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International Journal of Project Management 34 (2016) 761 – 778

International Journal of Project Management

www.elsevier.com/locate/ijproman

The impact of project management (PM) and benefits management (BM) practices on project success: Towards developing a project benefits governance framework☆

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Received 8 December 2014; received in revised form 4 May 2015; accepted 18 May 2015
Available online 26 June 2015

Abstract

Benefits management (BM) and project management (PM) are two interrelated approaches to the success of projects. The literature, however, still lacks empirical evidence of the value of applying BM practices. Hence, it is aimed to test the impact of BM practices on the success of investments in projects, taking into consideration the impact of PM practices on that success. Since the results, based on 200 valid responses, suggest that a significant proportion of organisations adopt PM and BM concurrently, SEM was used. PM practices were not only found to influence project management success but also to affect project investment success. However, BM is found to be less significant and to have less impact on project investment success. Nevertheless, the probability of project success is enhanced significantly when PM and BM practices are combined together. Therefore, a governance based framework is developed to uncover the interweaving relationship between the two practices.
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Keywords: Project benefits governance framework; Benefits management; Project management; Project success; Structure Equation Modelling; Project governance; Change management

1. Introduction

Delivering project outputs on time and on cost was the main concern for project managers in 1960 up to the 1980s (Ika, 2009). Although the research focus has changed to other concerns, such as customer satisfaction and achieving a project's strategic objectives, a significant number of project managers still focus on the iron triangle (cost, time and scope) of performance metrics. In addition, factors such as age and experience make project managers focus on this iron triangle (Müller and Turner, 2007), but the complexity and uncertainty of project outputs lead to cost and time overruns (Williams, 2005) and this can lead project managers to focus on this triangle.

However, the over focus on delivering the project iron triangle performance measures (cost, time and scope) creates an "output-focused" mentality (Chih and Zwikael, 2015). This mentality creates problems at the organisational and the individual level. Maylor et al (2006) show that this mind-set at the organisational level, which they call "projectification", leads to many problems that limit the effectiveness of the organisation to realise benefits from its projects, such as the distribution between project managers and functional managers in the organisation of power, authority and responsibilities. On the individual level, inexperienced project managers tend to focus more on iron triangle performance measures than on customer satisfaction measures (Müller and Turner, 2007).

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http://dx.doi.org/10.1016/j.ijproman.2015.05.005
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The literature reveals that this "output-focused" PM mind-set could confuse the orientation of a project manager and hence could leave the project customers/sponsors unsatisfied (Shenhar and Dvir, 2007). Indeed, complying with the iron triangle alone is argued to be insufficient for judging a project successful (Samset, 2009). For this reason, a new "project benefits management" mentality is spotlighted by academics and practitioners to handle the issue of what factors are required to realise the benefits from the projects and how this should be done (Bennington and Baccarini, 2004; Breese, 2012; Chih and Zwikael, 2015).

Benefits management (BM), sometimes called Benefits Realisation Management, is a framework which was formerly used with the aim of increasing the success of Information Technology (IT) projects (Ashurst and Doherty, 2003; Breese, 2012; Melton et al., 2008a,b; Serra and Kunc, 2015). However, it has spread now to other industries (Chih and Zwikael, 2015; Mossalam and Arafa, in Press). Despite an early call to implement BM (Thorp, 1998; Ward et al., 1996), little empirical evidence has been brought to show how much light benefits management sheds on the prevalent ways in which projects become successful. Most of the research conducted on benefits management either explores it at the level of implementation (Bennington and Baccarini, 2004; Coombs, 2015; Lin and Pervan, 2003) or implements and develops the benefits management approach in case studies (Baccarini and Bateup, 2008; Doherty et al., 2011; Fukami and Mccubbrey, 2011; Pina et al., 2013). Nevertheless, a few papers have used generalizable evidence to test the success or level of effectiveness of benefits management (Badewi, 2015; Serra and Kunc, 2015).

Paradoxically, from one perspective, these papers have found a mixed weak relationship between the implementation of benefits management practices and project success (Badewi, 2014; Serra and Kunc, 2015). Indeed, current benefits management practices are not in themselves a panacea (Breese, 2012) and sometimes they hardly even matter (Haddara and Paivarinta, 2011). From another perspective, project management practices alone are perceived to have only a moderately significant relationship with project success (Besner and Hobbs, 2013).

Moreover, in terms of customer satisfaction project management maturity is found to have an impact on project management success but not on project investment success (Berssaneti and Carvalho, 2015). Additionally, project management performance is significantly correlated with success in both project investment and project management (Mir and Pinnington, 2014). However, when project management practices are used in transformational change, such as the deployment of a new IT system to change work practices, the results may be frustrating (Ram et al., 2013). Therefore, it is advised that change management practices should be integrated with project management practices (Hornstein, 2015). This could be done by synchronising the soft and hard approaches to managing the project and its stakeholders (Shi, 2011).

In order to understand how project management may have an impact on project investment success, Thomas and Mullaly (2008) address the point using a general framework to identify the contextual factors that affect the capacity to implement PM (such as the quality of the people and technology used in PM) which in turn affect the project's success. The present research is designed to test whether the successful implementation of projects leads to project investment success. Furthermore, it addresses whether, as a single framework without PM practices' being implemented, BM alone can deliver success.

PM and BM frameworks aim to deliver organisational value from investments in initiatives. However, they each have different aims, methodologies and techniques. Thus, combining them into a single governance framework, called project benefits governance, is proposed to enhance the probability of project success.

To bridge the knowledge gap, this paper tests the relationship between success in different areas (i.e. project investment success and project management success) to find whether successful project management leads to project investment success. It goes on to propose that project management practices (Project Management Institute, 2013a,b) alone and benefits management practices alone (Ward and Daniel, 2006) affect the success of project management. Finally it proposes that, when PM and BM come together, the probability of success is enhanced.

2. Literature review

2.1. Project success and project benefits

The main purpose of using a project management framework is to increase organisational value (Dalcher, 2012). The organisation can benefit from using project management framework by increasing the effectiveness of human effort in the organisation while increasing the efficiency of these efforts. Therefore, project success is measured by its efficiency in the short term and its effectiveness in achieving the expected results in the medium and the long term (Jugdev et al., 2001; Müller and Jugdev, 2012). Therefore, the value of the project can be understood in so far as it satisfies customer needs, aligns the project output with the organisation's strategy and gives a return on investment (Thomas and Mullaly, 2008).

Nevertheless, from the traditional PM point of view, scope creep in projects or over-budgeting and over -scheduling are not acceptable (Atkinson, 1999). Therefore, achieving the targets of a project is called project management success (Zwikael and Smyrk, 2012) or internal project performance (Golini et al., 2015). However, the ability of the project's output to deliver the expected return on investment is the key to declaring the project success from the business perspective (Camilleri, 2011; Artto and Wikström, 2005). Therefore, project investment success is used to describe the ability to generate the project's return on investment (Zwikael and Smyrk, 2012).

Project investment success is indeed more challenging than project management success. Project investment success needs a system thinking mind-set to understand and to manage the internal and the external environment (Fortune and White, 2006). For instance, Cserháti and Szabó (2014) have found that relational-oriented success factors such as communication, co-operation and leadership are more critical than are task-oriented success factors. In supporting this evidence, Müller and Turner (2007) find that more experienced project managers are more interested in

developing teamwork and more oriented to investment success. Likewise, in urban regeneration projects which entail changes in citizens' behaviour and attitude, stakeholders' management is a critical factor for project success (Yu and Kwon, 2011). Consequently, Golini et al (2015) has found that the PM tools (e.g. critical path method and Gantt chart) used to achieve project management success are different from those needed for project investment success because they are more closely related to stakeholder management such as the stakeholder matrix and responsibility assignment matrix.

A benefit is described as "an advantage on behalf of a particular stakeholder or stakeholder group" (Ward and Daniel, 2006). However, this definition is extended on the basis of different considerations. First, no benefits can be realised without a change in the current state (Hornstein, 2015; Serra and Kunc, 2015). Second, for each aspect of project success (management and investment), measures should be established to define the success criteria (Müller and Turner, 2007). Third, benefits should be owned and assigned to a certain person or department, made responsible for realising them (Winch and Leiringer, 2016; Chih and Zwikael, 2015); indeed, without an owner, the benefit will never accrue because nobody will be interested in using the project output to capturing the benefits (Peppard, 2007). Thus, this research extends Ward and Daniel's definition of project benefits as "a measurable advantage owned by a group of stakeholders incurred by changing the current state through project management mechanisms".

