

Organisational learning in small and medium sized South African energy project organisations

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Abstract

Purpose: Using fine-grained exploratory multi-case studies, this paper explores organisational learning practices – and associated constraints - impacting the performance of four small and medium sized project organisations which deliver energy efficiency projects in South Africa, and whose learning practice mixes are of wider significance for the emerging project society in the region.

Design/methodology/approach: The unit of analysis is the Energy Efficiency Demand Side Management (EEDSM) programme, a US\$104 million grant funded initiative directed at supporting energy efficient retro-fit projects across local municipalities in South Africa. Thematic analysis is undertaken, based on multiple exploratory interviews with project practitioners working for small and medium sized EEDSM project organisations.

Findings: Recognising the criticality of tacit knowledge as a focus for learning, within unstructured, novel, non-routine and technically specialised learning contexts in particular, widespread lack of organisational harnessing through linkages to strategy and performance are noted – and advocacy is offered for the development of appropriate learning cultures linked to communities of practice that bring specialists together from across the regional project society concentrated in Gauteng Province.

Research limitations/implications: The socio-political context of the EEDSM programme, although briefly addressed for its organisational cultural implications, was not given detailed consideration in the exploratory interviews. This would have enhanced the idiographic

complexity of the findings, while also reducing prospects for distilling generalisable organisational learning improvement opportunities for emerging project societies. More importantly, the study does not seek to provide evidence for specific learning practice effects on performance – because this was not something the interviewees felt able to comment on in significant detail. Rather it explores learning practice from the standpoint of meaningful understanding by practitioners themselves, whose career long learning and knowledge transfer activities we regard as the backbone of the project society. Hence our findings are of value in part by reflecting the limitations of the practitioner perspective we found.

Originality/value: Learning practice studies for small and medium sized project organisations remain sparse. So too are studies of business environments within developing countries in general, or sub-Saharan Africa in particular. Looking beyond narrow individual project views of performance, the present study's project society-based business environment is theorised as both constraining and benefiting from the project learning practices discussed by the respondents.

Keywords: Project management; Project society; Organisation learning; Small business management

1.0 Introduction

1.1 Project society context

Organisations use projects to structure and deliver operational objectives (Engwall, 2003; Stal-Le Cardinal and Marle, 2006). Projects offer a fast and flexible means by which ventures can be created and terminated at relatively low cost and resource commitment by the sponsor (Sydow *et al.*, 2004). While this clearly entails that projects are temporary entities (Bakker *et al.*, 2013, 2016; van Marrewijk *et al.*, 2016), they are nonetheless also the primary means by which organisations pursue new objectives (Hobday, 2000; Bresnen *et al.*, 2004; Bakker, 2010; Prado and Sapsed, 2016). Therefore tensions between differing and perhaps confused management priorities with respect to questions of when and to what extent the long term view should be taken, may arise whenever temporary projects are embedded within more permanent organisations. One means to mitigate such tension is to explicitly seek efficiency gains from project learning practices by looking to longer term value creation from both the knowledge and the learning capacity which they help build (Sydow *et al.*, 2004; Stjerne and Svejenova, 2016).

When we conceive of such value creation as occurring not just at individual project or organisation level but also at regional and project society level (e.g. as a consequence of

managers accumulating relevant wisdom through learning over successive and varied project experiences, and through engagement in periodic knowledge transfer), then socially distributed *mixes* of learning practices both at and below regional project society level become important objects of study. A bottom-up approach to studying these mixes would entail that distinct contributory learning practices are carefully categorised by researchers. Taking this bottom-up view, it might be argued that only with such categorisation attended to can socially distributed learning mixes which feed the overall regional project society mix be studied thoroughly, with attunement to salient patterns, allowing for tensions and complementarities, and with a fundamental concern for optimisation.

However this research ambition must also be viewed as inherently complex for the following reasons. Firstly, both formal and informal learning and retention practice categories are clearly significant. Some of these need little introduction, such as mentoring, training and workshop activities, all of which can be more or less formal. However when we attempt to take a broader and yet also more granular view of what a learning practice can comprise, complexity quickly arises. Learning practice at the more informal end of the spectrum, for tacit knowledge transfer in particular, can be hard to describe or may perhaps not even be regarded by practitioners as learning practice at all. Then there are questions of what it means for learning practice to comprise links to strategy or performance. In other words there is also the context of strategic and performance management practice to consider (and conceivably others besides) as integral to learning practice itself. Secondly, and looking more closely within the above formal versus informal learning practice categories, it can be argued that these will inevitably to some extent span both expert and lay forms of knowledge (strongly implying difference between philosophical-scientific and narrational-experiential knowledge) (Kinsella, 2002), as well as knowledge that can be deemed either explicit or tacit-ineffable (Grant, 2007), or as either abstract and concrete (Gregorc, 1984). Thirdly, and to further problematise the issue of what learning practices can be theorised as taking as their objects (i.e. what sorts of things are being learned), learning practices can be viewed dynamically and from a knowledge-based-view-of-the-firm perspective as focussing towards how data can be converted into information, and then that information into knowledge which can thereafter be applied in some way to create value. As Nonaka (1998) explained, theorisation of what constitutes knowledge as opposed to mere information, can itself be highly complex; knowledge is always meaningful as some social and behavioural expression of trust and intentionality which bonds participants within some social endeavour. This makes it considerable as a complex and inherently social asset in its own right. These points of course

illustrate that learning practice and its basic object referent, knowledge, is best studied within project contexts with a high level of attunement to subtleties that might sometimes be hard to discern from interview data. An inductive and exploratory research approach, sensitive to whatever participants tend to deem meaningful, therefore seems more appropriate than a bottom-up individual learning practice checklist approach which imposes rigid learning practice categories.

Multi-case studies, where the contributing studies are broadly representative of very different types of learning practice that may mix together to create value within a particular region, are arguably essential in order to address the above complexity. Of course, a practical balance must always be struck between categorisation schemes employed or developed, and the idiographic complexity that supplies the richness of the interview data. In this study, our approach is to accommodate as much complexity as we can by letting the interviewees themselves express what is salient about a learning practice. One sensitising assumption we make is to recognise that learning will always refer in some way to knowledge, which is to say, information imbued with meaning (Choo, 1998) where the meaning in question will typically relate to some real or imagined utility or good – or indeed aspect of performance. Accordingly, we define learning practices so as to be amenable to elicitation at interview, in terms of “...the meanings and explanations managers give for their practices in relation to learning” (Antonacopoulou, 2006; p. 460). This approach entails sensitivity to subjectivity and plurality with respect to what interviewees count as knowledge (meaningful information), and indeed with respect to related issues of what matters are salient within the subjective human experience of aligning that knowledge to what may be variously theorised as utility, performance, value creation, etc., on whatever social level is deemed salient by interviewees. Thus on a project level in particular, learning practices encompass the processes that projects adopt to best interpret and manage experiences (Kotnour, 2000; Keegan and Turner, 2001). Taking this view, projects also become considerable as at times constituting the most important crucibles of organisational experimentation, and resulting learning experience, within which knowledge offering long term competitive value for organisations can be developed (Williams, 2008).

A further adjunct to the ascendancy of projects within firms is ‘project society’ theory (see Lundin, 2016). This describes the evolution of much wider roles for projects across entire societies. In particular, project society theory regards the ‘project-based organisation’ as possessing the potential to offer learning platforms not just for itself in the shorter term, but rather for the greater good of stakeholders contributing to that national and regional

economic growth upon which the longer term prospects of all may depend. Hence project society theory, considered as a theory of societally distributed collaborative learning bound by longer term common interest, easily encapsulates partnership working between small and medium sized project organisations on the one hand, and the much larger organisations within which they are situated on the other. Given the academic consensus among scholars that small and medium sized business organisations and enterprises play a vital role in driving economic growth (Acs *et al.*, 2008; OECD, 2017), project partnership working might even be regarded the backbone of the project society. And of particular interest to the present study is the idea that a project management professional attitude focused on collaborative learning and knowledge transfer, and cognate of the project society benefits arising, may play a vital and perhaps under-recognised role in building the social trust which the project society requires (we mentioned earlier with reference to Nonaka (1998) that knowledge formed socially expresses social trust) if it is to enact its pivotal role within institutional life and broader civil society as an agent of economic growth.

