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Diffusion of management accounting innovations:

A virus perspective

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Abstract

Classification: Conceptual

Keywords: Management accounting innovations, virus perspective, post-adoption, implementation, diffusion, translation, management fashion

Purpose

– The diffusion of management accounting innovations (MAIs) is the focus of much debate in the management accounting research community. Extant contributions have drawn on a large number of theories, including innovation diffusion theory and various sociologically inspired theories such as management fashion. This paper demonstrates how Røvik's virus theory offers an alternative perspective on how MAIs diffuse. The paper evaluates and elaborates on the potential usefulness of the virus perspective to empirical research on MAIs.

Design/methodology/approach

– The paper uses a conceptual and explorative research approach. The paper introduces the virus perspective and compares this perspective with several other theoretical perspectives often employed in studies of the diffusion of MAIs. The paper also reexamines a number of prior studies of MAIs and identifies different virus characteristics implicit in these studies.

Findings

– The findings of the paper imply that the virus perspective is a useful basis for empirical research on MAIs. The virus perspective differs from other theoretical perspectives in several respects, and is particularly suited for longitudinal studies of both management accounting/control and organizational change. However, the perspective could be used at other levels of analysis as well. The extant studies reviewed in this paper provide support for the viral characteristics of MAIs. The paper also identifies and discusses avenues for future research using the virus perspective as a theoretical lens.

Originality/value

– The virus perspective has been given little attention in research on MAIs, as well as more generally within accounting research. This research paper demonstrates that the virus perspective offers a rich and valuable conceptual framework for studying how demand-side organizations are affected by MAIs over extensive periods of time. The paper also discusses the implications of the virus perspective with respect to research method.

1 Introduction

1.1 Management accounting innovations

There is a growing research literature on management accounting innovations (MAIs) (Alcouffe, Berland, & Levant, 2008; Ax & Bjørnenak, 2007; Ax & Greve, 2017; Busco, Caglio, & Scapens, 2015; Chiwamit, Modell, & Scapens, 2017; Lapsley & Wright, 2004; Malmi, 1999; Zawawi & Hoque, 2010). As shown by Zawawi and Hoque's review (2010) article, a number of theoretical perspectives have been applied in research on MAIs, including innovation diffusion theory, the sociology of translation, institutional theory and management fashion theory.

Previous research in the innovation diffusion tradition has often modeled adoption as a dichotomous variable, i.e. as an either-or decision (Røvik, 2011). However, MAIs are not adopted and implemented wholesale, as "off-the-shelf" solutions. Instead, as pointed out by for example Ansari, Fiss, and Zajac (2010), there is much variation in what is adopted and as well in terms of effects on organizations. Still, relatively little attention has been given to the post-adoption phase, or what has been referred to as the 'dynamic' nature of MAIs. The long-term organizational consequences of MAI adoption remain somewhat of a black box (Ax & Bjørnenak, 2008).

This can be considered a shortcoming of present research on the diffusion of MAI when taking into account findings showing there is considerable variation in MAIs as they are implemented in practice (Wanderley, Cullen, & Tsamenyi, 2014). Therefore, in this research paper, the virus theory (Røvik, 2011) is presented as an alternative theoretical basis and research approach to MAIs. The virus perspective offers a rich set of theoretical mechanisms that can be used to study how MAIs are adopted and the long-term effects on organizations.

1.2 Purpose and contributions

The aim of the paper is to illustrate how the virus perspective can provide a theoretical basis for studying MAIs. The virus perspective has only to a limited extent been applied in the context of MAIs. However, there are a few recent studies in the management accounting literature, which have utilized the virus perspective as a theoretical lens. For example, Madsen and Slåtten (2015) and Ogata, Spraakman, and Kemper (2018) demonstrate how the virus perspective can be applied to the diffusion and institutionalization of the Balanced Scorecard. The virus perspective has also been used in the context of the evolution of New Public Management reforms (Hyndman & Lapsley, 2016).

In this research paper we argue that the virus perspective offers a theoretical framework and a rich set of concepts that can be used to explain how MAIs evolve as they are adopted and implemented in organizations. In doing this, we aim to contribute to the on-going debate on the diffusion of MAIs (Ax & Bjørnenak, 2007; Busco et al., 2015; Chiwamit et al., 2017; Zawawi & Hoque, 2010).

1.3 Structure

The paper proceeds in the following way. Section 2 provides an overview of how the virus perspective relates to other theoretical perspectives often used in research on the diffusion of MAIs. In Section 3 we conceptualize the impact of viruses at different analytical levels. In Section 4 we (re)interpret prior studies in the MAI literature in light of the virus perspective. In Section 5 we discuss the implications for research on MAIs. Finally, in Section 6 we

summarize the contributions of the virus perspective, discuss limitations, and outline future elaboration of the theory and an agenda for empirical work.

2 Theoretical perspectives used in research on the diffusion of MAIs

In this section we first briefly outline what is meant by MAIs. Then we discuss three theoretical perspectives that have often been used in research on the diffusion of MAIs: (1) management fashion, (2) boundary objects, and (3) travelling ideas. This is followed by a brief introduction to the virus perspective, and a comparison of the similarities and differences between these perspectives.

