Return on Expectations; an Academic Assessment of a Large KM Project

Barry Byrne[*]

Maynooth University, Ireland

Abstract: This paper examines an award-winning technology enabled Information and Knowledge Management (IKM) programme carried out by the Irish Defence Forces (DF). The programme introduced new procedures, a new staffing function and a new enterprise-wide collaboration platform for knowledge discovery and sharing. This paper begins by outlining the importance of this research and stating the research question. The second section looks at the methods of assessing programmes of this type. A Return On Expectations (ROE) methodology is selected as most suitable in this instance (Kirkpatrick and Kirkpatrick, 2010). The third section presents the findings and the paper concludes with a short summary and recommendations which are internationally relevant.

Keywords: Information; Knowledge; Management; Technology; Return On Expectations; Microsoft SharePoint; Military; ISO 30401; Research.

1 Introduction

From 2012 to 2016 the Irish DF implemented an enterprise-wide Information and Knowledge Management programme. I led the team that delivered this programme. This involved the creation of a new dedicated staffing function and the implementation of new policies and procedures throughout the organisation. It included the delivery of new knowledge management training courses and the creation of formally recognised IKM roles across the DF. This programme also included the design, build and roll-out of a new, enterprise-wide knowledge sharing digital platform based on Microsoft SharePoint.

This platform, entitled IKON (Information and Knowledge Online), spans all formations: land, sea, air and overseas missions. The programme was awarded first place in the European Intellectual Capital and Knowledge Management awards in Italy. As a case study, this was a valuable opportunity to study an organisation that implemented a programme that had defined goals and metrics. The international recognition of the programme also makes any subsequent follow-on research on its effectiveness internationally relevant. There are aspects of the programme that failed to reach desired expectations and therefore valuable lessons to be learned from a study of its implementation.

The DF IKM strategy statement set out the Defence Forces' IKM vision, objectives and principles. The strategy outlined four main objectives. The first objective was to enhance information exploitation within the Defence Forces using a collaborative information-sharing, networked environment. The second was to support the development of a knowledge-centric organisation by the identification and preservation of information and knowledge of permanent corporate value to the DF. The third was to recognise people's contribution towards creating a knowledge-centric organisation. The final objective was to contribute to increased situational awareness through improving information flow using industry proven technologies.

A ROE assessment is conducted against these four objectives. To assess these objectives, they were 'operationalised' to make them tangible to this research. To do this, senior stakeholders were asked how *they* interpreted these objectives and to what degree they were reached.

The research question is as follows:

To what extent did the Irish Defence Forces' IKM programme achieve its stated objectives?

The two subsidiary questions to the main research question are;

* Correspondingauthore-mail: barrybyrne7@gmail.com

a) What were the factors that helped achieve these objectives?

b) What were the factors that hindered the achievement of these objectives?

Literature Review

There are a number of methods available for measuring IKM programmes. Capability maturity models and assessment frameworks are offered by some leading organisations such as the American Productivity and Quality Centre (APQC). A Return On Investment (ROI) methodology, which focuses on monetary value, is also often used. It was assessed however, that an ROE assessment offered the most holistic solution in this instance. This section identifies that Return On Expectations (Kirkpatrick and Kirkpatrick, 2010) can be an effective way of assessing if objectives were met, particularly if senior leadership are engaged in the process. The literature review also identifies an important new KM standard, ISO 30401 – Knowledge Management Systems Requirements.

IKM programme measurement and ROE

Professor Tsui (2018), head of the KM programme in Hong Kong Polytechnic University, recommended using one of the following three approaches for the assessment of an IKM programme:

1. A quantitative method by forming hypotheses, collecting data, analysing, and proving the hypotheses;

2. A qualitative method by using structured interviews and/or surveys, applying coding (ground theory), then studying the data to form conclusions;

3. AHP (Analytical Hierarchical Processing), which is a systematic and vigorous mathematical approach to identify the factors and their respective weights which influence the outcome of a decision.

Two of these three methods (quantitative and qualitative methodologies) were used because of Professor Tsui's recommendation.

A recent paper provides valuable insights into the use of a modelling to assess an organisation's KM maturity (Serenko, Bontis and Hull, 2017). The paper recommends that the correct model for the situation be selected, as organisations and companies can vary as regards their focus on KM.

