Knowledge Management in Complex Project Environments

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Structure of Presentation

✓ Setting the Scene - Knowledge Management (KM)
  - How we view KM

✓ The Nature and Characteristics of Project Environments - Impact on effective KM initiatives

✓ Complex Projects - Why are they different?

✓ Project Leadership and KM Initiatives

✓ Mechanisms to Improve KM Initiatives in Project Teams and Project Environments

✓ Reflections and Conclusions
“Capital consists in a great part of knowledge and organization ....
Knowledge is our most powerful engine of production"

Alfred Marshall 1890
"The only irreplaceable capital an organization possesses is the knowledge and the ability of its people. The productivity of that capital depends on how effectively people share their competence ...."

Andrew Carnegie, 1835-1919
“Economists have ... for the most part, found the whole subject of knowledge too slippery to handle.”

*Edith Penrose Theory of the Growth of the Firm (1959)*
“Knowledge, during the last few decades, has become the central capital, the cost centre and the crucial resource of the economy”

Peter Drucker, 1969
Knowledge ...

“... a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers...” (Davenport & Prusak, 1998)

Characteristics of knowledge

- Dynamic - constantly changing through experience and learning
- Requires ‘knowers’
- Context dependent
knowledge

tacit knowledge

codification is incomplete

codification is incomplete

explicit
Knowledge Management

“The management of any process or practice of creating, acquiring, capturing, sharing and using knowledge wherever it resides in order to meet existing and emerging needs, to identify and exploit existing and acquired assets and to develop new opportunities”.

Growth in Knowledge Management Literature

Source: Gordon & Grant 2000
Current KM Struggles and Emphasis ...
What Do We Associate with Effective KM Initiatives – Organisational Perspective?

- Effective KM strategy linked to the wider organisational strategy – Good support from top management
- KM as a long term investment – not a ‘punctual act’
- Involves TR² (Trust, Respect and Reciprocity) – which takes time to build and embed within organisations.
- A stable culture which is rife for k-creation, sharing, capture, and for the benefits of KM to be measured.
- Incentivization of ‘knowledge workers’.
- Adequate resources for KM initiatives – to accomplish good/stable processes/systems and IT infrastructure.
Knowledge Management and Projects

“Projects are successful and innovations take place in projects because people within them generate and exploit knowledge”

Association for Project Management (APM, 2006)
Project-based industries ...

✓ Growing use of project-based forms of organising production and service delivery

✓ Wide number of industries
  – film and media
  – advertising
  – complex products and systems
  – research and consultancy
  – software
  – construction
  – design
Project Focus and Imperatives ...

- Problem solving
- Delivery of Project Objectives
- Speed of response/Actions
- Client (customer) preferences/demands/expectations
Nature and Characteristics of Projects

✓ Uniqueness (one-time activity) and determinate life
✓ Multi-firm networks - and temporary nature of project organisations - involving a multi-disciplinary team/multiple organisations (‘moveable feast’ of production)
✓ Loosely-coupled - weak ties between actors: Mobility of the workforce is very high - nomadic in many instances.
✓ Reputation-based competition - ‘swift trust’.
✓ Strong reliance on informal networks and collaboration, and ‘know who’ to locate the repository of knowledge.
✓ Little or no incentivisation for knowledge sharing, capture, transfer efforts.
The Project - KM Galaxy

The Firm

Management

R&D & technical support

Projects

Suppliers

Business Processes

Partnerships

Idea

Clients

Know-why

Know-how

Know-who

Know-what
Project Complexity

• “The extent to which a project, or one of its components, involves a large number of parts, and/or a large number of people, to be coordinated and/or interfaced. In project management, complexity is typically a reflection of the number of work packages involved and the number of different people required to carry them out.

Complexity of Projects

✓ A large number of different interrelated ‘project elements’ that require a large number of interfaces between them.
✓ Working with a large number of professionals, suppliers with varied backgrounds, cultures (and subcultures).
✓ Incorporation of advanced new technologies (incl. ICT)
✓ Changing project objectives, scope, and increase in change orders.
✓ Increased levels of risk and uncertainty.
✓ High levels of innovations
Example - The Wembley Stadium project - £757m

- Designed by Fosters and Partners and the International architects HOK; managed by Multiplex.
- 1500 working on the stadium at the same time at its peak
- Purchase of land and early design fees - £120m.
- Basic cost of building the stadium is £352m.
- Demolishing old stadium & fitting out new: £99m
- The contribution to local infrastructure improvements is £21 million.
- Financing project, management & other costs - £165 million.

