A theory of continuous improvement, designed to facilitate learning and innovation between the for-profit and the not-for-profit sectors.

1 Introduction

This paper forms part of a wider research project looking into how for-profit and not-for profit organisations can improve performance, innovate and learn from each other, by using a unified theory of continuous improvement.

The initial spark for this research came from two related projects with organisations operating in differing sectors. The first project, for a for-profit organisation, had the stated aim of "introducing a culture of continuous improvement" into the organisation. The second, for a not-for-profit organisation, was less well-defined, but essentially aimed to improve the performance of a charity store, by increasing revenue (proceeds) to support the charity.

These two related projects, led the author to the question of whether "continuous improvement" could be applied in the not-for-profit organisation, in the same way as it was being applied in the for-profit sector.

This simple question then led the researcher into some broader research questions. The first was around the term continuous improvement itself, what is it, where did it come from, where and why is it done? This led the research into an investigation into the origins and development of continuous improvement and a search for an underlying theory of continuous improvement that could be applied to the profit and not-for-profit sector.

As the research progressed, the questions were refined and revised, and eventually led to the questions defined below:

a) Is there a single theory of continuous improvement that can be applied across the for-profit and not for profit sector?
b) Would such a theory assist profit and not-for-profit organisations to share knowledge and ideas across the two sectors and mutually improve their continuous improvement efforts?

The research into these questions has found that there is an abundance of information on continuous improvement, and a growing amount of research into continuous improvement for the not-for-profit sector. However, it appears there is limited research on whether one single continuous improvement approach could be developed for both types of organisations, and whether this would assist with the generation of ideas and knowledge sharing between different organisation types.

The research suggests that there is a flow of ideas and information from the for-profit to the not-for-profit organisations, but there is very limited knowledge and ideas sharing in the opposite direction. For those practitioners working in the for-profit world, this is a missed opportunity. We propose that there is significant untapped opportunity to share ideas across the two sectors.

To illustrate one example; for-profit managers are often looking to increase engagement from their staff; engagement is usually a key tenet of most continuous improvement programmes. Not-for-profit organisations have a similar challenge in that they also strive to engage their volunteers, and arguably not-for-profit have a greater challenge, in that they have reduced funds for large scale internal communication programmes and their volunteers are not bound to the organisation by any contract or financial remuneration incentive. Where better for a for-profit organisation to learn about engagement than from a sector that relies almost fully on engaged volunteers to run their organisation?

It is posited that there is an opportunity for both profit and non-profit organisations to work together and share ideas on how to introduce continuous improvement into their respective businesses.

The objective of this paper is to review existing literature on the topic of continuous improvement with the aim of establishing if a theory of continuous improvement already exists that would help profit and not-for-profit organisations to improve organisational performance through learning and innovation

2 Outline of the paper

The term "continuous improvement" has become almost ubiquitous across a range of organisational functions and research fields. To review the term from a holistic perspective, a systematic literature review method is applied.

To structure the findings from the systematic literature review, a theoretical framework provided by Schmenner and Swink (1998), is used to assess if a theory of continuous improvement already exists. The literature is reviewed with the aim of testing if "continuous improvement" stands up to the five tests of a good theory, proposed by Schmenner and Swink (1998). Namely,

1) *The phenomenon for which explanation is sought should be clearly defined. This clarity is enhanced by unambiguous measures.*
2) *The description of the phenomenon will likely centre on some observed regularities that have been derived either logically or empirically*
3) *There should be one or more precise statements of these regularities (laws). Mathematical statements of the laws will naturally help the precision*
4) *The theory should indicate a mechanism….that explains why the laws work as they do and how, and in which ways, the laws may be subject to limitations*

5) *The more powerful the theory, the more likely it will unify various laws and also generate predictions or implications that can be tested with data.*

The outcome of the assessment of continuous improvement against the above criteria is presented in the main body of this paper. To begin, the paper begins below with an overview of the methodology of the systematic literature review applied

3 Systematic Literature review of continuous improvement

Machi and Mcevoy (2009, p 4) define the systematic literature review as "a written document that presents a logical argued case founded on a comprehensive of the current state of knowledge about a topic of study" The six steps in the process are:

1. Select a topic (specifies and frames)
2. Search the literature (explores and catalogues)
3. Develop the argument (organises and forms)
4. Survey the literature (documents and discovers)
5. Critique the literature (advocates and defines)
6. Write the review (address the topic)

The above framework is used as a basis to present the findings from the systematic literature review on continuous improvement.

Exploration of the literature on the subject of continuous improvement and in the specific domain of for-profit and not-for-profit organisations.

To obtain a broad perspective on the literature available on the topic, an initial search was carried out on the broader term "continuous improvement" and a separate search to identify papers on continuous improvement related to the not-for-profit and charity sector. Three databases were searched: Emerald, Business Source Premier and google scholar. The criteria were first applied to each database and the top 20 articles in each database were considered.

A detailed review of these 20 articles found that the papers in the Emerald database were the most relevant for the topic, and hence the literature review focused on this database.

Firstly, a very high level review of all available literature from the Emerald database was considered.

