CORPORATE REAL ESTATE MANAGEMENT (CREM) ON THE WAY FROM BUZZWORD TO CONCEPT – A COMPARATIVE ANALYSIS OF TWO CREM MODELS

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Corporate Real Estate Management (CREM) has been intensively discussed in research and practice since the 1990s. Nevertheless, empirical studies show that CREM has remained a buzzword rather than a concept to this day and that CREM theories are developed in isolation rather than in joint effort. Due to this type of segregation, questions about the theoretical background of CREM have not yet been answered unequivocally; neither is a complete model of the impact relationships of CREM nor a uniform or comparable concept of real estate management tasks in non-property companies. The aim of this paper is to decrease the segregation by bringing two of these isolated CREM concepts, namely the models of TU Delft and TU Darmstadt, together for a comparison.

In the comparison, we noticed that CREM is a broad and deep concept. The scope and standpoint in CREM are not fixed. The findings show that both models identify the different views on CRE in non-property organisations and reconcile these views. However, the models have different trains of thoughts of what and from which perspective is modelled: one models the CRE related management activities inside a non-property organisation and the other models the use of CRE in the organisation-wide economic transformation processes.

The paper provides an in-depth analysis of the two CREM concepts, contributing a way to see and discuss the similarities and differences of these two concepts. The value is not to nominate a best concept, but to provide an analysis that contributes to the theoretical foundation of corporate real estate management. This should take CREM a step further on its way from a buzzword to a concept. This version of the paper, as presented at ERES 2019, is an intermediate report about this endeavour.

INTRODUCTION

The role of corporate real estate management (CREM) has developed tremendously in the past decades. For example, in the model of Joroff (1993), the role of CREM has developed from a technical function, which takes care of the building engineering, to cover also the analytical, problem-solving, business planning and strategic aspects of managing corporation's operational assets. Nevertheless, compared to other fields, such as physics, chemistry or medical sciences, the development in CREM is recent and driven by practice. According to Krumm et al. (2000), the internationalisation of corporation's business activities in the 1960s and 1970s led firms to also develop their real estate (RE) activities and, at the same time, as Joroff (1993) illustrated, the CREM function professionalised in these multinational corporations. The professionalization has continued (Jylhä et al. 2019) and CREM has been intensively discussed in research and practice since the 1990s.

Despite the professionalization and development steps, recent studies indicate that CREM has remained a buzzword rather than a concept to this day. Although CREM theories have common elements, such as added value (e.g., Lindholm, 2008; Appel-Meulenbroek et al., 2010) and real estate strategies (Roulac 2001; De Jonge et al. 2009), the various CREM concepts remain apart and the synergy of these different approaches is not captured. This can also be seen in practice in the way CREM research teams across the globe use their own models as a starting point in their research. In line with this notion, Heywood and Arkesteijn (2017) stated that the current CREM alignment models are developed in isolation from each other. Due to this type of segregation, questions about the theoretical background of CREM have not yet been answered unequivocally; neither is a complete model of the impact of CREM nor a uniform or comparable concept of real estate management tasks in non-property companies.

The aim of this paper is to decrease the segregation by bringing two of these isolated CREM concepts, namely the models of TU Delft and TU Darmstadt, together for a comparison. In practice, this paper presents a catalogue of criteria for classifying the development of these models, i.e., the respective purposes and conceptual derivation of the two models.

This paper has four parts. After this introduction, the two models are presented. The comparison includes the identified similarities and differences and illustration of the key findings. In the last part, the conclusions are drawn.

PRESENTATION OF THE CREM MODELS

TU Delft CREM model

The CREM model of TU Delft has its roots in the CREM developments in the Netherlands in 1980s-1990s. The CREM developments can be tracked back to two organisations, where Hans de Jonge, one of the co-authors and developers of the model, worked and influenced (Vande Putte and Jylhä, 2017): (1) the Dutch Government Building Agency, which was and still is responsible of supplying substantial amount of space for the need of governmental agencies and institutions, and (2) the establishment and development of a new department in the Faculty of Architecture at TU Delft that focused on management practices in the built environment. When it started in September 1992, the department was called Real Estate & Project Management (Bouwmanagement & Vastgoedbeheer)

(Prins and Hobma 2016), currently known as Department of Management in the Built Environment in the Faculty of Architecture and the Built Environment.