How many organisations/supply chains involved? How do they communicate project knowledge?
Wembley stadium case study
Wembley stadium case study
Project Knowledge – Context and Content

✓ Context in which the project is initiated: knowledge between members of a team, between project and parent organisation, between multiple projects, and/or between multiple projects and the parent organisation (impact on the sharing and transfer of knowledge)

✓ Project knowledge expressed in operational terms - component of task performing system. A state of the ‘system’ which warrants task completion and future repetition of the task - Content
KM in Project-based Environments

✓ Project-to-Project (P2P)
  - the passing of experience and ideas from one project to another
✓ Project-to-Business (P2B)
  - the movement of experience from project teams to the central business functions
✓ Business-to-Project (B2P)
  - the dissemination and development of new skills and competencies in central departments to project teams
Project-based Learning ...

- Projects as episodes – opportunities to learn and do
- Learning is spasmodic, unpredictable and hurried - “learning while riding on a galloping horse”
- Project mentality - culture of heroism
- Flat structures and high levels of professionalism
- Distrust of systems and control
- Re-invention and re-innovation
Cross Project Knowledge

Important we ...

✓ Facilitate the re-use of the collective learning on a project by individual firms and teams involved in its delivery
✓ Provide knowledge that can be utilised at the operational and maintenance stages of the asset’s life cycle
✓ Involve members of the supply chain in a collaborative effort to capture learning (challenge in integrating the disparate ‘stores’ of project knowledge)
Institute a sharing culture - openness and willingness to share experiences across project teams - “espouse the law of increasing returns of knowledge” *(Cf. Boundary Paradox)*.

Define and communicate knowledge performance behaviours

Making knowledge performance part and parcel of project performance

Creation of knowledge teams - staff from all disciplines to develop or improve processes to effect k-communication

Introduction of knowledge webs and the provision of collaborative technologies (e.g. PIMS).

Create a risk tolerant climate - accepted that lessons can be learned through mistakes
Key Mechanisms to Improve K-Capture in Project Environments

- Live capture of project knowledge - use of long-lasting (frameworks) agreements with suppliers/sub-contractors to maintain continuity (and the re-use and transfer of knowledge in the delivery of project for a specific client)

- Capture of lessons learnt/best practices in operational procedures, design guidelines, etc - Post Project Reviews - repository of process and technical knowledge [knowledge from project to organisational base]

- Use of formal and informal feedback between providers and user of knowledge (e.g. site visits by office-based staff to obtain feedback on project/work progress)
Key Mechanisms to Improve K-sharing and Transfer of Knowledge in Project Environments

- Well organised project meetings - information well documented/archived
- Story telling (more formality needed here)
- Coaching (including Apprenticeships), mentoring approaches
- Use of Quality Circles
- Effective use of Communities of Practice (CoP) - internal and external to projects
Are we singing from the same hymn sheet?

community of practice
Communities of Practice (CoP)

- Learning a practice involves becoming a member of a community of practice
- Communities of practice - tight-knit groups of people who know each other and work together directly
- Peer recognition - slang, appropriateness, sense of taste, understood rules and conventions, “in the know”, part of a community
Personal exchange tools

- Post-project reviews
- Mentoring
- Brainstorming sessions
- Job rotation
- Informal interaction within project groups
- Informal interaction between project groups (social events)
- Induction courses
- Networking events
- Intra-firm meetings - retreats
- Technical expert meetings
- Exchange of personnel across project teams
Information exchange tools

- Intranets (expert listings)
- Extranets
- Lessons learnt databases
- Project databases
- Discussion boards (internal and external)
- Picture libraries
- In-house libraries
- In-company journals
- External journals (middle range publications)
- Project histories
- Electronic project files
- ‘Watch it’ notes
Knowledge in practice

- Build on what humans do best
- Avoid doing things that inhibit and restrict social knowledge processes
- Remove procedures and structures that prevent knowledge sharing
- Provide opportunities for knowledge sharing across boundaries
- Justification of KM? What is the cost of not doing it?
Reflections and Conclusions (1)

- Real challenges exist in effectively managing knowledge in project environments - The nature of project environments, the context and content of knowledge are culprits.

- Importance of forming long-term relationships/collaboration

- Project leadership has a role to play in improving knowledge management initiatives in project environments
Reflections and Conclusions (2)

✓ There are practical KM initiatives that can be adopted
  - Apprenticeships, coaching, mentoring, story telling
  and the use of IT enabled systems - e.g. project
  management information systems (PIMS)

✓ Need better ways to transfer knowledge and lessons
  learned from project(s) to organisational base
Thank you for your attention