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Maturity Models as a Tool for Benefits-Driven Change: A Qualitative Investigation of ten Organisations

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Maturity Models as a Tool for Benefits-Driven Change: A Qualitative Investigation of Ten Organizations.

Clare V. Thornley

Abstract

If Information Technology (IT) is to deliver change with clear benefits a complex mix of organizational resources (i.e. the IT capability), need to be mobilized. Improving IT capability is essential but often challenging for organizations. Maturity models are used to assist change management for IT capability improvement, but there has been limited research on how they are used and their efficacy in different organizational contexts. This paper addresses this gap through exploring the experiences of ten organizations who used the IT Capability Maturity Framework (IT-CMF), to help them address the challenge of gaining benefits from IT. Key topics are: motivations for using a maturity model; change management actions and improvements; success factors; barriers to success. The data was collected through qualitative interviews and interpreted through a benefits-driven change management approach. This analysis provides key insights into the context and challenges of using maturity models for IT capability improvements, and suggests that capability improvement will to some extent address the 'knowing-doing gap' highlighted with respect to maturity model implementation.

Keywords: change management; IT-CMF; maturity models; IT capabilities; benefits management.

1.0   Introduction

The problem of ensuring that investments in Information Technology (IT) improve organizational performance and deliver business benefits is a persistent one within IT theory and practice (Ashrafi and Mueller, 2015; Markus, 2004; Mithas et al., 2012). Recently, with the move towards digital organizations and the urgency to successfully manage IT-enabled business transformation in order to gain and retain competitive advantage (Hess et al., 2016; Seddon, 2014) this need has become more pressing. Maturity models are one tool that organizations can use to help them build the capability to plan and deliver the change needed.

Maturity models generally provide descriptions of maturity levels (normally five) ranging from low to optimizing within particular management areas. They can also be understood as a codified structured presentation of best practices around key organizational areas. Organizations can use them to assess their current maturity and identify their desired maturity. In this paper the use of the IT Capability Maturity Model (IT-CMF) maturity model in organizations is discussed. This paper's contribution is

providing qualitative data from ten organizations on how IT-CMF has been used, and their reflections on how it may have contributed to their capability improvement in terms of planning and implementing change that delivers benefits. The authors interpret this data using the lens of a benefits-driven approach to change, and thus add to the understanding of this complex and persistent issue in IT management (Ashurst et al., 2008; Ashurst and Hodges, 2010; Doherty and Coombs, 2013).

The complexity of gaining benefits from IT is compounded by the fact that the introduction or development of new IT is nearly always part of some organizational change process with all the associated potential pitfalls (Ward and Daniel, 2006). IT and organizational change also have a complex and iterative relationship in that gaining value from IT requires investments in organizational change but IT itself also has an impact on the nature of organizational change (Gregor et al., 2006). Gaining actual benefits from this change process by clearly focusing on and managing the desired benefits as opposed to just outcomes is essential (Ashurst and Hodges, 2010; Doherty and Coombs, 2013). As highlighted by Coombs (2015), effective benefits management is dependent on developing the skills for managing change. There have also been calls for a framework to help in organizational transformation, for empirical research on change management within organizations and to identify critical success factors for the management of change (By, 2005). What 'success' looks like at the end of the process is also hard to ascertain, as concepts relevant to benefits such as 'business value' can be vague and open to multiple interpretations (Cronk and Fitzgerald, 1999) and the time lag for benefits can be long. This paper's perspective is that building IT capability should be understood as a process of organizational change and it explores those changes through the perspective of benefits management (Ashurst et al., 2016; Ward and Daniel, 2006; Ward and Elvin, 1999).

Despite the increase in the number of guidelines and tools available for organizations, solving the problem of getting real benefits from IT remains a challenge (Doherty and Coombs, 2013). As argued by Jurison (Ashurst et al., 2008)(1996, p. 270), IT only has potential value and "whether it is realized depends on how effectively the benefits are managed for business results". Differing perspectives on the benefits of IT can also cause problems for organizations in terms of blocking useful agreed approaches to improvement (Tallon, 2014).   Chen et al. (2014) also note that our knowledge of the organizational processes which actually enable IT capability to improve organizational

performance is limited, and their work concludes that business process agility and environmental factors play important roles, but that more research is needed on how exactly they operate.

Increasing our understanding of what makes IT benefits materialize and 'stick' during a change process is crucial to improving the credibility and usefulness of IT research. Peppard and Ward (2004, p.189) state that:

"research to examine and understand how IS competencies and capability can be developed and sustained will provide a real source of value to organizations".

1.1 The IT Capability Maturity Framework (IT-CMF)

Maturity models are conceptual models that provide guidelines, for example on strategy or processes, for organizations. IT-CMF is a capability maturity model with a focus on IT from a management perspective. Maturity models also facilitate benchmarking assessments and improvement roadmap planning, to guide organizations towards their desired maturity (Becker et al., 2010; Gottschalk, 2009; Hamel et al., 2013; Scott, 2007). IT-CMF adopts the 5-level maturity design structure of Capability Maturity Model Integration (CMMI) that has influenced and informed the development of many maturity models in IS research (Becker et al., 2010; Lasrado et al., 2015).

To remain competitive, organizations are increasingly adopting maturity models in order to assess and improve their capabilities (Lasrado et al., 2015; Mettler and Rohner, 2009; Scott, 2007). Some studies have shown that higher maturity levels lead to increased productivity and quality (Ashrafi, 2003). The potential role of maturity models is a theme of growing importance in IS research and a topic of great relevance to practice that remains relatively unexplored (Becker et al., 2010). This research makes a contribution to reducing these limitations in our understanding of maturity models. The remainder of this section provides some detail on the maturity model used in the research.