1.2 Project delivery by small and medium sized project organisations

According to Turner *et al.* (2009, 2010) project management plays a pivotal role in the growth and sustainability of small and medium sized organisations (Turner *et al.*, 2009, 2010). By contributing up to 40% of national income (World Bank, 2018) and 6% of global Gross Domestic Product (World Economic Forum, 2016), small and medium sized business organisations and enterprises play a key role in the global economy, with their contributions to economic growth being particularly salient within developing economies. In Africa, it is estimated that such entities contribute approximately 80% of employment (World Economic Forum, 2015). The construction industry is one of the major industries contributing to these figures. This contribution comprises its roles in designing, building and maintaining public and private infrastructural foundations for economic development (Ojiako *et al.*, 2018). Correspondingly, literature pointing to the use of projects to meet business requirements is particularly well demonstrated in the construction industry (Cooke-Davies and Arzymanow, 2003). While it is recognised that construction is one of the most important value-based economic sectors, it is also widely understood that subtler, tacit forms of knowledge often provide the backbone of its learning practices; accordingly learning often takes place through such methods as thoughts, perspectives, advice, and reflection on past experience (Pathirage *et al.*, 2008). This point will prove to hold particular significance for interpreting findings and making recommendations within the present research.

A related consideration is that small and medium sized project organisations – and, underlying these, their parent businesses and enterprises - represent the main driving force of the construction industry. They constitute over 99% of entities working in UK construction (Hari *et al.*, 2005), 97.7% of entities working in Australian construction (Lingard *et al.*, 2015), 90% of those in Malaysia (CIDB, 2006) and a similar proportion in South Africa. In the South African construction industry, approximately 85% of contributing entities are small and medium sized sub-contractors (Mbachu, 2008), thus attesting to our earlier observation that small and medium sized business businesses and enterprises are the backbone of the project society. And, accordingly, we might surmise that highly variegated and widely distributed tacit forms of knowledge will provide a focus for its learning practices.

Learning from failure becomes particularly important within this context. Given the construction industry's reliance on smaller project entities, set within the broader context of the rise of the project society which relies on the learning platforms contributed by individual projects, the business failure rate of small and medium sized businesses and enterprises in South Africa - of approximately 70% to 80% (Van Eeden *et al.*, 2003; Fatoki and Van Aardt Smit, 2011) – is highly significant. There are likely to be many opportunities for learning in hindsight from the failures of the past, if this professional learning philosophy can permeate down from project society level to individual project level where its learning platforms exist. These South African failure rates are considerably higher than for other African countries (Abor and Quartey, 2010, Gbandi and Amissah, 2014). Despite being vital for delivery of construction output upon which economic development relies, most small and medium sized construction businesses in South Africa remain slow, inefficient and labour-intensive (Tezel *et al.*, 2018). They also tend to rely on low skilled employees (Dainty *et al.*, 2005; Gledson and Phoenix, 2017). These circumstances are all considerable as broad contexts for project society learning via individual project learning platforms which can each be valued as rich sources of potentially very highly detailed insight into problems and solutions. This of course creates a strong project management academic and practitioner imperative to pinpoint such insights at individual project level (Gregori and Pietroforte, 2015) in order to extrapolate any broader project society implications.

1.3 Small and medium sized project organisations: the learning imperative

Organisational learning comprises processes and mechanisms geared towards knowledge production (Politis, 2005; Matthews *et al.*, 2017) whose usefulness can be expressed in terms of the competitive performance advantages they produce. These advantages of course become

less tangible and measurable, the more we adopt a project society focus lying beyond the narrow individual organisational unit of analysis necessary for empirical inquiry into specific competitive performance benefits arising from specific learning practices. In order to explore these broader advantages, we traverse literatures on project management, small and medium sized business management and entrepreneurship. And we draw on substantial evidence illustrating ways in which organisational learning can enhance project performance (Bresnen *et al.*, 2004; Grabher, 2004; Scarbrough *et al.*, 2004; Sydow *et al.*, 2004; Bartsch *et al.*, 2013; Prado and Sapsed, 2016; Hartmann and Dorée, 2015). Also relevant here is strong evidence for organisational learning contributing strongly to both small and medium sized business (Gibb, 1997; Chaston *et al.*, 2001; Spicer and Sadler-Smith, 2006) and enterprise (Cope, 2003, 2005, Harrison and Leitch, 2005; Politis, 2005; Kropp *et al.*, 2006; Holcomb *et al.*, 2009; Zhao *et al.*, 2011) competitiveness. In fact, it can be argued on the basis of the above performance and competitiveness literatures that organisational learning is the most salient factor for both small and medium sized businesses. In line with most knowledge-based theories of the firm, this view holds that learning provides key competitive capability by helping to create knowledge that is inimitable (i.e. *irreproducible*) (Spicer and Sadler-Smith, 2006), at least for a while prior to its project society dissemination. Looking from this project society standpoint, we theorise societal dissemination of knowledge as espousing precisely that knowledge which individual organisations have for a previous while regarded as an ‘inimitable’ source of competitive value. The subtle learning practice issue arising here is that inimitability makes good subject matter for project society learning because secrets (comprising knowledge which might take either tacit or explicit form) have story telling power in particular.. Such knowledge might be valued across the project society either for its technical use value (revealing that it should not have been classed as ‘inimitable’ in the first place) or for its inspirational value in illustrating what can be achieved (in which case the knowledge itself may well remain inimitable, and what matters is that mindfulness towards opportunities for creating inimitable knowledge is inculcated across the project society). For the present paper, we anticipated that inimitable knowledge on the energy efficiency projects studied might often lie at the interface between technical knowledge (or *techné*), culture and environment, often being sufficiently concerned with the latter two as to be of interest well beyond the immediate technological and business contexts for the study.

A related influencer of learning practice is that small and medium sized project organisations inevitably confront managerial challenges of novelty, complexity and fluidity. Drawing upon the literature (Marshall *et al.*, 2018), we view these challenges as being

experienced as ‘ambiguity’ in the minds of project managers – perhaps accompanied with some reflection upon what is unknown, extending for example to a concern to quantify and resolve the uncertainty deemed at issue. Looking from this perspective, managers also cope, not by applying what they ‘know’, or indeed by taking uncertainty as an explicit object of management, but instead by muddling through heuristically using practical reason in lieu of knowledge. At this point it can be argued that the conceptual complexity associated with the vast literature canon on practical reason is mirrored by the considerable scope that exists for managers to wish to negotiate by reduction and constructive simplicity, the associated complexity they perceive as mattering to them within their learning practice narratives. In particular, this leads us to surmise that learning practices may often succeed by degrees in conveying some limited insight into managerial use of practical reason, employing various imaginative and highly individualised forms of expression which may be hard to categorise for research purposes. We can nonetheless still view such challenges as fundamentally epistemological in character; that is, as focal points for knowledge development (and retention within organisations) where there can be dedicated effort to resolve the epistemic ambiguities found to matter within projects (Pich *et al.*, 2002).

Of course, the above mention of ambiguity aligns to our earlier mention of inimitability. This point can be explained as follows. For the present study we allowed for the possibility that much of the project society learning that arises from the energy efficiency projects studied may well take the form of complex and very highly individualised success stories. The learning that arises from such stories, might often focus on how managers have succeeded by striking an effective balance between relying on practical reason (on the one hand) and dedicating valuable time and other limited resources to knowledge development (on the other hand). Such learning is clearly important when training successors for specific job roles, and one motivation for the present study was to gather insights on whether and to what extent such subtle and highly individualised forms of learning might also offer generalizable value for the project society in South Africa and beyond.

A further important point is that learning on projects becomes formalised and professionalised through dedicated infrastructure. Obviously, any study of project learning cannot neglect processes and mechanisms employed (Politis, 2005; Matthews *et al.*, 2017), even if these do not always capture important knowledge, and indeed knowledge transfer, in its subtler and more tacit forms. Looking beyond these learning conduits to issues of how the broader project society might access them, an important further consideration is that small business management and entrepreneurship literatures, and indeed professional association

and other practitioner publications, can play important roles in distilling and summarising individual project learning experiences that offer value to the project society. Hence sometimes learning practices on individual projects might be developed towards relatively abstract codification on that higher project society level, especially in instances where that higher recognition is sought, and where it is perceived that the learning value offered is generalisable on that level.