Table 1 : Published Articles on Continuous improvement published on Emerald Database 1951 - Present day

Terms searched	Publication Date between							Total published articles
	1951 & 1960	1961 & 1970	1971 & 1980	1981 & 1990	1991 & 2000	2001 & 2010	2011 & 2020	
"continuous improvement"	6	9	22	146	2907	4032	1798	8920
"continuous improvement" And "non-profit"	2	1	1	3	91	210	102	410
"continuous improvement" And "charity" or "charities"	0	0	1	1	40	79	46	167

As indicated above, three separate terms were searched; the results of the search were then classified into year of publication. Note that the present decade is not complete, and it is expected that number of articles between 2011 and 2020 will exceed the previous decade.

The results of this high level analysis are in themselves revealing. The research shows that there has been a growing body of research on the subject of continuous improvement over the last sixty years, resulting in a total of 8920 articles (search was carried out on 26 Nov 2014). Similarly, there has been a growing body of research on continuous improvement in the non-profit sector, but the number of articles is relatively small (less than 5%). Furthermore, as non-profit can also include government bodies and other non-charity organisations, a deeper focus on “continuous improvement” and “charity or charities” reveals that published research is even more sparse with only 167 articles (less than 2%) focused on this topic.

Although the research could have gone deeper, to carry out additional searches to include wider continuous improvement references, such as “process improvement”, “business

improvement", "lean" or "TQM", and also wider references to the charity sector, such as "voluntary organisation" and "not-for-profit", it was decided the table above is representative of the general development of continuous improvement, and the relative focus of continuous improvement in the charity sector. With more than 8000 articles identified, the next step was to focus the research.

To do this, the author began by reviewing the top 50 articles in the Emerald database with the general topic of "continuous improvement" and the top 50 articles with the topic "continuous improvement" AND "charit*".

This search generated links to other papers, both through citations and references, which were then reviewed and included in the literature review if considered relevant. In total more than 150 papers were reviewed as part of the initial literature review process. All papers reviewed can be found in the bibliography of this document. This wide search generated results from a range of papers, from trade magazines to peer reviewed academic journals.

With such a broad term, it was decided to apply a more rigorous and focused criteria to limit the number of articles critiqued. To do this, specific criteria were defined, these criteria are outlined below.

Required	Metric
Citations	> 10
Publication	Only peer reviewed and published academic articles.
Methodology	Qualitative (Case study) Qualitative (framework) Quantitative (empirical)
Page length	> 10 pages (min 7000 words)
Year range	Jan 1980-present day
Search terms in title or abstract	"continuous improvement", and "lean" or "6-sigma" or "TQM" or "learning org*, "quality", "innovation", "agile"
Sectors	Included : Private sector / not for profit sector Excluded : Government, public service
Searched databases	Emerald
Other comments	The author will create a list of all articles found using the above search criteria, and then to facilitate replication of the study, the author will

	identify which articles were included and excluded from the systematic literature review Some articles that fall outside of the above criteria may also be included in the systematic literature review if they are considered as highly influential in the field. These articles will also be noted in the appendix of the study to facilitate replication

Table 2 : Articles included in Literature review, by decade and journal of publication

Even when applying the limiting criteria above, which reduced the number of papers from the initial 150 to a more focused 51, the analysis demonstrates that the subject of continuous improvement is indeed broad. In fact, the 51 papers reviewed were found to be published across 30 different journals. It is perhaps worth noting that although topic of continuous improvement is clearly well researched, there is no dedicated journal for this subject, as there are specific journals for TQM or Lean.

	Decade published			
Journal Published	90's	00's	2010 to present	Grand Total
Administrative Science Quarterly		1		1
Asian Journal on Quality		1		1
Benchmarking: An International Journal		1		1
International Journal of Contemporary Hospitality Management	2			2
International Journal of Health Care Quality Assurance	1			1
International Journal of Lean Six Sigma			1	1
International Journal of Operations & Production Management	4	1	1	6
International Journal of Organizational Analysis	1			1
International Journal of Production Research			1	1
International Journal of Productivity and Performance Management		1	2	3
International Journal of Public Sector Management			1	1
International Journal of Quality & Reliability Management	1	1	2	4
International Journal of Quality Science	1			1
Journal of Communication Management	1			1
Journal of Educational Administration		1		1
Journal of Manufacturing Technology Management		1		1
Journal of Operations Management	2	2		4
Journal of Quality in Maintenance Engineering			1	1
Learning Organization The,	1	1	2	4
Management Decision		1		1
Management development review	1			1
Management Science	1			1
MIT Sloan Management Review.	1			1
Quality Assurance in Education		1		1
Team Performance Management		1		1
Technovation		2		2
The IUP Journal of Operations Management			1	1
The TQM magazine	1	2		3
Total Quality Management		1		1
Work Study	1	1		2
Grand Total	**19**	**20**	**12**	**51**

As indicated earlier in the document, the above 51 articles are then reviewed in more detail against the criteria proposed by Schmenner and Swink (1998) to test whether a good theory of continuous improvement already exists. Before doing this however, the section below provides an overview of the historical development of continuous improvement to provide a background to the later critique

4 What is continuous improvement?

Research info the topic of continuous improvement is not new. Papers by Locke & Jain (1995), Bond (1999), Caffyn (1999), Savolainen (1999), Terziovski & Sohal (1999), Bessant and Francis (1999), Bessant, Caffyn & Gallagher (2001), Jorgensen et al (2003), Bhuiyan and Baghel (2005), Marin-Garcia et al (2008), Putnik (2012), Colledania et al (2010), Maletic et al (2012) among other have addressed the subject in detail.