For the evaluation of training on IKM delivered during the programme, Kirkpatrick's (1976) four level approach to training evaluation was considered for its popularity in this domain and provides some relevant guidance. A later paper focusing on Return on Expectations (ROE) assessment describes how it is particularly effective where training was a key part of the programme. This was the case in the DF IKM programme. Arguably the best way to assess success is to examine the objectives that were planned in advance and assess if these objectives were met. An ROE analysis (Kirkpatrick and Kirkpatrick, 2010) is considered to be the best fit for this assessment. As the authors pointed out, "stakeholder expectations define the value that training professionals are responsible for delivering" (2010: 36). They advised in the same chapter that programme leaders, ask senior leadership to "clarify and refine" what expectations they have.

This approach of asking senior leadership what expectations they had was used in this assessment. Senior leaders were asked what specific understanding they had of the four main objectives of the IKM programme. They were also asked to operationalise them in a way to make them tangible to the research. Below is a useful table to visualize the approach. Table 1.0 shows the comparison between ROE and the more common ROI, which focuses more on monetary value.

Table 1: ROE comparison with ROI. (Kirkpatrick and Kirkpatrick, 2010).

ROE	ROI
Proactive, business partnership approach that unifies teams	Defensive isolation approach that separates functions
Defines training as a contributor to key business results	Defines training as an end in itself
Value defined by business stakeholders in cooperation with training	Value defined by predetermined formula
Focus on comprehensive evidence and a compelling story of value	Focus on single metric of numeric proof
Easy to understand, flexible, and cost effective	Complex, rigid, and expensive

New KM Global Standard

A new global standard for KM systems, ISO 30401:2018, was released in November 2018, and served as a timely and valuable comparison (Lindsay, 2018). Prior to this, the sole ISO standard that referred to knowledge management was ISO 9001:2015, Quality Management Systems Requirements. The standard, albeit in its infancy, provided a useful and up to date mechanism on which to base the findings of this research. The document provides guidance on 19 mandatory requirements of a KM system. Requirements include documentation, knowledge flows, roles, enablers, action plans and communication (Lindsay, 2018).

Knowledge Management Project Success and Failure

Soja and Soja (2017) identify that *people, process* and *technology* are key areas in the adoption of systems in organisations. In relation to *people* and *process*, recent studies have shown that trust and leadership are key contributors to knowledge sharing and therefore to KM programme success. A study by Asrar-ul-Haq and Anwar (2016) into what obstructed and what facilitated knowledge sharing initiatives in organizations reveals some very relevant findings. The authors conducted a review of 64 relevant articles published between the years 2010-2015. Some of the factors that influenced successful programmes are listed as follows:

- Trust;
- Reward system;
- Culture;
- Open communication;
- Information technology;
- Top management support and effective leadership.

Factors that inhibited effective knowledge sharing were found to be as follows:

- A lack of trust;
- Lack of leadership;
- Negative organisational culture;
- Lack of absorptive capacity (ability to exploit external sources of knowledge);
- A lack of an incentive or reward scheme.

These findings can be compared to research I conducted prior to the delivery of the DF IKM programme, where over 200 surveys were conducted across 25 countries and organisations. There are some similarities with Asrar-ul-Haq and Anwar (2016) and some divergences. The findings of this research indicated the following prerequisites to success;

- Support of the highest level of management is secured first;
- Start with policies and procedures, then progress to technology;
- Informational needs of end users is needed before beginning;
- Ensure the information architecture is in place;
- Ensure technology is easy to use and has some social networking element;
- Ensure single 'point of truth' for information;
- Where possible train managers/leaders separately;
- Establish a reward system. (Bannister and Byrne, 2013).

Clearly, a reward system is important as it appears in all three sections. An example of how this can be implemented was offered by Davenport, De Long, and Beers (1998). They noted that Buckman Laboratories rewarded its top 150 knowledge sharers with a new laptop and a trip to a holiday resort. A recent paper entitled Why KM projects fail: a multi-case analysis, explores the failures of five KM project failures and outlines a model so that KM failure factors can be pre-empted (Chua, 2005). Milton and Lambe (2016) also outlined several case studies of successful and unsuccessful implementations from which valuable comparison and contrast can be drawn. The key tenets of strong leadership, trust, a reward system, and organisational culture emerge.