1.4 Study aims

To counterbalance the foregoing discussion which has addressed some of the complexities associated with learning practices, we must also recognise that for organisational as opposed to individual learning, what matters is carefully structured information (see Holcomb *et al.*, 2009). Only organisational processes, over and above individual managerial experiences, can drive systematic knowledge development and retention aligned specifically to organisational need and competitive advantage (Politis, 2005; Matthews *et al.*, 2017). It has been argued that such processes must effectively *support* individual managers to recognise and act on opportunities (Lumpkin and Lichtenstein, 2005). It is also clear from entrepreneurship literature (Cope, 2003, 2005) that learning by small and medium sized project organisations is unlikely to be focused *idiographically* on single events; rather it occurs right through the manager's life. In other words the knowledge concerned often has a nomothetic character by pertaining to *isomorphically* comparable repeating experiences over the course of years or decades where the manager has learned either directly through trial-and-error experimentation, or indeed indirectly through training, hearsay, anecdote, etc. Also suggested by the literature (Harrison and Leitch, 2005; Baggen *et al.*, 2016) is that learning by small and medium sized project organisations is likely to be impacted by a broad range of extraneous factors such as the prevailing business environment, various skills issues, and a wide range of political and other social variables,. Some of these will be fundamental across the project society context while others will be highly particular for individual projects. This further underscores our concern that the processes and mechanisms of organisational learning may often struggle to strike an effective balance between idiographic and nomothetic knowledge, perhaps sometimes erring on the side of over-generalising from unique project experiences. Accordingly, it becomes important to theorise organisational learning processes by small and medium sized project organisations as likely to be powerfully advantaged by finding ways to intersect with managerial wisdom accumulated over perhaps long periods, conceivably drawing on entire careers, and which have followed diverse paths. Clearly,

therefore, small and medium sized project organisational learning processes should aspire to move beyond an individual project-by-project focus; they should instead be iterative – by making provision for considering how each project experience of individual practitioners, or management teams, might modify and improve the greater knowledge that accumulates within the project society.

Taking stock, this study has two specific research aims. *Firstly* it examines the learning practices of small and medium sized project organisations within our chosen organisational context, considered from the standpoint of meaningful and structured understanding by the managers involved. *Secondly* it ascertains how the knowledge so produced can offer value both to the individual project organisation and for the broader project society. Accordingly, the study is particularly attuned to aspects of project ‘performance’ referred to by the study participants. Notably there remains no consensus on what is an appropriate definition or measure of performance in projects (Ozorhon *et al.*, 2007, 2010). Therefore the term was used flexibly and variably in the interviews in accordance with each participant’s own understanding, often allowing for learning and knowledge to be construed by the researchers as valuable to participants for multiple and sometimes complex reasons at both individual project and regional project society level.

2.2 The context of organisational learning in the study

The study is contextualised within a major energy efficiency project in South Africa: the Energy Efficiency Demand Side Management (EEDSM) programme. Broader project society context is that there is widespread concern with the sustainability of South African energy resources (Department of Energy, 2015) which makes knowledge relating to energy efficiency demand management highly valuable across the project society. Despite numerous government initiatives, energy challenges persist in South Africa (Baker *et al.*, 2014; Pollet *et al.*, 2015; SALGA, 2018). Government is also reputationally exposed to the problem because access to electricity is deemed – implicitly at least - as a constitutional right of citizens (Runsten *et al.*, 2018). As is evidenced by recurring power-cuts and power rationing (load shedding), ESKOM, South Africa’s monopoly public electricity utility company, struggles to generate sufficient capacity to support national development objectives (ESKOM, 2017, 2018). To address these challenges, the Department of Energy and ESKOM initiated the EEDSM programme. While funded directly by the Department of Energy, the programme management responsibilities reside with ESKOM.

We know that firms exhibiting higher learning levels are more likely to outperform competitors (Santos-Vijande *et al.*, 2012). Furthermore, learning is widely understood to be particularly important for firms operating in developing economies. Such firms can develop learning capabilities internally and/or engage in various forms of external knowledge acquisition. Some element of the latter allows firms in developing economies to access a range of managerial and technology-related competencies, which would otherwise be greatly lacking, and whose absence would most likely limit firm competitiveness and viability (Zhao *et al.*, 2011). In effect, through organisational learning, such firms can access well-tested solutions favoured within more advanced economies, thus limiting the investment costs that are conventionally associated with knowledge development. Indeed, a large part of the rationale for the EEDSM programme is to stimulate and provide a forum for such learning. It is therefore within the spirit of the EEDSM programme that individual project learning should pay at least some attention to tailoring learning to achieve regional project society benefits through consideration of both top-down and bottom-up learning pathways that link local experience to the global profession.

Yet, as some scholars (Kropp *et al.*, 2006; Owusu-Manu *et al.*, 2013; Bbenkele and Madikiza, 2016) indicate, there remains a marked scarcity of available mechanisms to support small business management learning in developing economies. Owusu-Manu *et al.* (2013) suggest that one major limitation is continuing reliance on traditional knowledge transfer paradigms which fail to support free thinking and creativity. To overcome these limitations, the authors of the present study emphasise the need for learning mechanisms geared towards stimulating opportunity-seeking and other discretionary-innovative behaviours, thereby creating an entrepreneurial project society culture in particular.

3. The literature

3.1 Learning in project environments

Some literature (Bresnen *et al.*, 2004; Grabher, 2004; Scarbrough *et al.*, 2004; Sydow *et al.*, 2004; Tempest and Starkey, 2004; Prado and Sapsed, 2016) suggests that the discontinuous, temporally flexible and subjective nature of projects entails that they typically struggle to support effective learning. Furthermore, learning is often lost when project team members disperse. In addition, particularly where projects represent unique undertakings and experiences (Engwall, 2003), generalisability issues for lessons learned are often poorly handled (Sydow *et al.*, 2004). This happens often because a substantial amount of learning undertaken in project environments remains experiential and un-coded (i.e. tacit)

(Savelsbergh *et al.*, 2016). Even forecasting knowledge is likely to be of limited generalisable value, because it is unlikely to be aligned to the precise natures and requirements of future projects (Levinthal and March, 1993). In short, therefore, much of the learning on projects can be considered context-specific (Mezias and Starbuck, 2003).

3.2. Opportunities

There is substantial literature available on learning by small and medium sized businesses (Chaston *et al.*, 2001; Spicer and Sadler-Smith, 2006; Ekanem and Smallbone, 2007; Clinton *et al.*, 2017; Matthews *et al.*, 2017) and enterprises (Minniti and Bygrave, 2001; Cope, 2003, 2005; Harrison and Leitch, 2005; Politis, 2005; Lumpkin and Lichtenstein, 2005; Wang, 2008; Zhao *et al.*, 2011). In small and medium sized businesses, the literature alludes to learning often being ad hoc, accidental, informal, unplanned and unintentional, but also adaptive. Managers in small businesses are only likely to re-engineer their processes when it becomes clear that existing processes are unlikely to support desired levels of organisational performance (Chaston *et al.*, 2001).

It follows from the above notion that learning might often focus on adaptive necessity, that a valuable perspective on project learning is to recognise its potential to support strategic renewal (Crossan and Berdrow, 2003), and entrepreneurship (Lumpkin and Lichtenstein, 2005; Vaghely and Julien, 2010; George *et al.*, 2016). A particular problem arising here is that there are limits to the future relevance of learning from hindsight. Noting that managers of small and medium sized business organisations and enterprises “...learn by updating a subjective stock of knowledge accumulated on the basis of past experiences” (Minniti and Bygrave, 2001; p. 5), it can be argued that small and medium sized project organisation managers develop adaptive knowledge in a manner which is strongly experiential in nature. An important challenge, as we have explained earlier, is for such knowledge to be codified for ongoing individual project use as well as for broader organisational and project society use. More fully, it can be argued that, what is required for practitioners and researchers of learning practices alike, is effort to encode experience nomothetically as practical instruction or guidance to others – perhaps sometimes at the expense of important contextual knowledge. We can regard this as a straightforward trade-off between idiographic and nomothetic knowledge.