2.1 MAIs

Numerous management accounting innovations (MAIs) have been introduced over the course of the last decades (Ax & Bjørnenak, 2007; Bjørnenak & Olson, 1999). Well-known examples include strategic management accounting techniques known by three-letter acronyms such as Activity Based Costing (ABC), Balanced Scorecard (BSC) or Economic Value Added (EVA). Birkinshaw, Hamel, and Mol (2008) define a management innovation as “...*the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals*” (p. 825). This is a valuable and inclusive definition, although the criterion that the innovation is new to the state of the art seems excessively strict. Many management innovations are “old wine in new bottles” (Spell, 2001; Örténblad, 2007). Despite this, such innovations sometimes obtain high levels of diffusion. A further issue relates to the distinction between management innovation and MAI. A MAI should assumingly contain at least some quantified data in monetary units. Taking those two issues into consideration, the definition by Birkinshaw et al. (2008) captures fairly well what is meant by a MAI in this paper.

MAIs are administrative innovations. Being ideational in nature they have “interpretive viability” (Benders & Van Veen, 2001), meaning that they can be understood and “translated” in different ways. However, the room for interpretation varies across different MAIs (Fincham & Roslender, 2003). Some MAIs such as the BSC have a considerable room for interpretation (Ax & Bjørnenak, 2005; Braam, 2012) while others such as EVA have a more fixed technical core.

2.2 MAIs as “management fashion”

The first view of MAI is that it is an example of what management researchers call a “management fashion” (Abrahamson, 1991, 1996; Benders & Van Veen, 2001; Kieser, 1997). The management fashion perspective builds on early theoretical insights from neo-institutional organization theory, in particular the notions of legitimacy and normative/mimetic isomorphism (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). The theoretical influences from institutional theory are reflected in Abrahamson’s (1996, p. 257) classic definition of management fashion as a “... *relatively transitory belief, disseminated by management fashion setters, that a management technique leads to rational management progress.*” According to Abrahamson (1991, 1996), organizations are subject to normative pressures from suppliers of MAIs who shape what is considered “rational” and “state of the art.” Moreover, organizations adopt new practices such as MAIs not only to increase economic efficiency but in order to retain and preserve legitimacy within their organizational field.

The important focus of the management fashion perspective is to understand why certain MAIs become fashionable while others do not. Following the definition of Jung and Kieser (2012, p. 329), a fashionable MAI would be a MAI that quickly obtains a large share of the public management discourse surrounding MAIs. From this definition, it follows that not all MAIs succeed in becoming popular and fashionable. For example, some MAIs may never reach what Benders (1999) refers to as a critical mass of adopters where bandwagon effects kick. Therefore, some MAIs may remain in obscurity and/or may die off. In other words, fashionable MAIs, constitute a sub-set of the total supply of MAIs available in the market for MAIs (Braam, Heusinkveld, Benders, & Aubel, 2002).

The management fashion perspective have also traditionally rested on the assumption that the popularity of fashionable MAIs is transitory and that they will soon fall out of favor and gradually disappear, having little long-term impact on practice (Abrahamson, 1996; Gill & Whittle, 1993). However, in recent years, researchers within the management fashion perspective have started questioning this assumption, and now instead argue that management fashions could become institutionalized and sticky practices (Abrahamson, Chang, Choi, & Katic, 2015; Perkmann & Spicer, 2008). Indeed, we have seen that a fashionable MAI such as the BSC has had considerable staying power, with relatively high diffusion rates being reported more than 25 years after its introduction (Hoque, 2014; Nørreklit & Mitchell, 2014; Rigby & Bilodeau, 2018).

Several reviews have shown that the management fashion perspective has been used quite extensively in recent research on the diffusion of MAIs (Ax & Bjørnenak, 2007; Larsson, 2015; Zawawi & Hoque, 2010). This body of research focuses in particular on the role played by fashion-setters on the supply-side (e.g. consultants, conference organizers and business media) in the diffusion of MAIs (e.g. Malmi, 1999; Nassar, Al-Khadash, & Sangster, 2011).

A weakness of extant MAI research inspired by the management fashion perspective is that it mainly focuses on the diffusion of MAIs at the international or national level. Intra-organizational adoption and implementation of fashionable MAIs is seldom addressed. This is partly a result of the methodological approaches employed in these studies. As pointed out by Modell (2009, p. 60), a *“majority of empirical research following the fad and fashion perspectives has focused on broad diffusion and adoption patterns and relies heavily on survey data or secondary sources.”* This means that adoption and implementation of MAI is typically viewed as a dichotomous variable, a common critique of studies drawing on the management fashion perspective (Røvik, 2011).

2.3 MAIs as “boundary objects”

The second view of MAIs is to see them as ‘boundary objects’. The notion of a boundary object stems from actor-network theory (ANT), which is an influential theoretical perspective in management accounting research (Briers & Chua, 2001; Justesen & Mouritsen, 2011). In the words of Star and Griesemer (1989: 393), *“boundary objects are objects which are both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites.”* We previously noted that a key characteristic of MAIs is that they have interpretive space, which is similar to Star and Griesemer’s notion of plasticity. While MAIs have considerable interpretive space, they also have a certain level of robustness in that they retain recognizable core characteristics when they are interpreted and translated in practice.

In MAI research, the notion of boundary object has for example been used in the context of the BSC (Cooper, Ezzamel, & Qu, 2017; Hansen & Mouritsen, 2005). Cooper et al. (2017) argue that the BSC is a boundary object, which is continuously transformed as it travels across time and space. Hansen and Mouritsen (2005) argue that the BSC can be viewed as a boundary object since the concept retains certain core characteristics (e.g. perspectives, measures, targets) even as it is diffused and “translated” in different ways in practice. Furthermore, Hansen and Mouritsen (2005) find that managers are actively interpreting and applying the BSC, and mobilizing it vis-à-vis organization-specific issues. This process bears some similarities to what Quattrone and Hopper (2006) label the “heterogeneous” nature of MAIs, in that the application of an innovation such as the BSC on the surface appears homogeneous, while in practice this MAI is being used in heterogeneous ways.