The presentation of the model in this paper is based on previous literature and interviewing the key co-creators and co-authors of the model resulting in a narrative review of the model (Vande Putte & Jylhä, forthcoming).

The structure and contents of the TU Delft model were driven by the need to systematize and legitimate the CREM function inside of a non-property organisation and by the need to institutionalise CREM in education at TU Delft. The Delft model is a representation[1] of the many views on real estate – in this model there are 4 views – within a CREM function inside of a non-property organisation and it highlights the role of CREM in reconciling these views.

The structure of the CREM model of TU Delft can be explained through two perspectives and two levels (Krumm et al. 2000, in Dewulf et al. 2000): through business and real estate perspectives and through strategic and operational levels dividing the model into four views that are aligned by the fifth view, here called corporate real estate management. This structure is illustrated in Figure 1 (a).

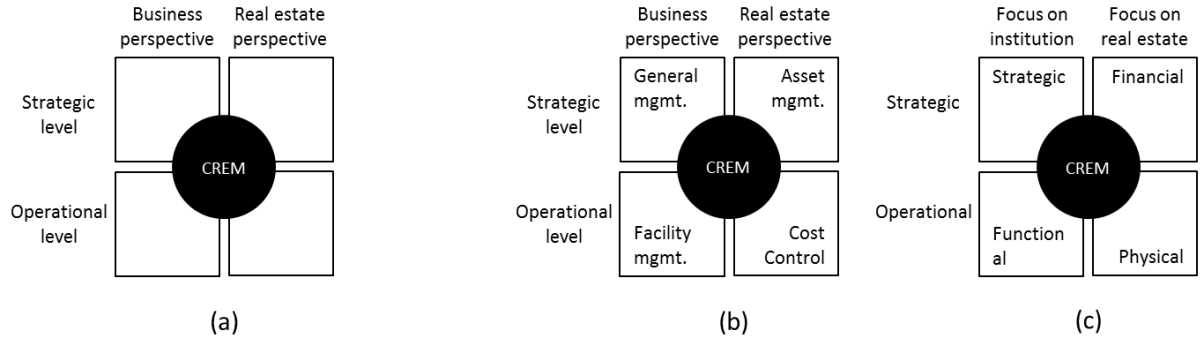

Figure 1 (a) Basic structure of the TU Delft CREM model, (b) the model by Krumm et al. (2000), (c) the model by Den Heijer (2011).

The most cited version of the model (Figure 1b) is presented by Krumm et al. (2000). The Krumm et al.(2000) version was prepared by Suyker (1996) and is followed and used in several other publications such as those by Den Heijer (2011) (Figure 1c), Van der Zwart (2014) and Curvelo Magdaniel (2016). It was Den Heijer (2011) who extended the model into an organisation-wide tool to structure stakeholders and performance indicators. The labels in the model vary between the different versions. In table 1, the views are presented without fixed names to avoid strong associations of the different labels.

[1] The many versions of the Delft model reveal two interpretations of the model: (1) a structured representation of the CRE related management activities in a non-property organisation (i.e., internal CRE interpretation) or (2) a representation of the required alignment of CRE with the corporate strategy and operations inside a non-property organisation (i.e., organisation-wide interpretation). In this paper, the focus is mainly on the first interpretation.

Table 1 Presentation of the four views.