Opportunities for small and medium sized project organisations to learn from small business management and entrepreneurship literature also offer some relevance to the present study. Some literature (Cope, 2003, 2005; Ucbasaran *et al.*, 2013) suggests that disruptive,

discontinuous experiences and related critical events can be vital in stimulating higher-level learning. This event-focussed approach to learning has clear relevance for small and medium sized project organisations where projects, as primary delivery mechanisms (Stal-Le Cardinal and Marle, 2006) encounter critical disruptions in delivery (Grabher, 2004; Sydow *et al.*, 2004; Prado and Sapsed, 2016; Stjerne and Svejenova, 2016), whose criticality relates in particular to the vulnerabilities that arise from their temporality (Bakker *et al.*, 2013, 2016; van Marrewijk *et al.*, 2016). Such experiences are all too easily overlooked for organisational learning purposes where they are short-lived and the entities dissolve before learning can occur (Tempest and Starkey, 2004; Ligthart *et al.*, 2016) and yet they can be extremely important.

3.3 Learning challenges

Small and medium sized businesses and enterprises face a number of further challenges identified in the literature which have implications for how we understand learning pertaining to small and medium sized project organisations. Firstly, being predominantly experiential in its nature and origins (Holcomb *et al.*, 2009), some valuable knowledge is likely to be bound to the experiences of individual project practitioners, suggesting some need for tacit-to-tacit knowledge transfer through learner observation and emulation. Secondly, noting that small business (Spicer and Sadler-Smith, 2006; Ekanem and Smallbone, 2007) and related entrepreneurial learning (Cope, 2003, 2005; Baggen *et al.*, 2016) are generally characterised by their dynamic, temporal and discontinuous nature, learning by small and medium sized project organisations is likely to be unstable and therefore hard to routinize, thus limiting the scope for tacit-to-tacit knowledge transfer as we described it above. Effective solutions can still nonetheless be conceived in terms of dynamic learning episodes matched to periodic re-engineering of processes to render them more resilient against any non-routine and surprising events that may occur in future.

Summarising the literature, we regard learning by small and medium sized project organisations as commonly challenged by:

- i. Contradictions in terms of the long-term developmental nature of organisational learning as against the short-term and discontinuous nature of project-based learning which curbs knowledge accumulation (Bresnen *et al.*, 2004; Scarbrough *et al.*, 2004).

- ii. The heterogeneity of project stakeholders in terms of their maintenance of highly individualised methods and styles for interpreting learning experiences (Sydow *et al.*, 2004).
- iii. Tensions between requirements for project stakeholder independence and the need to integrate project activities within the overall activities and routines (behaviours which are regular and predictable – see Spicer and Sadler-Smith, 2006) of the sponsor organisation (Sydow *et al.*, 2004) and;
- iv. The uniqueness of projects, which limits the scope for the transfer of learning from one project context to another (Bresnen *et al.*, 2004; Grabher, 2004).

Taken together, these challenges suggest that it will often be difficult to articulate a comprehensive learning experience based on the different belief systems, attitudes and assumptions of individual stakeholders in a project. For the present study, it was therefore anticipated that interviewees will often articulate a learning mix that is far more individual than organisational in character, unless asked very specifically to focus and reflect on its organisational aspects.

4.0 The study

4.1 Research approach

Heeding longstanding and persistent interest in empirical project management studies (see Geraldi and Söderlund, 2018), our initial choice of research approach was between exploratory/theory-developmental and deductive/explanatory approaches. Barratt *et al.* (2011) suggest that in making such choices: (i) research should always start with a phenomenon (such as either an academic or practical problem), which in this case is what is learned on projects and what the associated challenges are, and (ii), a literature review around the phenomenon should also be undertaken (which in this case explores individual, organisational and entrepreneurial learning insofar as these align through relevance to the multiple project context for our study). According to this second guidance point, if there is sufficient knowledge/theory available, then a conceptual framework should be developed and used to nest a set of hypothesis/propositions. These should then be tested by following deductive (qualitative and/or quantitative) approaches. By contrast, in cases of insufficient knowledge/theory around the phenomenon, Barrett *et al.* advocate for a more exploratory/inductive approach, geared towards producing new knowledge/theory.

4.2 Unit of analysis

Our study focused on learning experiences of small and medium sized project organisations (who we refer to as small to medium sized *ESCOs* – energy service companies) involved in the EEDSM programme. Hence it took the form of a multi-case study. All the *ESCOs* are privately held, therefore offering considerable scope for insight into learning imperatives within small and medium sized project organisations more generally within the region across multiple industry sectors, and perhaps similarly in other regions.

4.3 The case study (The EEDSM programme)

The case study concerned the Energy Efficiency Demand Side Management (EEDSM) programme. The EEDSM programme is an approximately R¹1.3billion (US\$104 million) grant funded initiative directed at supporting local municipalities to fund energy efficient retro-fit projects across the country. The programme is enacted by multiple *ESCO* project which install energy efficiency technologies such as Geyser controllers (for smart metering) and solar water heaters across residential properties in South Africa on behalf of Eskom (South Africa's monopoly public electricity utility company). Other initiatives within the project include the mass rollout of compact fluorescent lamps and the simultaneous discontinuance of incandescent light bulbs in all residential properties. The project also includes programmes geared towards facilitating behavioural change (i.e. promoting efficient electricity use among domestic consumers). Summing up, there is widespread national interest among key energy stakeholders in the country who are supportive of the *ESCOs* which deliver the EEDSM programme. This stakeholder learning support context adds interest to and complexifies the research.

By creating the right learning environment as part of the EEDSM programme, the South African government, through joint initiatives between the Departments of Science & Technology (DST), the Department of Energy (DoE) and a number of South African universities (who all enrich the above mentioned stakeholder learning support context), expects that participating small and medium sized service organisations will: (i) develop core-learning competencies to enhance their performance and (ii) reduce the high transaction and pre-investment development costs. There are viable reasons for the high levels of government interest in the development of core-learning competencies among the *ESCOs*. For example, in order to meet the South Africa's ever growing demand for sustainable

¹ South African Rand

energy, the South African National Energy Development Institute (a joint venture between the DST and the DoE) has identified EEDSM as primary national research and development theme. Essential context here is provided by our earlier assertion of arguably higher-than-average business failure rates of small and medium sized businesses and enterprises in South Africa. This creates a plain need for success stories and associated lessons.

4.4 Analytical framework

The use of operations management case studies (and associated guidance) remains popular (Barratt *et al.*, 2011). Often behaviourally focussed, such studies nonetheless also resonate with the sociological traditions of *verstehende* espoused by Weber (1949), by pointing to the importance of shared and communicable meaning, over and above narrow concern with individual behaviour and the meaningful understanding which individuals use for self-reflection. Such literature, being socially rather than individually focused, therefore has particular relevance to organisational over individual learning – and in particular to aspects of meaningfulness, pertaining to trust, utility, etc., that differentiate knowledge from information

We also regarded process context for learning as significant. We specifically took into consideration Bitran and Lojo's (1993) delineation of operations into three specific functional analytical units. These focus on: (i) internal operational processes, (ii) external operational processes engaged with stakeholders and (iii) the process and institutional framework guiding manager-stakeholder interaction. Our study, while focusing on the second functional analytical unit, does however take stock of the various challenges and complexities that flow *across* the three analytical units, considering in particular that many important ambiguities (challenging organisational learning) may emerge from within these areas of intersect. This is operationalised via interviews of key actors within the case organisations.

4.5 Research data

The study data were obtained from multiple exploratory semi-structured interviews with project management practitioners involved in four ESCo projects. Following initial piloting (two interviews), a total of eleven interviews (Table 1) were conducted. Key publicly available EEDSM policy documents were also reviewed (Department of Energy, 2010, 2015; World Bank, 2011).