Resilience is also an emerging trend in IKM writing. This can be described system's ability to continue to meet its expectations in the face of challenges. It is the ability of project or programme to survive and become embedded into the fabric of the organisation (Barasa, Mbau and Gilson, 2018).

This section assessed the conflicting views on the measurement of IKM project implementation. Strong leadership a reward system and continued change management support have been identified as prerequisites for success. The best way to assess success is to examine the objectives that were planned in advance and assess if these objectives were met. This chapter identifies that Return On Expectations can be an effective way of assessing if objectives were met, particularly if senior leadership are engaged in the process.

2 Methodologies

A large amount of data was gathered using semi-structured interviews and surveys. The combination of both methodologies gave valuable qualitative and quantitative data for analysis and comparison. In total, fourteen senior level interviews were conducted. Four interviews were conducted with senior Irish DF leadership: the Chief of Staff, the Assistant Chief of Staff, the CIO, the Head of Information Systems for the Naval Service and a senior Air Corps officer.

Interviews were also conducted with senior experts in the field from outside the DF to give a non-military perspective and provide a wider optical gaze. Finally, eight interviews were conducted with international experts to give a further external dimension to the research. A survey was conducted for comparison with these results. This survey focused solely on

serving Irish DF personnel. Unlike the interviews, this survey did not focus on senior personnel, but was intended to obtain a broader understanding of the perceptions within the DF across all stakeholders and then feed the results back to senior leadership. These results were fed back immediately and anonymously.

Over one hundred and thirty personnel from all three services in the DF responded to the survey. These personnel engaged with the survey through passive selection. The link to the survey was posted to the homepage of IKON with an invitation to engage in the survey.

Interviews conducted:

Irish Defence Forces

- Vice Admiral Mark Mellett, DF Chief of Staff;
- Brigadier General Peter O'Halloran, DF Asst. Chief of Staff and previous CIO;
- Colonel Maureen O'Brien, DF CIO;
- Commander Brian Mathews, Irish Naval Service, CIO;
- Commandant Fabio Scallici, Irish Air Corps pilot and lead of IKON case study;

Ireland Non-Defence Forces

- Philomena Lyons, DPP Ireland, Senior Knowledge Management Officer;
- Dr Sandra Moffett, KM lecturer, University of Ulster;

International Experts

- David Oberhettinger, NASA/Caltech Jet Propulsion Laboratory (JPL) Chief Knowledge Officer;
- Tom Condon, NATO HQ IKM lead;
- Professor Patrick Lambe, President ISKO, Singapore;
- Professor Eric Tsui, KM lecturer, Hong Kong Polytechnic University;
- Paulo Da Silva, NATO JALLC Information Systems lead, Portugal;
- Captain Ramberto Torruella, CIO, US Navy 6th Fleet;
- Dr Nick Milton, VP of Knoco KM, author of the NATO Lessons Learned handbook.

Axiology

It must be acknowledged the connection that I, as the researcher, have to this DF IKM programme. As such, I acknowledge that the research will display my fingerprints. I fully accept this and have done everything possible to negate its presence. One way I did this was to use focus groups. Focus groups ensured bias was minimised in the construction of the questionnaire and the interview questions. Focus groups were also used in the interpretation of the results.

Findings

This rich data set has been analysed in the context of three major themes that emerged from a combination of the literature review and a thematic analysis of the interview transcripts. The transcriptions were analysed using thematic analysis. Open coding and axial coding was employed using cards with elements that emerged from the research written on them (Kendall, 1999). The main themes that have emerged from this analysis are *people, process* and *technology*. This links with findings of the literature review (Soja and Soja, 2017). Within these main themes, clear sub themes also emerged, these were *leadership, trust, resilience* and *scope creep*.

The first major theme of *people*, and its sub-themes of leadership and trust were particularly evident. Leadership was identified early in the literature review (Asrar-ul-Haq and Anwar 2016). The research revealed a lack of middle tier leadership during the programme roll out and a case of discontinued leadership post roll out. Trust also impacted adoption levels.

In second major theme of *process*, resilience was identified as a clear sub theme. Resilience can be described system's ability to continue to meet its expectations in the face of challenges. It is the ability of project or programme to survive and become embedded into the fabric of the organisation (Barasa, Mbau and Gilson, 2018). A clear challenge here has been the location of the IKM function within the organisation. Currently located in the J6 CIS branch, where it is perceived as an IT function and thus suffers from true cross boundary support and influence. This limits the effectiveness of the IKM process.

