CRIS 2014

Strategies for the management and adoption of impact capture processes within research information management systems

Laura Fedorciow[a], Julie Bayley[b]*

[a]*Vertigo Ventures, Albany House, Georgian Heights, Bourne End, Buckinghamshire, SL8 5NJ, UK*
[b]*Coventry University, Priory Street, Coventry, CV1 5FB, UK*

Abstract

Following the 2014 UK Research Excellence Framework (REF), attention across the Higher Education sector is turning to embedding impact measurement within the organisation. Impact is defined as the social, financial and environmental effects of research. Planning and capturing impact however is a difficult and resource-intensive activity, demanding both strategic commitment and infrastructure support. A means to systematically capture and monitor impact across the organisation is crucial to continued research success. In addition, with impact data capture as an emerging practice, there is the opportunity and necessity for a degree of standardisation in the approach to measuring impact across HEIs. Vertigo Ventures, an impact measurement consultancy, has been using and expanding its tool- VV-Impact Metrics with UK universities to support assessments by identifying impact pathways, impact indicators, evidence collection and analysis to improve the quality of the evidence and narrative. Vertigo Ventures has been working with Coventry University to use its VV-Impact Metrics tool in their self-service module (ERIC) to create a systematised data capture platform that can be readily used by the academic community to input data. This paper discusses the experience and learning from the process of embedding a solution institutionally.

1   Introduction

The UK Higher Education (HE) sector is under increasing scrutiny to demonstrate the impact of its research on the wider social world. Recent austerity measures, increased tuition fees and a growing climate of public

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* Corresponding author. Tel.: +44-7712-182321
  E-mail address: hello@vertigoventures.com / j.bayley@coventry.ac.uk

accountability obligate universities to transparently demonstrate spending, research excellence and ultimately a return on public investment. Universities expend sizeable resources reporting a myriad of institutional activities such as student numbers and PhD completions, and submit a vast body of monitoring data to agencies such as the Higher Education Funding Council for England (HEFCE) and the Higher Education Statistics Agency (HESA). As such the HE sector is highly experienced in large scale information management and reporting, a skill it increasingly needs to translate into impact management.

A key driver for UK research activity and performance monitoring is the ongoing series of Research Assessment Exercises (RAEs), succeeded by the recent Research Excellence Framework (REF) in 2014. Within these assessments, expert panels review research quality via the excellence of academic outputs and benchmark these against collaboratively agreed standards (up to a 4 star or 'world leading' rating). In REF 2014, a step-change in criteria led to the addition of impact as a weighted (20%) component of the overall score. Impact was defined as 'an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia'[1], a definition echoed by Research Councils UK[2]. The resulting scale of the effort to chase benefits, revisit external contacts and seek suitable evidence was complicated by difficulties in identifying impact and tracking stakeholders who had moved post. The sector is poised to adopt a more formal information management solution and avoid retrospective evidence gathering[3], particularly as good research assessment scores confer both financial and non-financial benefits to universities. REF scores − via a multi component calculation - determine the amount of central government finance for research through both Quality Research (QR) funding allocation and Researcher Development Programme (RDP) for PhD students. With the significance of impact expected to grow from a 20% to 25% weighting in REF2020[4 (p9)], the financial implications of impact are increasingly salient. Universities also gain higher reputation from good REF scores and can command an elevated position in HE league tables. Both factors incentivise universities to submit strong cases, whether they are likely to receive more financial or reputational benefit as a result.. In parallel impact is increasingly prominent in funding calls and research income activities. Horizon 2020, perhaps the most significant cross-European research funding opportunity at the current time with nearly €80 billion available over seven years (2014-2020)[5] places a weighting of 20% on the overall marks for the impact component. Undoubtedly the ability to plan, articulate, metricise and manage impact institutionally will confer a competitive advantage on those with the mechanisms to achieve this.

2   Organisational benefits of embedding impact

The impact agenda does not only serve external assessment or funding activities, but also the core business of the organisation. Most fundamentally, data on the effects of research support individual and institutional performance monitoring and give valuable feedback on public engagement with research. More strategically, such information underpins discourse and feedback across the academic/non-academic divide, creating a more generative context for impact creation. Where both the creators (academics) and the recipients (stakeholders) can collaborate effectively these benefits can be maximised, breeding further strategic success and creating a 'virtuous circle' of good impact. Ultimately this will be accelerated within those organisations which embrace and establish impact as part of 'Business As Usual' rather than an additional or tangential adjunct to the research process. More than ever, impact creation and capture need to be incorporated into organisational strategy to ensure a competitive stance against peers and a scalable operation. For this, senior leadership need to commit to the agenda and articulate how this vision translates to a departmental/individual level. Top-down commitment is also needed to provide time and resources to implement the necessary change management programme and leverage support from existing internal systems. In parallel those working from a bottom-up perspective (e.g. impact officers, academics) must be empowered to practically realise this vision and maximise the opportunities they identify. Such a conjoined approach is vital to an effective, sustainable programme of adoption.