The number of interviewees represented the point of data saturation at which it was determined that no additional insight deemed beneficial to the study were likely to emerge

from further interviews. Moreover the geographical concentration in Guateng Province allowed for the project society context to be considered more fully. The interviewees comprised a mix of project practitioners across different management (and operational) layers. This allowed for: (i) capturing the limited amount of heterogeneity that exists between the ESCo projects and (ii) facilitated the gleaning of different and varying and possibly contradictory insights of organisational learning and associated experiences. It also enabled mitigation of unrepresentative themes emerging from the interviews. We chose our interviewees based on professional experience. For example, the senior professionals who were interviewed attested to a skill base equivalent to that of Professional Engineer (PE) standard, as designated by the Engineering Council of South Africa (ECSA, 2014). Each interview lasted approximately between 60 and 90 minutes.

Insert Table 1 here

The interviewees were drawn from four small and medium sized project organisations involved in the delivery of the EEDSM project operating in the Gauteng Province of South Africa. In Table 2 below, we show a breakdown of the range of EEDSM projects each of the organisations were involved in.

Insert Table 2 here

There were two reasons for drawing the study sample from Gauteng Province. Firstly, With a population of 14.2 million, Gauteng Province, one of the nine administrative provinces in South Africa, is the most populous and urbanised province in the country (Statistics South Africa, 2017). Gauteng Province also contains South Africa's largest city, Johannesburg, and South Africa's administrative capital, Pretoria, from which the EEDSM programme is managed by the Ministry of Energy. Secondly, approximately half (46%) of the country's formal small and medium sized business organisations and enterprises operate in Gauteng (Bureau for Economic Research, 2016). Gauteng is the hub for South Africa's economic activity (Bbenkele and Madikiza, 2016) and therefore for its emerging project society.

Sampling and ethical considerations related to anonymity are widely recognised as vital in research (van Den Hoonaard, 2003). Noting that the delivery of public services faces intense scrutiny in South Africa (Cameron, 2014), we recognised that the interviewees were likely to be reserved and sometimes defensive. van Den Hoonaard (2003, p. 149) exhorts that

“the onus is on the researcher to acknowledge that the likelihood of tearing the veil of anonymity is a real possibility”. To that end, the researcher must incorporate all known devices to maintain anonymity in the research and publication”. Carefully heeding this advice, details of specific EEDSM projects which interviewees were involved in are not disclosed.

4.4 The interview questions and analysis

Six literature-influenced interview questions gave structure to the interview schedule (Table 3).

Insert Table 3 here

The outcomes of the interviews were analysed in the following stages. Analysis began with axial coding to identify themes of a similar nature from the interview responses. This coding exercise commenced with the first and second author. In line with recommendations by Denzin *et al.* (2006), the author who led the coding analysis (in this case, the second author) had been blind to the data gathering. Bearing in mind this division of tasks, the two authors both cooperated in reading through and summarising relevant data from the transcripts. They then developed in a deductive manner, the likely emergent themes for the second author to consider. Where disagreements ensued, the third author’s viewpoint served as the tiebreaker. Emergent themes were then compared. Final agreements were then reached on a set of commencing themes, which were based on core elements of the research. These commencing themes were chosen so as to align ‘learning’ themes to various more contextual ‘performance’ themes that attribute them meaning and value, in particular through the researcher’s discernment that some knowledge (and not just information) is at issue. At this point, once agreement had been reached on the broad themes, adjusted coding categories were developed in line with iterative processes in qualitative analysis. The next stage involved iterative coding. This continued until the entire codes were seen to have accounted for all emergent points captured in the transcripts. As a part of this process, categories were included or removed as was determined appropriate by the researchers, following the lead of the second author. A final check of the emergent themes was conducted on the individual transcripts. This was undertaken individually by three of the four co-authors.

5.0 The findings

The findings below focus in the first instance on what the interviewees themselves perceived to be salient about the learning practices of small and medium sized project organisations, with specific reference to their perceived performance implications. Implications of findings within the context of entrepreneurial learning on projects are also theorised. Findings are further articulated as key ambiguities, i.e. as areas of epistemological deficit where further learning is perceived by interviewees as either as required or as possible sources of competitive value.

To begin, it was clear that the majority of interviewees acknowledged the importance of learning. For example, according to Interviewee 'P-A4':

"...our training agenda is usually intense and developed through negotiation with our key partners....sometimes things which we need highlighted in training is downplayed, but overall the need for learning is well recognised by partners".

Most interviewees suggested that current learning approaches in their project organisations were limited, with expertise primarily reliant on prior qualifications obtained from higher educational institutions. This suggested deficits of tacit, technical knowledge (i.e. *techné*) which cannot be taught in any way other than through practical experience). Correspondingly, the need for informal training in the form of on-the-job-training and other experiential/situational training was strongly recognised. For example, according to interviewee 'P-D1' (from, *ESCos D*):

"...attending classes is important, but we recognise that the best way to learn is to actually do the job and make mistakes".

On the other hand, it became clear that opportunities to provide such training were limited. According to Interviewee 'P-C3':

"...our training was limited because it's sometimes unclear as to whether it is sufficient in terms of the challenges we are facing...also, as a small company, we simply don't have the financial resources to send our people off to training as overheads are tight."

It was further pointed out that provision of any experiential/situational training was quite difficult because, as interviewee 'P-B4' observes:

“Nothing ever seemed the same...we always end up seeing ourselves deal with different problems...what we face today in one project is often completely different from what we will face in a different project the next day, in fact, sometimes come back to complete one of our projects only to find ourselves dealing with a completely different problem...this makes it difficult to determine what specific training we need for our staff.

We found evidence suggesting that different firms drew upon diverse knowledge sources to share knowledge sources and support their learning experiences. For example, *ESCos A and B* utilised both explicit knowledge, as articulated in various project reports to support learning. At the same time, they also made considerable efforts to draw on more tacit knowledge rooted in the experiences of individual project managers. For example, Interviewee P-D1 (*ESCos D*) suggested that: *“learning was shared in the technical project close-out report that is compiled and documented”*. In *ESCos A*, it was observed that discussions relating to technical problems experienced during project implementation were fed into formal agenda items for the organisation’s bi-weekly project meetings. Such meetings, according to Interviewee P-A4 (*ESCos A*), could be organised: *“...weekly if the project was particularly challenging”*. The technical project close-out report is then documented digitally in the firm’s project library. We also found evidence to suggest that *ESCos B’s* learning process appeared almost identical to that of *ESCos A and D*, in that in *ESCos B’s*, different project teams were required to evaluate projects implemented by other teams, focusing on providing feedback on how they perceived the quality of information sharing, documentation and also whether they were firm-wide lessons to be learned and shared.

Overall, learning practices and strategies appeared largely similar across the four *ESCos*, although they were mainly reliant on traditional forms of knowledge transfer. While the significance of learning practices in terms of various aspects of performance were largely recognised across the board (with an emphasis on on-the-job training and mentoring), none of the firms maintained formal learning strategies linked explicitly to performance management and measurement so as to provide some means of gauging their success. For example, both ‘P-A1’ and ‘P-A4’ (both from, *ESCos A*) indicated that they had attended a number of EEDSM programme related training sessions. For example, *ESCos A* held weekly in-house team building sessions. Interviewees ‘P-A1 and P-A4 pointed out that they had also attended

a number of EEDSM programme post-project review or briefing sessions as part of their training and were able to discuss what they had learned from these engagements with *ESCos A* management. Of the four case organisations, it was observed that efforts were made within *ESCos B* to finalize the development of a learning strategy that was to be incorporated into its policies. For example, according to Interviewee P-B2: “*All learning is now formally documented and kept in our “content library” that is managed by the business development manager*”.

Views also emphasised ambiguity relating to possible causal relationships between learning, project performance and organisational performance. Arguably, this ambiguity is demonstrated by Interviewee ‘P-C3’ (from, *ESCos C*) who opined that: “*I am not actually sure what really we measure as we don’t have key performance indicators...if we do, I am not aware of them*”. However, Interviewee ‘P-A1’ (from, *ESCos A*) suggested that: “*...we do collect information on our performance from customer feedback, but it is not high quality and it is not something we regularly monitor as we are always on the go*”. Interviewee ‘P-D1’ (from, *ESCos D*) also suggested that there were efforts to collect feedback from clients, but “*...it is not as tight as it should ideally be*”. Conversely Interviewee P-A1 noted that efforts were being made by managers in *ESCos A* to encourage professionals to set learning goals aligned to their individual career goals, which of course we can view as aligning to the needs of the project society. Overall, while the interviewees were inclined to assert the existence of a relationship between learning, project performance, organisational performance and the broader needs of the project society, none were able to advance a clearly articulated explanation on how such conclusions were being drawn beyond citing some slight increases in financial income from the EEDSM programme.