Caffyn (1999) noted the increasing popularity of the term Continuous Improvement and states that the term has become associated with a variety of organisational developments including the adoption of "lean manufacturing" techniques, total quality management (TQM), employee involvement programmes, customer service initiatives and waste reduction campaigns.

Despite, or perhaps because of the breadth of research on the topic, the systematic literature review found many different definitions of the term "continuous improvement" and also found a number of academics who criticise the existing definitions used. Zangwill and Kantor (1998) for example, indicate that the concepts of continuous improvement are "abstract and imprecise" and Bessant et al (1999) point out that confusion remains around the term continuous improvement, as it "refers not only to the outcomes but also to the process through which these can be achieved". (Bessant et al 1999).

In terms of the definitions used, the literature review found a number of examples, including Bhuiyan and Baghel (2005) who define continuous improvement as a "culture of sustained improvements", Locke and Jain (1995) who define continuous improvement as "any and all organisational efforts designed to inculcate a culture of continuous improvement and change, which fosters continual learning and innovation within the organisation" and (Bessant et al 1999) who define continuous improvement "as an evolution of and aggravation of a set of key behavioural routines within the firm"

Other authors focus more on the practical use of continuous improvement. Marin-Garcia et al (2007) for example refer to continuous improvement as a "weapon for maintaining and improving competitiveness", which is similar to authors such as Bacdayan 2001 and Grutter et al 2002 who refer to the more practical use of continuous improvement and see it as "tool

for implementing wider systems of production such as TQM or Lean" (Marin Garcia et al, 2008)

The above definitions highlight the first point of ambiguity around the term "continuous improvement". Is it a concept, philosophy and set of behaviours or is it a collection of tools and techniques? Or is it both? This ambiguity is addressed later in this paper, but first a number of other ambiguities around the term continuous improvement are explored.

The second point of ambiguity around the term continuous improvement is related to whether continuous improvement is limited to improving what is already done, or also includes doing new things and innovating. Bessant et al (2001) indicate that continuous improvement is a "set of routines for doing what we already do better", but goes on to say that "there is emerging evidence that this capability (of continuous improvement routines), once established can also contribute to doing new things – to innovation routines. (Bessant et al 2001).

A third point of ambiguity is related to whether continuous improvement is an organisational, team or individual level phenomenon. Bessant et al 1996 imply that continuous improvement is organisation wide, specifically defining continuous improvement as "an organisation-wide process of sustained incremental innovations" (1996). This implies that continuous improvement is something that must be carried across the entire organisation. In contrast, Imai (1997), states that continuous improvement is a more "personal and individual philosophy that can be applied in working life, social life or home". Imai uses the term Kaizen in this reference, but also states that Kaizen is synonymous with term continuous improvement

A fourth point of ambiguity is related to the scale and size of change that continuous improvement refers to. For authors such as Imai (1997), continuous improvement only refers to small, incremental changes, and it specifically does not include radical or quantum leap change approaches. Singh and Singh (2013) appear to agree with this limitation, stating that "continuous improvement strategies are the recognised way of reducing waste by focusing on small incremental changes" as do (Bhuiyan and Baghel, 2005) who state that CI generally

relates to small incremental improvements without the need for huge capital investments. Although these authors agree that continuous improvement is only related to small improvements, the ambiguity around what defines small still remains, and how and why should practitioners identify and use different approaches for different size projects.

A fifth point of ambiguity is whether learning is a separate topic from continuous improvement or if the two are inextricably linked. Locke and Jain (1995) emphasise the close link between the two and state that it is often impossible to distinguish one from the other. Bessant (2001) also indicates a strong link between continuous improvement and learning, where he argues that achieving the highest level of his model of continuous improvement maturity is equivalent to becoming a "learning organisation".

A sixth point of ambiguity is identified by Bessant et al (2001) who state that "there is considerable confusion in the way the term continuous improvement is used, since it is deployed as a verb - the process whereby a continuous stream of innovations emerge – and also as a noun, referring to the outcome of that process". The ambiguity here relates to whether continuous improvement is a means to an end, or whether it is the outcome of the means, or both.

As continuous improvement has become such a wide ranging term, with a number of ambiguities as defined above, it is perhaps not surprising that some authors abandoned attempts to create a definitive view of continuous improvement, with Michela et al stating

> "Because a shift to continuous improvement as a way of working has implications for so many aspects of the organisation (strategy, operations, human resource policies and practices etc.) it is impractical to provide a complete or definitive list of activities entailed by CI or conditions for its success". Michela, et al (1996)

For such a widely used term, it is perhaps surprising that the term "continuous improvement" is not specifically recognised or documented in the Oxford English Dictionary, particularly when one considers that other less widely used terms such as continuous assessment, continuous-flow and continuous process do appear in the OED.

(OED Online, 2015). This lack of an OED definition is perhaps a reflection of the ambiguity that remains around this common term.