The IT Capability Maturity Framework (IT-CMF), (Curley et al., 2015) has been developed using design science methodology by the Innovation Value Institute (www.ivi.ie) as an academic/industry collaboration with several leading companies (Curley et al., 2012; Donnellan et al., 2011). For a discussion of how it has been used by Intel to improve IT capability in terms of sustainable IT see (Curry et al., 2012). The

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IT-CMF was used in the research because it was the maturity model the authors had used previously and it is also suitable as it is IT capability management focused.

IT-CMF helps organizations to measure, develop, and monitor their IT capability maturity progression for maximum business benefit. It consists of 35 IT management capabilities and these are organized into four macro capabilities. Figure 1 illustrates the scope of the IT-CMF and the structure of its 35 Critical Capabilities (CC's) which are defined as:

"a defined IT management domain that helps mobilize and deploy IT-based resources to effect a desired end, often in combination with other resources and capabilities." (Curley et al., 2015, p.583).
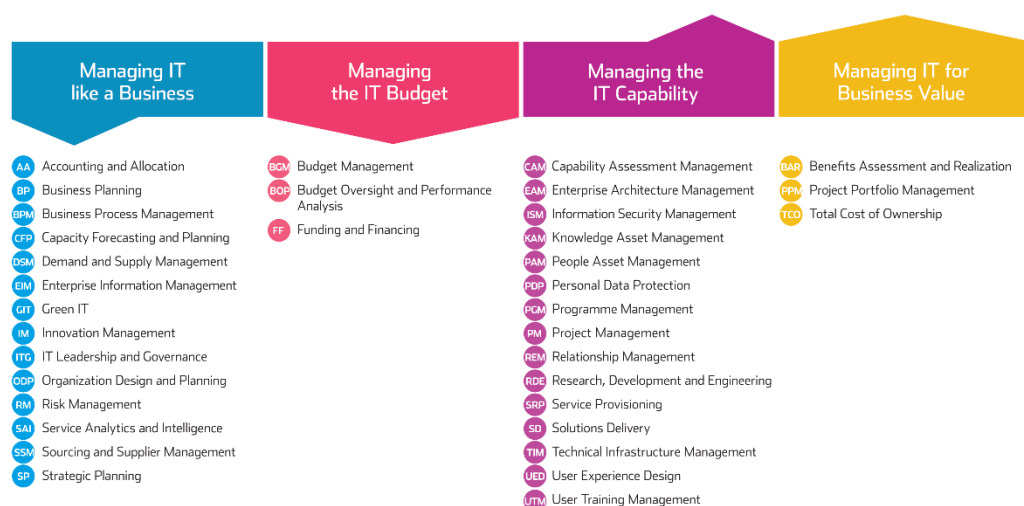
Figure 1: IT-CMF structure

Figure 2 shows the summary maturity progression across the macro capabilities of IT-CMF. This level 1 to 5 structure allows organizations to pinpoint areas of low maturity that require improvement.
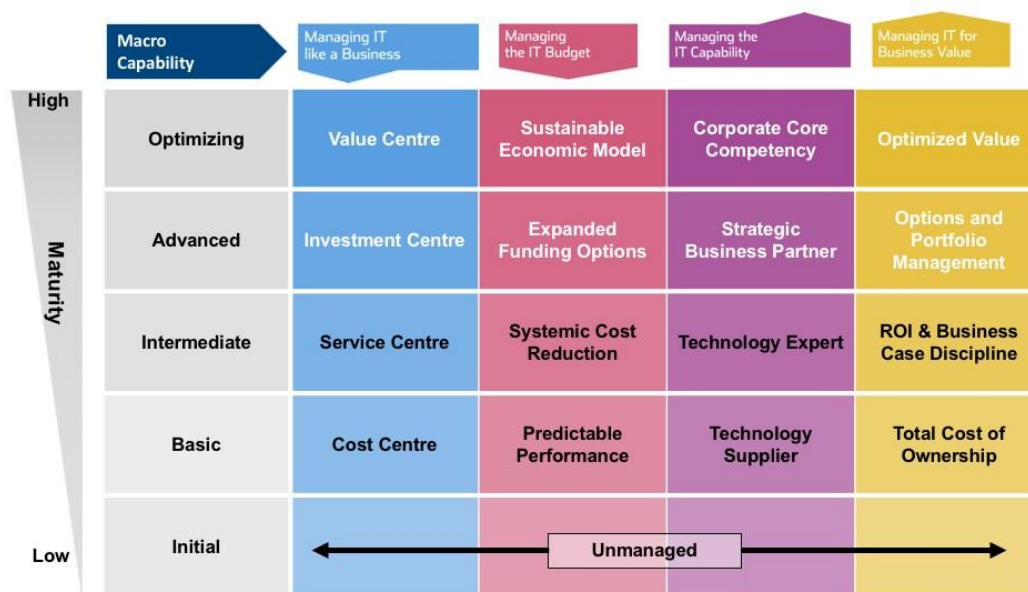
Figure 2: Summary maturity progression across levels 1-5 in macro capabilities of IT-CMF.

1.2 Research aims

The primary focus of this research is to provide useful insights for IT practitioners in how to make more effective use of maturity models to manage organizational improvement through capability improvement. The secondary aim is to investigate how useful Benefits Management (Ashurst et al., 2008; Ward and Elvin, 1999) is as a model for guiding, analysing and discussing how to plan, manage and analyse this maturity model based improvement. The authors aim to produce "relevant and timely" research (Davenport and Markus, 1999, p.20) and to "produce knowledge about how to intervene in the world and change it in order to satisfy real-world needs". This research can be seen as part of the participatory research paradigm in the aim is to work with participants to develop improvements (Bergold and Thomas, 2012).

The specific Research Questions (RQ's) are:

RQ1   What drivers motivate organizations to adopt IT-CMF and to carry out maturity assessments?

RQ2   What change management actions are taken in response to the maturity assessment result for improvements in capabilities and performance?

RQ3   What change management factors enable success in adopting the IT-CMF to realize value from IT?