3   Impact in practice

The current approach to impact is not yet standardised across the HE sector, although the need for better systems to track impact is being increasingly championed[6]. Aside from the necessity to submit narrative case studies for REF 2014, the underlying mechanisms to achieve this vary considerably between institutions. Now, with attention shifting to the next REF, impact information management is a priority and straightforward pathway approaches such as Kellog's Foundation Logic Model[7] offer useful conceptual frameworks (see figure 1).

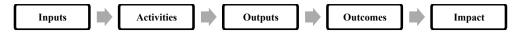| Inputs | ➡ | Activities | ➡ | Outputs | ➡ | Outcomes | ➡ | Impact |

Figure 1: Kellog Foundation Logic Model

This simple stepwise route from funding ('inputs') to impact is achieved via the delivery of projects ('activities') which produce dissemination ('outputs'), demonstrating findings ('outcomes') resulting in measurable benefits. However such flow models can mask the complexity and breadth of impact and the need to seek collaborators, involve stakeholders and navigate difficult contexts. Real world impact is a complicated concept in a shifting context and the intricacies must be understood if a comprehensive data management is to be successfully achieved. Attention must shift therefore to how this model is translated into guidance and frameworks for more complex impact pathways and accommodate a number of impact challenges:

3.1   Challenge 1: Non-standardised impact across disciplines or study phase.

A fundamental issue is the lack of consensus over impact meaning and application across disciplines and subdisciplines[8,9]. For academics working in highly applied fields with immediate outlets (e.g. commercially linked) impact is proximal to outcomes and easily realised. However for more exploratory or fundamental research, effects are far more distal and translation of results far harder to track. The time lag inherent to building a body of confirmatory evidence from fundamental research and translating into learning means potential impact may not be realised swiftly. Given the changing nature of the social context it is also possible that they may not be realised at all. Information management must therefore support capture in its broadest sense and help overcome disciplinary nuances within academia. Ultimately impact is achieved by a series of steps, whether known from the outset or identifiable only once unexpected impacts have occurred and information management can help academics to lineate the effects of their research.

3.2   Challenge 2: Intangibility

Cross-disciplinary differences are further confounded when impacts are not observable or tangible (e.g. determining the impact of a fine art exhibition). Impact rhetoric dictates that 'intangible' impacts can be gauged by proxy measures (e.g. footfall at events), but these do not capture the true value of the experience and can at worst be insultingly reductionist to the academic. Academia is not yet fully cognisant about how proxy measures are best applied and thus there is a continuing need to assess their suitability in generating a compelling impact story.

3.3   Challenge 3: Determining impact achievement

The iterative and evolving nature of real world approaches can also make it difficult to determine when an impact has been 'achieved'. Impact by definition is a change, but the necessary scale of that change may be subjective based on discipline or topic, overarching monitoring requirements (e.g. REF) and the stability of the beneficiary group (e.g. commissioning body remains in existence). Furthermore impacts can lead to follow on activities which trigger secondary, indirect impacts or 'ripple effects'. A conceptual diagram of how this may work in practice is provided in Figure 2. The challenge for information management is to capture the impact demonstrated, with the clearest pathway and evidence, and support institutions to appraise the merits of these appropriately.

3.4   Challenge 4: Attribution and ownership

Impacts are rarely generated by an academic in isolation from peers or stakeholders. More often they are the result of a collaborative effort within and beyond academia, complicating the attribution of achievement or ownership of the impact. In the academic environment where intellectual property is a primary currency for reputation and progression, concerns over ownership cannot be underestimated. Information management processes can support this by evidencing achievements across the lifecycle of the impact (such as the approach shown in figure 2). Demarcating the contribution of specific academics to impacts throughout the project can help reduce the concerns over ownership and foster a more collaborative approach.
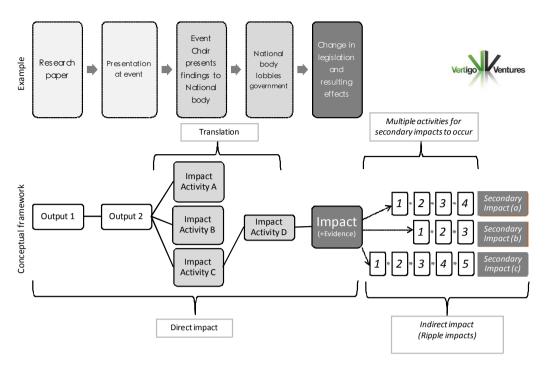
Figure 2: Conceptual diagram of primary, secondary and 'ripple' impacts
VV-Impact Pathway Model (copyright Vertigo Ventures Ltd 2014)