Project benefits, which can be reflected by Key Performance Indicators (KPI) (Kaplan and Norton, 1996), can be financial or non-financial. Project benefits and project investment success are slightly different: project investment success is more inclusive and includes the cost of the project as well as the financial benefits from it. In other words, stakeholders will not be satisfied until the expected benefits, both financial and non-financial, are realised.

Benefits can be tangible and intangible (capable or incapable of being measured) (Irani and Love, 2002; Irani, 1998). While financial benefits can be measured and estimated before the starting of a project, non-financial benefits may either be measurable (e.g. the defect rate) or non-measurable (the organisation's market reputation).

However, non-financial benefits cannot easily be considered in a project's investment success without articulating, quantifying and measuring how they can affect the financial benefits (Lin and Pervan, 2003). Furthermore, quantifying the benefits is necessary for managing, monitoring and controlling their realisation (Lebas, 1995; Otley, 1999); in other words, what cannot be measured cannot be managed. A project's financial benefits, and therefore its investment success, cannot be realised without achieving these interim non-financial benefits (Peppard et al., 2007). Therefore, while balanced scorecards (Kaplan and Norton, 1993; Fang and Lin, 2006; Milis and Mercken, 2004) and Benefit Dependency Networks (BDN) (Peppard et al., 2007) are used for the sake of articulating these non-financial benefits in order to convert them into financial benefits which can be measured for the evaluating and selecting of projects, other tools are used to value the projects in terms of delivering investment success and costs, such as business case (Ward et al., 2008), vision to value vector (Tiernan and Peppard, 2004) or the Cost, Benefit, Financial Risk Model (CoBeFR) model (Badewi and Shehab, 2013).

To sum up, classifying project success as the success of management and investment (Zwikael and Smyrk, 2012) is extended to reflect these conceptual principles in the form of project efficiency, organisational benefits, impact, stakeholder satisfaction and future potential (Joslin and Müller, 2015). Another framework used is to classify project success under process success (project management success), product success (satisfaction with the project output) and organisational success (organisational satisfaction with the outcome) (McLeod et al., 2012). In this framework, project success is the output of three interacting sub-success criteria: successful project management in delivering the project output, successful communication and understanding of stakeholders' needs; and successful realisation by the organisation of the project's benefits. Without the ability to organise, through a proper project governance, to absorb and to use the project outputs, the benefits will not be realised effectively (Maylor et al., 2006).

2.2. Benefits management

Ward and Daniel (2006) define benefits management as "The process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realised". On the basis of the definition of project benefits defined earlier and Ward & Daniel's definition, the present research defines project benefits management as "the initiating, planning, organising, executing, controlling, transitioning and supporting of change in the organisation and its consequences as incurred by project management mechanisms to realise predefined project benefits".

The discipline of benefits management has progressed from a call for active management to realise expected benefits through the Active Benefits Management (ABM) framework (Leyton, 1995) to the point where it is a government standard in some countries, such as the UK (OGC, 2011). A Cranfield process model was developed by Ward et al. (1996). By 2001, Lin and Pervan (2003) had found that a significant proportion of the biggest organisations in Australia were adopting the Cranfield process model either formally or informally. The Cranfield process model argues that benefits management is a continuous process and it should not be imposed via single projects. This process model is followed by an Active Benefit Realisation (ABR) approach which is developed to underline the importance of having a continuous process of managing benefits (Remenyi and Sherwood-Smith, 1998). Nevertheless, Remenyi & Sherwood-Smith believe that the project is the mechanism to deliver output; but that benefits realisation is a continuous process to reflect the fact that benefits from investments can be realised more and more from current investments, instead of developing new projects. This view is aligned with the perspective of the Cranfield process model on realising benefits.

The research has changed direction to focus on organisational capabilities (such as the capacity to learn and develop (Ashurst and Doherty, 2003)) and the programme management capabilities (Reiss, 2006) required to deliver project benefits. From the project management research perspective, benefits management

is more oriented to programme management (see for example the Multi-Objective Realisation Method (MORE) framework of Barclay and Osei-Bryson (2009)). This school of thought was extended through many subsequent papers (Maylor et al., 2006; Shao et al., 2012; Badewi, 2015).

Most of this literature categorizes benefits management on the basis of the Cranfield process model (Ward et al., 1996), which puts practices under the headings of the identification, planning, executing and reviewing of some benefits (Bennington and Baccarini, 2004) and the exploitation of others (Ashurst et al., 2008). Since coherent governance is one of the factors in play when deriving benefits from investment in projects (Doherty et al., 2011), the responsibility for managing change and/or recouping the benefits should be addressed, because the project manager has only a certain scope for delivering the output (OGC, 2011; Zwikael and Smyrk, 2011; Too and Weaver, 2014). As with the Input–Transformation–Output model, the responsibility for capturing benefits should be assigned to a specific person (Zwikael and Smyrk, 2012); the project manager should be responsible for implementing the project as planned, but s/he is not necessarily accountable for obtaining the expected benefits from it. Thus, from the governance perspective, assigning a role of accountability for realising benefits from intended projects is perceived as critical for capturing these benefits (OGC, 2011; Zwikael and Smyrk, 2015).

To sum up, it is hypothesised that adopting benefits management practices contributes positively to project investment success.

H1. Benefits management practices positively affect the success of project investment.

2.3. Project benefits governance framework

One of the main determinants of project success is effective project governance structure (Lechler and Dvir, 2010; Joslin and Müller, 2015). The definition of project governance is not generally agreed in the literature (Bekker, 2014). The reason for this may be that three concepts now used interchangeably are in fact different. Project governance, the governance of projects and governmentality are three interwoven concepts for understanding and realising the value of project management (Müller et al., 2014). While project governance deals with the internal control of individual projects, such as the level of flexibility in applying PM tools, techniques and roles (Müller, 2009), the governance of projects is a way of selecting, coordinating and controlling projects such as programme/portfolio management (Williams et al., 2010). This governance of projects varies according to the country, project size and project type (Müller and Lecoeuvre, 2014). Meanwhile, governmentality means managing the perceptions, attitudes, values and culture to govern/control and direct projects in order to deliver project value (Foucault et al., 1991; Müller et al., 2014).

Governance is the determination of roles, responsibilities and accountabilities among stakeholders in order to achieve an ethical, cohesive and transparent decision making process for the sake of achieving the mission of the organisation. Ahola et al. (2014) reflect this definition by dividing project governance research into two streams: governance as a phenomenon external to a project (the relationship between a project and the organisation in general and the higher governance theme, e.g. programmes or portfolios, in particular); and project governance as internal to a specific project.

This research uses the concept of the "governance of projects", because the aim is not to manage the project per se in order to deliver the expected performance; rather, the aim is to manage different projects and activities towards the production of the pre-defined benefits (Williams et al., 2010). Thus, the governance of projects can be defined as "a process oriented system by which projects are strategically directed, integratively managed and holistically controlled, in an entrepreneurial and ethically reflected way" (Renz, 2007). Renz's definition suggests that the success of a project is based on collaboration between implementing a reliable project output with an acceptable level of service level agreement after its delivery and effective use of the project output (Burton-Jones and Grange, 2012; Badewi et al., 2013). Thus, allocating resources wisely between these projects and the supporting processes and a high level of cooperation between them are vital for this success (Jonas et al., 2013).

In order to achieve and manage effective cooperation between elements, the interdependence between them should be structured and defined (Forrester, 1994; Golden and Martin, 2004). Likewise, the interdependence between roles, responsibilities and accountabilities should be clarified before starting the projects (Ahola et al., 2014; Too and Weaver, 2014) so that the cognitive conflicts over the responsibilities and areas of accountability between these roles can be reduced (Forbes and Milliken, 1999) and therefore project success is improved through the cohesiveness in the governance of the structure.

Since the capabilities of the project owner are a determinant factor in recouping the expected benefits from projects (Winch, Leiringer), the one who owns the project, sometimes called the funder, or Senior Responsible Owner (OGC, 2011) should from both perspectives – management and investment success – be responsible and accountable for its investment viability (Zwikael and Smyrk, 2011; Zwikael and Smyrk, 2012). Additionally, on the basis of agent-principal theory (Eisenhardt, 1989), separation between ownership and control is recommended for enhancing performance (Bozec et al., 2010). Therefore, the principal (the funder) should control its agents' performance (i.e. the performance of the project manager and benefits owner). Consequently, there could be a conflict of interest between the principal and the agents, the agents, or both.