RQ4   What change management barriers or blocks have arisen in trying to adopt the IT-CMF to realize value from IT?

The experiences of ten organizations using the IT-CMF to enhance their IT capability are investigated. Each organization undertook one or more assessments using the IT-CMF assessment tool. The aim of the assessment is to identify gaps and develop a capability improvement plan for change driven by the organization. It includes training and awareness raising for staff around IT-CMF and capability improvement planning. They took the IT-CMF assessment to gauge their maturity levels in the 35 areas or critical capabilities (CCs) of IT, as covered in the IT-CMF. The results give them a current maturity score and a desired or target maturity score. The IT-CMF assessment also asks respondents to rank which areas of IT capability development are most important to them. The consultants carrying out the assessment then analyse this data to identify areas of high importance that also have a large gap between current and desired maturity. This provides guidelines on which CCs to focus on and what actions could be taken to improve capability.

This paper is structured as follows. Firstly, a review of relevant literature is provided to frame and justify the study. Then the research method is described, and results are presented within the structure of the research questions. Finally, some key themes arising from the data are discussed in more detail and the paper concludes with some implications for practice.

2.0   Literature review

The primary purpose of this section is to provide a critical review of literature relating to IT capability models as a tool for implementing change through developing organizational capabilities. The secondary purpose is to develop the theoretical context for the research, drawing on Benefits Management (Ward et al., 1996; Ward and Daniel, 2006) as a framework for benefits-driven organizational change.

2.1 Maturity models and capability improvement

There is limited data examining the effects of maturity models aimed at developing capability on organizations in terms of how the process actually worked (Reifer, 2000) and how they contributed to improvements, indicating meaningful change, rather than

just describing their current state (Röglinger et al., 2012). Within the literature, there are some issues and limitations reported regarding both the theoretical foundations and the practical implementation of IT maturity models. Maturity models have been criticised for failing to supply adequate data that "more mature" does actually equate with better performance and results (Lasrado et al., 2015) and for not having a sound theoretical background or design approach (Mettler, 2010). How can we be sure that reaching a higher state of maturity, as described in a maturity model, necessarily leads to organizational improvements? Changes may happen, and they may improve organizational scores on a maturity scale, but this may not translate into significant results for the organization.

Becker argues that maturity models in IS research "require conceptualisations and analytical perspectives that are better grounded in theory" and he calls for researchers to conduct applicability checks with practitioners, to ensure the relevance of maturity models for practice (Becker et al., 2010, p.9). Many maturity models do not describe how to effectively conduct maturity improvements leaving a 'knowing-doing gap' which can be very difficult to close (Mettler and Rohner, 2009), p.1). Additionally, it has been noted that maturity models can challenge IT employees to go outside their comfort zone and learn new capabilities and skills that traditionally were not associated with the IT workforce (Scott, 2007) and that this process requires careful change management. There appears to be a gap in our understanding of maturity models 'in use' and the authors aim is to decrease this gap in terms of the IT-CMF and to explore how these insights might also relate to maturity models and there use as tools for change management in general. In summary, the literature suggests that maturity models do effectively provide organizations an accurate picture of current state and desired state, but that the process that needs to happen to get from one to the other is a complex change management issue, which often is not planned in an optimal way.

2.2 Benefits-driven approach to change: establishing a framework

Any increase in maturity is a change process, as it requires things to be done differently. As is well evidenced in the literature change is a complex and often contradictory process requiring both some stability and also shifts (Swanson and Creed, 2014; Thornley, 2012). As such, it needs to be planned for as part of improvement, but change perspectives tend to be underutilized within maturity model implementation (Mullaly,

2014). Research on success factors in realizing benefits from IT advocates a 'maturity model' to provide a structure for the practitioner as a diagnostic and planning tool for change, noting in their study that "Unfortunately, participants had not got a management framework in place for realizing benefits from any significant investment in IT through a long-term process of learning and change." (Ashurst and Hodges, 2010). In a recent paper, Lasrado also calls for theories of change to be used to interpret the approach towards paths to maturity (Lasrado et al., 2015). It would appear then, that the combination of maturity models and carefully managed change for organizations could be a useful approach, but there is little empirical work on this.

2.2.1 Benefits Management

A key perspective informing this research is provided by a benefits-driven approach to IT-enabled change. The research draws particularly on the Benefits Management work of Ward and others, for example, see Ward and Daniel (2006). The main principle is that benefits will be gained from technology when people and organizations make changes which are focused on benefits the technology can bring (Ashurst et al., 2008) rather than the technology *per se.*

2.2.2 Capability improvement: a benefits-driven approach

The benefits-driven approach delivers benefits through organizational change, i.e. the business changes and enablers. The organization being changed can be considered as a group of substantive and dynamic capabilities (Zahra et al., 2006). Capability is the result of combining competences and resources to achieve particular results. The definitions of competence, resource and capability (Ashurst et al., 2008) indicate that capability is complex and change will affect a range of dimensions of the organization. Nicolian et al. (2015) conclude, in their CIO study on challenges of delivering value from IT, that for success it is necessary to build organizational competences.

Capability is a higher-level construct than competence (Stalk et al., 1991), defined and enacted through the application of a set of competences (Moingeon et al., 1998; Teece et al., 1997). More specifically, a capability can be defined as an organization's ability to "perform a set of coordinated tasks, utilizing organizational resources, for the purposes of achieving a particular end result" (Helfat and Peteraf, 2003, p.1000). Capabilities are not static and Teece (1994, p.541) introduced the term 'dynamic

capabilities' defined as " the subset of the competences/capabilities which allow the firm to create new products and processes, and respond to changing market circumstances". This reflects how capabilities must anticipate and adapt to changes in the environment, and has since been further developed in the literature, for example, by Prieto and Easterby-Smith (2006) in terms of its connections with organizational knowledge.