The final major theme is *technology*, and within this theme is the sub theme of scope creep. This is a theme which was evident in the literature review and one of no surprise to those in the technology sector (Shirazi and Tavakkoli-Moghaddam, 2017). Overall, the analysis of the programme under these three major themes reveals that while the IKM programme had some successful elements in the early stages, there now exists a clear gap.

This gap exists primarily around leadership but there is also a gap in the ability to reach all members of the DF on one

information platform. The result is that the IKM programme failed to deliver a return on certain expectations. Through the lens of the four initial objectives, this leadership failure is particularly evident in relation to objective three; recognising people's contribution to knowledge capital (Kirkpatrick and Kirkpatrick, 2010).

An interesting aspect of the findings is that the stakeholder perceptions and expectations varied according to the level of seniority in the organisation. Senior leaders were more dissatisfied than more junior members of the organisation. Kirkpatrick's ROE methodology explains this.

Senior members of the organisation had a greater understanding of what was expected from the system, as they were involved in its inception, and, therefore, had greater expectations. Senior leadership also experienced scope creep as the desire for the system to reach all serving DF members on one information system crept in, after a climate survey of the DF revealing poor internal communications. The findings of the online survey show that the majority of respondents were largely satisfied with the KM system IKON. For example they felt they saved time as a result of the introduction of the search function.
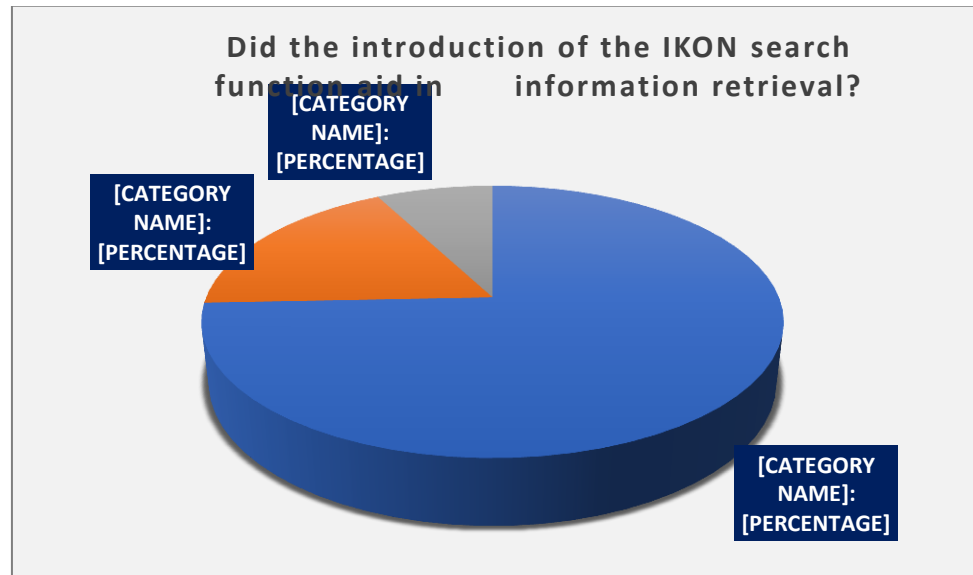

Fig.1: Increased Situational Awareness due to Search Capability.