Therefore, the use of contracts to define the desired behaviours and outcomes is critical for realising the expected outcomes (Eisenhardt, 1989). In the same way, contracts to identify the scope of the funder's work and that of the project manager and benefits owner should be clarified. In addition, the funder's contract (i.e. the business case), to detail the project cost, benefits and scenarios for realising benefits from the investments, is intended to define the funding and organisational change requirements, and the benefits profile (which defines the project benefits and how they will be measured) (OGC, 2011) and the project charter (Project Management Institute, 2013a,b) form the benefit owner's and project manager's contract. As seen in Fig. 1,

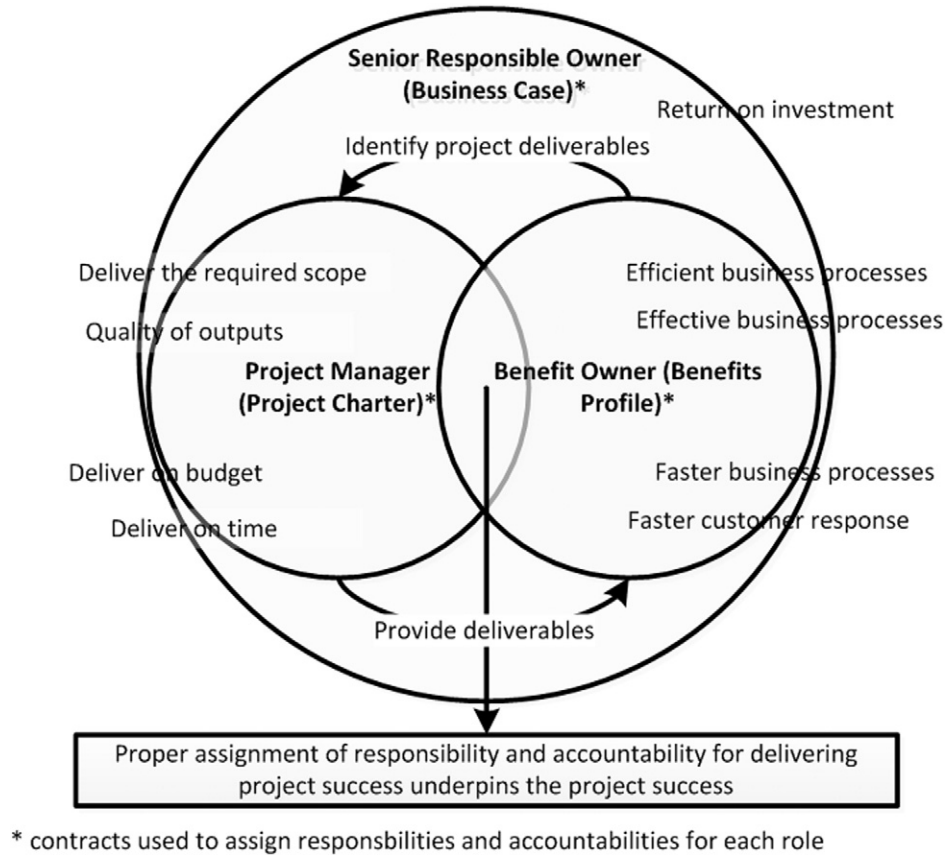

Fig. 1. Circles of accountability between project manager and benefits manager.

the progression on identified project benefits detailed in "Benefits Profiles" is used as a benchmark for reviewing the performance of the benefits owner. Finally, the purpose of the "project charter" is to tell and later to function in the performance metrics against, the project manager the budget and time requirements for delivering change of the required scope.

In light of this, the present research aims to investigate, through the literature, the governance relationship between the project manager and the benefit owner with a view to developing a framework for integrating both practices (BM and PM) in order to enhance the probability of project success.

2.4. The relationship between PM and BM under a project benefits governance framework

The relationship between delivering outputs (the project) and delivering the outcomes (the benefits from the project) has been examined in many handbooks of professional guidance, such as Managing Successful Programmes (OGC) (OGC, 2011), Program Management (PMI) (Project Management Institute, 2013a,b) and the Managing Benefits APMG certificate (Jenner and APMG, 2014). Academics also have addressed this relationship in a number of books and publications (Gareis, 2005).

Starting with the premise that the nature of a project is to deliver a certain well-defined output which may entail conflicts over changes in the environment, it follows that organisational governance is the key to obtaining the organisation's objectives by keeping a balance between the different tasks of delivering this output, delivering the expected benefits and attaining the organisational goals (Too and Weaver, 2014). In other words, unlike the process and product success (successful project management in delivering on time and within budget with stakeholder satisfaction), the organisational success (project benefits) is more relevant after handling the project outputs phase (McLeod et al., 2012).

Therefore, two or more different management themes (e.g. programme management, benefits management, portfolio management and project management) should be given prominence, to enable an organisation to impose its vision through the changes with and because of these projects (Maylor et al., 2006; Bartlett, 2002; Zwikael and Smyrk, 2011; Blomquist and Müller, 2006). This does not mean that project management practices should disregard the practices of change management (Artto and Wikström, 2005); rather, project management has a limited role, but an impetus impact, in managing change (Gareis, 2010) through the continuous management of stakeholders (Cserháti and Szabó, 2014). Nevertheless, the scope of organisational benefits is broader than the current project management scope. This is why the programmification of the concept of project management is necessary for organisations to realise the expected benefits from

projects (Maylor et al., 2006). Thus, one of the key determinants of programme success is business success in terms of business results (Shao et al., 2012).

In order to understand the relationship between project management and benefits management or between the process of project management and that of deriving benefits, a governance based framework is developed in the present paper to distinguish between the two processes (see Fig. 2, below). The process of realising benefits has a broader scope and longer life cycle than a project has (Zwikael and Smyrk, 2011). The reason is that projects deliver outputs that enable certain benefits to be obtained (OGC, 2009). Therefore, the benefits should first be identified before plans are made for obtaining them (Ward and Daniel, 2006). Afterwards, a business case can be developed in a formal document to consider these benefits, the costs of obtaining them and the plans for doing so (Ward et al., 2008).

Since the organisational capabilities which are inherited in the current state of the organisation (e.g. its processes, culture and attitudes) deliver a certain performance, to transform the current performance level, this current state has to be changed (Bradley, 2010; Serra and Kunc, 2015). The new state required to deliver the new benefits is crafted in the blueprint (OGC, 2011).

Projects entailing change management, such as IT projects, are even more challenging than other projects in terms of changing attitudes and managing the resistance to change (Cicmil, 1999) and the perceptions and behaviour of employees. For instance, in Enterprise Resource Planning (ERP) systems, where an information system involves a radical organisation change (Badewi et al., 2013), traditional project management practice does not contribute to the success rate of ERP projects (Ram and Wu, 2014; Ram et al., 2013). Rather, it is training and education that are critical for delivering success. In such projects, benefits are derived from the change, but without a significant change in the current working practices, no significant benefits will be recouped (Ward et al., 1996; Serra and Kunc, 2015).

Each project should be managed and coordinated to deliver a blueprint that could be coordinated using a single management framework, such as programme management (Reiss, 2006; Ribbers and Schoo, 2002). The project dossier based on this blueprint would be designed as a roadmap to show what the organisation would look like in the future as it performed its daily tasks after receiving the project output so as to realise the project benefits. Finally, the projects would be initiated on the basis of the project dossier to deliver a coherent blueprint with which an organisation can pursue benefits through the required changes (OGC, 2011).

For this reason, as illustrated in Fig. 2, a project charter has been drawn up on the basis of the blueprint requirements defined in the project dossier, which is the initial document for assigning responsibility in the project (the delivery of an output and its contents to a specific person) (OGC, 2009). From this point, the project of delivering the required blueprint is launched. Projects are initiated, planned, executed, controlled and monitored according to the project's lifecycle (Project Management Institute, 2013a,b). The hand-off point (sometimes called the "output closeout") should be left to the benefit owner (also called the project owner) (Zwikael and Smyrk, 2011), the one responsible for capturing the benefits from the project business case. The benefit owner is perceived to be critical for buy-in behaviour and in this capacity has been found to affect project performance (Zwikael and Smyrk, 2015). Finally, a benefits audit should be conducted regularly in order to guarantee that the benefits were obtained after implementation (Ashurst et al., 2008). Once the benefits are delivered, or once they are self-sustaining, the process of obtaining them is finished; this juncture is also called the outcome closeout (Zwikael and Smyrk, 2011).

H2. When project management practices are combined with benefits management, the probability of success is increased.