The IT capabilities represented by IT-CMF provide a comprehensive picture of the capabilities relevant to IT, which are a central enabler for organizations to thrive in the digital environment. For capability improvement to be most effective in terms of improving organizational performance it needs to be channelled towards important areas of the organization in close collaboration with business leaders (Chen et al., 2014). Capability improvement must be coordinated in holistic way to ensure it effectively supports the needs of the organization (Fink, 2011).

2.2.3 A framework for change

There are many change models which analyse the various steps or stages of the change process such as Lewin's (Lewin, 1947) 3-step model of unfreezing, moving and refreezing or Kotter's (1995) model of change as an 8-step process. In selecting an appropriate change model for this work the authors took the lead from others who have done related work on IT and benefits and followed Ward and Elvin (1999) in using the change heptagon model, in conjunction with benefits management to analyse the contextual factors and dimensions of change. Ward and Elvin used the change heptagon as it shows the seven core components of change and additionally provides space for additional contextual issues surrounding these core components. In terms of their work, the IT-CMF assessment can be seen as an early stage of an intervention to start change and the actions taken in response to the assessment consist of the activities for intervention. The actions taken by the organizations in response to the IT-CMF assessment are analysed, in terms of the change heptagon components (see Figure 3). The change heptagon has the following dimensions (Ward and Elvin, 1999), p. 215):

Strategy: the changes imply a new or modified business strategy or component of it.

Structure: the changes to the organizational structure.

Operational processes: the changes affect specific business processes, which can be internal or related to trading partners.

Management processes: new or modified management, planning or control processes needed.

Technology: describes the key aspects of the IS/IT components of the change.

Roles/skills: the changes require new/revised roles to be established or new skills developed in the business (and/or trading partners).

Culture/behaviour: attitudes and behaviour have to change in order to deliver the benefits.
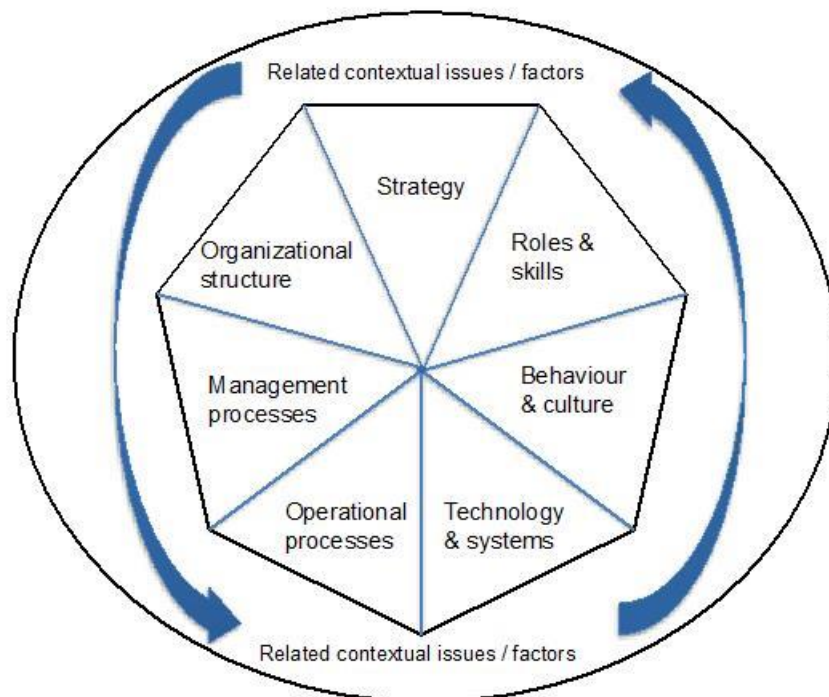
Based on: Ward J. and Elvin R (1999) A new framework for managing IT-enabled business change. Information Systems Journal 9 p 197-221

Figure 3: The change heptagon dimensions.

The key concepts and framework for the study have now been introduced, the next section describes the research methods in terms of how the data was gathered to meet our research objectives.

3.0 Research methods

Due to the exploratory nature of the study, and to allow the flexibility to pursue new topics as the conversation evolved, semi-structured interviews were utilized to gain insights into the change management actions organizations are taking in response to IT capability maturity assessments and the resulting improvements in the capabilities and

performance (Myers, 2013; Myers and Newman, 2007). The interview guideline consisted of sixteen open questions to enable the interviewees to relate to their individual organizational context. The questions were developed through analysis of the benefits management literature, discussion with practitioners and then refined through pilots. These questions are available in the Appendix.

The interviewees were from ten large organizations who had undertaken at least one IT-CMF assessment in the previous five years. Interviewees were sponsors of, or closely involved in, these assessments. In most cases the assessment was sponsored by the Chief Information Officer (CIO) or top IT manager. In a few cases, the Chief Executive Officer (CEO) was the sponsor. The participants were selected on the basis that they provided a representative sample of IT-CMF users based on size and sector. Table 1 provides data on research participants.

The research was guided by the Universities (*identity and link to be supplied after peer review*) research code of ethics. The participating organizations were coded to anonymize the source of the data. Each interview lasted approximately 60 minutes and was conducted by one of the three researchers, recorded and then transcribed. The transcriptions were sent to the interviewee for confirmation of the content prior to analysis and quotes were only used with prior consent.

The resulting qualitative data was analysed using thematic coding and categorization content analysis techniques (Flick et al., 2007) through researcher interpretation rather than using software. It is acknowledged that the interviews and discussions are constructed by the researchers and so will inevitably have an inherent bias (DeWalt and DeWalt, 2010). Each coder began by reading all transcripts. To reduce biases each transcript was initially analysed by one researcher who drew on common statements to form provisional categories and codes and then this was reviewed by the other two researchers and the final categorization analysis was consolidated by consensus. The initial findings of the research were also reviewed through a workshop with another group of twelve subject matter experts who had experience of the IT-CMF and its implementation. This review enabled validation and evolution of the findings with a senior group of IT leaders.