Business perspective on strategic level Strategic level on business side focuses on strategic planning including tasks such as establishment of common goals, setting priorities and responding to the changing business environment. This view strives for achieving long-term corporate goals. The strategic CRE demand is translated based on the strategic planning of this domain. The representatives of this domain are top and middle managers, i.e., the policy makers of the organisation who are responsible to the owners of the corporation. CRE demand of this domain is typically presented by corporate real estate manager – the manager working as the linking pin between this view and the RE organisation. This manager has the key responsibility to manage RE as a corporate resource, as a means to achieve a certain end, defined by the strategic business level, in an effective way. The label of this domain has varied for example from as 'general management' (Krumm et al. 2000 in Dewulf et al. 2000) to 'strategic' (Den Heijer 2011).	**Real estate perspective on strategic level** The strategic level on real estate side responds to the financial and investment-related CRE demands. In this domain, CRE is seen as a financial and investment product or instrument: an asset or resource that is used to provide better results for example through efficient and sustainable structures, investments and other asset arrangements. This domain is represented by those people who are interested in the allocation of this financial and investment asset, i.e., top and middle managers of the organisation including for example asset and portfolio managers. The label of this domain has varied between 'asset management' (Krumm et al. 2000 in Dewulf et al. 2000); 'asset' (Vande Putte and Jylhä 2017); and 'financial' (Den Heijer 2011).
Business perspective on operational level The operational level on business side covers corporate operations and processes where products, services and knowledge are created mainly by corporate's employees. More and more especially services and knowledge are created together with customers and other third parties. Corporate's operations and processes together with employees and other stakeholders set operational CRE demand: operations, processes and their stakeholders need to be accommodated and the tasks and activities of the stakeholders need to be functionally supported to ensure high performance of the operational business level. To satisfy the RE demand of this level requires fitness for use. The operational business level is typically represented by the doers of the organisation covering managers on the operational business level and the representatives of the employees, customers and other accommodation users. Typically, the facility manager represents these stakeholders in the RE organisation. The label of this domain has varied for example from 'facility management' (Krumm et al. 2000 in Dewulf et al. 2000), 'functional' (Den Heijer 2011) and 'activity' (Vande Putte and Jylhä 2017).	**Real estate perspective on operational level** Operational real estate level produces physical and functional RE solutions with certain spatial quantities and qualities and manages and maintains these solutions. The provided solutions support the performance of corporate's operations and processes including the activities of employees and other stakeholders. In this domain, solutions and services are offered either through certain projects (e.g., refurbishment and repairs), or on a more regular basis (e.g., annual maintenance work or workplace programs). This domain is represented by technical and facility managers who are responsible for the spatial fitness of the operating RE. The label of this domain has varied for example from 'cost control' of projects and operations (Krumm et al. 2000 in Dewulf et al. 2000), to 'physical' (Den Heijer 2011) and 'technical' (Vande Putte and Jylhä 2017).

CREM

The model emphasises that coordination and management are needed among the four views presented in Table 1. In this model, CREM – the circle in the middle – aims for reconciliation

between the four views. The CREM function ensures that there is a fit between the four views in order to contribute to the overall performance of an organisation. This is also the main reason to position the CREM function in the middle of the views.

TU Darmstadt CREM model

The premise of the TU Darmstadt model is the idea that real estate has different purposes in economic transformation processes, which need to be clarified in terms of type and scope before its significance for economic success can be concluded (Figure 2). They can be the result of a service provision process, can be used as operating resources in a service provision process or can be the basis of an investment process as a real existing asset position.