3. Research methodology

In order to understand "project-as-practice", interpretive research is suggested, in the form either of learning about the experience of project and benefit managers through interviews, observations, or focus groups (Cicmil, 2006); or through the in-depth, in particular ethnographic, analysis of cases, to understand what is going on and differences in practices

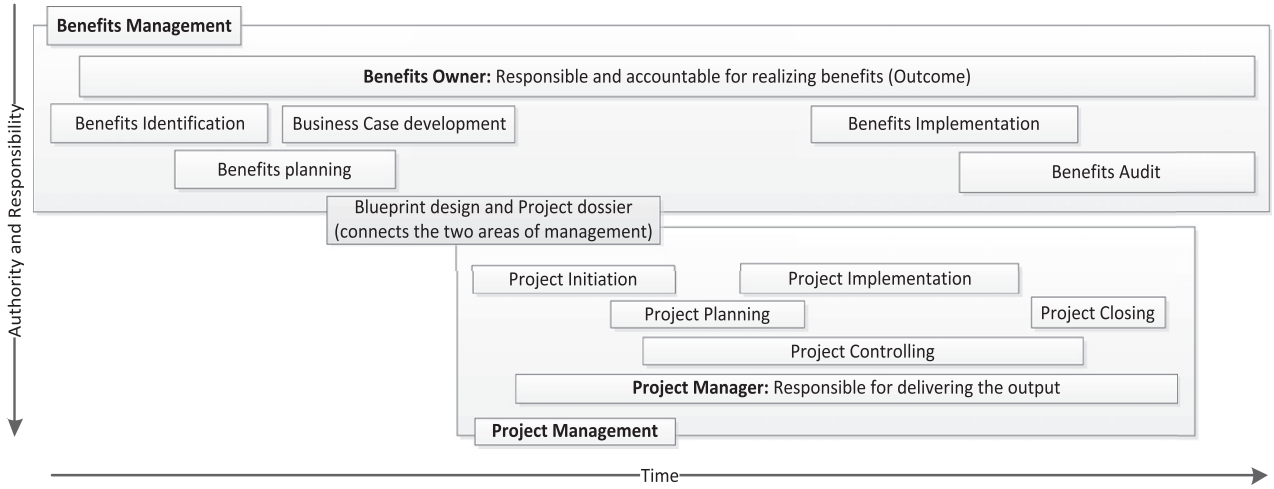

Fig. 2. Relationship between PM and BM under project benefits framework.

(Blomquist et al., 2010). However, in this research the benefits of being able to generalise results outweigh the expense of understanding in depth what is going on (Singleton and Straits, 2005). Generalisation does not mean showing universal applicability; rather it means that the evidence may be drawn from different geographic areas and across different areas.

The aim of this research, in addition, is not to discover these practices, but rather to test whether they are valid across different organisations, as discussed in the BM and PM literature, which was developed using case studies (Doherty et al., 2011; Ashurst et al., 2008), based on the books' authors' experience of long periods spent managing projects and benefits (such as Thorp, 1998 and Bradley, 2010) or derived from the widely accepted project management "body of knowledge", which is based on long experience of multiple cases either in government (OGC, 2011; OGC, 2009) or in different organisations (Project Management Institute, 2013a,b). The use of these professional (non-academic) documents to develop the questionnaire questions is expected to bridge the gap between practice and academic theory (albeit proved empirically). Indeed, achieving this level of generalisation would be impossible through qualitative and in-depth analysis case by case (Saunders et al., 2011; Bryman, 2012).

Consequently, an online survey was used to test the research hypotheses. An online questionnaire was distributed to a range of social media groups in LinkedIn and Facebook. Project and programme managers involved in information technology projects were then identified and targeted on LinkedIn. 300 responses were received and when the uncompleted ones had been deleted, the 200 remaining responses were found to be valid and used in the analysis.

The units of analysis in this research were organisations with their own practices, not projects. Although projects as units of analysis could sometimes give more accurate and in-depth results (Zwikael et al., 2014), this research took the organisation as its unit of analysis because the practices used in its projects tend to be drawn from the relationship between the organisation and its projects (Turner, 2009). Governance themes for both project and benefits management practices are enforced by the organisation's policies and standard operating procedures (SOPs), such as selecting the owner of the benefits and the project manager before initiating the projects (Müller et al., 2014). Likewise, the use of basic project management and benefits management practices, reflecting the organisational belief in these practices (Artto and Wikström, 2005), is implemented as part of the organisational policy for dealing with projects. Engaging in any of these practices without the organisation's clear specification of their content through the project management office, programme management office, or an independent consulting organisation would undermine the value of the practices in terms of the frequency of their use and their value as consistent communication mechanisms between the projects and their organisations. (Sample characteristics are tabulated in Table 1.)

3.1. Questionnaire design

The five sections of the questionnaire – project management success, project investment success, benefits management practices, project management success and organisation related information – aimed to test the relationships between four concepts. In order to avoid the problem of same source bias, in particular for evaluating the success of the projects, the first questions in the questionnaire asked about the project's successes. Moreover, each concept was presented in a separate section to mitigate the subjectivity of the respondents (Kraimer and Wayne, 2004; Rogg et al., 2001) towards the effect of their organisationally enforced practices on the project's success.

In order to examine the reliability of the measures, Cronbach's alpha was used as a measure of reliability. As long as the Cronbach's alpha of a construct is more than 0.6, it is considered reliable (Nunnally et al., 1967). Concerning the validity of the questions, Exploratory Factor Analysis (EFA) was deployed, using Principal Component Analysis with Varimax rotation to test the divergent validity of the constructs, as illustrated in Table 2. The summary of the descriptive statistics of the questionnaire is presented in Table 9.

3.1.1. Project success

The definition of project success has changed over time; at first in the 1970s it focused only on the application of project management tools but nowadays it is concerned with satisfying stakeholders' needs (Davis, 2014). The attention of project managers is usually focused on delivering projects on time and within budget. However, project sponsors (funders) demand a return on investment from every project, wishing to realise strategic benefits from it. Therefore, project success is measured from a different perspective, which may be that of project efficiency, team and customer influence, business success or preparing for the future (Mir and Pinnington, 2014). Similarly, Zwikael and Smyrk (2012) offer a taxonomy of project success and hence divide project success into project management success and project investment success.

On the one hand, project management success focuses on the efficiency of a project in terms of delivering something of the right scope on time and within budget. Indeed, the use of "triple constraints" (cost, time and scope) as a criterion of project performance is the traditional way of defining project success (Atkinson, 1999). Therefore, respondents were asked to indicate how far they agreed that their organisations' IT projects were delivered on time and within cost. These questions are derived from the literature and include questions used to measure project efficiency (Dvir and Lechler, 2004; Zwikael et al., 2014). The Cronbach's alpha for measuring the reliability of this construct was 0.815. In addition, on the basis of Factor Analysis for measuring the validity of the constructs in Table 2, the factor loads of items of scale were more than 0.6, which means that this construct was valid.

On the other hand, project investment success is the concern of the project sponsor, who wants to know whether a project is worth investing in (Zwikael and Smyrk, 2012). To set the financial expectations for identifying and selecting projects, different capital budgeting techniques can be used, such as net present value (NPV), internal rate of return (IRR) and return on investment (ROI) (Bierman and Smidt, 2012). Although ROI has drawbacks such as its inability to consider the time value of

Table 1
Sample characteristics.

Characteristics of the sample (n = 200)					
Country	N	%	Length of time in this position	N	%
Egypt	49	25%	0–3 years	71	36%
Saudi Arabia	19	10%	4–8 years	60	30%
Other Arabic Countries	3	2%	9–15 years	35	18%
Total Arab World	**71**	**36%**	More than 15 years	34	17%
UK	32	16%	*Total*	**200**	
Ireland	3	2%	*Positions*		
Italy	4	2%	Project managers	64	32%
Others	13	7%	Programme managers	32	16%
Total Europe	56	**28%**	CIO/IT managers/IT directors	33	17%
US	**51**	**26%**	IT technical (e.g. programmers, DB)	12	6%
Others	**26**	**13%**	Consultants	22	11%
Total	**200**		Users	18	9%
			Non-IT decision-makers (e.g. accounting and finance)	13	7%
			Missing (refused to say)	38	19%
			Total	**200**	

money or project risks, it is the easiest and most common formula to employ in practice (Gitman and Zutter, 2012) and is calculated by dividing the monetary value of the non-monetary and monetary benefits by the project's investments (Irani, 1998).

Since the sponsor's financial satisfaction (in terms of the project's return on investments in) cannot be realised without project deliverables that can secure the planned benefits (OGC, 2011), project investment success focuses on the benefits which accrue from projects (Camilleri, 2011) and on return on investment. Therefore, as the literature suggests, project investment success is operationalised in terms of return on investments and the successful realisation of the desired benefits (Serra and Kunc, 2015; Besner and Hobbs, 2006).

Measuring and comparing the benefits between projects from different perspectives and Key Performance Indicators (Davis, 2014) are difficult. Likewise, it is hard to measure return on investment and compare it across different projects and organisations, since the nature of their deliverables and their work is different and what is expected or accepted in one context may not be so in another (Thomas and Mullaly, 2008). Thus, respondents were asked to indicate how far their organisation was satisfied with the return on its investments in IT projects and how far they believed that the expected benefits had been obtained. The reliability of this construct was 0.792 and the factor loads of the items under this construct were above 0.6. These figures indicate that these measures were reliable and valid for the analysis.