Before moving on to a proposed definition to address these ambiguities, the section below reviews two terms closely related to continuous improvement, namely "continual improvement" and "kaizen"

5 Continuous improvement, continual improvement and kaizen

The literature review identified the two terms above which are often used as synonyms for the term continuous improvement.

Taking the term "continual improvement" first, it may at first appear pedantic to differentiate between "continual improvement" and "continuous improvement", however, although the difference may be subtle and the former term infrequently used, it is perhaps worth exploring the distinction as continual improvement rather than continuous improvement is the term preferred by Deming (2000) and by the International Organization for Standardization (ISO, 2015)

The reason Deming and the ISO appear to make a point of using the term continual, rather than the more regularly used continuous, appears to be to deliberate, and is due to a subtle difference between the meanings of the two words. The adjective "continuous" indicates incessant and non-stop whereas the term continual describes something that is recurring and happens again and again, perhaps with pauses in between. Considering Deming's widely used PDCA (Plan Do Check Act) methodology, it is perhaps not surprising that Deming prefers the use of continual, which implies a regular stop in the process, in line with Deming's philosophy to regular Check and Adjust).

In regards to the term Kaizen, it is worth noting that even though the term "continuous improvement" is not defined by the OED, the term "Kaizen" which is often used as synonym for continuous improvement is defined in the OED.

The OED entry reads:

> Kaizen, n.
>
> **Etymology:** Japanese, lit. 'a change for the better', '(an) improvement', < *kai* revision, change + *zen* (the) good
>
> A Japanese business philosophy of continuous improvement in working practices, personal efficiency, etc.; hence, an improvement in performance or productivity (OED Online, 2015)

It is interesting to note that the original etymological meaning of kaizen makes no reference to the term continuous, and when translated to English in its literal sense, Kaizen is best translated as simply "improvement". However the work of Imai (1986, 1997) has broadened the definition of kaizen with the result that when applied in a business sense, Kaizen is often translated as "continuous improvement" as the definition from the OED confirms.

It is this author's view that the terms kaizen, continuous improvement and continual improvement are often used interchangeably by academics and practitioners. However, in this paper, the subtle nuances of the definitions of Kaizen, continuous improvement and continual improvement are noted and will be considered in the conclusions.

In order to carry out a review of existing knowledge on continuous improvement, the section below provides a historical development of the term.

6 Historical developments of continuous improvement

A number of researchers have traced the historical development of the term continuous improvement. Schroeder & Robinson (1991) cite two examples of continuous improvement programmes starting as far back as 1871. The first example refers to the introduction of an employee awards scheme at Denny's, a Scottish shipbuilder, the second at National Cash Register, refers to a program established in 1894, in which the company solicited written suggestions for improvements from factory workers and the company president expressed

the aim of creating an organisation with a "hundred headed brain", referring to his aim of involving of all his workers in continuous improvement.

These two examples pre-date the more accepted view of when continuous improvement as a recognised methodology began to gain traction. Zangwill and Kantor (1998) indicate that CI traces its origins to two major historical trends, both dating from the 1950's. The first, according to the authors occurred at Toyota where Tiichi Ohno and Shigeo Shingo conceived Just-in-Time (JIT), the second was the quality movement and statistical reasoning, conceived in the 1920's by Shewhart, and reinvigorated in a series of lectures by Deming in 1950 to Japanese executives, in which he highlighted the importance of data collection and of Shewhart's Plan Do Check Act cycle (often referred to as the continuous improvement cycle)

Similarly, Bhuiyan & Baghel (2005) in their article entitled "An overview of CI from past to present" tracks the development of certain continuous improvement philosophies, citing the development of the TWI (Training Within Industry) set up by the US Government in the 1940's, which was then transferred to Japan by experts such as Deming, Juran and Gilbreth, and which eventually developed into a wider management tool, known commonly as "Kaizen" for on-going improvement involving everyone in the organisation Imai (Imai, 1986). The authors go on to explain how the various continuous improvement methodologies developed, with the evolution of the Toyota Production System (TPS) by Taiichi Ohno at Toyota, which eventually formed the basis for the term Lean Manufacturing, popularised by Womack et al (1990). In addition to the TPS and Lean methods, in the 1980's, Motorola introduced a continuous improvement methodology known as 6-sigma, which focused on using statistical methods to minimise defects and improve process control and performance. Lastly, the authors include in their review of continuous improvement the "Balanced Score Card (BSC) method", developed by Kaplan and Norton in the early 1990's. It could be argued however that the BSC method is more a strategy deployment, measurement system and communications tool, rather than a continuous improvement methodology. A more recent phenomenon, originating from the software industry, is the "Agile" methodology, which although developed as an alternative to traditional project management approaches, does have the appearance of a continuous improvement approach,

with its focus on regular reviews (or scrums, to use the agile terminology), improvements and on-going adjustments.

It is interesting to note that most authors who tackle the subject of the history of continuous improvement often describe its development as the story of a series of methodologies gaining favour over time. In summary, most authors agree that TWI is seen to be the initial spark, which then led to TPS, which in turn developed into Lean. Then, 6-sigma become more predominant mainly thanks to the success of its use by Motorola, and then hybrid methodologies such as lean-6 sigma began to develop. However, it is the authors view that although the name, methodology, tools and even philosophy may change, there exist underlying principles and a theory of continuous improvement that is constant throughout the history of the development of continuous improvement, and that can be applied by any individual, team or organisation.