4   Role of Information Management

Information management is therefore integral to the growing model of impact, with a rapidly growing and reconfiguring body of information for multiple stakeholders. The need for a fit-for-purpose system is reflected in a HEFCE commissioned review of impact evaluation[9] which emphasised the need for practical approaches without excessive workload. Increasingly there is also likely to be need for specialist input as although HEFCE is 'initially proposing a relatively simple methodology (to assess impact), the history of the RAE suggests that this approach will over time become more ever more sophisticated'[10(p247)]. For institutions to meet this new decree, they must successfully and simultaneously embed both a culture of impact with a comprehensive information management solution. Current organisational Content Research Information Systems (CRIS) are unlikely to offer an effective 'institutional memory', as the complex and interwoven nature of impact needs bespoke system architecture. Collaboration between impact experts and impact management is crucial as the academic sector becomes increasingly hungry for viable data management solutions which:

- enables multiple end users (e.g. academics, organisational leads, commercial partners) to appraise and collect high quality impact evidence rather simply focusing on data input
- optimises ease of capture and storage of impact data to support facilitated or self service academic use and institutional reporting
- supports adoption and engagement through clear impact planning pathways and appropriate vocabulary

4.1   Information management solutions

Impact data management tools needs to provide standardised metrics and support a common vocabulary of impact, with necessary sensitivity to cross-discipline nuances. The nascency of large scale impact management coupled with the immediate need means the information management agenda must be accelerated. Over a minimal time frame information management support needs to:

- Provide an architecture for the input, storage and reporting of data, by and for multiple users and with simplified access. Notably such solutions are crucial to mitigate the risk of staff turnover, transient evidence (e.g. URLs deleted) and other such changes which limit the long term fidelity of a system
- Provide specific, additional functionalities to any other existing CRIS capabilities and work with organisational systems to avoid duplication of effort or data.
- Support cross-institution collaboration as organisations seek closer links with research partners
- Support the existing attribution and time lag challenges with impact reporting
- Provide strategic insight to inform decision making
- Provide visibility on performance, including past, present and future forecasts as appropriate

5   Evolving Solution – VV Impact Metrics

Vertigo Ventures (www.vertigoventures.com) was founded in 2009 to support organisations demonstrate their social, financial and environmental impact using empirical evidence. Vertigo Ventures developed a database of impact information – called VV-Impact Metrics – providing a framework for identifying and capturing pathways to impact at the organisational and project levels. The system supports impact pathway planning and monitoring to generate greater impact with evolving metrics[11]. VV-Impact Metrics has been developed for use across sectors (including industry), is aligned with international reporting guidelines and has already been used for impact reporting across academic disciplines. It builds on the Kellogg's Foundation Logic Model approach, and aligns with the CERIF schema for impact data management[12]. VV-Impact Metrics provides:

- Consistent and standardised indicators, providing comparability and opportunity for data aggregation.
- Structured impact data, allowing central teams to generate organisational performance reports for key stakeholders and providing defendable, attributable data for monitoring and grant writing (e.g. Horizon 2020)
- A flexible and evolving framework which grows with use and the impact agenda
- An institutional memory to overcome issues of academics moving between organisations
- Interoperability between the impact system and existing CRIS and related systems.
- Interoperability and commonality across academic and non-academic sectors for outcomes based reporting
- Auditable data via real-time impact evidence collection along a defined pathway. Organisations can track impact and monitor impact, amplify the reach and significance and accurately demonstrate the role of the research in generating this.
- Identification of both prospective and retrospective impact pathways to support impact planning from project inception

VV-Impact Metrics has been incorporated into Coventry University's Impact Capture system and continues to evolve through live use.