If time is saved on routine tasks daily, then efficiency increases. This can have a dramatic effect in an operational environment such as getting a helicopter to transport an injured person to hospital.
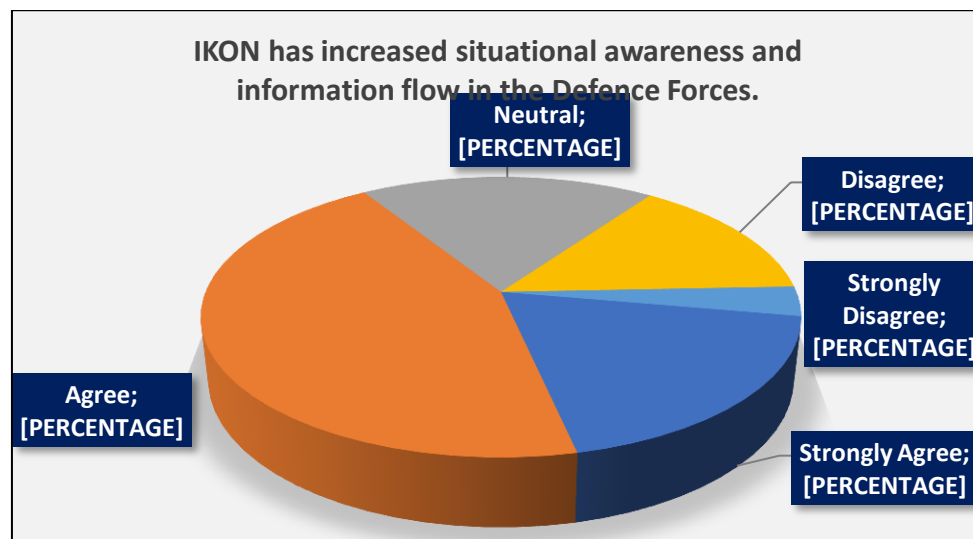

Fig.2: Increased Situational Awareness Overall.

Indications from the online survey reveal that situational awareness was increased as a result of the IKM programme and the rollout of IKON. This is supported in the interviews with senior command.
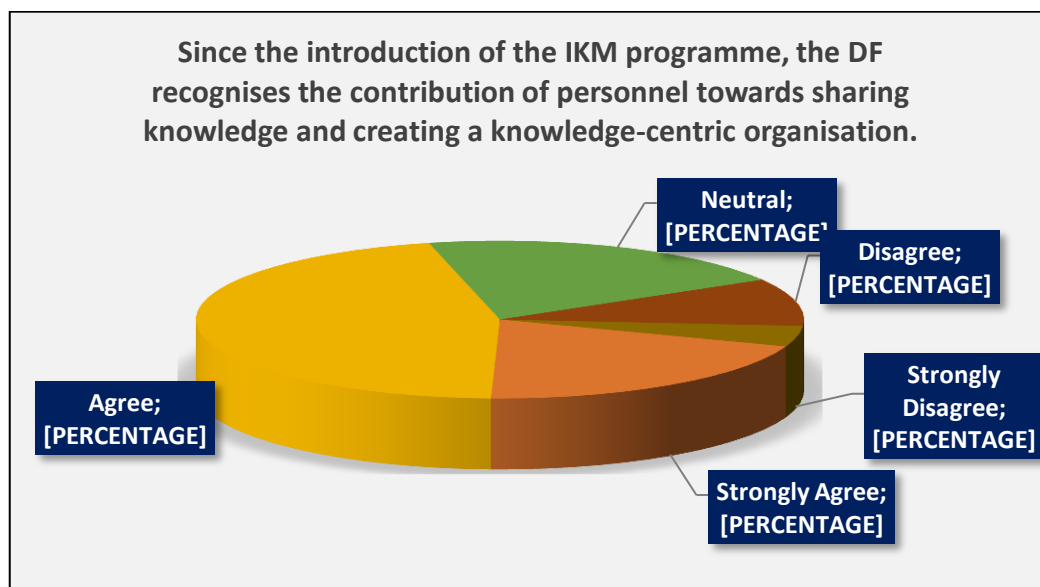
Fig. 3: Recognizing Knowledge Contribution.

The results of the survey relating to the recognition of knowledge sharing and the creation of a knowledge sharing organisation show that a majority agree with the statement that the DF recognises personnel who contribute in this area. This result is at odds with the answers given in the semi structured interviews where senior leadership openly acknowledge that regretfully "almost nothing" had been done to improve the recognition for personnel in this area.

Assistant Chief of Staff, Brigadier General O'Halloran commented that "I just don't think we have engaged in that process at all, and that's probably part of the cultural change that needed to come". The literature review showed that a reward system is a clear requirement for a successful KM initiative (Davenport, De Long and Beers, 1998, Bannister and Byrne, 2013, Milton and Lambe, 2016).

People, Leadership and Trust.

Expanding on the analysis of the people theme, and its sub-themes of leadership and trust, it emerged from the research that middle tier leadership was lacking during the programme roll out. The research suggested that senior leadership understood and supported the initiative; indeed they were the programme sponsors. The findings indicated that middle management were not engaged sufficiently to ensure sufficient understanding and compliance.