In fact, a review of the papers that cover the historical development of continuous improvement finds that the authors are actually reviewing the development of "enterprise wide continuous improvement", but not the fundamental approaches and methods of continuous improvement, which one could argue, are an innate human capability. One could argue that individuals have co-operated and improved things prior to the 19th Century.

To understand the precursors and fundamentals of continuous improvement, one must look beyond the programmes that have found favour in the last century. A more holistic review of continuous improvement, should also consider the theme of learning. This is supported by Locke and Jain (1995), who argue that continuous improvement is synonymous with learning.

Considering the history of learning, would indeed take the research and historical development of continuous improvement beyond the late 19th Century, when most authors above begin their history of continuous improvement. Due to the strong links between continuous improvement and learning, it is worth going back to the origins of learning.

An interesting approach proposed by Dahlgaard-Park (2006) is to review the Chinese characters for the term learning. As the Chinese characters are often developed from

pictograms, they provide perhaps the best insight into the original thinking behind the concept of learning.

Calligraphy by Su Mi Dahlgaard-Park (2006)

Dahlgaard-Park (2006) indicates that the first character means “to study” and the second character means to “practice repeatedly”. One could argue that this Chinese character lays the foundations for the origins of continuous improvement in organisations. In fact, as Dahlgaard-Park (2006) suggests, this is perhaps the precursor to the PDCA continuous improvement cycle

It is argued then that to understand the true underlying theory of continuous improvement, one must cut through the various name changes and management philosophies such as lean and 6-sigma to return to the fundamental premise of continuous improvement, which are rooted in learning.

Although it is beyond the scope of this research to provide a historical review of the development of learning, we believe that learning is a key component of the fundamentals of continuous improvement and must therefore be integrated into the final theory.

To return to the term continuous improvement itself, using the references generated from the initial search of the term in the Emerald database, we find that the earliest mention of the term in an academic paper is as early as 1903 Doubleday (1903), in an article related to library classification systems. In the article Doubleday argues that as photography is dependent on the application of natural forces (as opposed to creative effort), it is therefore

subject to continuous improvement, which in turn entitles photography to the rank of science (as opposed to art).

Although this early reference may seem somewhat unrelated to the term continuous improvement as employed by academics and industry today, Doubledays' tacit implication is that continuous improvement can be applied to a scientific field, but not to something that is subject to creative effort. This implication neatly summarises the ambiguity mentioned early in this paper, of whether continuous improvement is more a science (subject to mathematical laws and rigid methods) or an art (focused on behaviours and culture changes). Doubleday indicates that continuous improvement is more science based, whereas most researchers today focus on the softer, behavioural side of continuous improvement.

The 1903 reference appears exceptional, as the term is not found again in the Emerald Database until 1952 (Rangathan, 1952), again in relation to library and information management. Interestingly, Rangathan's paper is entitled "why documentation?" which also creates an early link between the idea of continuous improvement and the documentation of a standard. Many continuous improvement programmes, include a step to "define and document the standard" to ensure that a baseline is created to train others and to measure deviations against.

The first found mention of continuous improvement in the manufacturing arena is from a paper related to Aircraft engineering for the United States Air force (Putt, 1954), where Putt states that "increasing the striking and defensive power of the Air force through continuous improvement of its aircraft, guided missiles, equipment and techniques…..and the acquisition and application of new fundamental knowledge".

This reference is also interesting in that it creates the link between continuous improvement and the acquisition and application of knowledge, which today is considered an integral part of continuous improvement.

It is not until after the 1960's, that continuous improvement becomes increasingly linked to management, business and organisational objectives. Smith's article in 1963 (Smith, 1963) entitled "General Management, an outline code", is an early example, in which Smith notes

"the main objective of most undertakings is to produce more and better goods and services. To achieve this, they formulate supplementary aims which include the continuous improvement of organisation and procedures and cost reduction"

It is the authors view that after the 1960's, the term "continuous improvement" began to take on a life of its own, it became invariable linked to the myriad of methodologies that have developed over the last 60 years, including TQM, Kaizen, Lean, Agile, Six-Sigma, Business Score Cards and others, and somehow became connected to all, but at the same time lost its underlying purpose and simplicity.

Before exploring the underlying purpose and simplicity of continuous improvement, we first provide a brief introduction to the use of continuous improvement in the not-for-profit sector.

7 Continuous improvement in the not-for-profit

The majority of research on CI has focused on its application in the private sector, with limited research on continuous improvement in the not for profit sector. Exceptions include Al-Tabbaa et al (2013), Manville (2007), Tuttle & Chen (2012), Joo et al (2007), Robinson (1994), Prugsamatz (2010).

This appears to be changing however, and continuous improvement is becoming more relevant for not-for-profit organisations. According to Al-Tabbaa et al (2013), non-profit organisations are increasingly paying attention to organisational sustainability, (of which we believe includes continuous improvement), due to the increasingly competitive environment in which they operate, uncertain government funding and a reduction in private donations

The consequence of this is that scholars are increasingly researching the methods that non-profit organisations are employing to respond to this new environment. Continuous improvement, quality methods and benchmarking are examples of ideas developed in the

for-profit-sector, but that researchers have now studied how they can be adapted for the not-for profit sector, examples include Manville (2007) and Joo et al (2007).