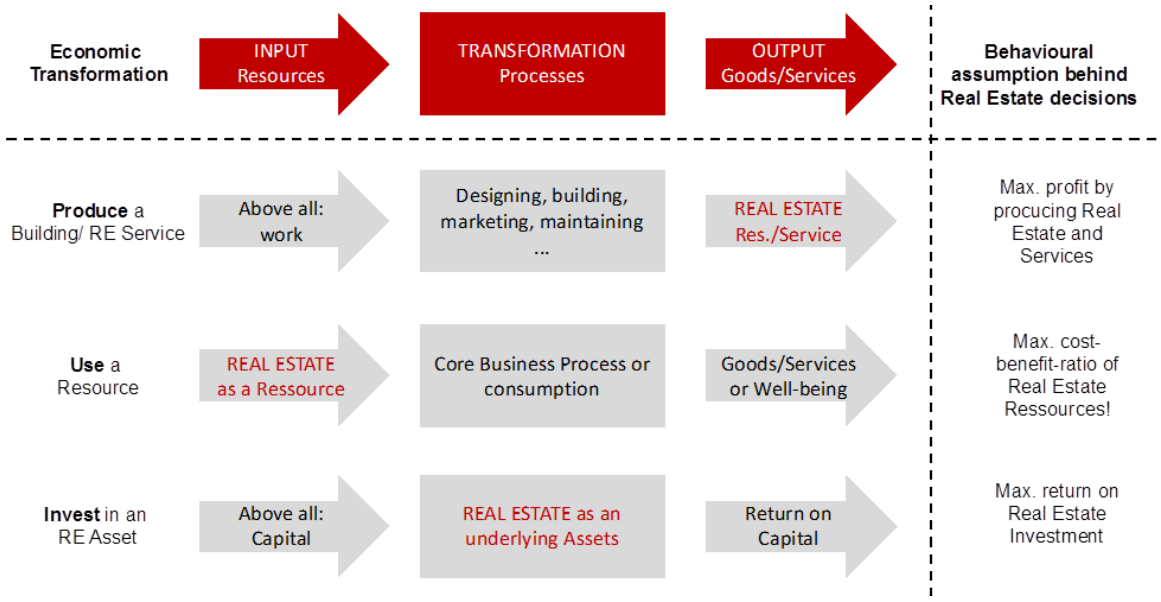

Figure 2 Three different purposes of real estate in economic transformation processes (Kämpf-Dern, Pfnür and Roulac 2015)

In accordance with the respective significance of the property in the economic process, rationally acting economic entities behave according to the different assumptions shown in Figure 2 on the far right when making CRE decisions. Conflicts of interest are thus unavoidable.

In the model, real estate is the output of a production or service process in the construction and real estate industries. From CRE's point of view, some of these services are provided by the company itself, but most of them are purchased on the market. The economic significance of the process of providing real estate resources for corporates is significantly high, although it varies depending on the stage of development of the sector. In the case of Deutsche Telekom, for example, around 20,000 employees are employed in the provision of real estate for around 200,000 employees. From the point of view of the CRE and external suppliers, the target figure "profit" is defined differently. While suppliers maximize profit factors such as the contribution margin from the products, a rationally acting internal construction and operations management achieves its profit from minimizing the provision costs for its own company. Depending on the chosen control concept, however, profit center concepts in the internal performance-based CREM also exist in business practice, which incentivize decision-makers on profit sizes (Pfnür 2000). Using real estate as a

resource in the service creation process is probably its original meaning in CREM. The goal is to maximize the cost-benefit ratio. The facts are initially obvious, but on closer inspection show that they are very complex and will therefore be explained next in detail.

The high capital intensity of real estate implies that real estate has a high financial significance, especially for corporates. This applies in particular to the property ownership of companies. For example, analyses by the major Swiss bank UBS show that the book values of real estate owned by companies in Germany account for 20% of the market capitalization of DAX companies.[2] Corporates and the public sector are the largest real estate investors in Germany. In such situations, fluctuations in the performance of the properties influence the profit, risk and liquidity ratios of the corporates. The same applies to the tax burden on companies.

Due to its nature, every property fulfils all three economic functions as an economic good at the same time. Efficiency criteria must be applied to real estate decisions from all three perspectives. The degree of freedom in making decisions is reduced accordingly. Each decision concerning the property can only be made once, so that the significance of the property in its three different functions must be clarified beforehand. This naturally results in conflicts of objectives, the solution of which is the most important task of real estate management (see for example Pfnür 2011). The basic CREM model (Figure 3) therefore focuses on reconciling the interests of the respective stakeholders. What is special about CREM compared to the real estate value creation system is that all three meanings of real estate have to be managed under one roof. Although the responsibilities within a company's organizational structures often diverge, the CRE manager ultimately has to coordinate the three areas.