There has also been a case of discontinued leadership post roll out. Leadership was identified as an essential element of any KM programme early in the literature review (Asrar-ul-Haq and Anwar 2016). Cdr Mathews commented that "the Chief of Staff always supported IKON and saw the value as a communication platform. It took longer for the bottom-up support to meet the top-down support before the cultural acceptance was achieved." General O'Halloran also noted that engagement "has dropped off somewhat."

A possible reason for this is that all appointments in the section responsible for IKM are vacant and have been so for over a year. As asserted by the DF CIO, Colonel O'Brien "they have all moved," describing the recent lack of leadership she clarifies "there was nobody there… and because there is no leadership of it, it is dying."

International experts on the subject also supported the finding the leadership was vital, particularly in the early years of on IKM programme after go live. NASA/Caltech Jet Propulsion Laboratory (JPL)'s Chief Knowledge Officer, David Oberhettinger stated, "I view the main challenge to the IKM programme in the first few years after introduction as maintaining momentum. Institutional KM programs may fail if they lack leadership buy-in. The Irish DF has attained that, but duty assignments in most militaries tend to rotate every two years or so, and "selling" the KM program to the new bosses may present a challenge."

This was also supported by the CIO of the US Navy's sixth fleet, Captain Ramberto Torruella, who in describing a US experience, summarised what the Irish KM programme may be experiencing at present. He talked about the period post implementation as key in ensuring there is not a drop off in leadership. "That will be the critical transition. If leadership owns the KM concept… you can just call it process improvement or whatever…as long as it's still doing the same functions. I've seen it called information superiority or knowledge dominance. If leadership does not see the value, then the IM/KM programme has failed."

Dr Nick Milton, a leading KM author, agrees with the importance of leadership in the early stages. He describes it as "vital, without a clear accountable leader driving KM adoption and implementation, and clear consistent championship from senior management, it will fail."
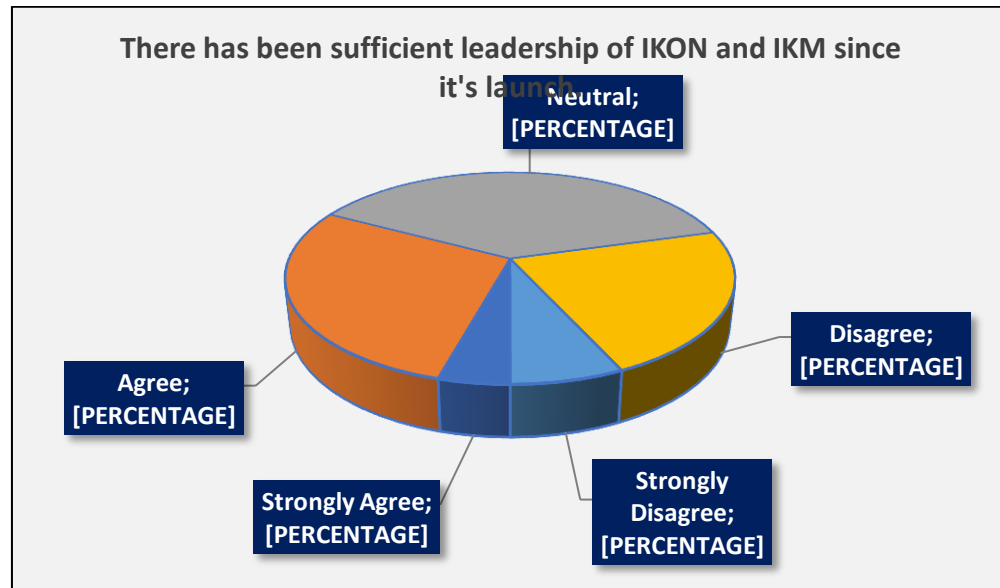

Fig.4: Leadership of IKM.

Results of the survey indicate that respondents were undecided if there had been sufficient leadership of IKM from its launch to present. The findings of the interviews found there had not been enough continued leadership.

Staying within the major theme of *people*, trust also impacted adoption levels. As commented by Cdr Mathews "military personnel don't trust what they can't see and it took a self-realisation of the DF to appreciate the value added through this approach to knowledge sharing and preservation before the buy-in became apparent."

