Delivering training for highly demanding information systems

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Abstract

Purpose – There is a lack of research covering the training requirements of organisations implementing highly demanding information systems (HDISs). The aim of this paper is to help in the understanding of appropriate training requirements for such systems.

Design/methodology/approach – This research investigates the training delivery within a customer-facing organisation that successfully implemented an HDIS. A case study was undertaken to identify resource allocation during the implementation lifecycle and training guidelines were prepared following in-depth interviews with client and supplier consultant practitioners.

Findings – Organisations implementing HDISs should invest in training throughout the implementation lifecycle. Two areas of training were found to be of importance: end-user training to avoid technical-isomorphism and post-implementation training to avoid system atrophy.

Practical implications – Literature shows that training attracts the smallest proportion of the implementation resources. This research shows, however, the critical role training plays in delivering a successful HDIS implementation.

Originality/value – The phasing of training requirements allows training resources to be allocated more effectively into end-user and post-implementation training, which is necessary for the full benefits of HDIS to be realised.

Keywords Post-implementation training, End-user training, Knowledge workers, ERPII, Benefits realization, Phasing of training CSF, Information systems, Training methods, Training evaluation

Paper type Research paper

Introduction

In today’s knowledge driven economy, customer-facing organisations (CFO) are relying more heavily on highly demanding information systems (HDIS) in order to manage growing customer expectations. HDIS, such as enterprise resource planning (ERP), offer end users the ability to use information for both pro-active and re-active interaction with the customer (Pan and Lee, 2003).
ERP is a software system that operates through a centralised relational database. These commercial investments are considered to be “configurable information systems packages that integrate information and information-based processes within and across functional areas in an organisation” (Kumar and Van Hillegersberg, 2000, p. 210). ERPII is the next generation of enterprise systems which align organisational processes with the external environment (Møller, 2005; Beatty *et al.*, 2006). CFO design their business infrastructure around their customers’ needs (Galbraith, 2005) and can benefit from these types of systems as they increase the organisation’s capability to interact with customers.

The demand for ERPII is strong, even despite the current economic climate of austerity. A recent report by Forrester Research showed that 25 per cent of European and Asian organisations intended to invest in their existing ERP systems in 2011 (Hamerman *et al.*, 2011). However, implementing any type of HDIS is not an easy task; a report by the Standish Group shows that of all successfully implemented systems, only about 30 per cent deliver the full benefits initially outlined (Krumholz *et al.*, 2000). Given the high failure rate, research has focused on in identifying Critical Success Factors (CSF) for improving implementation success (Somers and Nelson, 2001; Finney and Corbett, 2007). Recently, research has introduced the idea of developing critical pathway steps for CFO implementing HDIS (Norton *et al.*, 2011).

Even when the technical implementation itself has been a success, there can be difficulties in achieving competitive advantage (MacAfee and Brynjolfsson, 2008). This has been termed technical isomorphism (Benders *et al.*, 2006), which is based upon the concept of institutional isomorphism, in which external pressures cause organisations to standardise their processes (DiMaggio and Powell, 1983). ERPII attempts to combat this by optimising the customer facing processes of organisations (Ragowsky and Somers, 2002; Utogikar, 2009) by aligning the technology with the user environment (Ho *et al.*, 2004). Maintaining HDIS post implementation can also be problematic and if not carried out can lead to system atrophy, which occurs when the customer facing processes (system capabilities) are not utilised to their full potential (Sharif and Irani, 2005; Ward *et al.*, 2005).

HDIS implementations are extremely disruptive as they rely heavily upon end-user adaptation (Elie-Dit-Cosaque and Straub, 2011). Training staff to a level at which they feel comfortable in utilising the system and indoctrinating them into new ways of the system has been shown to be critical for delivering benefits realisation (Gardiner *et al.*, 2002). The lack of adequate training has been identified as a key reason for inefficiency in system usage (Henriksen and Andersen, 2008). The current research looks to understand the training requirements for delivering successful HDIS implementations.