Table 2
Validity and reliability tests.

Rotated component matrix [a]				
	Component			
	1	2	3	4
Cronbach's alpha (reliability measure)	.804	.681	.792	.815
Proj MGM succ — time				.833
Proj MGM succ — cost				.785
Proj inv succ — benefits realisation			.822	
Proj inv succ — ROI satisfaction			.881	
BRM1 — business case		.656		
BRM2 — periodical benefits audit		.869		
BRM3 — assigning responsibility for realising benefits		.672		
PM1 — project charter	.742			
PM2 — reviewing cost plan	.729			
PM3 — reviewing time plan	.785			
PM4 — implementing communication plan	.720			

Extraction method: Principal Component Analysis.
Rotation method: Varimax with Kaiser normalization.
[a] Rotation converged in 6 iterations.

3.1.2. Project management practices

In order to measure the level at which project management practices were implemented, PMBOK and PRINCE2 practices were used for benchmarking. The level of implementation is measured by the level of agreement that the respondents' organisations engage in the following practices in their projects: having a project charter before starting to implement a new IT project; reviewing cost plans periodically; reviewing time plans periodically; and implementing communication plans. These four practices are used to emphasize different aspects of the level of implementing project management: project governance; reviewing and using the basic plans of time and cost; and using communication plans.

Without clearly identifying the project manager, it is difficult to manage projects effectively, because the mechanism for assigning the responsibility of managing organisational resources is imperfect. Therefore, the first question, on the use of a project charter before starting a project, is used as a governance requirement to delegate the responsibility for implementing the project to a project manager (Project Management Institute, 2013a,b).

Project planning is perceived to have an impact on project efficiency, in terms of delivering the output on time within cost; and on effectiveness, in terms of project performance and customer satisfaction (Zwikael and Globerson, 2006; Zwikael

et al., 2014). However, planning which takes no account of changes in the environment and goals is probably useless (Dvir and Lechler, 2004). Therefore, in this research, planning goes hand in hand with controlling the index at the level of PM implementation. The next two questions were about reviewing the cost and time plans. Unlike the studies that use specific practices to indicate planning (Papke-Shields et al., 2010; Zwikael et al., 2014) as indicators for measuring the concept of planning, this research asked about "reviewing plans periodically". The reason is that changes in plans are more important to project success than the quality of planning itself (Dvir and Lechler, 2004). Finally, stakeholders' engagement is negatively affected unless effective and continuous communication with them is maintained throughout the identifying, planning, executing and controlling of the project (Beringer et al., 2013; Heravi et al., 2015). A project may fail if poor communication leads to the stakeholders' feeling uninvolved. Thus, a question was asked about implementing a communication plan because it is one of the basic requirements for successful project management.

Only these four practices were selected, as the main practices in implementing project management; if any of them had been absent, it would have been hard to say that project management methodology had been applied in the organisation at all. However, implementing other practices is subject to many other factors which are not necessarily found in all projects. For instance, projects with less dependence on risk plans can sometimes be seen; they vary in the level of project uncertainty (Besner and Hobbs, 2012a,b). Likewise, other practices such as procurement, HR, and so on, vary with the nature of the projects being managed with, for example, the same degree of complexity and of innovation (Besner and Hobbs, 2012a,b; Besner and Hobbs, 2008). As seen in Table 2, the reliability of this construct, using Cronbach's alpha, is 0.8 and the factor load of all items was above 0.6. This indicates that the construct was valid and reliable for use.

3.1.3. Benefits management practices

Likewise, questions on practices in benefits management were adopted from Ward and Daniel (2006) and OGC, (2011). Questions were asked about the organisational frequency of identifying the benefits of the IT investments before implementing the project, starting with the development of a business case (Chih and Zwikael, 2015), periodical reviews of benefits and assigning a benefits owner to be responsible and accountable for obtaining the benefits from each IT project. As illustrated in Table 2, the reliability of this construct was 0.68 and the factor loads of the items under this construct were above 0.6. These figures indicate that these measures were reliable and valid for the analysis.

4. Data analysis and results

The analysis for this research was conducted through three phases: regression analysis, stepwise analysis and Structural Equation Modelling (SEM), as illustrated in Fig. 3. The aim of the first phase was to test the relationships between the independent (PM and BM practices) and dependent concepts (project investment and management successes). However, correlational analysis suggested a significant relationship among the independent variables (i.e. PM and BM were closely correlated) from one side and significant correlation between the dependent variables (since the two kinds of successes were found to be closely correlated) from the other. Therefore, SEM was used to analyse the data because it takes into account these correlations between different concepts.

4.1. Simple regression analysis

A simple linear regression model was used to reveal the impact of BM and PM on project investment success; the results are illustrated in Table 3. BM alone, without taking account of PM practices, was found to have a significant impact on project investment success, with an adjusted R^2 of 14.1% and a standardized beta 0.381. Likewise, PM alone was found to affect project investment success, with an adjusted R^2 of 14.9% and a standardized beta of 0.392.

4.2. Stepwise analysis

Stepwise regression makes possible the choice of predictive variables in automatic procedures. It measures the fitness of each model using one variable and compares models with one another. Insignificant models are eliminated (Hocking, 1976; Draper and Smith, 1981). Therefore, it is used to find which concepts (PM or BM practices or both) have a significant impact on project investment success and which practices in benefits management have the major impact on project investment success.

4.2.1. Are PM practices alone, BM practices alone, or both required for project investment success?

It should be noted that each of the simple regression analysis results alone is misleading, because BM and PM are significantly correlated by 43.1% with a 99% confidence interval, as illustrated in Table 4. Therefore, this significant impact could be due to a problem with the third variable, a problem which arises when X affects Y but when the impact is due to the correlation of X & Z and Z & Y. In this research, Z is the PM practice because PM is closely correlated with both BM and project investment success. Therefore, stepwise analysis was used to find which practices affect the success of the project investment. To this end, two models were selected as significant and the third, which was less significant, was ignored. The first model, PM alone, has an adjusted R^2 of 14.9% and a standardized beta of 0.392. However, in the second model, which combined BM and PM, the impact of the PM practices had declined to .276 and the adjusted R^2 of the model had increased to 19.8%. This means that the entrance of BM in the regression equation had increased the adjusted R^2 of the model by 5.2% ($P < 0.001$). Therefore, finding the incremental explanation ratio of project management success by entering benefits management success was important; it increased the adjusted R^2 of the model by 35%.

Unfortunately, these results are probably misleading, since about 43.1% ($P < 0.001$) of the organisations that implement

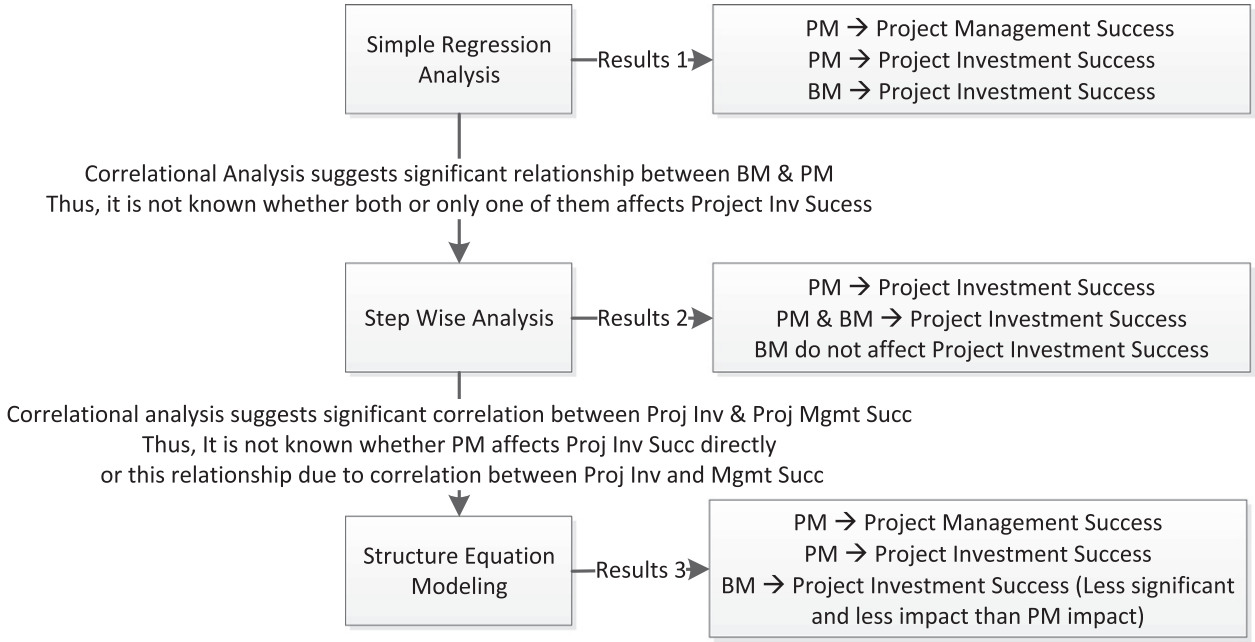

Fig. 3. Analysis process.

benefits management engage in project management practices. This measurement error may be made by researchers who try to examine the impact of benefits management on project investment success without controlling for the level of project management practices across the organisations. Likewise, project investment success and project management success are significantly correlated by 52.4% ($P < 0.001$), which may bring misleading results. Therefore, Structure Equation Modelling was used to overcome the problems of multicollinearity (Howell, 2007) (in which inflated results occur due to the correlation between dependent variables) and of the correlation between dependent variables (Hu and Bentler, 1999).