Asrar-ul-Haq and Anwar (2016) note that trust is the number one reason for an IKM programmer to fail or succeed. A lack of trust is the largest barrier to knowledge sharing. This inherent lack of trust in the new or the unknown must be accompanied by strong leadership if an organization is to overcome it and achieve true resilience of a system. It was noted in the interviews that those who do not have access to the platform regularly do not trust the information and knowledge on it.
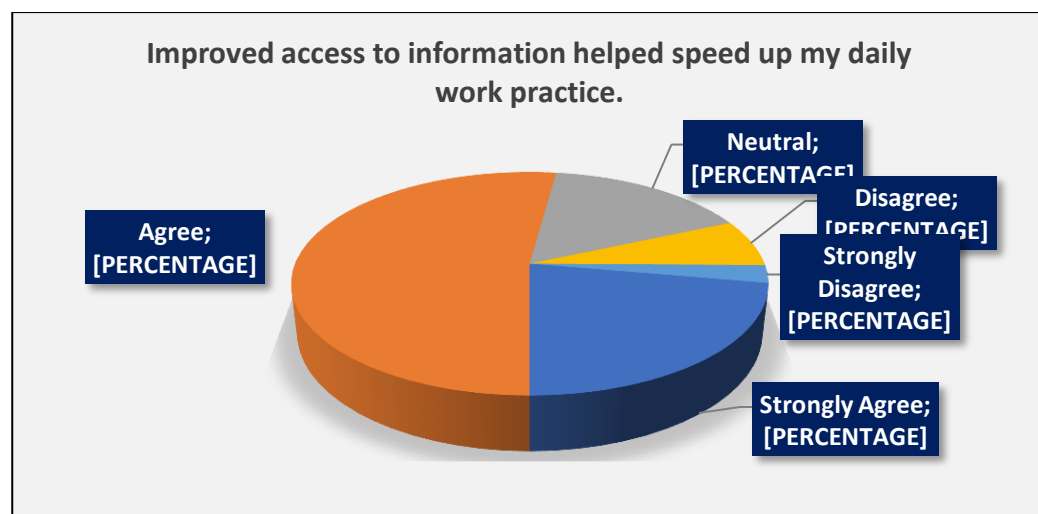

Fig. 5: Access to Information Speeds up Work Practises.

Figure 5.0 shows that improved access to information does demonstrably speed up work practises.

Technology and Scope Creep.

As noted earlier, and within the theme of *technology*, is the sub theme of scope creep. This theme presented in the literature

review and is common in the technology sector (Shirazi and Tavakkoli-Moghaddam, 2017). The particular details of the scope creep experienced in this case are insightful however. One of the biggest differentiating benefits of the technology element of this programme was the open and dynamic nature of communication on the IKM information system IKON, particularly on the homepage. This feature is remarked upon by outside companies as being something they strive to emulate but struggle to do so. Interestingly, this feature became one of the programme's biggest perceived areas of failure in the eyes of senior command; the inability to reach 100% of the DF population due to limited access to computers in the DF. This feature of 'enterprise social' communication functionality was never in the initial scope of the project.

What is interesting in this finding from the research, is that an examination of the project charter for IKON showed it focused on knowledge management, document sharing, information management and search capability. Enterprise social was a feature that 'crept' into the project because of the native capabilities of the software being used and a desire to drive engagement.

Process and Resilience.

Contained in the major theme of *process*, is the sub theme of resilience. This is highly topical in knowledge management research. Resilience is the ability of project or programme to survive and become embedded into the fabric of the organisation. It can be described as a system's ability to continue to meet its expectations in the face of challenges (Barasa, Mbau and Gilson, 2018). A clear challenge here has been the location of the IKM function within the organisation. Currently located in the J6 CIS branch, it is perceived as an IT function and thus suffers from true cross boundary support and influence. This limits the effectiveness of the IKM process.

This is noted by the CIO of the DF, Colonel O'Brien. Commenting on the project, she points out that "I don't think we managed the *management* of it... it was stuck on to the CIS (function). Information and Knowledge Management isn't CIS".

Professors Patrick Lambe and Eric Tsui and Dr Sandra Moffett agreed that to achieve "organisation crosscutting influence," IKM should be situated at an appropriate level in the organisation. They observed that its current location, within an IT function, is not optimal. IKM and IKON's resilience is challenged significantly due to sub-optimal positioning, a lack of leadership and decreasing engagement.