Since the dawn of complex systems, such as ERP, there has been an imperative to improve end-user training (Olfman and Mandviwalla, 1994). For a successful HDIS implementation, it was initially thought that 15 per cent of the overall budget should be invested in training (Volwer, 1999; Vincent *et al.*, 2001). However, more recently it has been recognised that there is widespread underestimation of the overall level of training required to implement these systems successfully (Umble *et al.*, 2003). End-user training, which is introduced to educate users of the system before go-live, has been shown to have a direct influence on system usefulness (Igbaria *et al.*, 1995). In addition, following the go-live date, training for software solutions should also incorporate any post-training requirements (Compeau *et al.*, 1995).
Training is an extremely important aspect of HDIS implementations; the end users must fully understand the system and how to use it to perform their roles. However, although the importance of training has been previously highlighted, there is a gap in literature concerning the training requirements for HDIS implementations. Our research provides nine recommendations that CFO should follow when implementing HDIS. These need to be applied at specific points in the implementation lifecycle if the problems of technical isomorphism and system atrophy are to be avoided.

**Methodology**

The current research has evaluated the training needs for HDIS through a case study.

**Case study**

The case study was based on a CFO that successfully implemented an ERPII system in 2007. The organisation was a large UK Local Authority serving a population of 477,770, with a staffing capacity of 6,000. The ERPII system was seen as a strategic tool to support a customer focused vision and £170m was invested into this project. As a result of the implementation, customer access to council services was improved and customer satisfaction increased by 25 per cent (IBM, 2007, 2010). The training delivered played an important role in the successful outcome of this implementation (Marshall, 2008).

Many training variables needed monitoring during this research and as such, a case study was the most appropriate approach, enabling simultaneous evaluations of these variables (Benbasat et al., 1987; Yin, 1989). A detailed single case study was best suited, as it allowed for more in-depth evaluation of individual training issues (Franz and Robey, 1984). Case study analysis allowed for the conversion of observations of complex issues, and assisted greatly in addressing the qualitative issues that arose (Bonoma, 1985).

The method of conducting research within an organisation has been successfully used in previous ERP implementation research, the author undertaking the role of “neutral observer” (Akkermans and Van Helden, 2002, p. 37). This approach was undertaken in the current research, with the primary investigator undertaking a five-month placement as Training Officer within the project implementation team. The six sources of evidence listed by Yin (1994) were incorporated into the research methodology, which formed the participant observations (Easterby-Smith et al., 1993). Observational research enabled behavioural patterns relating to the training issues to be recorded in their natural environment (Hunt et al., 1982).

The Benefits Realisation Capability model of Ashurst et al. (2008) was used to locate training issues at appropriate stages within the implementation lifecycle; planning, delivery, review and exploitation.

**Interviews**

Validation of the observations made regarding training-related issues during the project team placement was undertaken by means of face-to-face interviews (Hodgson, 1987). To fully understand the critical training requirements during the implementation process, initially, in-depth interviews were held with the Head of Training from the case-study organisation two years post-implementation. The observations made during the implementation and the client’s perspectives towards
these were subsequently presented to seven consultants from ERPII supplier organisations. Each supplier organisation practitioner interviewed had over 20 years experience working within the field of ERPII implementation, having tackled over 500 implementations between them. Comparing client project team consultants’ perspectives with supplier consultants’ perspectives, has been shown to be an effective methodology for this type of research (Markus et al., 2000).

The seven stages of interview design described by Kvale (1996) were incorporated for reliability. The questionnaire prepared for the Head of Training was structured around specific issues identified during the work placement. A funnel approach was used (Bickart, 1993), whereby a general open (non-bias) question regarding each specific variable was followed by a leading question if the respondent had not raised the point at the outset. Special attention was paid to the terminology (O’Brien, 1984; Couper, 1996; Edmondson, 1996) to avoid ambiguity (Abramson and Ostrom, 1994; Stout, 1994; Bollinger, 2001). Compared with other research methods, face-to-face interviews offer little chance of misinterpretation (Hodgson, 1987) and this two-way dialogue offered the best way to reveal valuable personal opinions from interviewees.