Ref.	Sector	Region	Employees	Revenue	Informant Role	Assessment Year (s)
A	Health	Europe	Unspecified	Unspecified	CIO & Sponsor	2012
B	Government	Europe	5,500	N/A	CIO	2012
C	Finance	International	51,200	$3.7 billion	Head of performance /Assessor	2012, 2013 & 2014
D	Electronics	International	107,300	$55.4 billion	CIO Assessment Lead	2010, 2011 & 2012
E	Health	Europe	9,068	Unspecified	CIO	2012
F	Government	Europe	5,833	N/A	CIO	2011
G	Government	Europe	2,980	N/A	IT Manager / Assessment Lead	2011
H	Finance	Europe	1,529	Unspecified	IT Manager / Assessment Lead	2010 & 2013
I	Energy	International	6,600	€1.89 billion	CIO & Sponsor	2013
J	Finance	USA	3,000	$1,494 billion	IO Executive Sponsor	2014

Table 1: Organizations participating in the research

4.0 Results

This section reports in detail the results in relation to each research question.

4.1 RQ1: What drivers motivate organizations to adopt IT-CMF and to carry out maturity assessments?

Drivers for the maturity assessment and use of IT-CMF were varied. Many organizations had a range of different drivers. A number of organizations wanted an objective external assessment and benchmarking with other organizations (A, B, C, F, G), to check out their own informal assessment of performance (C, E, D) and to provide IT business value information for business and top management (B, F, G, J). A second driver was to confirm areas where action for improvement was required (F). A third and important driver was to contribute to the process of change and improvement (B, D, E, H, I). Figure 4 indicates how the organizations are placed on two important dimensions that help distinguish the different drivers.
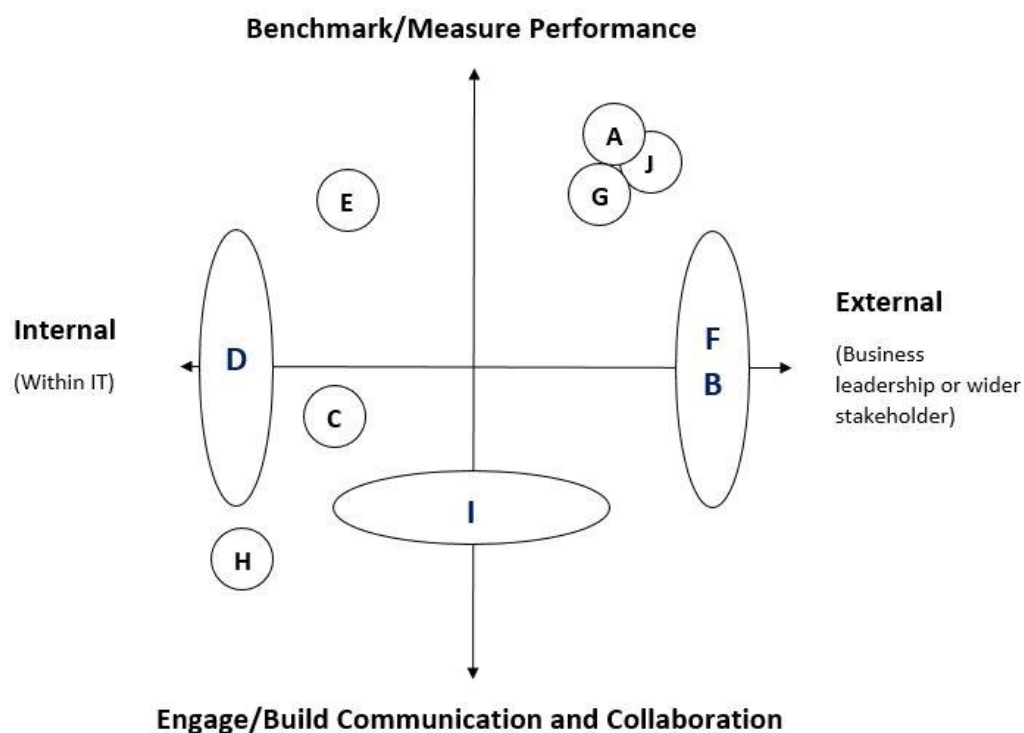
Figure 4: Primary drivers for the assessment.

Interviewees expressed views on the need for top management engagement. One felt that the process of assessment was itself a good way to develop communication and build stronger relationships:

"both the process and the output of the assessment can be used to facilitate improved communication. It was a way of communicating what had been achieved… and involving a wide number of staff in the overall direction and strategy" (H). "the

leadership recognized that there were gaps. We used the assessment to build momentum for changes" (I).

Interviewees also noted how an individual CEO or CIO could have a major influence on drivers and priorities.

4.2 RQ 2: What change management actions are taken in response to the maturity assessment result for improvements in capabilities and performance?

4.2.1 Findings and benefits from the assessment

All the participants in the research found the assessment useful:

"I strongly believe the approach is very powerful" (A);

"It's quick, it's cheap and it's useful" (C);

"The key is the credibility of the feedback from IVI – because of the organizations that are members. The assessment method is valid and it works."(I)

The majority of participants (6) felt there were *"no surprises"* in the assessment result, but that it was good to get confirmation of internal views and evidence to support making a case for improvement actions:

Some surprises did emerge. For example, when the assessment highlighted areas as needing attention and action was taken to improve these without it being requested or planned by management:

"How many of the capabilities improved even though there was no direct action taken on them, simply through getting people to think about doing things better."(H)

"The potential for the process itself and the outcomes to facilitate and improve communications wasn't a surprise to me, but I think it may have surprised some of the other senior executives." (H)

For most organizations, the assessment is a part of a process of capability improvement. Two organizations illustrate very different aspects of change actions. Firstly, an example of the assessment leading to change of people:

"The assessment showed me that me and my team didn't share the same view of the problems. We didn't have the same appreciation of reality. It led me to the decision to reconfigure my team. I set up a new organization with new people at the top of my organization. The people having responsibilities at the time of the assessment are not here." (E)