4.2.2. Which PM and BM practices are more important for realising project investment success?

Correlation analysis suggests that the highest correlation of project management practice with project management success is in "implementing the communication plan" and "periodical reviewing of the time plan," found in the present research to be by 44.8% and 46.2% respectively. Nevertheless, the highest correlation with project investment success, by 42%, was the time plan. However, other practices were correlated with it by between 24% and 29%, approximately. This is an indication that the periodical reviewing of the time plan is one of the critical factors for project success.

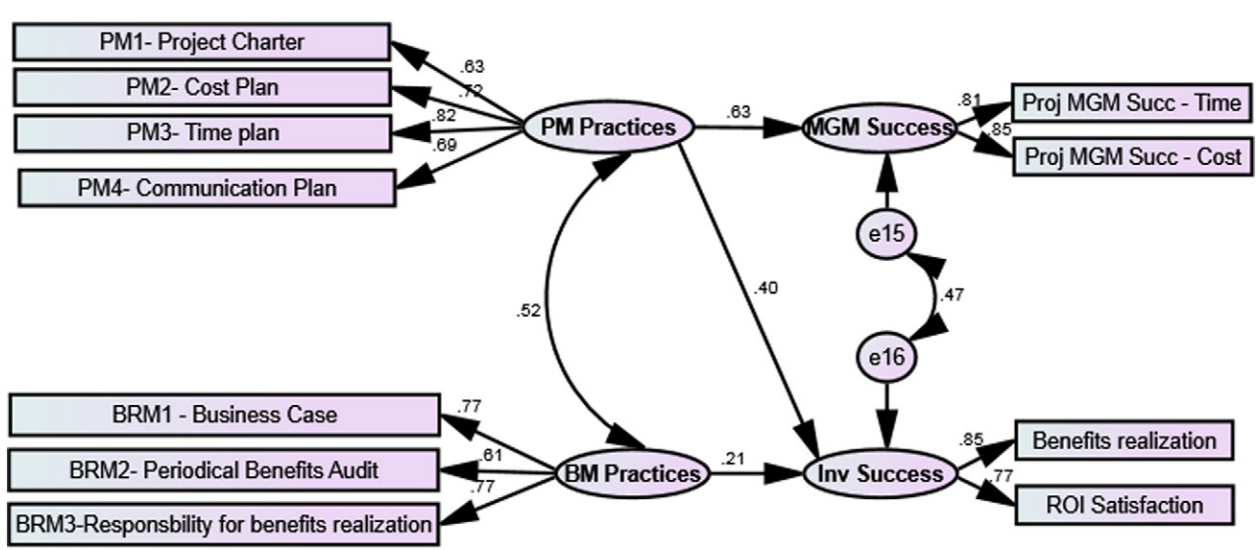

Fig. 4. SEM results.

Table 3
The impacts of BM and PM on project investment success using traditional regression methods.

Independent variables	Adjusted R^2 *	Standardized beta	Method
BM	.141	0.381	Regression
PM	.149	0.392	
BM & PM combined	.198	BM = .257 PM = .276	Stepwise analysis
Incremental adjusted-R^2 between the PM model and the PM & BM model	.052		

* All values are significant at 99%.

Correlation analysis in Table 4 revealed that the business case was the least important factor in benefits management, by a correlation of 25.8%. Indeed, after conducting regression analysis to find its exclusive impact on project investment success, the explained ratio (r-squared) was only 6.2%. Moreover, when it was considered in stepwise analysis, taking into consideration other practices in benefits management, this model was excluded because the t-value was 1.337.

Still, assigning to a specific person or department the responsibility and accountability for capturing benefits was found to have a significant correlation, of 37.6% ($P < 0.001$) (see Table 4: correlational analysis). Moreover, as illustrated in Table 5, the adjusted R^2 was 13.7% ($P < 0.001$) for the regression analysis model. Nevertheless, combining this practice with a periodical benefits audit increased the adjusted R^2 coefficient to 15.4%.

4.3. Structural Equation Modelling analysis

Because of the significance of the correlation between all the concepts of the research (i.e. PM and BM are closely correlated and so are project investment and management successes), SEM was recommended to overcome these problems. However, before analysing with SEM, the fitness of the data to the SEM had first to be tested to identify whether SEM could give reliable and valid results.

4.3.1. SEM fitness model

In order to ensure that the results of the model were reliable and valid, Goodness-of-fit criteria had to be deployed. As illustrated in Table 6, There were several perspectives from which to assess the fit of the model (Hair et al., 1998). First, overall fit (absolute fit) measures were used to assess the degree to which the overall model and the structural and measurement models fitted the sample data. Chi-square per degree of freedom (x^2/df) Goodness-of-fit index (GFI) and Root Mean Square Effort of Approximation (RMSEA) were used to measure the absolute overall fit of the model in the present research. The Chi-square per degree of freedom (x^2/df) was 1.32, which was lower than the cut-off points of 2.0 (Byrne, 1989) and 5.0 (Marsh and Hocevar, 1985), as accepted in the literature. The GFI was 0.961, which was higher than the 0.9 that indicates the good fit of the sample data (Hair et al., 1998). In addition, RMSEA was .04 with a

Table 4
Correlational analysis.

Correlations	1	2	Pro MGM succ	4	5	Pro inv succ	7	8	9	BM prac	11	12	13	14	PM prac
1. Proj MGM succ — time	1														
2. Proj MGM succ — cost	.693 **	1													
PM_MGM_succ	**.922** **	**.918** **	**1**												
4. Proj inv succ — ROI	.378 **	.441 **	**.445** **	1											
5. Proj inv succ — benefits	.429 **	.507 **	**.508** **	.661 **	1										
PM_Inv_Succ	**.444** **	**.521** **	**.524** **	**.904** **	**.918** **	**1**									
7. BRM1	.247 **	.287 **	**.290** **	.234 **	.235 **	**.258** **	1								
8. BRM2	.223 **	.257 **	**.260** **	.281 **	.283 **	**.309** **	.500 **	1							
9. BRM3	.408 **	.398 **	**.438** **	.295 **	.387 **	**.376** **	.319 **	.479 **	1						
BM_Prac	**.370** **	**.398** **	**.417** **	**.343** **	**.383** **	**.399** **	**.761** **	**.843** **	**.761** **	**1**					
11.PM1 — project charter	.318 **	.316 **	**.345** **	.204 **	.244 **	**.246** **	.214 **	.197 **	.253 **	**.280** **	1				
12.PM2 — cost plan	.345 **	.285 **	**.343** **	.251 **	.266 **	**.284** **	.443 **	.327 **	.375 **	**.482** **	.451 **	1			
13.PM3 — time plan	.435 **	.415 **	**.462** **	.366 **	.399 **	**.420** **	.343 **	.181 *	.291 **	**.342** **	.520 **	.610 **	1		
14.PM4 — communication plan	.437 **	.387 **	**.448** **	.223 **	.300 **	**.288** **	.189 *	.190 *	.289 **	**.282** **	.530 **	.477 **	.542 **	1	
PM_Prac	**.479** **	**.437** **	**.498** **	**.322** **	**.374** **	**.383** **	**.366** **	**.279** **	**.377** **	**.431** **	**.788** **	**.786** **	**.820** **	**.807** **	**1**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 5
Stepwise analysis after entering three BM practices on PM investment success.