The interviews were written up within a week of being carried out. Once a transcribed version of the audio recording of the interview had been prepared, this was e-mailed back to the respondent to give them the opportunity to verify any points made.

Data analysis
The criticality of training issues was derived from a combination of all interviewee perspectives and graphically represented by means of a heat map. In total, eight respondents participated in this research; the Head of Training within the project team and seven consultants from ERPII supplier organisations.

The heat map was broken down into four classifications:

1. strongly supported;
2. medially supported;
3. weakly supported; and
4. unsupported.

The factors classified as being critical were those that were strongly supported (at least seven of the eight respondents identifying the training aspect as a critical factor). Detailed statistical analysis was not adopted since in single case study research richness of data has been outlined as being key (Meredith, 1998).

Results
Our results highlight nine CSF that apply to the training aspects of a successful HDIS implementation. These training requirements were allocated into four stages of the implementation lifecycle using the Benefits Realisation Capability model:

1. planning;
2. delivery;
3. review; and
4. exploitation.
These training requirements were also categorised into two areas of training, end-user and post-implementation training, based on the timing of the CSF in relation to the go-live date (Figure 1). A recommendation has been outlined for each of the nine training requirements.

Develop a holistic training strategy
Preparing a training strategy that incorporated the views of many stakeholders was an approach used by the case-study organisation. An integrated team with representation from five key functional departments within the organisation and from two key supplier organisations involved in the implementation approved the final draft of the training strategy document. This multidisciplinary team looked specifically into three key issues:

1. the end-user training requirements;
2. the post-implementation training requirements; and
3. the provision of training resources.

In terms of delivering a holistic training strategy, the Head of Training (Respondent one) commented:

So the strategy had already been written by the IBM training manager. I had a lot of leeway to implement my own vision when I took on the role. I put in a more detailed training plan. I had more influence within that training plan, but it had to still link back to the training strategy.

This view was reinforced by the consultant practitioners. Indeed, the General Manager of one of the supplier organisations (Respondent two) commented that “We try to get involved in that because if the customer gets that wrong and the project failed, it will still be our fault”.

Recommendation 1: A holistic training strategy should be developed, incorporating the views of both the client and supplier, ensuring resources are adequately allocated throughout the implementation lifecycle.

Incorporate customer management training
The case-study organisation integrated an element of customer management training into the training material delivered, which was specific for each functional department to ensure that end users could perform their roles. User acceptance testing was
performed by the trainers, who were all internal staff, since they had a cultural understanding of the organisation and how the system would be used in delivering the customer facing services. The training feedback confirmed this as when trainees were asked “The course objectives were clearly explained at the beginning of the course”, 98.6 per cent either agreed or strongly agreed. In addition, when asked “The course content was relevant to my job”, 87.5 per cent either agreed or strongly agreed.

Regarding the customer management training, respondent one commented that “Trainers were involved in user acceptance testing. The trainers were all council staff … the trainers worked alongside the subject matter experts”. From the supplier consultants’ perspective, the Sales Director of one supplier organisation (Respondent three) commented that:

Education and training are about delivering specifics to [the client]. The education is about showing different ways [the client] can do things, but the bespoke training is then based on an intermediate step of extensive consultancy, to agree exactly how [the client is] going to use the software.

The Head of Sales and Marketing of another supplier organisation (Respondent four) pointed out that:

We would learn about the business in terms of business process mapping and then we would map their business processes to our software. That would then identify how the system would need to be set up, and it would also identify what training was required, and then the training is purely bespoke. So, every training is different to every customer.

Recommendation 2: An element of customer management should be incorporated into training material for each functional department to ensure the end users achieve a sense of personal ownership and understand how to use the HDIS in performing their specific roles.