6   Coventry University Impact Capture System

Coventry University (www.coventry.ac.uk) have made substantial headway in developing and adopting an institution level impact management system to support academic and research support staff engage in this agenda. Coventry has a tradition of highly applied research activity and was rated the 'Modern University of the Year' by *The Times and Sunday Times Good University Guide 2014.* With a national and international student body of 24,000, the university is ranked 33rd in the UK and in the Top Ten Universities for 'added value' (*Guardian University Guide*, 2014). During the REF 2014 process, a team headed by Corporate Development identified the potential for a more standardised institutional approach to impact management. In 2012 Coventry successfully secured JISC funding[13] to develop a prototype impact capture system supporting a metricised approach to managing impact data. The aim of the project was to design and pilot an academic self-service impact system offering the means to plan, record and store evidence of impact over time. The result was a database led drop-down menu solution, piloted in a health psychology team and developed in equal partnership between business leads, information management specialists and academics. Methodologically the pilot development of the Embedding Research Impact at Coventry (ERIC) system consisted of:

1) Needs assessment with stakeholders (led by Business Development staff): Identification of requirements for staff, support and beneficiaries from the impact agenda
2) Content development (led by academic partner): Review of existing impact frameworks (e.g. REF 2014 guidelines) and the development of impact matrices to support translation into a linear technical solution
3) Technical development (led by information management and programming experts): Translation of the content matrix into a logic based programme embedded in the existing research management system
4) Pilot testing (led by academic): System and content testing with academics

Upon completion, the institutional potential for the system was recognised at the senior level, resulting in a Vice Chancellor commission to develop and rollout university-wide. The team are now progressively developing and rolling out a full solution, iteratively repeating stages 2 (content development) and 3 (technical development) in response to feedback. The development of ERIC has been substantially accelerated by the incorporation of the 2000+ impact indicators from VV-Impact Metrics database; in turn VV -Impact Metrics has been updated based on the feedback academic users. Coventry University is the first university to develop and systematically roll out an in-house, bespoke impact module tool across the organisation, providing critical insight for the rest of the higher education sector

6.1 System summary

Coventry's system equips academics and research support personnel to plan impact from project inception and capture the effects throughout (and beyond) the project lifecycle. Impacts are planned / entered using a series of four logic-based drop-down boxes, articulating impacts from the broad area down to the indicative metrics, with evidence subsequently stored in a dedicated repository. These indicators allow academics across multiple disciplines to identify, monitor and record impact data systematically. Staff can add a narrative description, request impact types or evidence not listed and grow the system organically through shared use. ERIC also includes email reminders to keep impacts 'live' and support real time monitoring. The system is supported by central and faculty based research support personnel who can use the system to frame discussions about impact at the funding, delivery or dissemination stage. Additionally ERIC provides a reporting function to support institutional monitoring of patterns of activity and emerging profile of impact. The programme of development includes a broad programme of information management development, strategic support, staff engagement and academic training and behaviour change. The Coventry experience strongly suggests that these issues need to be developed in parallel as the context for impact is so complex and shifting.

6.2 Consultation

A consultation with academic, business/research support staff and strategic leads (total of 30 individual interviews plus a series of discussions with strategic groups) was held in late 2013. In a think-aloud study[14] staff were asked to use the system whilst verbalising their experience whilst a researcher recorded their feedback to assess the acceptability of the system as a self service tool. Results were used to edit ERIC and determine areas of system redevelopment. Interviews were also underpinned by a behaviour change approach, identifying barriers and facilitators to system use (see table 1 for a summary of results). Time constraints and workload offered the main barriers to engagement, whilst training and awareness raising activities offered the most support.

Table 1: Summary of barriers and facilitators to impact system use

		Frequency
Barriers	Time constraints and workload	18
	Access to/familiarity with research management system	12
	Limited understanding of impact / benefits of the system	9
	System use difficulties	6
	Attribution or tracking of impact	5
Facilitators	Training and support	20
	Raising awareness of impact and the system	18
	Edit the content and navigation of the system	16
	Link systems and embed processes across university	10
	Utilise / produce reports from system (including REF)	6
	Improve ease of access	4
	Increase relevance of impact to academics	3

6.3   Usage

Whilst the pilot process was stepwise, the full rollout has been far more complex and iterative. Initially rollout was envisaged as additional content development, technical revision and a subsequent launch, but the complexities of scaling up across the institution became swiftly apparent. In parallel the central CRIS system was under review and thus development of the technical workflows decelerated in case the system changed. Ultimately the project became a large scale development project in a shifting context, underpinned by varied levels of impact awareness and engagement. The development and integration therefore evolved thus:

- *Phased launch*: The planned full 'launch' was revised to address the barriers identified and ensure an acceptable system was produced. A modified phased launch focused on the system and awareness-raising in parallel, and is providing a strong base into which an integrated system can be successfully introduced.
- *Offline use*: anecdotal reports suggest that the system content is being used by academics to guide impact thinking, but not yet to formally log impact. This represents in part the emergent nature of impact consciousness and that the viability of a metricised solution depends on first building a level of engagement and awareness around impact. This is under review and further engagement activities are planned
- *Academic advice-seeking*: Whilst envisaged and still planned as a self-service system, ERIC has prompted academics to seek impact advice from the central specialist. This demonstrates the growing engagement with impact institutionally and the need for recognised support structures internally.
- *Alignment with funding team*: The impact management role is strategically placed centrally to build institutional capacity. However in practice the most extensive use of the expertise so far is at the pre-award level to support bid writing and has ranged from broad discussions to metricised planning. This alliance helps to optimise impact engagement from the outset of a study.
- *Broadening the impact agenda beyond REF:* Whilst REF 2014 has been a key driver in the impact agenda, it has also left a legacy of challenges at the ground level. There remain for the foreseeable future a range of ongoing concerns from academic staff reflecting scepticism and suspicion over the need to centralise/metricise information; non linear and intangible impact; cross-disciplinary definitions; and distaste at the conflation of impact with financial benefit (eg. QR funding). To overcome these, Coventry's impact strategy encompasses a broad approach to impact, supporting colleagues in all types of research activity and offering training and awareness raising activities. These in combination are progressively diluting these challenges and will continue to break down barriers to engagement.
- *Information management:* Information fidelity is dependent upon good quality data input, which is itself dependent upon sufficient knowledge and engagement with impact. Coventry are addressing this by (1) improving instructions and system navigation information (improving input processes) and (2) tackling person-level factors (improving knowledge and engagement). Currently Coventry is undertaking a more detailed analysis of behavioural determinants, borrowing the 'Precede-Proceed' model[15] from health studies to identify predisposing, reinforcing and enabling factors in impact management. This, in conjunction with improving information management workflows will help engage staff most effectively.

6.4   Next steps

Coventry University is supporting the impact agenda through multiple parallel activities, and the ERIC system is integral to the strengthening strategic vision. Moving forward focus will be on training and system adoption in parallel as part of a wider, long term change management process. Additionally the principles and processes for incentivising impact – including how this links to remuneration – are under review. Currently impact is too emergent across the sector to determine how to most fairly and appropriately apportion rewards. Ultimately the impact agenda can only become normalised as 'Business As Usual' through both individual and organisational culture change, and Coventry remain committed to the time and resources required to achieve this.

7   Conclusion

There is a growing and increasingly urgent need for smart and integrated management of impact data across the HE sector Approaches such as VV-Impact Metrics and the ongoing implementation of these at a university level offer great promise for managing such a complex activity.. The successful development, adoption and integration of an impact system depends on multiple individual and organisational factors, the strategic vision for which is to

embed impact as 'business as usual' not as an adjunct. The impact agenda is still evolving, with greater standardisation occurring as it matures, and solutions will continue to evolve in line with the higher education sector requirements and standardised practices. Successful approaches must incorporate culture and behaviour change as a system-only approach will be minimally effective. It is imperative that organisations draw on the expertise of information managers (for system architecture and data processing), impact specialists (for expert knowledge of the pathways and metrics), central administrative and business support (for institutional reporting requirements), staff whose roles align with impact (e.g. knowledge transfer, marketing, learning and development) and academics (as super users). The ultimate solution must also break down academic-administrative/business divides alongside cementing partnerships with external stakeholders to maximise impact opportunities. Such endeavours must also be underpinned by a standardised impact taxonomy, particularly as international growth of the impact agenda demands consensus and commonality of understanding. As the sector understands more about impact, such tools evolve further to meet the needs of the marketplace (e.g. through the experience of demonstrating impact for the REF and the challenges of proving the reach and significance of impact retrospectively, Vertigo Ventures are evolving their VV-Impact Metrics into a proprietary software application currently marketed as the 'VV-Impact Tracker'. This provides users with the ability to identify, collect, store, manage and aggregate impact performance information and will be used within the HE sector. Ultimately the impact agenda requires solid solutions as it grows in both assessment weighting and international visibility. A combined approach of technical, person-based and impact specialism offers the most promising approach to realising impact at the highest level.

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