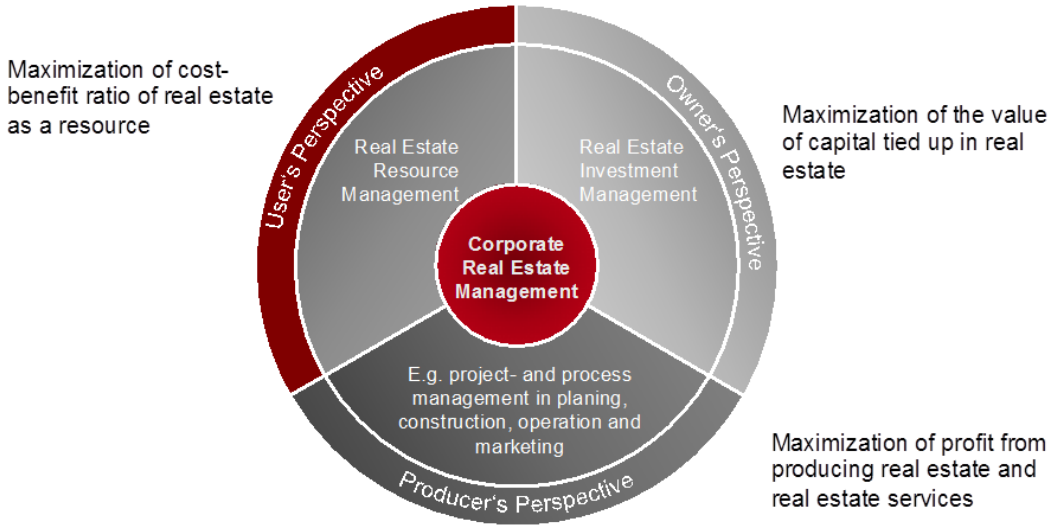

Figure 3 The basic CREM model of TU Darmstadt (Pfnür 2014).

Some actors distinguish between CREM in the broader sense (as explained above) and CREM in the narrower sense (as explained above). CREM in the narrower sense comprises exclusively the function

[2] This ratio naturally depends on the market cycles of the capital and real estate markets. The year 2005 was deliberately chosen here, as both markets had comparatively average conditions before the financial and economic crisis (UBS 2005).

of real estate as an operating resource with the aim of maximising the cost-benefit ratio for the user (user perspective).

In this model, corporate(/public) real estate management refers to the management of all real estate originally acquired as operating resources in the service provision process of a company/public institution. The CREM/PREM serves the institutionalization of all real estate management tasks of an organization. At the heart of CREM/PREM is the reconciliation of interests between the three functions of real estate as an economic good, based on the objectives and strategies of the organisation.

Properties offer companies potential for success in all three functions, which influence the company's success via the associated mechanisms of action: *operating performance*, *real estate performance* and *financial performance*. Pfnür, Seger and Appel-Meulenbroek (2019) have decomposed this relationship in a framework (Figure 4).

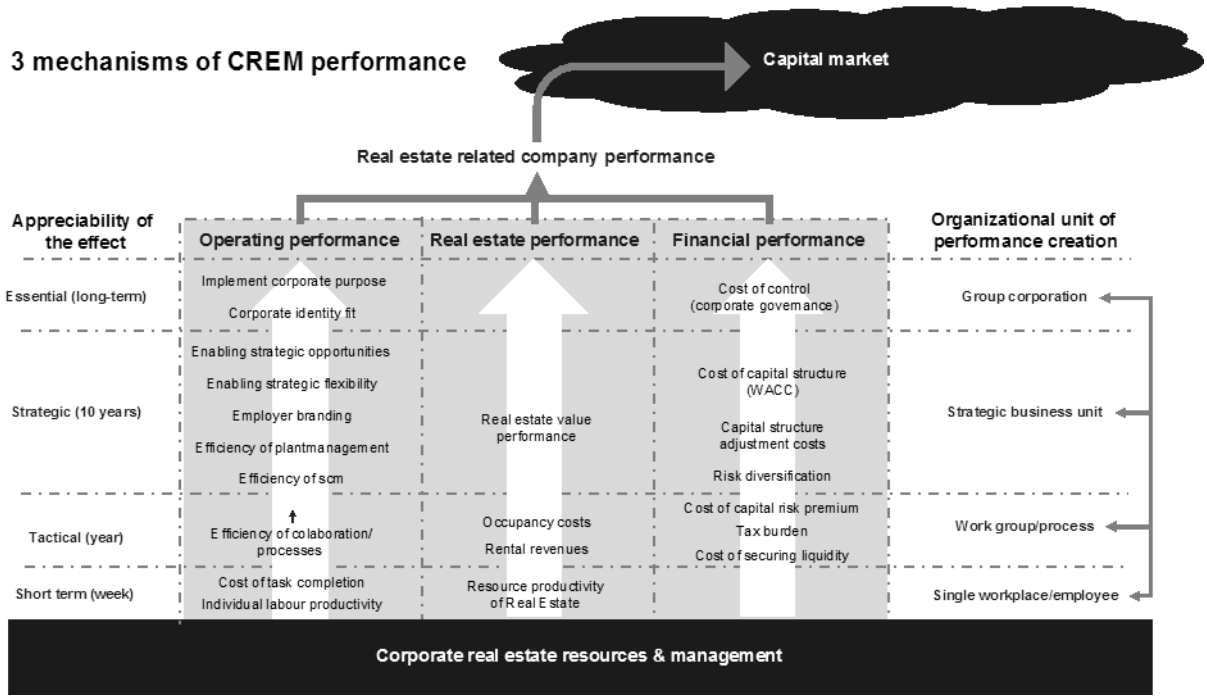

Figure 4 Three mechanisms of CREM performance.