Timing of training delivery
The case-study organisation ensured that training activities were coordinated so that they were delivered to each department in a timely manner. Training milestones were prepared for each department, outlining when their training curriculum needed to be signed off, when their training needs analysis needed signing off, and when their training materials were required. This departmental approach to training allowed all end-user training to be simultaneously delivered just prior to go-live, and ensured that end users had sufficient time to learn and practice. The training feedback confirmed this as 62 per cent of the course attendees said their training was delivered on time, with only 15 per cent stating that it was delivered too late.

In regards to the coordination of training activities prior to go-live, respondent one commented:

The go-live dates were key. We had no say over this at all. We delivered the training no later than eight weeks prior to a release, so it was fresh in their memories.

From the supplier consultants’ perspective, the timing of the training is very important. The Team Leader of Global IS Solutions of one of the supplier organisations (Respondent five) commented that “Training is usually in the last two weeks prior to go-live and to be quite honest, the later the better”. In addition, respondent three pointed out that “It needs to be close enough to the go-live for them to remember what
they were shown" whilst the Founding Director of another of the supplier organisations (Respondent six) raised the point that “There must be enough time for them to practice”.

**Recommendation 3:** End-user training should be as close to the go-live date as possible, so that they remember what they were shown, whilst being flexible enough to allow for refresher training and practice sessions.

**Undertake skills based training**

The case-study organisation singled out core users from standard users just after go-live, so that they could be supported with additional, more detailed training. An evaluation began with a quantification of all core users and all general business users. Approximately 10 per cent of the people in each department were considered to be core users and designated key project users, several of whom became champions of their particular area. This approach ensured that key end users could disseminate more advanced features departmentally.

Highlighting the importance of undertaking skills based training, respondent one commented: “We were training for the role mapping that had been undertaken. We were really targeting who needed to be trained”. From the supplier consultants’ perspective, respondent three outlined that “[Core users] all have different jobs to do and they require education in different aspects of the system”. The Project Team Manager of another of the supplier organisations (Respondent seven) emphasised that this was necessary at this point in the implementation lifecycle, commenting that “It tends to come down to key project users . . . we identify champions of a particular area, so they’re the ones who get all of the training, all of the key training in that area”.

**Recommendation 4:** Staff members should be segregated into core users and standard users. Training for core users must be in line with the role mapping for their specific roles ensuring that they can deliver the advanced benefits in their new job roles.

**Undertake training course evaluations**

The case-study organisation was able to ascertain if the training material prepared had been appropriate and if the training delivered had been effective by means of training course evaluations. The course feedback was mandatory and all 6,000 end users answered post-training questionnaires concerning end-user training, refresher training and practice sessions. The feedback collected showed that 70 per cent of the attendees found the handouts useful, with 8 per cent not finding them helpful at all; 89 per cent of attendees found the refresher training useful, with only 11 per cent saying it was not useful; and 76 per cent of attendees said they found the practice system useful, with only 15 per cent stating that it was not useful.

In addressing the issue of training course evaluations, respondent one commented that “We used Kirkpatrick, this is level 1 to 4, level 1 is the evaluation, what we call the smiley faces sheet, level 2 takes place within the training, so it’s where they do exercises to cheque understanding”. From the supplier consultants’ perspective, training course evaluations are beneficial to them as they can serve an important second purpose of self-appraisal. The Founding Director of a supplier organisation (Respondent eight) poignantly highlighted this issue, commenting that “A supplier is actually judged on that training course by the evaluation”.

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Recommendation 5: Training course evaluations should be undertaken to verify if the training has been effective and determine if refresher courses are necessary. In addition, feedback can indicate if the consultants themselves need more training and ultimately improve training for future implementations.