Although there is increasing interest from scholars and practitioners on whether there is potential to transfer ideas from the profit to the not-profit sector, the research is still limited (Al-Tabbaa et al, 2013) and adoption of the ideas in the not-for-profit sector have been slow.

To cite one illustrative example: The MBNQA quality model awards, set up in 1987 to help improve quality performance in for the for-profit sector, did not have a not-for-profit award until twenty years after its launch (The National Institute of Standards and Technology, 2015).

Although the research into how for-profit ideas on continuous improvement can be transferred to not-for-profit organisations is relatively scarce, the research on how continuous improvement ideas can be transferred from not-for-profit organisations to for-profit organisations appears to be non-existent.

It is the author's view that there is a gap in the academic literature for an over-riding theory of continuous improvement, that is designed to suit both for-profit and not-profit organisations. Such a theory, it is envisaged would make it easier to transfer knowledge and ideas on continuous improvement between the two sectors.

The below section returns to the more general topic of continuous improvement, to review what research has already been conducted to develop theories of continuous improvement and to assess where gaps in current theory may exist.

8 Does a theory of continuous improvement exist?

A number of authors have highlighted the lack of theory in the field of continuous improvement. Savolainen (1999) found that no theoretical basis exists for continuous improvement, and (Zangwill and Kantor, 1998) state that no scientific theory exists to guide the application of continuous improvement or to systematically improve the concepts of CI

themselves. Lastly, Noori and Michela (1996) in their systematic literature review of CI conclude that "there is also little theory that gives specific guidance about how to conduct rigorous research or practice"

This paper proposes a more systematic and rigorous assessment of the theoretical underpinning of continuous improvement, to identify the existing gaps and facilitate the development of a theory that addresses the existing gaps

As mentioned in the early sections of this paper, the term "continuous improvement" is reviewed against Schmenner and Swink's (1997) five criteria for a good theory. The first criteria states that

1) *The phenomenon for which explanation is sought should be clearly defined. This clarity is enhanced by unambiguous measures.*

As indicated in the previous section, it is argued that the term continuous improvement is not clearly defined, and seven areas of ambiguity were identified as part of the systematic literature review.

Arguably, if the term is poorly defined from the outset, all subsequent elements of the theory will be imbued with ambiguity. One cannot expect unambiguous measures for something which is ambiguously defined. We therefore propose the following definition for continuous improvement, adapted from Locke & Jain (1995)

"Any and all co-ordinated efforts designed to accelerate the achievement of specified organisational objectives through change, learning and innovation"

With this definition, we look to address the ambiguities defined in the earlier section. More specifically, we propose that continuous improvement is more a framework and mind-set than a specific set of tools or techniques (ambiguity 1). Continuous improvement is not separate from learning and innovation, learning and innovation are part of continuous improvement (ambiguity 2 and 5). We reject the idea that continuous improvement has to be organisation wide (ambiguity 3), as it is the authors view that continuous improvement can

be done a team level, with any small group of individuals (with or without support from senior level management). We include the word "co-ordinated" into our definition, to distinguish it from individual continuous improvement philosophies.

This distinction between "enterprise-wide continuous improvement" (continuous improvement that aims to work all across the organisation and which many authors implicitly refer to in their research) and "co-ordinated continuous improvement" which we refer to here and can be done with any small group of individuals, is an important distinction.

It is the author's view that researchers are causing a barrier to organisations doing continuous improvement, with the statement that continuous improvement needs senior level commitment. Enterprise-wide continuous improvement does indeed need senior level commitment; however we propose that any group of individuals can do continuous improvement within their sphere of influence (whether or not it is supported at senior levels)

We reject the idea the continuous improvement is limited only to small, incremental, low cost improvements (ambiguity 4). It is our view that radical change and innovation, when reviewed in detail is often the culmination of lots of small ideas, and also that complex, long term improvements are types of continuous improvement, but just done over a longer time scale

We reject the idea that continuous improvement or achieving a culture of continuous improvement is an objective in itself (ambiguity 6). It is our belief that continuous improvement is the means, and not the end.

It is also worth highlighting that the use of the term organisation for us includes for-profit and not-for-profit organisations. In fact, we use the term as defined by the Oxford English Dictionary:

> "An organized body of people with a particular purpose, such as business, government department, charity etc". OED Online (2015).

So, from the start, our definition of continuous improvement specifically includes not-for-profit and for-profit organisations

With this new definition of continuous improvement, we can then proceed to introduce some measures.

As we have already specified that we do not believe continuous improvement to be the end state, but rather a means to an end, we propose that the effective measure for our theory should not be "how well is the organisation doing continuous improvement", but rather "how well is our continuous improvement approach delivering the organisational objectives it set out to achieve"

It is the authors belief that there is no one measure that would suit for-profit and not-for-profit organisations, but rather believe that for an organisation to measure the success of their continuous improvement approach, they must define **specified organisational objectives,** and it is against these objectives that the success of the continuous improvement approach should be measured.