2.4 MAIs as “travelling ideas”

The third perspective considers MAIs as “travelling ideas.” The Scandinavian institutionalist perspective on ‘travelling ideas’ (Czarniawska & Sevón, 2005; Czarniawska & Sevón, 1996; Sahlin & Wedlin, 2008; Wedlin & Sahlin, 2017) attends to what happens when management ideas travel and circulate across national and organizational boundaries. For example, research has shown that management ideas are often transformed and translated when they spread to organizations in other countries (Lillrank, 1995).

According to this perspective, MAIs are circulated between different actors which may operate at both the international and national level (Sahlin & Wedlin, 2008). This perspective places emphasis on the large number of intermediary actors (“carriers”) involved in the circulation of MAIs, such as consulting firms, business schools and business media organizations (Sahlin-Andersson & Engwall, 2002). These carriers are both shaping and circulating the MAIs. In the process of travelling, global ideas attain local flavors as they are interpreted and implemented at the local level. This is sometimes referred to as a process of “creolization” (Sahlin-Andersson & Engwall, 2002).

A number of studies have viewed MAIs using a travelling ideas perspective. The BSC in particular has received much interest from researchers drawing on a travel and translation perspective (Nilsen, 2007; Wagensveld, 2013; Wagensveld & Vosselman, 2014; Wongkaew, 2007).

2.5 MAIs as “viruses”

As pointed out in the introduction, the virus theory has only to a very limited extent been applied in the context of management accounting. Exceptions include Madsen and Slåtten (2015) and Hyndman and Lapsley (2016). According to the virus theory, managers are seen as “active hosts” of MAIs, meaning that they actively consume and handle MAIs in different ways. Table 1 outlines various virus characteristics and corresponding organizational mechanisms to handle MAIs (Røvik, 2011).

The first characteristic of a virus is *infectiousness*. This characteristic relates to how managers are exposed to viruses, and the formal or informal decision to adopt or reject a MAI. The second characteristic is *replication*. Replication refers to the continual reproduction of a MAI in the organization. For replication to occur, it is vital that there is a “champion” who is able to sell the MAI to the organization. In this idea-selling process, third-party consultants may play a role. For example, consultants could reduce the organization’s immunity and resistance

to the MAI, by persuading skeptical organizational members that there are potential benefits associated with adoption and implementation.

The *incubation period* of a virus can be long and drawn-out. The implementation of a MAI may take considerable investments in terms of time, expertise and resources. *Mutation* refers to translation and contextualization of the MAIs in the host organization. According to the virus perspective, managers are “active hosts” who often will translate the MAI, both in terms of content and the language used. Consultants may also contribute to mutations, as they typically “sense” local organizational preferences/needs, and will customize and tailor their version of the MAI to client organization.

Dormancy refers to the process where a MAI is inactivated and stowed away for a period of time. There are several possible factors that can lead to inactivation of MAIs. One factor could be related to pitfalls and barriers in the implementation process. For example, organizational resistance can bring an implementation project to a standstill. In addition, there are often significant investments associated with the implementation of MAIs. These resource requirements could make it difficult to convince top management to continue with the MAI.

Table 1: Virus characteristics and idea-handling mechanisms (Madsen & Slåtten, 2015: 95, based on Røvik, 2011: 646)

Virus Characteristic	Organizational Idea-Handling Mechanism
<i>Infectiousness:</i> Exposure to the virus	<i>Adoption:</i> The formal decision to adopt an idea.
<i>Immunity:</i> The ability to resist the virus	<i>Non-adoption:</i> The decision not to adopt an idea.
	<i>Isolation:</i> The idea becomes marginalized and confined to a specific part of the organization, and is largely decoupled from actual daily activities.
	<i>Expiry:</i> The process where an idea over time loses steam and gradually disappears from the organization.
	<i>Rejection:</i> The formal decision to stop using an idea.
<i>Replication:</i> The continuous reproduction of the virus	<i>Entrenchment:</i> The anchoring and embedding of an idea in organizational structures and processes.
<i>Incubation:</i> Time lapse from exposure and infection to implementation	<i>Maturation:</i> The idea slowly gains traction in the organization and becomes transformed into practice.
<i>Mutation:</i> The virus transforms and changes in the host organization	<i>Translation:</i> The transformation of an idea when it is interpreted and contextualized.
<i>Dormancy:</i> The virus is stowed away and marginalized for an extended period of time	<i>Inactivation:</i> An organization’s activities related to the idea are greatly reduced or halted altogether.
	<i>Reactivation:</i> A dormant idea is awakened, leading to increased organizational activities related to the idea.

The virus perspective focuses on managers as “active hosts” of MAIs who may shape and translate these ideas, but also what MAIs “do” to organizations as they behave as viruses. The

different viral characteristics and the associated handling mechanisms, means that a MAI is likely to have organization-specific trajectories. While there in some organizations may be a high degree of immunity to a MAI, in other organizations the MAI virus may quickly lead to a large-scale infection. In addition, the long-term viability of MAIs will also vary across adopting organizations. In some organizations, a MAI may become taken-for-granted and entrenched, whereas in other organizations a MAI may become marginalized, or perhaps even abandoned.

