and BPM (adapted from Paladino, 2007)*

As can be seen from the figure, BI serves as a holistic term for capturing and analysing discrete data elements that can then be brought back into the business for analysis and action. BPM sits within this framework capturing data from the data warehouse and using it to produce manageable and meaningful reports that can be accessed by a variety of business users as required. The significant benefit of integrating BI and BPM as observed by White (2009) is that it can allow users from across the business to adopt a holistic perspective themselves and thereby understand and appreciate the impact of their actions on others. To

provide a simple example, the sales and marketing team can use BI before they confirm a new client in order to ensure that they are going to be truly profitable for the business, as it is a false economy to assume that all clients will bring equal revenue to the organisation (Palandio, 2007). Previously it would have been almost impossible for non-technical functions within an organisation to obtain this data because of the use of disparate software systems, but BPM facilitates holistic use. It can be suggested that this is where the true benefit of BPM actually lies.

### **2.8 BPM for SME's**

Thus, having provided the contextual background of BPM, examined the current use of BPM in the wider market, and also assessed how BPM integrates within the framework of BI, it is now necessary to specifically examine the use of BPM within and SME context. Accordingly this section of the literature review will examine SME's and performance management, the benefits and barriers of using BPM in an SME environment, and finally factors which may be adversely affecting the penetration of BPM in the SME market.

#### *2.8.1 SME's and Performance Management*

As has been established in the preceding discussion, there are a number of considerable advantages which arise from implementing BPM, which are both quantifiable and qualitative in nature. It was hypothesised by a number of researchers in this area that possible explanations for failure to adopt BPM in SME's were cost-driven, technology driven and cultural in nature. It was also observed in the contextual discussion that in recent years there has been a technological revolution in respect of BPM software which has been spearheaded by leading software providers such as Oracle, SAP and IBM. However, on a pragmatic level it is clear that many small firms will simply not have the cash reserves to procure and implement a bespoke BPM as developed by these larger software providers, and thus there is a market for smaller software providers to offer a stripped down more 'user-friendly' version of BPM (Kusic and Kandasamy, 2007). There is further logic in this insofar as all of the research in this area to date confirms that no organisation actually uses the true capability of

their BPM. Therefore it can be argued that it would be more beneficial for smaller providers to offer a vanilla software package that incorporated the necessary BPM components on a modular basis as the SME required or as they expanded. This would not only help keep costs low, but should also encourage a greater number of SME's to invest in BPM when the benefits are obvious and can be easily quantified in terms of ROI. Examples of this would include SaaS (Software as a Service), and Business Analytics.

### *2.8.2 Benefits of BPM for SME's*

The benefits of BPM have been itemised by Li and Bauer (2005) as follows:

- Provision of integrated data
- Integration of business strategies with business actions
- Reduced problems with financial data
- Improved customer service and integration

Clearly, these benefits apply to businesses of all sizes, but for SME's which may lack the necessary corporate experience or expertise then a framework to at least assess this situation is likely to be of considerable value. Fundamentally, BPM and BI allows the senior executive of any business (however small) to use timely and accurate data in order to make informed management decisions. The greater the accuracy and reliability of this data, the more likely it is that prudent decisions will be made that allow a firm to steal a competitive advantage. For SME's competitive advantage is absolutely critical if the business is to grow, and therefore it makes perfect sense opt utilise some form of BPM in order to monitor the business and create a strategic vision.

### *2.8.3 Challenges of Integrating BPM in SME's*

However, given that there is a relatively limited adoption of BPM amongst SME's it is also necessary understand further possible reasons for this other than cost (Curtis and Cobham, 2008), comfort Rayner and Van Decker (2010) and limited acceptance of technology Bojic et al (2008). Frolic et al (2006) suggest that some of the failure to utilise BPM could be attributed to the fact that the expectations of BPM are not clearly stated, and therefore the

system is not properly used. Cokins (2009), seems to concur with this view and suggests that failing to clearly agree how BPM would be used within an organisation may account for its limited use. Eccles and Pyburn (2010) also suggest that an alternative explanation might be simple fear of or resistance to change. Indeed it is not uncommon for an MIS to be implemented and for people to then find ways around using a system so that no real value is derived. This is quite common amongst MIS's in general and can also be examined through use of some of the technology acceptance frameworks as discussed previously.

### 2.8.4 Factors Affecting the Penetration of BPM in the SME sector

Unsurprisingly, the most common reason given by SME's for failure to adopt BPM is cost, closely followed by lack of resource. Butler (2009) states that smaller organisations often fail to benefit from first generation software development as the leading software houses specifically target larger firms in the hope of recouping their R&D expenditure in favourable licensing deals. Typically it is not the actual software and hardware itself that forms the largest proportion of the cost, but the subsequent licenses and support packages which are also required to run and manage the systems. Often large software providers will also charge for upgrades which can be a considerable unforeseen cost for many SME's. It has been anecdotally noted by more than one SME that large software houses are often more interested in developing unnecessary functionality in order to sell their products rather than focussing on the actual needs of their clients. Furthermore, research by Ventana (2010) shows that lack of resources (60%) and lack of a budget (43%) are the two most common barriers to improving BI and performance management in SME's. Moreover, the top two HR issues were cited as lack of awareness (36%) and lack of executive support (26%). Ventana (2010) also established that perceived complexity is a further issue which adversely affects the adoption of BPM in SME's.

## **2.9 Summary**

In summary of this chapter there has been a review of the background and evolution of BPM, and an examination of how it functions under the umbrella of BI. This chapter has also

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examined the growth of BPM concepts in alignment with developments in technology. It is clear that whilst BPM has many obvious benefits, adoption of BPM has been lower than would be expected, and various reasons have been proffered to explain why this might be the case. This chapter has also briefly examined some of the models of technology acceptance following this discussion which will form the basis of the questionnaire for primary research purposes in order to understand why so few SME's have adopted a system which provides such obvious benefits and so few drawbacks. Accordingly the following chapter will set out the methodology that will be employed during this study in preparation for the primary element of the research.

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