2) *The description of the phenomenon will likely centre on some observed regularities that have been derived either logically or empirically*

Despite the lack of an agreed definition of continuous improvement, a number of articles have observed regularities and common themes in the area of continuous improvement. Research by Kaye & Anderson (1999) identified ten essential criteria for continuous improvement. Others, such as Caffyn (1999) have sought to unify the common phenomenon of continuous improvement under the umbrella of a self-assessment tool. Bessant et al (1999, 2001) have also sought to pull together common observed regularities of continuous improvement, resulting in the creation of five levels of continuous improvement. Fryer et al (2012) building on the work of Bessant, identify 8 indicators of continuous improvement and classify the indicators along three levels of maturity. Interestingly, Fryer et al indicate that their model is developed for use in the public sector, but arguably the indicators and criteria are suitable for the private sector. This is a good example of where ideas are being

defined as sector specific, when in fact, could possibly be applied to all sectors. It is also worth noting that the indicators identified by Fryer et al have not yet been put to the test in practice.

Indicator	Stage 1 : Going through the motions	Stage 2 : Transforming	Stage 3 : Embedded
1. Integration of CI into the organisation	No formal structure for improving the organisation. When there are problems, specialists come in to solve them rather than using existing staff. No systematic or disciplined approach to improvement	Teams idenfity and carry out CI initiative There are regular reviews of the CI system throughout the whole organisation There is the use of a formal problem solving process	CI is no longer a "add on to the day job", but is an integral part of the individuals' or teams' work CI is the dominant way of life
2. Extent of CI projects	Improvement activitity is focused at a local level	CI activities can involve people from different departments, sections, divisions Suggestions for projects come from within the department rather than imposed from outside. Specific CI projects with customers, suppliers etc are taking place	People are thinking about their internal and external customers when they are working on improvement projects
3. Management Support	Individual managers sporadically promote CI	The organisation is making serious attempts to use CI The strategic management leadership style reflects genuin commitment to CI	Managers' commitment to CI is evident throughout the whole organisation
4. Strategic performance Management	Focus is on short term benefits Lack of strategic focus Performance management system is not linked in with the strategy	The organisation can link CI initatives to the strategic goals of the business Everyone understands what the organisation's or departments strategy, goals and objectives are Individuals and teams monitor the results of their improvement activitiy	Everyone understands how their performance affects the strategic goals of the organisation The achievement of projects are measured to see how they have affected the strategic goals of the organisation
5. Training and learning	Training in CI tools is ad-hoc	There is training in the basic tools of CI available on a routine basis Individuals and groups at all levels share their learning from all work experiences	The organisation as a whole generates the ability to learn through CI activities Everyone is involved in sharing knowledge and creating the complete learning organisation
6. Reward system	No rewards system	Local reward systems in place	An organisational reward and recognition system
7. Blame culture	Individuals are afraid of making suggestions	Managers support experiments by not punishing mistakes but by encouraging learning from them	When something goes wrong, the natural reaction of people at all levels is to look for reasons why rather than blame individuals
8. Communication	Good communication down through the organisation	Efficient and effective communication up and down the organisation	Efficient and effective communication flows vertically and horizontally

Table 3 : Three stage model of continuous improvement for the public sector developed by Fryer et al (2013)

In fact, there has been considerable research into identifying common practices and regularities of continuous improvement. In some cases, the practices have been observed in specific organisations; the collection and practices used by Toyota for example, form the foundations for a grouping of continuous improvement ideas which can be broadly classified under the term "lean". Similarly, the improvement practices observed and developed by Motorola can be broadly classified as "6-sigma".

Other observed regularities or phenomenon of continuous improvement have been grouped under different titles, such as "TQM", "Agile" or "Systems Thinking".

It is perhaps a reflection of the number of different groupings of continuous improvement ideas, that there has also been research into comparing the differences, similarities and interconnectivity between the groupings. See Bendell (2006) and Dahlgaard (2006) for examples.

In summary, it can be argued that some observed regularities around continuous improvement have been derived, however it does appear that the regularities have already started to be fragmented under different headers (e.g lean, 6-sigma) and even when grouped under the wider term "continuous improvement", authors have already began to identify differences in certain sectors (e.g public or private) rather than looking for commonality across all sectors.

Also, the above table reflects the issue mentioned earlier in this paper, in that many researchers implicitly apply an "enterprise-wide" view of continuous improvement, and not, as proposed in this research, a theory of "co-ordinated continuous improvement" that can be applied with any small group of individuals.

3) *There should be one or more precise statements of these regularities (laws). Mathematical statements of the laws will naturally help the precision*

Schmenner and Swink (1997) state that "as hypotheses are supported by more and more evidence, especially evidence of different kinds, they can often be organised into laws".

As yet, it appears that no authors have appeared to specifically define any laws of continuous improvement. That is not to say they do not exist, it may be, as Schmenner and Swink (1997) identified in their research on the theory of operations, that the laws exist, but they have not yet been labelled as such by researchers.

In the below section, we propose some initial laws of continuous that can be used as a basis for further research.