6.0 Discussions

Four key findings, each of which can be read as helping to resolve both of our basic research aims, emerged from the study. These relate to: (i) Learning in project environments, (ii) Shared knowledge sources, (iii) Learning practices and strategies and (iv) Organisational performance and learning.

6.1 Learning in project environments

Literature exploring learning in projects appears substantial and has, over the years, included studies such as those of Bresnen *et al.* (2004), Grabher (2004), Scarbrough *et al.* (2004), Sydow *et al.* (2004), Prado and Sapsed (2016), Stjerne and Svejenova (2016), Tempest and

Starkey (2004) and van Marrewijk *et al.* (2016). These studies suggest that learning on projects can aspire towards comprehensiveness by engaging with issues of task setting, complexity and social context. More structured and comprehensive approaches to project learning provide an opportunity for new knowledge to be developed systematically towards application (Sydow *et al.*, 2004).

The majority of the interviewees did acknowledge the significance of learning as project practice that is entrepreneurial in character, in ways that largely chime with the above literature. From further reviewing the literature in the light of the interviews, it is possible to discern a typical general process of project-based learning as follows. Such learning commences at the level of the individual project team member or stakeholder, which is then modularised into specific learning episodes (Grabher, 2004). Project team members and stakeholders then share those ideas in the form of shared communities of practice through stakeholder forums (Bresnen *et al.*, 2004; Scarbrough *et al.*, 2004), a point alluded to by one of the interviewees in their reference to how their training agenda was developed through partner negotiation. The final phase of such learning then involves the sharing of lessons learned (see Williams, 2008), through practice transfers to the sponsor organisation in the form of repeatable routines that the organisation then constantly recycles across its portfolio of projects (Prado and Sapsed, 2016). These repeatable routines are generally codified into practice manuals and methodologies developed and produced by the various project management professional bodies in the form of ‘bodies of knowledge’ (Duffield and Whitty, 2015).

Despite only a minority of university degree holders using discipline specific qualifications in their jobs (Baker and Henson, 2010), our study discerned a predisposition of the project organisations to rely almost extensively on employee prior academic qualifications. When this is viewed within the context of the study’s finding of a very high premium placed on tacit knowledge for novel and non-routine situations in particular, the nature (and to some extent the scale) of the challenge for learning practices on these projects becomes clear. An important related observation, consistent with studies by Sambrook (2005) is that managerial dispositions in the small and medium sized businesses seem to very strongly favour the development of formalised training opportunities by the firms, in order to compensate for the absence of professional/educational institutional validation for their project management practices. Yet arguably this does not engage with the above challenge at all. Perhaps, we conclude from findings, *informal* training opportunities where learning comprises tacit-to-tacit knowledge transfer, should matter more.

Earlier studies by Castrogiovanni (1996) found industry and sector specific knowledge to have the most positive impact upon the performance of small and medium sized businesses. This is certainly consistent with our above conclusion, inviting the broader generalisation that it is often highly specific technical or practice knowledge, or *praxis*, that matters far more than highly generalised or theoretical knowledge, if we are to understand links running between organisational learning and project – or indeed SME -performance.

An important related consideration is that the knowledge we refer to above is more readily bought - or otherwise accessed - than taught. However a key issue arising is whether to hire more for experience or qualifications. Often, small and medium sized businesses face major decisions relating to whether they invest scarce resources in training and development, and creation of learning experiences, or whether they should instead engage with other organisations and institutions to draw upon skillsets, which offer institutional validation, sometimes at the expense of relevance to the needs of specific firms. Johnston and Huggins (2018) assert that because of resource constraints and a need to reduce operating costs, most small and medium sized businesses around the world draw upon external sources for their knowledge. However, clearly the traditional approach of doing so through recruitment processes that access the knowledge which formal education can offer (Soriano and Castrogiovanni, 2012) will be insufficient in many cases. Arguably, the workplace-humanising and trust-fostering emphasis upon learning-by-doing and mentoring, that findings lead us to advocate for as the best means to transfer the subtleties of techné, can set a very healthy cultural tone. In particular this would happen through the validation and dignification of work experience, not necessarily over and above, but certainly as an essential and therefore highly valued complement to, formal qualification. Accordingly we can conceive of an argument that the ESCo project organisations should take an explicit interest in cultural engineering along these lines. Insofar as they foster learning cultures which accord work experience high status, they would in effect be countering more formal and institutional cultural impositions, which may often be perceived as alien sources of power and privilege, and which are therefore likely to be distrusted by much of the workforce. Arguably, such cultural engineering focused on learning practice could only improve workplace cohesion and trust, with further benign implications for working across the broader external stakeholder context.

Another closely related point which emerged from the interviews was that the challenges faced by each of the small and medium sized project organisations involved in the EEDSM programme were very heterogeneous, often unique in character, and therefore not

routinely experienced. This meant in particular that no clear learning practice ontology emerged from our approach emphasising the meaningful experiences of the interviewees. A broader implication is that there are likely to be difficulties in codifying learning experiences for purposes of widespread knowledge dissemination. This challenge might itself be construed as underscoring the need for organisational learning to focus on any broad areas of ambiguity that are relevant, so that these can themselves become what gets coded and passed on through learning. This of course entails alerting project managers more to the value of practical uncertainty management in their daily activities. Put simply, this means organisational learning might usefully focus more on sensitising project managers more towards what they don't know, and hence to what they can usefully find out about. This might also be protective against harmful false assumptions. More generally, it speaks to the possibility of a planned and benign co-evolution of learning practice and uncertainty management. And perhaps even more importantly, this emphasis on uncertainty, accompanied in particular by emphasis upon the importance of recognising where uncertainty arises within novel, structured and non-routine circumstances, would help managers reflect upon the need for their tacit and sometimes ineffable technical knowledge. It would help them become more aware, in particular, of how, where, when and why such knowledge allows them to cope in these challenging yet commonplace workplace circumstances. This would, as a consequence, help managers focus on informal learning opportunities whenever they arise.

To reiterate, these are far from ideal learning environments. Literature very notably tends to emphasise that team learning benefits from stability and by extension, the existence of planning and routines (Edmondson *et al.*, 2001). Learning often encodes routines. In effect, firms can therefore remember by doing, thereby building confidence and perceptions of stability in various aspects of the project environment. However, the challenge associated with such learning in project environments is that firstly, most projects are situated outside the direct mandated control systems of organisations. This means that more often than not, project activities are not seen as intrinsic to standard organisational processes (Scarbrough *et al.*, 2004; Cacciatori, 2008). Secondly, the unique, time-constrained and non-repetitive nature of projects makes them unattractive for routinized forms of learning (Hobday, 2000). For these reasons, project-based working is not able to secure the necessary knowledge repositories required to enhance learning experiences and competency development (Cacciatori, 2008). Without the existence of such knowledge repositories, project team members have no choice than to make improvised decisions when faced with unique

challenges. These considerations seem to reflect well the circumstances of our interviewees, and underscore once more our above suggestions for how they can best approach organisational learning. Moreover, we might consider that the above mentioned separateness of daily ESCo project management from routine organisational process may actually be protective in some respects – by allowing the appropriate focus on specialist tacit knowledge to flourish within learning practice.

6.2 Shared knowledge sources

Some academic literature (Ratcheva, 2009; Tengö *et al.*, 2014) and in particular literature indebted to the Knowledge-Based Theory of the firm (see Grant, 1996), suggests that knowledge serves as a key competitive advantage resource for firms. Key to its utilisation as a source of competitive advantage is not just the process of knowledge generation, but also the process of its sharing. Yet, for a number of reasons, the natural tendency of firms is to restrict the sharing of knowledge (Bock *et al.*, 2005), thereby constraining project society learning.