2.6 Comparison of the four theoretical perspectives

In the following table, the four perspectives are compared along five dimensions that are of relevance for research on the diffusion of MAIs.

Table 2: Comparison of four theoretical views on the diffusion of MAIs

	MAIs as “management fashion”	MAIs as “boundary objects”	MAIs as “travelling ideas”	MAIs as viruses
<i>Primary focus</i>	Diffusion and popularization	Use in praxis	Travel and contextualization	Intra-organizational trajectory
<i>Theoretical model</i>	Diffusion	Translation (actor-networks)	Translation (circulation)	Translation (implementation)
<i>Stability vs. change</i>	Interpretive space	Plasticity	Plasticity	Plasticity
<i>Supply-side of MAI</i>	Fashion-setters	Not explicit focus	Carriers	Infectors
<i>Demand-side of MAI</i>	Consumers	Mobilizers	Translators	Active hosts

2.6.1 Primary focus

The four perspectives differ in terms of their primary focus. The management fashion perspective focuses on the macro-level (Madsen & Slåtten, 2015; Perkmann & Spicer, 2008), i.e. the emergence, diffusion and popularization of MAIs. In particular, researchers adopting a management fashion perspective center on the spectrum of fashion-setting actors involved in the popularization of MAI processes, e.g. consulting firms, management gurus and book publishers. In contrast, the boundary object perspective takes a mostly micro-level view on MAIs, highlighting how MAIs are mobilized and applied in organizational practice. These mobilization and translation processes result in organization-specific translations and implementations as the MAI travels across time and space.

Viewing MAIs as travelling ideas means addressing what happens when a global MAI is circulated across national and organizational boundaries, and travels into an organization, where it is translated and infused with meaning by organizational actors. Finally, viewing MAI as a virus entails focusing on how organizations become infected with MAIs, and what these MAIs “do” to their host organizations.

2.6.2 Theoretical model

The four theoretical perspectives rest on different assumptions about the nature of the diffusion and popularization process. As pointed out in the previous section, the management fashion perspective takes a mostly macro-view focusing on how management fashion-setters

diffuse and disseminate MAIs to consumers in the management fashion market. The management fashion perspective builds on the diffusion model where the diffusing objects do not change much as they are diffused (Fincham & Roslender, 2003). In contrast, the other three perspectives rest on different variations of the translation model (Latour, 1987). For example, according to the travelling ideas perspective MAIs are “circulated” via different routes and networks (Sahlin & Wedlin, 2008), which could lead to different translations of MAIs as a result of the diffusion process.

2.6.3 Stability versus change

The four theoretical perspectives also differ in their views on the stability of MAIs as they diffuse. According to the management fashion perspective, MAIs are viewed as relatively stable ideas. However, MAI researchers drawing on the management fashion perspective have started to recognize the notion of interpretive space (Ax & Bjørnenak, 2005; Fincham & Roslender, 2003, 2004), and how a MAI’s room for interpretation can be utilized by both suppliers and users. For example, suppliers of MAIs (e.g. consultants) may use the interpretive space of MAIs to make it fit better with their competencies and specialties, or as shown in Ax and Bjørnenak’s (2005) study of the BSC in Sweden make the MAI more appealing to the preferences of the local adopter market.

The boundary object perspective highlights the plasticity and flexibility of MAIs. Here it is emphasized that managers may interpret and use MAIs in relation to organization-specific issues and problems. MAIs are mobilized in various ways, and as the MAI spreads, it retains some core elements, which are recognizable across translations (Cooper et al., 2017; Hansen & Mouritsen, 2005; Quattrone & Hopper, 2006).

The travelling ideas perspective focuses on how MAIs are “edited” (Sahlin-Andersson, 1996) and “creolized” (Sahlin-Andersson & Engwall, 2002) as they are implemented at the local level. According to theorists subscribing to the travelling ideas perspective, MAIs are translated and contextualized as they travel into organizations. Finally, the virus perspective focuses on what MAIs do to organizations in the post-adoption phase. The virus perspective puts emphasis on the multitude of ways in which MAIs are handled in the adoption and implementation phases. Change is an important part of the virus perspective, and the notion of mutation is one of the key characteristics of a virus.

2.6.4 Supply side

The four perspectives portray the supply side of MAIs differently. According to the management fashion perspective, supply side actors such as consultants, trade organizations, and business school academics are seen as important “fashion-setters” who are actively popularizing and fashioning MAIs (Ax & Bjørnenak, 2007). In contrast, the boundary object perspective does not have an explicit focus on the supply side of MAIs. However, related research in the strategy literature viewing strategy tools as boundary objects, highlights that actors such as business schools, consultants etc. play important roles in the diffusion of strategy tools (Jarzabkowski & Kaplan, 2014; Spee & Jarzabkowski, 2009).

According to the travelling ideas perspective, suppliers act as “carriers” of MAIs. Acting as carriers, these intermediary actors are actively shaping MAIs as they are circulated between organizations, resulting in local variations and adaptations of MAIs. Finally, according to the virus perspective, suppliers, consultants and trainers are “carrying the virus” and infecting

other organizations with MAIs, e.g. as a result of interaction in conferences/seminars, clubs and networks.