The three mechanisms of action result in the contribution of corporate real estate management to corporate success. Assuming that maximising the equity tied up in the company is the paramount objective of management, the success of the real estate industry can be measured in monetary terms, for example, with the aid of the shareholder value concept developed by Rappaport (1986). There have been numerous contributions in this respect in real estate literature (e.g. Grünert 1999). What all contributions have in common is that they very much follow the value driver trees of the basic concept of managing companies by means of shareholder value, which almost completely neglect *operating performance* in particular. Even though the concept for controlling real estate management in general and the real estate property portfolio in particular appears to be fundamentally suitable, it has therefore not become established in corporate practice (Pfnür and Hedden 2002).

Accordingly, the framework is comparatively easy to adapt for academic and practical use. It becomes more difficult from the next step. Pfnür, Seger and Appel-Meulenbroek (2019) show in their literature review that the persistence of the effects of success in the real estate business can last for very different periods from situational to virtually infinite. This is also associated with very different units considered to be responsible for real estate economic success stories. After all, the different effects of success for corporate practice shown in Figure 4**Error! Reference source not found.** regularly exhibit major dependencies, which are very often characterised by negative features.

COMPARISON OF THE MODELS

Main similarities

The models have common characteristics (Table 2). Both models address the real estate used by non-property companies and/or public organisations. In general, both models root in the observation that the awareness of the importance of CRE and its management is low in non-property organisations. The overall goal of the authors of the models is similar: claim the needed attention and surface CRE and its management in these organisation. In the model of Delft, the goal has also been to establish CREM education based on the model.

The remedy proposed by the authors of the models is the same. Firstly, to identify the views on CRE and its management that exist in a corporation. Then to claim the need for reconciliation between the different, identified views that can represent even conflicting interests. This key idea of reconciliation has had a founding impact on CREM theories: to systematise and legitimatise CRE and its management in non-property organisations.

The representation of the reconciliation and the different views is rather similar: a central circle and petals around it. The petals (i.e., the views) are mostly similar although the fit is not 100 per cent between the models: the asset management view in the TU Delft model is similar to the investors' perspective in the Darmstadt model and, respectively, the cost control view to the producers' perspective and the facility management view to the users' perspective. Both models are descriptive by nature although the TU Delft model is occasionally used as prescriptive to ensure that all views are taken into account.

Table 2 Main similarities in the models.

	TU Delft and Darmstadt models
RE stock	RE used by non-property private and public organisations.
Root observation	The awareness of the importance of CRE and its management is low.
The overall goal	To surface CREM in non-property organisations. (TU Delft model also to establish CREM education.)
Key remedy of the model	Identification of different views on CRE. Reconciliation of the identified views.
Impact on CREM theory	Founding in systematisation and legitimisation.
Representation	Circle with petals.
Nature	Descriptive.

Main differences

The models have also differences (Table 3). Both models have been established in different eras and different settings. The development of the TU Delft model can be tracked to the late 1980's and early 1990's, when there was a need to position CREM in a non-property organisation. This need was recognised globally in Europe and North America although the Dutch environment had a dominant role in the development of the model. The key publication including the model was published in 2000. The development of the TU Darmstadt model started independently from the TU Delft model in 2010 and the first version was published in 2014. The main reason for the development was to justify CREM as a management concept in a non-property organisation.

The models model two different phenomena and as a consequence the petals represent slightly different things. The TU Delft model looks at the CRE-related management activities in the organisation and the petals represent viewpoints on CRE. The TU Darmstadt model models the contribution of CRE for corporate success. This model looks at the presence of CRE in different economic transformation processes that take place in organisation and how CRE is used in these processes. The petals represent the uses of CRE. Because of this, the standpoint in the models is different: the standpoint in the TU Delft model is inside the CRE organisation[3] while the model of TU Darmstadt is organisation-wide. In both of the models, these views are reconciled but in the Delft model it is mainly done by the CRE manager, whereas in the Darmstadt model it is done through a CRE management system.