Knowledge sharing is important to small and medium sized project organisations because while knowledge resides with the individual, the exchange and movement of knowledge between those who create knowledge, those who incorporate it into organisational routines, and those who will utilise it on behalf of the organisation, is primarily dependent on the small and medium sized project organisation's ability to foster and support its sharing. Ratcheva (2009) points out that the ability of project teams to successfully execute projects depends in part on the sharing of relevant knowledge amongst the members of the project team. Bock *et al.* (2005) points out that the curtailing of knowledge being shared within (and across) organisations is likely to produce sub-optimal work efficiencies. The same applies to projects; thus Ratcheva (2009) points out that growth in the notion of the networked organisation and other new organisational forms reflects an acknowledgement that knowledge sharing is of critical importance within the modern project environment, especially where project teams are expected to deliver project requirements not only within internal organisational boundaries, but also across external boundaries. In project environments, we find that it is not unusual for individual team members, who are not necessarily subject-matter experts, to develop knowledge, whose unhindered sharing then becomes important for the project. This means that small and medium sized project organisations, such as those involved in the EEDSM programme need to increase not only the

diversity of their knowledge base, but also enhance and broaden the sharing of such knowledge.

Accordingly, our finding that the small and medium sized project organisations involved in the delivery of the EEDSM programme utilised diverse knowledge sources to support individual firm learning experiences was not surprising. For example, in the context of the study, sub-optimal knowledge sharing may also greatly reduce the ability of the EEDSM programme delivery organisations to effectively respond to challenges from other entrants or changing ESKOM project requirements. Ahuja and Lampert (2001) had pointed out that constrained knowledge sharing among small and medium sized businesses meant that they were more prone to overemphasise prior-existing knowledge (Ahuja and Lampert 2001). Arguably, we find some evidence of the beginning of such competence traps, with Interviewee P-D1's suggestion that his organisation facilitated knowledge production through internal project reports. Arguably, such attitudes to knowledge sharing and by extension, learning *may* prevent some small and medium sized businesses from seeking out and obtaining much needed external knowledge.

There are a number of reasons why, generally speaking, small and medium sized project organisations may exhibit a slightly lower use of organisational knowledge. One such reason may be due to their limited resources (Maes and Sels, 2014). Another related reason may be the inability of such organisations to adequately police knowledge sharing across the boundaries that exist between the project as an entity and the project sponsor's organisation – or indeed various other stakeholders. In fact, Scarbrough *et al.* (2004) claims that project work spanning functional or professional specialisations within projects, while more likely to create learning opportunities within projects, are nonetheless often more likely to generate undesirable learning boundaries between the project and the sponsoring organisation. Thus, creating boundary spanning processes and communities of practice – focussed, as we advocate above, on tacit specialist knowledge and its diverse sources - can be considered essential to effective knowledge sharing. Moreover, explicit attention to the learning needs of the project society may help to render the above learning boundaries more permeable, at the same time helping to assure that the knowledge which permeates these boundaries is appropriately codified for relatively non-specialist (and therefore potentially widespread) use wherever possible.

6.3 Learning practices and strategies

Drawing from Sambrook (2005), it can be posited that a significant amount of learning can occur both *in* project activities and *at* project activities; furthermore learning *in* projects can be either formal or informal (Scarborough *et al.*, 2004; Williams, 2008; Swan *et al.*, 2010). Sambrook (2005) had earlier articulated a similar distinction between learning *in* work, which implied that learning was seen to be intrinsically linked with work activities, and learning *at* work, which implied formal provisions of education and training less directly related to work activities.

Learning in small and medium sized project organisations is more likely to be *in* work. None of the small and medium sized project organisations involved in the EEDSM programme were found to maintain an explicitly articulated formalized learning strategy. Aligned to this finding are earlier findings by Turner *et al.* (2009) who found that projectised SMEs tend to utilise project management tools and techniques that were considerably less-bureaucratic than those employed by larger organisations. This in itself suggests some discretionary ability to codify knowledge with project society benefit in mind. While differences exist in terms of the manner of their content, all forms of work-focused learning in projects will, of course, nonetheless emphasize the manifest relevance of their learning practices to the specific projects being delivered at the time.

Yet despite these discretionary powers, learning by small and medium sized project organisations remains particularly challenging for two main reasons. *Firstly*, while a number of studies highlight that small and medium sized businesses (arguably due to their flexibility and informality) are ideal platforms for learning (Sambrook, 2005), due to resource constraints, the learning nonetheless tends to be more formalized and not particularly supportive of more informal forms of learning. *Secondly*, due to the distinctly discontinuous (Grabher, 2004; Sydow *et al.*, 2004; Prado and Sapsed, 2016; Stjerne and Svejnova, 2016), temporal (Bakker *et al.*, 2013, 2016; van Marrewijk *et al.*, 2016) and ephemeral (Tempest and Starkey, 2004; Ligthart *et al.*, 2016), nature of projects, project environments may not be particularly conducive for either inter-project or intra-project learning or for associated knowledge transfer. In fact, the literature claims that constant changes of project team members (Swan *et al.*, 2010) project team member heterogeneity (Chipulu *et al.*, 2014; Ojiako *et al.*, 2014a, 2015), and diversity in project goals (Swan *et al.*, 2010; Ojiako *et al.*, 2014a, 2015) create poor learning conditions in project environments. Drawing from Swan *et al.* (2010), this appears to be because learning and the accumulation of experience by individual project team members may not necessarily translate into learning across the entire project team – especially where there is technical and functional specialisation. This is a point

reiterated in a number of studies including that undertaken by Williams (2008) who opined that because of the inherent complexity of projects, learning in project environments involved much more than "...simply writing down lessons" (p. 253). As evidenced in our case study, a number of the small and medium sized project organisations involved in the EEDSM programme fell into this trap by conceptualizing learning as focused on reviews of individual learning experiences. Hence the solution we suggest for improving such practice entails recognising that individual learning experiences by the managers concerned are best recorded in ways that explicitly recognise the layers of project value, organisation value, and project society value, which they can contribute towards. Furthermore the above discussion underscores the need for ESCo learning practice to focus on informal tacit-to-tacit knowledge transfer, within relatively narrow specialised contexts, with this broadening out to encompass tacit-to-explicit knowledge transfer, documented where possible and as appropriate for dissemination on various stakeholder, organisation and regional project society levels where specialised communities of practice exist.

6.4 Performance and learning

As we have indicated, understandings of performance are arguably the best reference points for establishing *why* managers find learning practices meaningful; that is, they provide essential contexts of meaning where knowledge, as opposed to information, is at issue. From Winters and Latham (1996) we can infer that learning is likely to enhance performance of complex, non-routine and novel projects in particular. Learning is also likely to significantly enhance the performance of short-term as against long-term projects. Projects are inherently discontinuous, temporal and ephemeral mechanisms of delivery, which all possess the above characteristics to varying extents. This can make their delivery particularly challenging and complex. Related to that there may be complex and often protracted ways in which project teams progressively disband and their individual members move to other projects (Grabher, 2004; Schwab and Miner, 2008). Since the project team does not exist following disbandment, no learning loop is then possible (Schwab and Miner, 2008). Yet these may be key to small and medium sized businesses sustainability (Pešalj *et al.*, 2018).

There is longstanding evidence of much broader links between learning and performance (Azadegan and Dooley, 2010). However, thinking within a small and medium sized organisational project context, it can be posited that enhanced performance alone will not necessarily ensure that a project contributes to the organisation's strategic positioning. For a project to fulfil this critical role, two conditions may need to be fulfilled. Firstly, there

needs to be a demonstrated commitment to learning by the small and medium sized businesses in question (Wang, 2008). Such commitment is more likely to support key attributes of entrepreneurship, including the propensity to seek, create and utilise knowledge in a manner that enhances exploitation for non-routine as opposed to routine project activities. Secondly, learning needs to be directed at enhancing causality identification, so that the *real* drivers of project performance are identified (Williams, 2008). Identification of causality, however, arguably requires a clear appreciation of the relationships between learning, project performance and organisational performance – and these may be highly ambiguous and contested in some cases.