2.6.5 Demand side

The four theories also offer slightly different views on the role of the demand or consumption side of MAIs. According to the management fashion perspective, managers are consumers of fashionable MAIs. Although managers were portrayed as relatively passive recipients of fashions in the early articles (Abrahamson, 1991, 1996; Kieser, 1997), it is now increasingly recognized that managers have agency and draw pragmatically and opportunistically on MAIs (Benders & Van Veen, 2001). According to Benders and Van Veen (2001, p. 37-38), “*users can eclectically select those elements that appeal to them, or that they interpret as the fashion’s core idea, or that they opportunistically select as suitable for their purposes.*”

According to the boundary object perspective, managers have a relatively more active and powerful role, where managers are actively interpreting and mobilizing MAIs vis-à-vis organization-specific issues, and that users may apply MAIs for socio-political purposes. The travelling ideas perspective has a relatively similar view of the role of the demand side, i.e. that managers are contextualizing and translating MAIs to fit with local needs and circumstances, which may lead to creolized and re-creolized versions of MAIs. Finally, the virus perspective points out that managers are “active hosts” who may handle MAIs in different ways (e.g. translation) (Røvik, 2011).

3 The impact of viruses at different levels

In Section 2 we presented virus as an alternative perspective on the diffusion of MAIs. As was shown, the virus perspective focuses largely on the intra-organizational diffusion of MAIs. Some parts of the virus theory as formulated by Røvik (2011) are both less explicit and less developed. Therefore, we argue that there is a scope for further development of the virus theoretical perspective on MAIs. One issue identified in this paper relates to levels of analysis. In our view, the virus theory in management does not draw a clear distinction between the impact of a virus at the macro level and the micro level. In the table below we develop this issue further by distinguishing between viruses at 1) the global level, 2) the national level, and 3) the organizational level.

3.1 Global level¹

Viruses are highly contagious and at the global level viruses can become epidemics or pandemics. A pandemic is a global outbreak where a virus spreads globally, across multiple countries or regions of the world. At this level the focus is on the inter-country diffusion of a virus. In the context of MAIs, we could think of the diffusion of the BSC as an example of an MAI that has had global impact. The BSC has been resilient over time and across national boundaries, and is currently one of the of the most widely used management tools among executives (Rigby & Bilodeau, 2018). Influential professional groups can also acts as carriers of viruses and may trigger global outbreaks of MAIs, similar to that of the role of COSO in relation to rise and institutionalization of Enterprise Risk Management (ERM) (Hayne & Free, 2014).

¹ We define global as direct comparison or sampling from a large number of countries.

3.2 National level

Similarly, at the national level there could be local outbreaks of viruses. A national epidemic involves the widespread occurrence of a virus in one particular country. Suppliers of MAIs such as consulting firms, management gurus and business school academics (Ax & Ax, 2018; Ax & Bjørnenak, 2007; Larsson, 2015; Madsen & Slåtten, 2015) play key roles in infecting local organizations and triggering outbreaks of viruses. In the research literature it has been shown that some MAIs have very high adoption rates in some countries or regions, while they could be met with skepticism and resistance in countries that have a higher degree of immunity. For example, Lean has been referred to as being of pandemic proportions in Norway (Aspøy, 2014), whereas some evidence suggests that it is on a downward trajectory in other parts of the world (Wittrock, 2015). While the BSC has arguably been a global pandemic, a country such as France has shown a higher degree of immunity to the BSC virus (Bourguignon, Malleret, & Nørreklit, 2004).

3.3 Inter-organizational level

At the organizational level viruses could spread across and between organizations. Inter-organizational diffusion is also likely to occur as a result of contact and communication between organizations. Arguably, such diffusion is more likely to occur when there are close ties and relationships between organizations. For example, it has been shown that the diffusion of the BSC is shaped by social networks (Braam & Borghans, 2009). Other examples of ways viruses may spread include corporate groups and organizations with close customer-supplier relationships in networks (Davis & Greve, 1997; Westphal, Gulati, & Shortell, 1997). With regards to inter-organizational diffusion, another question pertains to whether viruses could spread via the supply chain to other organizations. If, for example, one firm uses ABC could it be that this firm's main suppliers also start using ABC?

3.4 Intra-organizational level

Finally, viruses can spread from agents within the organization. For example, organizational members with prior positive experience from a particular MAI may advocate for its implementation in the organization. Moreover, organizations sometimes hire from consulting firms (Sturdy & Wright, 2008), and these new organizational members may be carriers of viruses, which the organization is then exposed to from within, bypassing outside layers of defense.

On the basis of the reasoning above, Table 3 illustrates the impact of viruses at different levels of analysis.

Table 3: The impact of viruses at different levels

Level	Viral impact	Diffusion
Global	Global epidemics Global pandemics	Inter-country diffusion
National	National epidemics National pandemics	Intra-country diffusion
Inter-organizational	Infectiousness of suppliers or customers in the value chain Social network ties and relationships	Inter-organizational diffusion
Intra-Organizational	Infectiousness of organizational members	Intra-organizational diffusion

4 Interpreting prior MAI studies using virus as a theoretical lens

This section demonstrates how prior studies can be interpreted using virus theory as a theoretical lens. In other words, we exemplify with findings from prior studies in the management accounting literature using the concepts and terminology of the virus theory.

4.1 Selection of studies

The studies were chosen on the basis of representing a wide variety of MAIs. A second criterion was that the studies illustrate different virus characteristics and mechanisms. It should be noted that many of the studies focus on the national level, e.g. the diffusion of a MAI in a particular country or region.