Coefficients [a]							
Model [b]		Unstandardized coefficients		Standardized coefficients	T	Sig.	Adjusted R^2
		B	Std. error	Beta			
1	(Constant)	2.464	.203		12.141	.000	.137
	BRM3 — assigning responsibility for obtaining benefits	.308	.057	.376	5.385	.000	
2	(Constant)	2.336	.210		11.125	.000	.154
	BRM3 — assigning responsibility for obtaining benefits	.243	.065	.296	3.759	.000	
	BRM2 — periodical benefits audit	.132	.062	.167	2.125	.035	

[a] Dependent variable: PM_Inv_Succ.
[b] Business case practice was excluded from analysis, due to the insignificance of its model.

confidence of 90% between 0.00 and 0.068. This was a good indicator, since it is accepted in the literature that below 0.1 is acceptable, from .08 to 0.05 is to be recommended and less than 0.05 is the best (Browne et al., 1993).

Second, incremental fit measures were used to compare the proposed model with the baseline model. The Adjusted Group Fitness Index (AGFI), the Tucker–Lewis Index (TLI), Normed Fit Index (NFI) and Comparative Fit Index (CFI) were the indicators used for measuring the incremental impact of the model which assume zero population covariance between the observed values (the baseline model). Indeed, all measures indicated that this model was significant in relation to the baseline model, because the AGFI, TLI, NFI and CFI were more than 0.9 (Hu and Bentler, 1999).

Third, parsimony measures (model parsimony) were used to assess whether the model fit had been achieved by over-fitting the data with too many coefficients. Indicators were adjusted from previous indicators, such as NFI, GFI and CFI, to consider the parsimony of the model. All the adjusted indicators, PGFI, PCFI, and PNFI were higher than 0.5, which indicated a parsimonious fit (James et al., 1982; Hu and Bentler, 1999).

4.3.2. SEM results

The model suggests that PM practices have a significant impact on project management success (the standardized estimate was 0.632, with a critical ratio of 6.592) but a lower impact on project investment success (standardized estimate 0.403 with a critical ratio of 3.926) (See Fig. 4). However, both estimates were significant at more than 99%. However, benefits management practices alone affect project investment success by only 0.21 with a critical ratio of 2.19, to be significant only at a 95% confidence interval. This evidence suggests that PM practices have a higher and more significant impact than BM practices on project investment success.

Supporting the previous literature review (Serra and Kunc, 2015), there was moderately significant evidence that benefits management practices affect a project's success (estimate = 21% and CR = 2.14, sig at 95%). Nevertheless, the impact of benefits management on project investment success is roughly half that of project management practices. According to the SEM output of the standardized total effect, BM practices affected it by 0.206 (standardized $\beta = 0.206$; $p < 0.05$ %)while PM practices affected it by .403 (standardized $\beta = 0.403$; $p < 0.01$ %). In addition, the

Table 6
Model fitness measures, values and cut-off points.

Measures	Criteria	Measure	Value	Cut-off-point
Absolute fit	The general fitness model relative to degree of freedom	Model Chi-square/df	1.32	Less than 5.0 is accepted
	Overall degree of fitness: the good fit of the sample data	Goodness-of-fit index (GFI)	0.961	More than 0.9 indicated
	Measures the error of approximation (population based index)	Steiger–Lind root means the square of approximation (RMSEA)	.04 HI90 = 0.064 LO90 = 0.0	Less than 0.1 is accepted
	Measures the mean absolute value of the covariance residuals	Standardized root means a square residual (SRMR)	0.053	Less than 0.1 is accepted
Incremental fit	Adjusts the GFI	AGFI	0.928	Greater than 0.9 indicates a good fit
	Incremental fit indices over the null model — assuming zero population covariance among observed values	Tucker–Lewis Index (TLI)	0.978	
		Normed Fit Index (NFI)	0.945	
		Bentler Comparative fit Index (CFI)	0.986	
Parsimony	Diagnosing whether model fit has been achieved by over-fitting the data with too many coefficients	PGFI	0.524	Range from 0 to 1.0. Higher is better
		PNFI	0.618	
		PGI	0.645	

standardized total effects (standardized β) of BM on the satisfaction of IT investments of return on investment and benefits obtained were .158 and .176 respectively, whereas they were .309 and .344 respectively for PM, as shown in Table 8.

Table 8
Standardized total effects.

	BM_Practices	PM_Practice	Inv_Success	MGM_Success
Inv_Success	.206	.403	.000	.000
MGM_Success	.000	.632	.000	.000
ProjSI2	.158	.309	.767	.000
ProjSI1	.176	.344	.854	.000
ProjSM2	.000	.537	.000	.850
ProjSM1	.000	.511	.000	.808
BRM1	.774	.000	.000	.000
BRM2	.610	.000	.000	.000
BRM3	.773	.000	.000	.000
PM1	.000	.628	.000	.000
PM2	.000	.718	.000	.000
PM3	.000	.819	.000	.000
PM4	.000	.690	.000	.000

5. Discussion

Because the performance of project management affects project success (Mir and Pinnington, 2014), the application of project management practices was found to have a significant impact on both project management success (ES = 0.722, CR = 6.592) and project investment success (ES = .459, CR = 3.926). This could be interpreted as 'the more the organisation uses PM practices, the more mature it becomes in PM capabilities and therefore the more capable of delivering value from its projects' (Thomas and Mullaly, 2008). The findings of the present research support those of other researchers in finding evidence for the view that project management practices affect project success (Berssaneti and Carvalho, 2015). However, this research looked at project management practices through different lenses, i.e., the governance of the project, periodical reviewing of plans and a communication plan.

Although it appears that implementing a project on time and within cost (i.e. project efficiency) does not necessarily mean delivering the expected benefits and stakeholders' satisfaction from them (Ram et al., 2013), this research indicates that such an argument may be fallacious, for a strong significant correlation was found between delivering on time and within budget and delivering the desired benefits. This finding supports the findings of Serrador and Turner (2015) that project efficiency has a significant role in project success. This could have several implications. First, organisations that succeed in implementing projects are already mature enough in their management of change. Second, delivering on time may mean that the scope of the projects is clear and understandable to different stakeholders and therefore few changes in the carrying out the project process are required or made.

Benefits management practices are usually seen by academics (Peppard et al., 2007; Ward and Daniel, 2006; Ashurst et al., 2008; Ashurst and Doherty, 2003), non-academic authors (Thorp, 1998; Bradley, 2010) and the body of knowledge of the Benefits Management professional certificate (Jenner and APMG, 2014) as critical to recouping the benefits from a project or programme. However, the present research, supported by the statements of other researchers (Badewi, 2014; Serra and Kunc, 2015), yielded no clear generalisable evidence regarding this. But the evidence from the regression model suggests that benefits management has a significant impact on it. At the same time, project management practices have a higher significance and higher impact on project success. Therefore, the impact of benefits management practices on project success could derive from the relationship between project management practices and those of benefits management (i.e. the organisations that implement benefits management usually implement project management practices).

As a result, it was hypothesised that project management and benefits management are correlated. After correlational analysis, a significant correlation between them was found. This reflects that a significant proportion of organisations that implement BM are concurrently implementing PM. Thus, it is not known which is the main factor affecting project success and thus which is not.

Therefore, a stepwise analysis was conducted to clarify the intertwining relationship of PM and BM in this regard. It was found that while PM alone is significant and BM alone is not significant, PM and BM in a single model produce a higher

Table 7
SEM results, estimates, standard error, critical ratio, P-value and standard estimate.

			Estimate	S.E.	C.R.	P	Standardized estimate
MGM_Success	←	PM_Practice	.722	.110	6.592	***	.632
Inv_Success	←	PM_Practice	.459	.117	3.926	***	.403
Inv_Success	←	BM_Practices	.207	.095	2.183	.029	.206
PM4	←	PM_Practice	1.000				.690
PM3	←	PM_Practice	1.012	.107	9.430	***	.819
PM2	←	PM_Practice	.982	.114	8.646	***	.718
PM1	←	PM_Practice	.911	.118	7.718	***	.628
BRM3	←	BM_Practices	1.000				.773
BRM2	←	BM_Practices	.816	.144	5.653	***	.610
BRM1	←	BM_Practices	.966	.147	6.568	***	.774
ProjSM1	←	MGM_Success	1.000				.808
ProjSM2	←	MGM_Success	1.020	.100	10.205	***	.850
ProjSI1	←	Inv_Success	1.000				.854
ProjSI2	←	Inv_Success	.833	.098	8.492	***	.767

*** Significant at 99%.

Table 9
Descriptive statistics of the questionnaire.