Unfortunately, the findings from the study appear to suggest that the EEDSM case organisations did not appreciate the nature of such relationships. Ambiguity in this area, in other words, is extensive. To a large extent, this finding aligns with much of the earlier literature (Bresnen *et al.*, 2004; Grabher, 2004; Scarbrough *et al.*, 2004; Sydow *et al.*, 2004; Ligthart *et al.*, 2016; Prado and Sapsed, 2016; Stjerne and Svejenova, 2016; van Marrewijk *et al.*, 2016) on existing tensions which are driven by the autonomy of projects against their fusion within the larger organisation. No evidence arose from the case studies to indicate that any of the practitioners interviewed were attuned to the relationship between their project organisation and the wider EEDSM programme or in fact the ESKOM organisation. Yet, from the literature (for example Sydow *et al.*, 2004), it can be inferred that facilitating a greater degree of embeddedness of projects within the control structures of the sponsoring organisation may serve as a key means by which learning can be enhanced, in particular through more explicit attention to the performance rationales for learning practices. Table 4 shows the summary of the basic learning practice mixes that the four ESCos employ. The summary distils the practices identified and deemed salient by the interviewees themselves in their responses across the full range of interview questions. These table 4 findings reveal in particular that although the learning practices which we would expect the interviewees to mention are indeed commonplace on the projects, their links to strategy and performance remain weak or non-existent.

Insert Table 4 here

7.0 Conclusions

This study is the result of a two-year study and reports on the conduct of an exploratory/inductive case study on the nature of, and prospects for organisational learning

by small and medium sized business organisations involved in the delivery of energy efficiency projects in South Africa. Noting the research aims, the study identified four major factors of importance to small and medium sized business organisations involved in project delivery. The authors argue that an understanding of these factors provides critical guidance for practitioners involved in the delivery of similar future projects. In effect, the authors argue that when these factors are understood, it is more likely that key learning from project lessons (Williams, 2008), will permeate through the three levels of project value creation, organisational value creation and project society value creation that we mentioned earlier. In summary, however, what emerges most strongly is the significance of tacit knowledge for unstructured, novel, non-routine and technically specialised issues in particular. The organisational harnessing and broader project society retention of such knowledge is clearly very challenging, and yet this is precisely where best prospects for reaping performance benefits seem very likely to exist. Our advocacy of appropriate learning culture, linking upwards to project society level communities of practice where specialists can share tacit technical knowledge, we think, points the way forward.

The paper also made theoretical contributions. As context is crucial when examining learning in small businesses (Gibbs, 1997) and enterprises (Harrison and Leitch, 2005) and also the internal dynamics of projects (Engwall, 2003), the authors argue that the study represented an opportunity to explore the moderating impact of the prevailing business environment in developing economies (in this case, South Africa) on learning practices. Such context is important because although small business management entrepreneurship is undoubtedly indispensable to economic development (Acs *et al.*, 2008), studies such as those of Naudé, (2010) and Desai (2011), point out that academic project management literature focuses excessively on advanced and developed economies. There are very few studies such as Kropp *et al.* (2006) and Goedhuys and Sleuwaegen (2010) that have explored how small business organisations learn in developing countries or in fact in Africa, where it becomes important to explore the impact of nascent project society rationales upon the learning practices of individual project managers. Thus, our study contributes to addressing the gap in literature that exists for motivational understanding of small and medium sized project organisation centred learning practices in developing countries where project society is vital for ongoing economic development. We also posit that as our study took into consideration the ‘temporality’ of projects, our study serves as a platform for future research into how small and medium sized project organisations may construe performance outcomes. Furthermore, it also becomes of future interest to explore whether the learning approaches used by small and

medium sized project organisations, operating under such pressures, enable their parent organisations to “circumvent traditional barriers to organisational change” (Sydow *et al.* 2004; p. 1475) at the same time as they address project society level learning needs.

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Table 1 Interviewee schedule

ESCos	Description of respondent	Code	Number of interviewees
Company ‘A’	Management	P-A1	1
	Technician	P-A3	1
	Professionals (senior, intermediate, junior)	P-A4	1
Company ‘B’	Management	P-B1	1
	Professionals (senior, intermediate, junior)	P-B2	1
	Professionals (senior, intermediate, junior)	P-B4	2
Company ‘C’	Management/Support staff	P-C1	1
	Professionals (senior, intermediate, junior)	P-C3	1
Company ‘D’	Management	P-D1	1

	Support staff/Technician	P-D2	1
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Table 2 Summary of project involvement

	ESCos A	ESCos B	ESCos C	ESCos D
DSM Projects				
Lighting			√	√
Heat Pumps				√
Metering		√		√
Energy Savings	√	√		√
Energy Optimization				
Energy training		√		
M&V		√		
Energy Management		√		
Energy Auditing		√		√
Manufacturing				
EE technology			√	
Lighting			√	
EE installations			√	
Turnkey Solutions	√	√		√
Other Services				
Project Management	√	√	√	√
Feasibility Studies	√			
Funding facilitation	√			
Refit	√			
Engineering designs	√			

Table 3 Interview schedule

Question No	Question	Driver/Rationale	Founding references
1	What does learning mean to your organisation?	Focused on understanding the underlying interest of organisations in learning. The literature for example, had found that such interest is often oriented towards strategic renewal.	Crossan <i>et al.</i> , 1999.
2	How does learning fit into your organisations vision and mission statement?	Question sought to understand the relationship between the organisation's strategic values, as articulated in its vision statements, and its learning orientation, defined as an organisation's commitment to learning and articulated in any pertinent policy documentation. It is this learning orientation that will influence the organisation's natural inclination to both create and utilise knowledge.	Sinkula <i>et al.</i> , 1997; Wang, 2008.
3	What internal and external factors tend to facilitate or drive learning in your organisation?"	This question derives from a number of studies, which have highlighted major challenges associated with learning, in not only project environments, but more specifically within the construction industry. Notably, literature cites one major challenge as industry fragmentation. Thus, a general indication	Crossan <i>et al.</i> , 1999; Scarbrough <i>et al.</i> , 2004; Williams, 2008; Duffield and Whitty, 2015.

		is that learning within the context of projects remains poor overall. Other works address the challenges associated with learning within a project context and consider how lessons are transmitted to other parts of the wider organisation. Similarly, other literatures posit that organisational learning is a dynamic process occurring at various levels of the organisation, where new ideas flow first from the individual level to the team and then to the organisational level. The resulting knowledge flows back to the individual level through professional socialisation.	
4	What practices and procedures does your organisation utilise to support learning?”	Taken together, these questions were useful for exploring learning as something that is significant for performance with more ontological precision. Here it is useful to recall that we had earlier cited ‘entrepreneurial orientation’ as relating to among a number of factors, such as proactive and risk taking behaviour associated with entrepreneurs, which we considered may be helpful for exploring learning opportunities that can enhance performance. We also noted the relationship between learning and project performance. From the literature we further glean that learning on projects can facilitate the development of knowledge and understanding required for various behavioural skill adjustments and improvements.	Winters and Latham, 1996; Letmathe <i>et al.</i> , 2012.
5	“Whether learning enhanced project performance”.		
6	What challenges has your organisation faced regarding adoption of learning processes?”	This question was construed from two perspectives. The first of these relates to our earlier recognition that entrepreneurial learning faces challenges due to its discontinuous nature. The second relates to the project perspective, which is informed by our earlier reviewed literature on challenges facing project-based learning.	Cope, 2003, 2005; Bresnen <i>et al.</i> , 2004; Grabher, 2004; Baggen <i>et al.</i> , 2016.

Table 4 Findings: Summary of findings for learning practices

	ESCos A	ESCos B	ESCos C	ESCos D
Learning in project environments				
Mentorship	√	√	√	√
On-the-job training/field training	√	√	√	√
Learning in project environments				
Team/Group learning	√	√	√	√
Meetings	√	√	-	√
Learning practices and strategies				
External workshops	√	√	-	√
Internal workshop	√	√	-	√
Technical/Training	√	√	√	√
Experiential learning	√	√	√	√
Individual learning	√	√	-	√

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Experimental learning	-	-	-	-
Business strategy versus learning strategy	x	x	x	x
Continuous learning strategy and learning practices	x	x	x	x
Organisational performance and learning				
Organisational development versus learning strategy	x	x	x	x
Lessons learned	√	√	√	-
Organisation learning versus organisational performance strategy	x	x	x	x
Organisation learning benchmarking	x	x	x	x