Another participant highlighted changes to culture:

"They learned the value of benchmarking, the value of pausing and reflecting on methods and a more scientific approach. IT assessment is part of a new culture, a new way of thinking, a philosophy as much as a method." (I)

Other participants gave examples of a wide variety of actions and changes that can be related to different dimensions of change. Factors often combined in the change process, as organization J noted, in terms of the relationship between awareness raising and leadership:

"We had a great blast of energy because once people saw the gap and they saw what – this is where the leadership comes in, the leader in the organization has to then create a compelling vision and a road map." (J)

The change heptagon (Ward and Elvin, 1999) is used to explore the primary focus of action for organizational change to improve IT capability in the different organizations (see Figure 5).
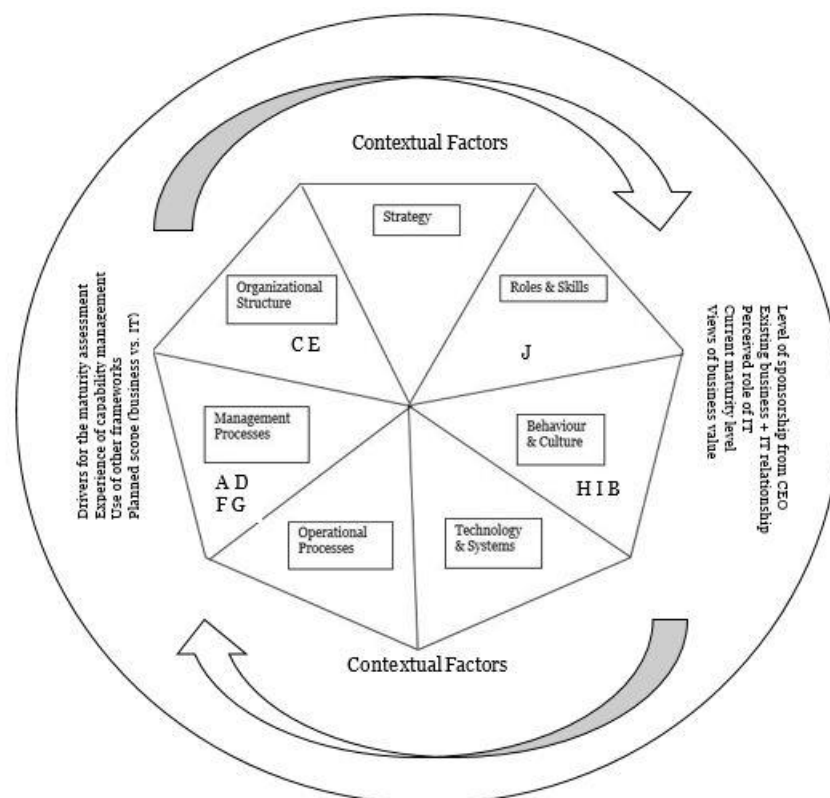
Figure 5: Changes in response to the IT-CMF assessment.

4.2.2 Designing the change programme

No one referred directly to making use of frameworks such as the change heptagon in establishing an action plan. However, as figure 5 indicates, changes related to a wide variety of dimensions of the organization and important aspects of a benefits-driven approach to change were addressed (even if implicitly). It is interesting, given the IT context, that strategy, operational processes and technology & systems, did not come up as particularly prominent issues. This does not mean they were not mentioned but they were not priority issues. Rather, what might be termed the 'softer' or more culture- and people-focused issues were given a higher priority. In term of strategy, aligning IT change with organisational strategy was seen as necessary but there was no indication that organisational strategy might be influenced or changed as a result of innovation or improvements in IT. The priority given to changes in behaviour and culture reflects the approach taken in developing a benefits–driven approach. In large IT organizations there can be many people who need to work differently and the change programmes involved can be complex and challenging. Taking the perspective of benefits-driven change, the principle that benefits come from "people doing things differently" (Ward and Daniel, 2006), was highlighted by one participant:

 "A change approach is required - 'who's job is going to change and how is that job going to change as a result of us trying to improve capability?' Being able to tell that story or have a body of knowledge that would inform the changes has been the challenge to date. .. The organization won't change unless the people understand how they can change themselves." (D)

Several participants noted the importance of actions related to metrics and measurement:

 "We introduced rigorous metrics and management oversight of reporting. We gained huge credibility as a consequence." (I)

The impact of IT changes in terms of improved organizational performance, which was then measured through relevant metrics (Casey and Waring, 2014), had to be clearly communicated and explained so that everyone could see the benefits of the change. If this was not done, then buy-in was diminished. The next quotation was from a medical context and the participant felt that in such a high-risk environment effective communication of benefits was particularly important:

"If you implement these kinds of processes and you don't give feedback to the staff ...they don't understand why you are doing it." (A)

In each case, organizations had to balance a variety of potentially conflicting factors when designing their change programme and action plan for improvement.

4.3 RQ3: What change management factors enable success in adopting the IT-CMF to realize value from IT?

A number of general enablers underpin the specific change and improvement programmes. A key planned enabler for one organization was to get better at the practice of change and improvement by focusing effort first on a small number of areas, using those to learn and build improvement capabilities. In another organization a key message was:

"delegate the ownership of capabilities to people ...in a position to do something about it and then ensure you give them time and space to do something about it." (H)

Ownership and accountability for particular capabilities and their improvement was seen as an important enabler by organization J.

Participants noted that improvement needs several years, so there is the risk of loss of sponsorship from the CIO, CEO etc. as individuals change focus or move to new roles. As one organization notes:

"there was a big drive on service improvement with ITIL – so the focus shifted. There's been significant re-organization as well, so some of the contacts we were working with have moved on." (D)

Another participant highlighted the importance of vision and being prepared for difficulties:

"It's a journey – create a compelling vision and organize around a few key things. You have to understand there will be setbacks." (I)

Training and outreach in terms of effectively communicating with and involving the whole of the organization was raised as key enabler of success by organization J. Interestingly, the IT department (J) had thought it was doing an effective job of clear communication but feedback from the rest of the organization gained though the assessment indicated that it was not reaching the right people. Thus, the assessment's engagement with wider stakeholders alerted IT to communication problems, which could be then be resolved.