Items/constructs	Mean	Std. error of mean	Mode	Std. deviation	Skewness	Std. error of skewness
IT projects are delivered on time	3.06	.085	4	1.200	−.018	.172
IT projects are delivered on budget	3.18	.082	4	1.164	−.125	.172
Project management success construct	**3.1175**	**.07676**	**3.00**	**1.08551**	**−.020**	**.172**
Delivers the business benefits expected from it	3.46	.080	4	1.133	−.295	.172
Is perceived as satisfactory by your organisation in terms of return on investment	3.54	.074	4	1.051	−.697	.172
Project investment success construct	**3.4975**	**.07031**	**4.00**	**.99433**	**−.613**	**.172**
BRM1 — developing a business case before starting to implement a new IT project.	3.63	.085	5	1.196	−.516	.172
BRM2 — developing a periodic benefit audit report after IT project implementation	2.58	.091	2	1.282	.432	.172
BRM3 — assigns responsibility and accountability for obtaining benefits from IT projects/(before, during, or after IT projects)	3.28	.088	4	1.240	−.345	.172
Benefits management practices	**3.1600**	**.06848**	**3.33**	**.96849**	**−.102**	**.172**
PM1 — Have a project charter before implementing the projects	3.75	.087	4	1.228	−.587	.172
PM2 — Reviews cost plans periodically	3.70	.082	4	1.156	−.575	.172
PM3 — Time plans are reviewed periodically	3.91	.074	4	1.045	−.957	.172
PM4 — Communication plans are implemented	3.43	.087	4	1.226	−.247	.172
Project management practices constructs	**3.6938**	**.06541**	**4.00**	**.92510**	**−.537**	**.172**

significant increase in the significance of the model than PM alone does. This result supports the hypothesis that combining PM and BM into a single governance based framework enhances the probability of success.

Because there was a significant correlation between project investment success and project management success, the impact of BM on project success is not clearly determined. Therefore, in order to overcome the correlation between the dependent variables and that between the independent variables, a structured equation modelling was used. It was found that PM and BM each had a significant impact on project investment success. However, the PM practices had a higher impact and higher significance than those of BM. Indeed, unlike the beliefs held by many authors (Ward and Daniel, 2006; Thorp, 1998; Bradley, 2010; APM, 2009), this SEM result with step-wise analysis suggests that the BM framework alone is not sufficient for realising benefits nor for project success. This result supports other authors who believe that PM should be the cornerstone for BM (Bartlett, 2002; Melton et al., 2008a,b; Thomas and Mullaly, 2008).

The low but significant impact of BM on project success may have several different implications. Since the results suggest that project management success and project investment success are significantly correlated, BM alone without practising proper PM is an indicator that an organisation cannot deliver the project output on schedule within budget. Additionally, this output may entail bugs or quality problems which can frustrate the users and, for instance, discourage them from using it, since the quality of IT artefacts affects the users' behaviour (Petter et al., 2008). Therefore, when BM is combined with PM, the project success is enhanced significantly to reflect that when benefit owners are accountable for realising benefits and they are supported by reliable outputs, the probability of project investment success increases more significantly than merely having a "good" output or "good" BM practices.

Among the PM and BM practices perceived to have a high impact on project investment success are assigning responsibility for delivering the benefits and reviewing the benefits thereafter. The responsibility for assigning benefits should be clarified and should not be left to "no one" in particular. Because Zwikael and Smyrk (2015) apply the principal–agent theory to the relationship between project manager, benefit owner and the funder of the project, the principal (i.e. the funder, sometimes called the Senior Responsible Owner (SRO) (Zwikael and Smyrk, 2015)) assigns responsibility and accountability for delivering efficient output to the project manager (agent) and should assign the responsibility and accountability for realising the expected benefits from this output to the benefit owner (agent).

Unlike the post-project review, which aims to identify and document the lessons learned and to evaluate the performance of the project manager in terms of delivering a project of the required scope on time and within cost (Anbari et al., 2008), the benefit review focuses on the realisation of benefits (Ward and Daniel, 2006). In other words, while post-project evaluation aims to evaluate the performance of the project manager (the creator of the project output) in delivering the output, the benefits review aims to evaluate the performance of the benefit owner (the user of this project output).

In addition, contradicting the belief that benefits identification before implementation has a marked influence on project success (Thomas and Fernández, 2008), this study has no strong evidence to support the view that business case development and use alone are sufficient and critical for obtaining project investment success. In fact, these results support the idea that the quantification of benefits is overvalued by practitioners and is not a "neutral" process (Breese, 2012). This may, in other words, be caused by an inability to properly quantify benefits (Ward et al., 2008). Another explanation lies in the time and effort devoted to developing the business case. The present study does not show the time devoted to business case development, but it is admitted that this amount of time is a factor perceived to affect project investment success (Tasevska et al., 2014).

6. Conclusion and suggestions for future research

The main findings of this research are that PM and BM practices are required for ensuring project investment success. In

other words, the organisations that combine PM and BM in a single project benefits framework for managing projects are able to achieve a significantly higher level of success than other organisations which implement PM or BM only. However, PM practices have a higher and more significant impact on project investment success than do BM practices. Regarding the latter, assigning the responsibility for obtaining benefits is the most critical factor to project investment success, while the business case is the least. Likewise, regarding PM practices, a communication plan and time plan are critical to obtaining project management success, whereas reviewing the time plan is the most critical factor for obtaining project investment success.

The present research has some methodological limitations, but offers some research opportunities. From the perspective of methodological limitations, the practices considered were limited to basic ones; the unit of analysis was the organisation and not the project; and there may have been the same source bias, in that the respondents were asked about the practices and the outcome of these practices (success measures). The three limitations appeared because the aim of this research was to find how far project success was affected by the main practices of project management and benefits management applied as part of the organisational policy or culture. It did not aim to reveal the impact of all projects or all benefits management practices on project success management. However, another study is recommended, to find the relative importance to project success of each practice in project management and benefits management. Regarding same source bias error, from letting the same respondent answer questions about both dependent and independent variables, it is feared that the same source bias may have distorted the results, although the constructs were valid and reliable. Therefore, it is recommended to replicate this study but this time to take a case study approach and ask different stakeholders in a single project; or to distribute paired questionnaires to different organisations, with one set of questions for the supervisor (programme manager or project sponsor) and one for the project management.

Moreover, in order to analyse the project success function in more depth, it is suggested that the interaction between project management and benefits management should be examined by moderating the relationship between PM and project investment success. Furthermore, the ability of an organisation to realise the project benefits from the current project management framework is still questionable. Although the research found that PM can affect the success of a project, it is not clear whether it has the same impact on project benefits.

A project benefits governance framework opens the door to much research in this area. For instance, what is the difference between a project benefits governance framework and a programme framework? The idea of a programme framework is challenged by some because, once the programme is finished, the benefits owner may not be interested in continuing to work to realise the benefits from it (Badewi, 2015). As Ward and his colleagues (Ward et al., 1996; Ward and Daniel, 2006) and Remenyi and Sherwood-Smith (1998) state, it is more efficient and effective to manage the benefits as a continuous process so that more and more benefits can be realised from a single investment and thus keep the same benefits owner for the longest possible period. To put it simply, for the current programme management practices, working to recoup the benefits ceases to be one of the benefits owner's job responsibilities and areas of accountability after when the programme is formally closed. Since the benefits are self-sustaining after three years (Esteves, 2009; Badewi et al., 2013), does it work to tie up the salary of the benefits owner with the progression and stability of the benefits for these three years? Furthermore, which is more effective, singular or collective accountability? Is it better to have a single owner or should the benefit ownership be distributed among all the beneficiaries from the project output? In other words, should the compensation system tie up the benefits with the income of the department head alone, or with that of all members of the department?

From project management-as-practice (Winter et al., 2006; Cicmil and Hodgson, 2006; Cicmil, 2006), we learn that a longitudinal study is advised as a follow-up when this project benefits framework is applied, to see how the project benefits are realised and what the contextual and environmental factors are that affect the realisation process. Furthermore, case study research is required to determine the critical items in project benefits governance contracts (business case, benefits profile and project charter) to realise the project benefits effectively and efficiently.

To sum up, many practitioners believe that BM practices are a panacea for realising the benefits from project investments. After testing this hypothesis using empirical generalisable evidence, BM practices were found to have less impact and less significant impact than PM practices in realising business success (investment success). However, combining PM with BM enhances the project success significantly. In other words, without a reliable project output delivered on time and within budget or invalid (not addressing the benefits owner's requirements), the benefits owner, if there is one, will struggle to recoup the expected benefits. In order to deliver successful project outputs (valid and reliable), plans should be continuously reviewed, stakeholders' expectations and requirements should be managed closely and a project charter should detail the contribution of this project as an enabler for (or being part of) a change in organisational work practices. Finally, without reviewing the progress in benefits realisation, it will be difficult to associate the benefit realisation with the benefit owners' compensation system. Therefore, the motivation to work actively on realising benefits from the project investments will be diminished.

Conflict of interest

There is no conflict of interest.

Acknowledgements

This research is funded by the Egyptian Government (Tanta University) and Cranfield University.

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