Table 3 Main differences in the models.

	TU Delft model	**TU Darmstadt model**
Eras and setting	1990s (published 2000), Netherlands and US.	2010s (published 2014), Germany.
The modelled phenomena	The CRE related management activities in a non-property organisation. Petals are viewpoints on CRE.	CRE's contribution for the success of the organisation; the presence of CRE in the transformation processes. Petals represent uses of CRE.
Standpoint	Inside the CREM organisation	Organisation-wide
Reconciliation actor	Based on the CRE manager	Based on the management system

Summary of the key findings

Figure 5 visualises the main findings from the comparison. The TU Delft model has four views that have standpoints inside the CRE organisation (Figure 5a). These four standpoints each have a counterpart in the organisation and the representative in the CRE organisation takes care of this counterpart. The perspective in this model is 'inside-out', meaning that CRE-related management activities are viewed from the perspective of the CRE organisation first, where-after the other CRE-related stakeholders inside and outside the organisation are added to the four perspectives.

The TU Darmstadt model has three views (Figure 5b). In these views, CRE is used in three economic transformation processes following the behavioural assumption of each view. The standpoint is not

[3] This is in line with the first interpretation (i.e., internal CRE interpretation) of the TU Delft model. Later, Den Heijer extended the model to organisation-wide interpretation.

inside the CRE organisation but it is organisation-wide. The perspective in this model is 'outside-in', meaning that the use of CRE and related management activities are viewed from the perspectives of these 3 transformation processes, and concentrate in the CRE management function.

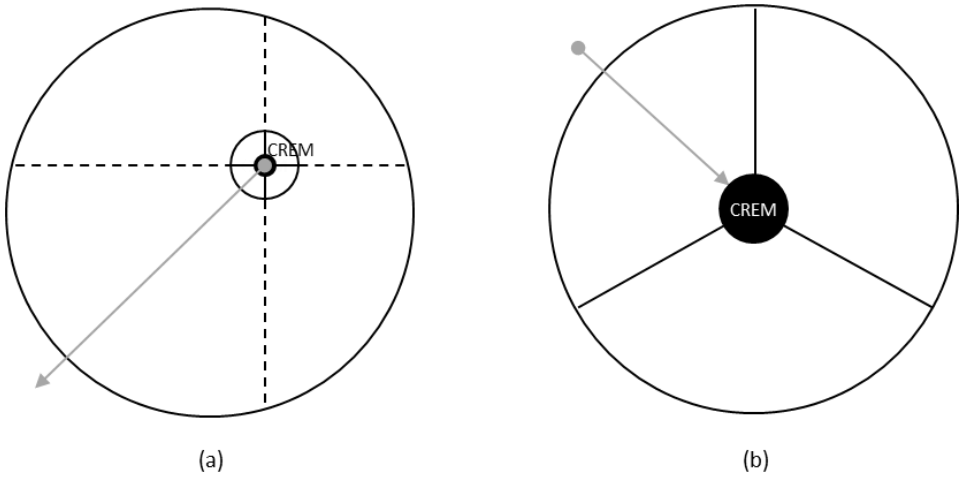

Figure 5 Visualisation of the conceptual differences between (a) TU Delft model and (b) TU Darmstadt model.

CONCLUSIONS

There are various CREM concepts and models that have their own approach to modelling CREM. These models have remained apart and, thus, the synergy of these different approaches is not captured. The aim of this paper was to decrease the segregation by bringing two of these isolated CREM concepts, namely the models of TU Delft and TU Darmstadt, together for a comparison.

In the comparison, we noticed that CREM is a broad and deep concept. The scope and standpoint in CREM are not fixed. This offers a variety of possibilities to approach CRE and its management but it also complicates the communication and creates confusion. The findings show that both models identify the different views on CRE in non-property organisations and reconcile these views. However, the models have different trains of thoughts of what and from which perspective is modelled: one models the CRE related management activities inside a non-property organisation and the other models the use of CRE in the organisation-wide economic transformation processes.

This paper is a work in progress. The here presented comparison includes the preliminary findings. To contribute to the maturity of the CREM models, further model comparison is required pursuing into a common language and CREM model taxonomy. Both models are also currently being further studied, developed and reported as independent research work.

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