Promote the benefits of the system
The case-study organisation recruited transition champions to promote the benefits of the system. These individuals were internal staff so that the values of the organisation could be upheld. This was realised to its full potential post-implementation, where they conveyed the benefits to end users in on-the-job training. The transition champions were recruited on a voluntary basis, but the recruitment criteria included the following key qualities: leadership, power, influence and posture, as primarily these individuals were most likely to be routinely questioned and opposed by resistant personnel, or those who have encountered problems. A list of all appointed transition champions was proactively advertised to all staff members.

Regarding the significance of the transition champions post-implementation, respondent one commented that “It was absolutely critical for the transition champions to promote the benefits to the end users”. This view was shared by the supplier consultants, and respondent three commented that “You often do not identify early doors who that transition champion is, because it might not come from their job titles . . . some people just see the big picture”. In addition, respondent eight stressed that the “Transition champions have to be internal staff”.

Recommendation 6: Transition champions should be appointed in order to promote the benefits of the HDiS. Transition champions form a two-way feedback system, which facilitates the promotion of the right messages, at the right time, to the end users.

Ensure knowledge transfer from the vendor
In order to ensure the supplier organisation (IBM) provided adequate training, it was under contract to deliver a series of training sessions throughout the implementation. The case-study organisation ensured that both the trainers and the transition champions were trained, as these individuals needed to be prepared to answer difficult questions regarding the new system, once it had gone live. This approach ensured that end users were continually informed on how to use advanced and newly developed system features.

In terms of ensuring knowledge transfer from the vendor post-implementation, respondent one commented:

Our Council staff worked alongside IBM on the ERP development. This is where the transfer happened, and this was passed to the trainers. That’s where the knowledge transfer happened.

Ensuring knowledge transfer is a very important issue facing the supplier, and respondent three encapsulated this sentiment by commenting that “[The client] has to take ownership of the system, lock, stock and barrel and train-the-trainer is essential to that”. The necessity for organisations integrating HDiS to achieve this was best expressed by the view of respondent two, who commented that “The difference is we [the supplier] get to go home, they [the client] get left with the system”. 

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Recommendation 7: Transfer of knowledge from the supplier should continue post-go-live. This can be supported in two ways: First, it is in the interest of the supplier to arrange annual site visits to ensure the system is running smoothly and the features are being used correctly. Second, the software providers may need to provide system updates to keep their software solutions up to date and in line with the fast moving software industry, and as part of this service, offer system upgrade training.

Treat as knowledge workers
The case-study organisation outlined a strategy to maintain and update all end-user training records. This strategy was set out in order to achieve a corporate understanding of their “knowledge worker” resource base and improve their ability to plan and deliver future training requirements. The organisation maintained records of training delivered during the implementation. In addition, to manage post-go-live training requirements, two options were outlined, departmental and HR managed training. In order to ensure the end users were fully supported a post-go-live training programme was conceptualised to build upon existing learning.

Unfortunately, no post-go-live training programme was delivered in the case study organisation, as highlighted by respondent one, who commented:

Ultimately no long-term training was accepted, neither the corporate centralised or departmental training scheme. They wouldn’t keep a centralised team because I don’t think they were willing to support any more from the program … they didn’t have the resources to handle this.

However, this factor was considered to be critical for HDIS in the current research, as there was unanimous consensus from all the supplier consultants interviewed. Each supplier consultant outlined that it is critical to develop knowledge workers through post-implementation training in order to ensure the future benefits of the system are delivered. For example, in regards to the case-study organisation not setting in place post-implementation training, respondent two commented “That’s why they atrophy, because you don’t do this”.

Recommendation 8: Organisations must treat end users as knowledge workers and this can be achieved by ensuring a post-implementation training programme is in place. Two main options are available for delivering post-implementation training: First, the client organisation can set up a centralised training department to which all IS-related training is undertaken and staff records are kept for review and appraisal purposes. A second option is for functional departments to maintain their own formal training procedures for individual staff members. This would allow for departmental ownership of the training materials and ensure they are used appropriately for training support and development.