Table 4: Selection of prior MAI studies reinterpreted using virus as a theoretical lens

Study²	Innovation	Level	Virus characteristic	Mechanism	Main research finding
Mayle, Hinton, Francis, and Holloway (2002)	BENCH	National	Infectiousness	Adoption	Adopters learnt about benchmarking from a variety of sources
Madsen (2014)	BSC	National	Infectiousness	Adoption	Adopters became exposed to the BSC via contact with a wide range of fashion-setters
Libby and Lindsay (2010)	BB	National	Immunity	Non-adoption	Low adoption rate of BB in North America
Aksom (2017)	BB	National	Immunity	Non-adoption	Low adoption rate of BB in Ukraine
Bourguignon et al. (2004)	BSC	National	Immunity	Non-adoption	Low adoption rate of the BSC in France
Askarany and Yazdifar (2007)	ABC	National	Immunity	Non-adoption	Low adoption rate of ABC in Australia
McLaren, Appleyard, and Mitchell (2016)	EVA	Organizational	Immunity	Expiry	Gradual abandonment of an EVA based model in three case study firms
Nielsen, Roslender, and Schaper (2017)	ICS	National	Immunity	Expiry	This radical initiative faced obstacles and over time lost steam in Denmark

² The studies by Hyndman & Lapsley (2016) and Madsen & Slåtten (2015) build explicitly on virus theory.

Siti-Nabiha & Scapens (2005)	VBM	Organizational	Immunity	Isolation	Resistance to a VBM model leads to decoupling from organizational practice.
Ax and Bjørnenak (2005)	BSC	National	Mutation	Translation	A “Swedish BSC package” by bundling BSC with other elements to fit Swedish business culture.
Modell (2009)	BSC and TQM	Organizational	Mutation	Translation	Studied how two MAIs were bundled and adapted to a particular organizational context
Soin, Seal, and Cullen (2002)	ABC	Organizational	Replication	Entrenchment	Studied how a version of ABC was institutionalized in UK multinational bank
Chiwamit, Modell, and Yang (2014)	EVA	National	Replication	Entrenchment	Studied the institutionalization of EVA in Chinese and Thai state-owned enterprises
Hayne and Free (2014)	ERM	Global	Replication	Entrenchment	Pointed to the importance of COSO as a global carrier of the ERM virus
Meidell and Kaarbøe (2017)	ERM	Organizational	Replication	Entrenchment	Studied the institutionalization of ERM in an oil and gas company
Johanson (2013)	BB	National	Mutation	Translation	The US BB model is more pragmatic (“rolling budgets”) than the Norwegian model.
Madsen and Slåtten (2015)	BSC	National	Infectiousness Immunity Replication Mutation Dormancy Incubation	All	All of the characteristics of viruses can be identified in empirical material on the implementation of

					the BSC in Scandinavia
Ogata et al. (2018)	BSC	Organizational	Infectiousness Immunity Replication Mutation Dormancy Incubation	All	Mutation and incubation stand out as particularly important, as the case organization customized its version of the BSC, and also allowed for sufficient time to incubate the BSC in organization
Hyndman and Lapsley (2016)	NPM	National	Multiple mutations, dormancy, replication	Reactivation, Entrenchment	The evolution of New Public Management has behaved much the same way as viruses.
Siverbo (2014)	BENCH	Organizational	Incubation	Maturation	Slow materialization and translation of Benchmarking in Swedish municipalities.
Hinton, Francis, and Holloway (2000)	BENCH	Organizational	Incubation	Maturation	Benchmarking requires considerable investments in terms of time, expertise and resources
DeToro (1995)	BENCH	Organizational	Dormancy	Inactivation	A number of pitfalls in the benchmarking implementation process Organizational resistance can bring a benchmarking project to a standstill

4.2 Infectiousness

Several studies in the management accounting literature have with reference to benchmarking adopters noted that: *“these are people who have learnt about benchmarking from a range of sources, most notably practitioner-oriented literature, networking, sometimes more academic literature, and reflections on their own practice.”* (Mayle et al., 2002: 222). In addition, in the context of the BSC, it has been shown that adopters became exposed to the BSC through contact with a wide range of fashion-setters carrying the BSC virus (Madsen, 2014).

4.3 Immunity

The study by Libby and Lindsay (2010) showed that North-American companies only to a marginal extent have adopted the Beyond Budgeting ideas. They seem to have a high degree of immunity and an outer level of defense. Similarly, Aksom (2017) finds that few organizations in Ukraine have adopted Beyond Budgeting. In a study of the intellectual capital statement (ICS) in Denmark, Nielsen et al. (2017) found that this radical initiative only enjoyed a modest degree of success, and faced obstacles, which ultimately led to its demise. Similar findings have also been reported in relation to ABC and the BSC. In Australia, Askarany and Yazdifar (2007) reported a low level of adoption of ABC. In France, organizations have resisted the BSC, partly due to lack of fit with the local ideology and values. However, also because they have been using an MAI with similar characteristics (“Tableau de Bord”) (Bourguignon et al., 2004).

4.4 Replication

Several MAI studies have focused on processes similar to replication. At the national level, Chiwamit et al. (2014) studied the institutionalization of EVA in Chinese and Thai state-owned enterprises. In a study of the rise of Enterprise Risk Management (ERM), Hayne and Free (2014) pointed to the importance of the professional group COSO as a global carrier of the “ERM virus.” At the organizational level, Meidell and Kaarbøe (2017) studied the institutionalization of ERM in an oil and gas company. Soin et al. (2002) studied how a version of ABC was institutionalized in UK multinational bank. The study by Madsen and Slåtten (2015) showed how the BSC in some organizations became entrenched, as it became embedded in organizational routines and software systems.