Law of organisational focus: Organisations (note again, that our definition of organisation includes any small group of individuals) that focus on a limited set of objectives will have more success to achieve these objectives than an organisation with a wide range of objectives. This law is a key factor in our theory, in that for continuous improvement to be successful it must be aimed at achieving these **specified organisational objectives.** This law indicates that continuous improvement must not be done for the sake of doing continuous improvement, but it must be done with the aim of achieving specified organisational objectives. The fewer focus areas, the more likely that they will be understood by the organisational members. The more likely the objectives are understood, the more likely continuous improvement plans can be tailored to meet them

Law of quality: Performance (as defined by the ability of meeting the organisational objectives) will be improved as quality is improved and waste declines. This law is adapted from Schmenner and Swink (1997) theory of operations.

Law of the experience curve: This law states that over time, a process involving people will naturally improve as individuals become more experienced at carrying out the process. This law has been researched in more detail, by Zangwill & Kantor (1998) who propose a mathematical statement around this law, the Continuous Improvement Differential Equation (CIDE).

The authors began by identifying the learning curve, which they describe as the historical predecessor of continuous improvement. The learning curve is described as a simple mathematical relationship between some metric or performance measure (and in our theory, this is the specified organisational objectives) and a firm's experience of delivering those objectives

Although distinctions have been made between the learning curve and the experience curve, the underlying concept is the same – in that performance (output) will improve over time as the individuals gain experience or learn from performing the input. Zangwill proposes that the purpose of continuous improvement is to increase the speed of learning, to increase performance at a faster rate.

Law of contiguity and cumulative capabilities. This law indicates that the more skills and ideas from different sources are brought together, the higher potential there is for new ideas for continuous improvement. This links the theory to learning, in that the more learning and knowledge is co-ordinated within the organisation, the more likely the improvements will be successful at achieving the specified objectives

Law of diminishing returns

This law indicates that continuous improvement focus areas will follow a typical S-curve shape. That is to say that initially improvement may initially have a big impact on performance, but eventually as the performance is improved, it will become increasingly difficult to maintain the same rate of improvement over time. This law is important as it indicates that the impact of continuous improvement will not be linear, and organisations must understand that at some point, new ideas and new approaches must be taken to start a new s-curve improvement. This links the theory to innovation, as this is the element that can trigger the start of a new s-curve of continuous improvement.

4) *The theory should indicate a mechanism….that explains why the laws work as they do and how, and in which ways, the laws may be subject to limitations*

The closest mechanism we find for continuous improvement is in the more established methodologies such as lean and 6-sigma. However, these methodologies often do not explain how nor why the mechanisms work, nor are they underpinned with laws. The mechanism below is proposed as an initial basis for the development of a mechanism for continuous improvement. Further work is required to review if the proposed laws exist and, or if additional laws should be added. Once all laws have been defined, it will then be possible to review their to further develop the mechanism and understand its limitations

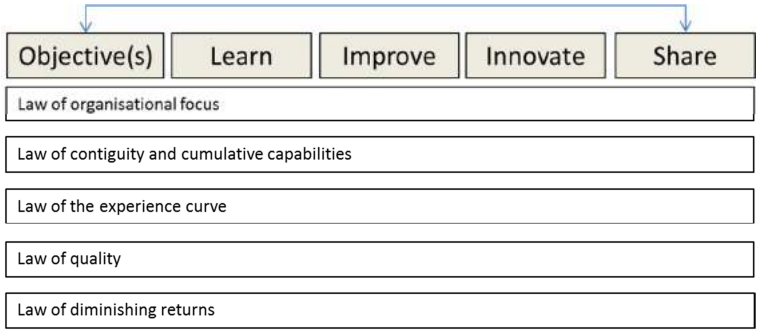

Figure 1 : Proposed mechanism for the theory of continuous improvement

5) *The more powerful the theory, the more likely it will unify various laws and also generate predictions or implications that can be tested with data.*

If anything, over time, continuous improvement has become less unified, leading to a wide range of different definitions, methodologies and implementation approaches. Although some researchers have attempted to measure (with data) the impact of continuous improvement, until the underlying laws can be unified, the debate will remain on what to measure, before the discussion moves on to how best to measure and test it. Only once the theory and laws are more established and understood, will it be possible to mathematically test the laws and use them to generate predictions

9 Conclusions

The review above indicates that there is currently no underlying theory of continuous improvement that meets the criteria for a good theory as defined by Schmenner and Swink (1998). In particular, the research finds considerable ambiguities with the term continuous improvement and a lack of underpinning laws.

The literature review also finds that research into the area of continuous improvement across the profit and not-for-profit sector is still in its early stages and certain specific research topics, such as learning and sharing continuous improvement ideas from the not-for-profit to the profit sector, have not been the subject of serious academic research.

This paper has made some preliminary attempts to address the gaps found, but further research is required to develop a more robust theory of continuous improvement that will serve to facilitate learning and innovation between the for-profit and the not-for-profit sectors.

10 Further research

The research carried out so far has generated ideas for a number of further research areas. In particular, further study is required to identify research that has been carried out that has tested the laws proposed here. Although no papers were found that specifically tested the laws, a more detailed review of the literature may identify papers that have reviewed the laws, perhaps using a different definition.

It is also believed that the development of a theory of continuous improvement cannot be created from a literature review only. Ideas and input from practitioners, particularly those in the not-for-profit sector, whose voice is less well represented in research so far, is required to develop the theory and underpinning laws.

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