4.4 RQ 4: What change management barriers or blocks have arisen in trying to adopt the IT-CMF to realize value from IT?

A major barrier was the failure to, adequately and convincingly, make the connection between IT capability improvement and specific business objectives or projects. This was reported as participants reflected on their experience of the process and how they would improve its success based on their experience. In their action plans participants wanted to make a strong link between actions to improve IT capabilities and business performance improvement:

"I think there is merit in being able to park capability improvement within a mega project…It's trying to create a bridge between that analysis and the business facing projects in terms of a cross mapping and we need these capabilities to land those projects." (D).

"We are looking at how can we align sets of capabilities to support specific organizational outcomes... capability improvement I would say needs to be driven by organizational priorities and then you can use the capabilities in that context." (C)

"A capability framework that drives their immediate business needs rather than the IT needs would probably have got better traction." (B)

Any change initiative requires sponsorship, and the changes involved in improving IT capability can be significant. As one participant noted:

"It'd have been advantageous if we'd used higher-up sponsors". (D)

Another potential barrier is the impact on individual IT managers. One participant highlighted that it was painful (but ultimately valuable) for the IT managers involved:

"There was a disconnect between what some of the managers thought of themselves and what the trained assessor discovered. It was moving from unconscious incompetence to conscious incompetence – a person can delude themselves and stick with their own little way of working. It was painful." (I)

There was also a perceived danger in an undue focus on the assessment of the current maturity level, rather than realizing that this could only be useful if it guided action on increasing maturity. This is linked to earlier observations in the findings that a long-term change programme view is required, as noted by Fahri (2015). Finally, there was a problem of ensuring executive understanding of the nature and purpose of IT-CMF, and, in particular, the meaning of the maturity scoring. There can be a discrepancy in score awareness between those familiar with using maturity matrices and those unused to such frameworks. In one case a low score was treated with derision, like a poor exam result:

"You only got X %??" (F)

"It can be hard to communicate that the 1 –> 5 scale does not represent a Bad –> Good progression, but… represents the particular organization's business priorities, and in fact a high score can be a red flag for over-investment." (F)

5.0   Discussion

This section synthesises and illustrates the main learning from the results in terms of how it relates to the existing literature.

5.1 Building capability as a change process

In many of the organizations the IT-CMF assessment was used on a number of occasions over a period of years. Development of IT capability using the assessment and IT-CMF framework, was recognized as a long-term process of change, driven by a focus on maturity improvements in areas recognized as a priority for the organization. The assessment itself is part of an educational and transformation process, so issues of understanding are likely to arise. In particular, the problems being tackled and the benefits arising from higher maturity levels may not be clear for participants struggling with very different challenges at lower levels of maturity. It has been argued (Doherty et al., 2012) that there is a mind-set shift to move to a benefits-driven approach. These transitions involving changes of mind-set are an important element of change management in improving IT capability. The importance of mind-set shift is also discussed in recent work on successfully managing digital disruption (Utesheva et al., 2016) which found that a clear focus on a desired future identity and a letting go of previous identities based on redundant technologies was a key enabler in allowing people to successfully adapt to digital transformation.

5.2 Embedding IT-CMF in the organization

The context for the adoption of IT-CMF varied widely between organizations. In one the CIO was pushing the capability-based approach, in other organizations, the capability concept was new. A number of factors identified in the research relate to how to approach embedding IT-CMF and capability improvement in the specific context of the organization. Sponsorship for the IT-CMF is important and organizations identified owners for individual capabilities as well as specific improvement initiatives. One challenge is how to engage both elements of the 'double-knit' organization (Wenger et al., 2002) i.e. the formal organization of structures, hierarchy and business processes as well as the informal organization of communities of expert practitioners and working practices. The importance of successfully building networks of influence laterally as well as vertically to enable the success of IT projects is also seen as crucial in more recent work on overcoming IS implementation barriers (Ngwenyama and Nielsen, 2014). The role of the informal organization in change and improvement is important (Casey and Waring, 2014; Fahri et al., 2015; McBride and Hackney, 2001). Two organizations illustrate these different factors:

"It'd have been advantageous if we'd used higher up sponsors" (D)

"Delegate the ownership of capabilities to people … in a position to do something about it and then ensure you give them time and space to do something about it" (H).

5.3 A benefits-driven approach to capability improvement

Organizations recognized a focus on benefits as an important factor in driving the maturity improvement process. There are examples of organizations taking change management actions to make improvements across a range of dimensions of the organization (people, structure, process etc.). An important challenge is: why should an organization focus on and invest in IT capability improvement? Organization C observed:

"Capability based improvement is a good thing. But, we need to be more driven from organizational objectives and outcomes, and then into which CCs need improving rather than focus simply on improving CCs." (C)

6.0　Implications for practice

This research investigated how organizations use the IT-CMF to improve their IT capability and implement benefits-driven change. IT-CMF has been closely developed in consultation with practitioners but its actual use in organizations over a period of time had not yet been fully investigated. In this section, a number of key implications for practice are highlighted, around improving the efficacy and relevance of the use of IT-CMF to support organizational change, but which will also be of broader relevance to making better use of other maturity models.