Internally disseminate knowledge
The case-study organisation established a network of 52 super users in order to provide continual assistance to fellow system users by delivering on-the-job training as required. The super users were kept in place post-implementation to ensure that system knowledge was continually disseminated throughout the organisation, and also to enable system knowledge to be passed to new employees joining the organisation.
In terms of the critical nature of super users in disseminating knowledge, respondent one commented that “The super users played a really critical role”. Suppliers also advocate this during go-live, as highlighted by respondent eight, who commented “When a system goes live you need the support of the people who are running that system and the only way you can provide that support, which we call floor walking ... are super users”. It is also clear to see why supplier organisations advocate the use of super users to internally disseminate knowledge post-implementation, as highlighted by respondent two, who commented that:

You find that Fred learnt it and he left and he told Bert, well he told Bert a percentage of what he knew and Bert left and he told Alf and Alf only knows a percentage of what Bert knew, then he told Betty and so on ... so super users are important and keeping super users current is also a difficult thing to do. We always tell customers to keep super users active.

**Recommendation 9**: Organisations implementing HDIS should set up an internal support network of super users. These individuals should see this as a long-term job and provide on-the-job training to current and newly recruited members of staff.

**Discussion**
Two problems have been highlighted in literature in delivering successful HDIS; getting the system set up and running but not achieving competitive advantage (technical-isomorphism) (Batenburg *et al.*, 2008; MacAfee and Brynjolfsson, 2008), and failing to maintain the system post-implementation (system atrophy) (Sharif and Irani, 2005; Ward *et al.*, 2005). Our research suggests that by investing in end-user training and post-implementation training, sufficient human resource development (HRD) can be delivered to alleviate the problems of technical isomorphism and system atrophy (Figure 2).

**End-user training for HDIS**
CFO implementing HDIS need to embrace a new philosophical approach towards their end-user training programme. To align the technology with the user interface, our research shows that in planning end-user training, it is necessary to prepare a holistic training strategy. It has been shown that the training and learning process should incorporate all aspects of the training from preparation and delivery of end-user training to post-training requirements (Compeau *et al.*, 1995). Furthermore, key stakeholders should be part of the decision making process and should be used to identify expected benefits (Guerci and Vinante, 2010).

Our research shows that in planning the training for HDIS, an element of customer management should be incorporated into the training material so that end users are able to realise the new capabilities of the new customer facing processes. Preparing training materials for specific skill-based requirements has been found to improve training receptivity (Chow *et al.*, 2008), and the customisation and personalisation of

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<th>PROBLEM</th>
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<td>Technical isomorphism</td>
<td>End-user training</td>
<td>Sufficient HRD for benefits realisation from HDIS</td>
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training is important for the development of talent staff (Garavan et al., 2012). Historically, training has revolved around ensuring users can perform their individual tasks (Kang and Santhanam, 2003). However, we show that training should be based around developing the new system capabilities.

In delivering the necessary end-user training, establishing when training should occur is critical (Muscatello et al., 2003). Our research supports this finding and shows that training schedules should be as close to the go-live date as possible, whilst giving enough time for end users to practice. It has been identified that spaced training, incorporating different contextual training applications works best for transferring knowledge (Kauffeld and Lehmann-Willenbrock, 2010). In addition, there is a need for time to practice, as training transfer is a two-way process interlinking theoretical understanding and work application (Vermeulen and Admiraal, 2009).

Our research shows that employees should be segregated at the point of go-live and skills-based training should be delivered for the full benefits to be realised. End users of HDIS all have different roles to play and it has been found that segregating end users during the post-implementation phase is essential in being able to appropriately support each user type (Liu et al., 2011). Training needs analysis is increasingly playing an important role in understanding the full training requirements in order to deliver effective end-user training programmes (Iqbal and Khan, 2011).