4.5 Incubation

A longitudinal case study by Siverbo (2014) addresses the translation of benchmarking in six Swedish municipalities. The process is slow and the project halts (“incubation”), but gradually develops from a cost comparison instrument to a wider performance management project. The MAI matures and then translates in the interaction between initiators and “counter-interests”.

Studies of benchmarking have shown that the incubation period can be substantial. Much research on benchmarking has highlighted that benchmarking requires considerable investments in terms of time, expertise and resources (Hinton et al., 2000). As pointed out in one study: *“Benchmarking can be a major investment. It is portrayed as both resource and time intensive...”* (Anand & Kodali, 2008, p. 259). There may also be a “maturity curve” in benchmarking implementation processes and these processes may take considerable time (Mayle et al., 2002).

Siti-Nabiha and Scapens (2005) study value-based management (VBM) in a gas processing company located in East Asia. In this study a VBM model is introduced by the top management of the parent company. However, organizational resistance led to a decoupling from organizational practice (“isolation”). As an organizational reaction to the VBM model, alternative KPIs were developed.

A recent multiple case study by McLaren et al. (2016) also examine VBM. The study looks at three firms in New Zealand where EVA-based accounting systems were introduced. The study spans a significant time-period including the 2008 financial crisis. The EVA models

were first adjusted and finally abandoned (“expiry”). The outcome is attributed to unanticipated managerial behavior, technical complexities, and changes in the markets. An interesting implication of the study is that the technical characteristics of MAIs should not be neglected in studying organizational change.

4.6 Mutation

Ax and Bjørnenak (2005) study the diffusion and transformation of the BSC in Sweden from a supply side perspective. They provide evidence that BSC is adapted to the Swedish business culture. The bundling of BSC with other management elements such as the intellectual capital model (“mutation”) result in a unique “Swedish BSC package.” In a study of bundling at the organizational level, Modell (2009) studied how two MAIs were bundled and adapted to a particular organizational context.

At the discursive level, Johanson (2013) compares the American and Norwegian models of Beyond Budgeting by analyzing the writings of two important propagators of Beyond Budgeting. The differences in how BB is presented are substantial enough to label them as two sub-models (“mutation”). A political model of corporate governance systems is used to theorize about the origins of the differences.

4.7 Dormancy

Drawing on virus theory and to some extent on translation theory, Hyndman and Lapsley (2016) describe New Public Management (NPM) in the UK from a historical viewpoint. Since its emergence in the 1980s, NPM has taken different shapes over time (“multiple mutations”). While it has been seemingly inactive (“dormant”) for shorter periods of time, NPM has penetrated the UK public service sector over a long period of time.

At the organizational level, there are many factors that can lead to dormancy and inactivation. For example, there is a number of pitfalls in the benchmarking implementation process (DeToro, 1995). Organizational resistance can bring a benchmarking project to a standstill. In the literature it has been pointed out that resistance could be happens due to mistrust (Hinton et al., 2000). Inactivation may also occur because of top management decisions and considerations. The often significant investments needed in terms of time and resources (Hinton et al., 2000) could make it difficult to convince top management that continuing with the benchmarking project is worthwhile (Dattakumar & Jagadeesh, 2003).

4.8 Summary

In this section, we have reinterpreted some selected studies on MAIs using the virus theoretical lens. This indicates that many of the virus characteristics and idea-handling mechanisms can be identified in studies of MAIs, both at the organizational and national levels. Studies drawing explicitly on the virus perspective such as Madsen and Slåtten (2015), Ogata et al. (2018) and Hyndman and Lapsley (2016) show that most, if not all of the mechanisms, are involved in diffusion processes.

5 Discussion

5.1 Supply-demand dynamics in virus processes

In his initial formulation of the virus perspective, Røvik (2011) is relatively silent on the role of the supply side in the spread of viruses. The focus on the intra-organization diffusion in Røvik’s initial formulation of the virus theory means that we could lose sight of the role of

suppliers and carriers of viruses (extra-organizational actors), as well as how viruses are diffused at the inter-organizational level.

One particularly apparent issue is the origins of viruses. Where do viruses come from and how do they break out? What is the role of intermediary actors who act as carriers of viruses? Those issues are today better elaborated in management fashion theory, which has a more explicit focus on the role played by fashion-setting actors in diffusing and disseminating MAIs (Madsen & Slåtten, 2015). Taking a multi-level view of viruses, as discussed in this paper expands the theory to provide a more explicit focus on the inter-organizational diffusion of viruses, and not only intra-organizational diffusion and institutionalization. This means that future elaborations of the virus perspective at the inter-organizational level need to have a more explicit focus on the role of suppliers in virus processes.

5.2 Viruses and organizational outcomes

The virus metaphor may invoke negative associations given its terminology relating to virology (e.g. illness, disease, or even death). However, in comparison with many other sociological and institutional perspectives used in accounting research, the virus theory does not a priori theorize about the effects on organizations of implementing MAIs. Røvik (2011), in outlining the virus perspective, states that “...the question of whether these processes and their outcomes are “negative” or “positive”, although interesting and answerable in numerous ways, falls beyond the scope of this paper” (Røvik, 2011, p. 648). In effect, the virus perspective is not incompatible with rational and functional arguments that MAIs create value in organizations (e.g. Chandler, 1962; Cooper & Kaplan, 1992). However, the virus perspective can certainly be used in more critical approaches to accounting as demonstrated by Hyndman and Lapsley’s (2016) study of NPM.