3 Conclusions

Using a Return on Expectations (ROE) framework measured against the four original objectives of the IKM programme, three major themes emerged and within these main themes, clear sub themes of leadership, trust, resilience and scope creep presented. The analysis of the programme under these themes reveals that while the IKM programme had some successful elements in the early stages, there now exists a clear gap. This gap exists primarily around leadership. The programme was more successful in promoting information sharing than knowledge sharing and management.

These findings are coherent with the recommendations of the new global standard for KM systems, BS ISO 30401 such as leadership roles, enablers and communication. There is also a gap in the ability to reach all members of the DF on one information platform, significantly, it was found that this creates a breakdown in trust. Finally, there has been no reward system put in place. The result is that the IKM programme failed to deliver a return on certain expectations in these areas. Through the lens of the four initial objectives, this failure is particularly evident in relation to objective three: recognising people's contribution to knowledge capital. This challenges the IKM programme's resilience and continued viability. Key recommendations for this and for future IKM programmes are:

- Ensure continued leadership, particularly post rollout. Focus on middle management leadership:
- Ensure a reward system exists for those who contribute to the knowledge capital of the organization:
- Ensure platforms for knowledge sharing can reach 100% of the workforce.

References

[1] Ajmal, M.M., Khan, M. and Hussain, M. (2018) 'Project scope creep: Reasons and solutions', *Information Review.*, **26**, 1464.

[2] Al Neimat, T. (2005) 'Why IT projects fail', *The project perfect white paper collection*, **1**, 1-8, 2005.

[3] Asrar-ul-Haq M., and Anwar S. (2016) 'A systematic review of knowledge management and knowledge sharing: Trends, issues, and challenges', *Cogent Business and Management.*, **3**, 1127744, 2016.

[4] Bannister, F., and Byrne, B. (2013) 'Knowledge Management in Defence', *Irish Defence Forces Review.,* 106-110, 2013.

[5] Barasa, E., Mbau, R., and Gilson, L. (2018) 'What is resilience and how can it be nurtured? A systematic review of empirical literature on organizational resilience', *International Journal of Health Policy and Management.,* **7(6)**, 491-503, 2018.

[6] Chua, A., and Lam, W. (2005) 'Why KM projects fail: a multi-case analysis', *Journal of Knowledge Management.,* **9(3)**, 6-17, 2005.

[7] Davenport, T. H., De Long, D. W., and Beers, M. C. (1998) Successful 'knowledge management projects', *Sloan management review.*, **39(2)**, 43-57, 1998.

[8] Kendall, J. (1999) 'Axial coding and the grounded theory controversy', *Western journal of nursing research.,* **21(6)**, 743-757, 1999.

[9] Kirkpatrick, D. (1976) *Training and development handbook: A guide to human resource development,* New York: McGraw Hill., 1976.

[10] Kirkpatrick, J. D., and Kirkpatrick, W. K. (2010) 'ROE's rising star why return on expectations is getting so much attention', *Talent Development; Alexandria.*, **64(8)**, 34-38, 2010.

[11] Lindsay, D. (2018) 'What Progress on Knowledge Management Systems – Requirements (BS ISO 30401)., *Refer*, **34**(1), 18-21, 2018.

[12] Milton, N., and Lambe, P. (2016) *The knowledge manager's handbook: a step-by-step guide to embedding effective knowledge management in your organization*. London: Kogan Page Publishers., 2016.

[13] Serenko, A., Bontis, N., and Hull, E. (2017) 'An application of the knowledge management maturity model: the case of credit unions', *Knowledge Management Research and Practice.*, **14(3)**, 338-352, 2017.

[14] Shirazi, F., Kazemipoor, H., and Tavakkoli-Moghaddam, R. (2017) 'Fuzzy decision analysis for project scope change management', *Decision Science Letters.,* **6(4)**, 395-406., 2017.

[15] Soja, E., and Soja, P. (2017) 'Exploring root problems in enterprise system adoption from an employee age perspective: A people-process-technology framework', *Information Systems Management.,* **34(4)**, 333-346, 2017.

[16] Tsui, E. (2018) '*Advice on contemporary KM programme assessment methodologies', Re: Information relating to KM project measurement* (email) message to barrybyrne7@gmail.com, Sent 26 August 2018.