Reviewing the end-user training delivered is critical in understanding the effectiveness of the training programme, which is reflected in job performance (Devaraj and Babu, 2004). There are many different ways training can be evaluated and one popular approach is through the use of Kirkpatrick (1994). However, very few organisations carry out effective evaluations (Griffin, 2010). Our research highlights that training course evaluations provide critical information, both to the client, and also to the supplier. The client is rewarded with the reassurance that knowledge transfer has occurred whilst the supplier is provided with a repertoire of quality assurance references, if their solution is delivered effectively.

**Post-implementation training for HDIS**

To ensure system features are utilised post-implementation and there is full engagement from end users, our research shows that CFO must promote the benefits of the system post go-live. It has already been shown to be critical to train the end user about the concept of ERP at the outset of the implementation (Yu, 2005). One approach for promoting the benefits is the appointment of transition champions. Having a project champion has been widely cited as being a CSF in ERP implementations (Willcocks and Sykes, 2000; Nah et al., 2001; Finney and Corbett, 2007; King and Burgess, 2008). These individuals have been shown to play a critical role in performing effective internal marketing (Akkermans and Van Helden, 2002).

Our research shows that the CFO’s absorptive capacity heightens post-implementation, which is when the supplier organisation’s expertise should be drawn upon. For the full benefits of the HDIS to be realised, the relationship between the client and supplier should continue to be developed post-implementation. Research has shown that having positive relations with external partners is critical during the implementation (Willcocks and Sykes, 2000; Somers and Nelson, 2001). HDIS are complex and supplier organisations fill gaps in expertise by transferring their knowledge to the client organisation (Brown and Vessey, 2003). There has been found
to be a positive correlation between the client’s absorptive capacity and the supplier’s competence in transferring knowledge (Wang et al., 2007).

To ensure that trained staff continued to operate the system it is important that the CFO manage their knowledge assets. During the exploitation phase, our research suggests that it is critical to develop knowledge workers (high-knowledge individuals or experienced users). The development of employees is an important element of workplace environment changes, particularly those occurring in knowledge-based and services-driven environments (Tomé, 2011). A knowledge value chain can assist in understanding the requirements of knowledge workers (Shah et al., 2007). Rodgers and Negash (2007) highlights that knowledge transfer is increased by developing knowledge workers. In addition, organisations investing in training programmes have been shown to have a higher than average retention of key employees (Kucherov and Zavyalova, 2012).

Processes must be in place to ensure that organisational knowledge is maintained and information on how to use the system is widely available both to existing and new staff members. Our research shows that super users are an effective solution to disseminating knowledge to end users post-implementation. Literature shows the appointment of super users to be critical during ERP implementations (Muscatoello et al., 2003), and our research highlights the importance of these individuals during the exploitation phase. Introducing “IT savvy” users or “super users” has been shown to increase the overall satisfaction level of the implementation (Davis et al., 2009). In addition, super users provide on-the-job training, which has been identified as the most effective method for delivering technical training (Hooi, 2010). Scenistic (on-the-job) training methods have been shown to be the most effective approach in knowledge transfer (Lyons, 2011).

Conclusion

Literature shows that training attracts the smallest proportion of resources in HDIS implementations, and widespread underestimation of the training requirements has been acknowledged. Our research highlights the critical role training plays in delivering successful HDIS. It shows that resources should be invested in both end-user and post-implementation training activities to ensure sufficient HRD and benefits realisation. As such, it is essential to ensure that an adequate training strategy incorporates both of these elements and that the training budget takes account for these activities.

A second key contribution from this research is that the phasing of training requirements into the different stages of the implementation lifecycle allows resources to be allocated more effectively into end-user and post-implementation training. This contribution has allowed the formulation of a critical training pathway that CFO are suggested to follow in order to achieve sufficient HRD for benefits realisation. Previous studies have simply provided a list of CSF for HDIS implementations and this is the first time that training related CSF have been allocated to different stages of the implementation lifecycle. The introduction of the “phasing” of CSF may have wider consequences within the field of IS research. There is certainly feasibility in applying this technique to assist with wider aspects of IS implementation projects.
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