The strength of the virus perspective lies in its set of organizational idea-handling processes and outcomes. In studies of translation and Scandinavian institutionalism, mechanisms such as maturation (“incubation”), inactivation and reactivation (“dormancy”) are barely addressed. Furthermore, most research studies tend to focus on one or perhaps two MAIs. The virus perspective, on the other hand, assumes that organizations constantly are exposed to a multitude of viruses. Organizations are often infected by many viruses at the same time and the viruses could go, but could also come back.

Furthermore, studies in the research literatures on translation usually focus on what the organization does with the MAI. The virus perspective, on the other hand, shifts the focus to the long-term impact of the MAI on the organization. This opens up possibilities for addressing broader issues of organizational change in conjunction with MAIs. What is the impact over time on for example organizational strategy and behavior?

5.3 Implications for research methods

The virus perspective has several implications for the choice of research methods when studying MAIs. Based on Røvik (2011), the virus perspective calls for longitudinal and qualitative studies. Researchers need rich qualitative data that provide insights into how the implementation process unfolds over time. Implementation from a virus perspective extends beyond adoption to include a range of organizational idea-handling processes, which take place in the post-adoption phase.

Historical studies seem to be a fertile approach for studies using this perspective. This was exemplified by for example the study by Hyndman and Lapsley (2016). Furthermore, the archives of organizations (public and private) constitute a rich source of evidence with respect to official documents relating to the adoption and implementation of MAIs. In-depth interviews with organizational actors could be a complementary data source, exemplified by the study by Madsen and Slåtten (2015).

6 Conclusion

6.1 Contributions

The current paper set out to introduce the virus perspective, which offers an alternative perspective on the diffusion of MAIs. We have shown how this perspective can contribute to current debates about the diffusion of MAIs. The demand-side of MAIs is relatively understudied. The virus perspective is well suited for explaining practice variation since it offers a rich set of theoretical mechanisms, which can be used to shed light on the diffusion and institutionalization of MAIs.

6.2 Limitations

Our paper has been theoretical and conceptual in nature, and the goal has been to discuss and elaborate on the virus theory in the context of MAIs.

A first limitation pertains to our choice of theoretical perspectives. There are other theoretical perspectives on the diffusion and implementation of MAIs that could have been used for comparison with the virus perspective (Zawawi & Hoque, 2010). In this research paper we compared the virus perspective with the perspectives of management fashion, boundary objects, and travelling ideas. More recent perspectives could have been included such as institutional work and institutional complexity (Chiwamit et al., 2014; Hayne & Free, 2014; Meidell & Kaarbøe, 2017). However, the perspectives were chosen on the basis of how prevalent they have been in studies within this research field over a longer time period.

Secondly, adopting terminology from another field of research, in this case biology, may be viewed as controversial. Application of the virus metaphor in the context of MAIs could be interpreted as adopters being sick or dysfunctional as a result of infection from a MAI. However, as noted earlier, the virus perspective does not a priori theorize about the effects of adopting MAIs. Furthermore, the virus metaphor is not a value judgment on the usefulness of a particular MAI. Instead, it is mainly a theoretical lens to understand the diffusion and post-adoption evolution of MAIs.

6.3 Further elaborations and future empirical work

The virus perspective is new and there is only a handful of applications of the virus perspective in both the accounting field and management generally (Hyndman & Lapsley, 2016; Kjeldsen, 2013; Madsen & Slåtten, 2015; Madsen, 2017; Ogata et al., 2018; Quist & Hellström, 2012). Therefore, there are many opportunities to use the virus perspective in empirical studies, but also to make further theoretical elaborations.

In particular, future work could develop the virus perspective at different levels of analysis. This could provide a better integration with the management fashion theory (Madsen & Slåtten, 2015). Researchers could also develop strategies for studying virus processes. The choice of research method should be aligned with the level of analysis. As we have outlined in

this paper, viruses can be analyzed at different levels of analysis, and these different levels call for different data sources. While an in-depth longitudinal case study may be suitable to analyze virus processes at the intra-organizational level, other research approaches may be needed at higher levels of analysis. At the international level, it would for example be appropriate to study how various actors involved in the dissemination of MAIs (e.g. consulting firms, gurus) (Becker, Messner, & Schäffer, 2010; Cooper et al., 2017; Johanson, 2013) act as virus carriers and the ways in which they infect potential adopters. Another way to study the viral aspects of MAIs would be to examine the uptake and portrayal of specific MAIs in textbooks (Bjørnenak, 1997; Golyagina & Valuckas, 2016; Huczynski, 2011).

Future research could develop the handling-mechanisms to be even more fine-grained. For example, there may be multiple mutations of certain MAIs. The extensive research literature on the BSC has, for instance, shown its considerable evolution over time, both in how it is presented conceptually in the literature (Cooper et al., 2017), and in how it is implemented and translated in managerial practice (Perkins, Grey, & Remmers, 2014; Speckbacher, Bischof, & Pfeiffer, 2003).

A further interesting issue is whether organizations may be infected by several MAIs at the same time. Could the presence of multiple viruses (e.g. BSC, BENCH and BB) lead to mutations? A related question is whether one virus could lead to mutations in another virus? Finally, different MAIs have different popularity trajectories within an organization. For example, one MAI could enter a state of dormancy, while other MAIs stay active. These processes and dynamics could fruitfully be explored in future research.

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