6.1 Gaining organizational commitment for change

Many of the findings reflect on the need to convince the wider organization of the actual value of investing time and resources in IT capability improvement. This is well-established guidance from the change management literature (By, 2005; Chrusciel and Field, 2006; Fritzenschaft, 2014; Kotter, 1995), but this work provides some insights into how this might be best managed in the particular context of IT management using maturity models. This is a challenge which can really only be addressed by each organization, as each will have its own understanding of business benefits. This also perhaps can have particular difficulties for IT which is often not represented at the top strategic level of organisations. The research suggests that a link should be established between improvement actions, business priorities and improvement programmes and a connection made between capabilities and organizational goals, both at the strategic and operational levels. This will help organizations turn the assessment into improvement plans using a benefits-driven change approach and improve the sustainability of the change programme required, as it is less reliant on local champions. The question of how organization-wide this input should be will also vary, with some participants suggesting a project-focused approach. The role of IT capability improvement can then be clearly connected to supporting particular project objectives/goals.

6.2 Understanding maturity

What is maturity and what does it mean for any particular organization? A comprehension or understanding difficulty came up as a recurring issue, as one participant noted:

"I actually have a slide that sort of illustrates the challenges with getting to a level 3 from level 2+ and the fact that it is not as expected." (C)

This suggests that maturity levels can appear too abstract and the gaps between levels are not always as linear or clear as models tend to suggest, nor it is always appropriate to aim for the highest possible level. A supporting process such as a workshop, tailored to each organization, could assist in clarifying this for organizations and help to set realistic expectations in terms of maturity objectives.

6.3 Implementing IT capability improvement

Many organizations struggled with the practicalities of actually improving performance. There is the question of how widely across the organization one wants to develop capability improvement, and there is also the question of whether one wants to improve maturity in all or just some aspects of IT. Different approaches were developed by different participants. There may be a tension between the general cultural shift needed across IT, and also including the wider organization for capability to really improve, and the 'quick wins' available from a more focused approach. Engaging the appropriate people was seen as a key factor in implementation. In order to reach higher maturity, IT must work with the entire organization, but when it is starting on the maturity journey it could be a long way from this, so this 'jump' needs be planned and resourced. A clear message from the findings is that using a maturity model for IT capability improvement needs to be planned for as a change management programme. This needs the necessary strategic commitment and resources to initiate and sustain a shift in culture and mind-set, as well as sets of practices and processes. Without this, there is a risk that the assessment will just be seen as an informative snapshot rather than the start of an improvement process.

7.0   Conclusions

This research provides the first evidence of how organizations are making use of the IT-CMF to improve their IT capability and thus provides a contribution to our understanding of this particular maturity model. The maturity assessment process   and IT-CMF framework are seen as useful and organizations have gained a range of benefits from their work on capability improvement. The research has also identified a number of practical implications for action to increase benefits realization by organizations using IT-CMF and this is likely to be relevant to other maturity frameworks. The benefits-driven change approach adopted for the research has been valuable. Conceiving the capability improvement actions taken by organizations as benefits-driven programmes of change is the basis for two important contributions. Firstly, in terms of research design, this approach would be useful in a range of qualitative research scenarios where the context is organizational performance improvement and change. The change heptagon was useful in structuring our key findings (see Fig.5). Secondly, the benefits-driven change perspective provides a way to approach IT capability improvement, which reveals valuable insights for research and practice. This provides support for the proposition made by (Ward and Murray, 2000) that Benefits Management can be applied to any change initiative and not just IT-enabled change.

The potential contribution of the research to practice is important. None of the participating organizations had adopted an explicit benefits-driven approach to change management and capability improvement. A key contribution to practice is the recommendation that organizations address capability improvement as a benefits-driven programme of change with a focus on benefits coming from business change enabling 'people to do things differently'. The suggestions included in the 'Implications for practice' section outline potential opportunities for organizations. The authors believe these will to some extent address the 'knowing-doing gap' highlighted with respect to maturity model implementation (Mettler and Rohner, 2009).

Acknowledgements

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Appendix

Interview questions

1. To start could you outline what was your role in relation to the IT-CMF assessment please.

2. Were you involved in the decision to undertake the IT-CMF assessment?

a. If yes, what was the main (or many…) business issue (or could it have been an 'IT' Issue?) that motivated you/ your organization to carry out the IT-CMF assessment?

b. If no, are you aware of what motivated your organization to carry out the IT-CMF assessment?

3. What is your recollection of the main findings from the IT-CMF assessment?

4. Where there any surprises?

a. If yes, what were these?

b. If no, why, would you say?

5. Do you recall if others in the organization were surprised by the results…. and in what ways?

6. Did the IT-CMF assessment help understand the main issues better?

Issue A (Etc. for all issues mentioned)

a. If yes, in what ways?

b. If no, in what ways?

7. Did the IT-CMF assessment help you tackle the issue?

Issue A (Etc. for all issues mentioned)

a. If yes, in what ways?

b. If no, in what ways?

8. Was there buy-in to the results of the Executive Assessment and the proposals for action?

9. What do you now do differently since taking the IT-CMF assessment? (& Why?)

Let's take a few of these areas and explore them in more detail e.g.:

Do differently A (Etc. for other issues mentioned)

a. What was the objective and intended benefits?

b. What did you do?

c. What aspects of the organization did you change (nb leadership, strategy, structure, process etc.)?

d. What was your role in these changes?

e. What have the outcomes been?

f. What evidence is there of the benefits of these changes? Were there any additional or unexpected benefits?

g. What have been the key challenges?

h. What were the enablers?

10. What lessons has your organization learned from the IT-CMF assessment experience? Is there anything you would do differently next time?

11. What in your opinion are the benefits you (organization) achieved as a result of undertaking the IT-CMF assessment?

12. What will you (organization) do next in relation to capability improvement?

13. What are your views of a capability based improvement approach, based on your experience of the IT-CMF assessment?

14. Would you (organization) do an IT-CMF assessment again?

a. If yes, why?

b. If no, why not?

15. Would you recommend an IT-CMF assessment to a colleague in another organization?

a. If yes, why?

b. If no, why not?

16. Is there any additional comment you would like to make in relation to the IT-CMF assessment and its impact on the business value in your organization?