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ScienceDirect

International Journal of Project Management 34 (2016) 258–270

International Journal of Project Management

www.elsevier.com/locate/ijproman

From the front end of projects to the back end of operations: Managing projects for value creation throughout the system lifecycle

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Received 28 September 2014; received in revised form 23 April 2015; accepted 18 May 2015
Available online 10 June 2015

Abstract

Morris (2013) calls for value creation for project stakeholders using project outcomes. This is an attempt to link the front end of the system lifecycle – the project phase – to the back end, i.e. the operations phase. Little is however known about how value creation occurs through developing project outcomes which have the capacity to continue value-creating activities even decades after a project is completed. We establish that projects are multi-organizational systems which transit from the project phase to the operations phase in system lifecycles, and we use the systems view to analyze value creation mechanisms within the system lifecycle. We carry out empirical research into the lifecycle of a shopping center. Four distinct value-enhancing integration mechanisms in the operations of this multi-organizational system are identified, and propositions for four new project management approaches that create value during the project and have long-term value-enhancing impacts in the operations phase are derived.

Keywords: Management of projects; Value creation; System lifecycle; Project phase; Operations phase; Integration

1. Introduction: value creation in project management that raises the use value of a system in the back end of its lifecycle

Morris (2013) calls for value creation for stakeholder organizations using project outcomes. These stakeholders – including sponsors, users, service providers, commercial firms and public organizations – use such project outcomes in the operations phase of the system lifecycle. The value-adding elements within a project link the front-end project management process to the back end of the system lifecycle, i.e. the operations phase. In this analysis, we adopt a system lifecycle view which assumes that a project creates outcomes which have the capacity to continue operations and additional value-creating activities even decades after the project phase has ended. The core element for creating value in project management is the integration of work among organizations within the project's multi-organizational system (Morris, 2013). Little is yet known about how value creation among multiple interdependent organizations occurs when creating project outcomes which have the capacity to continue value-creating activities in the operations phase of a system lifecycle.

The purpose of this paper is empirical research into the operations phase of the lifecycle of a shopping center to identify value-enhancing integration mechanisms and derive new project management approaches. These new project management approaches increase understanding of how a multi-organizational system can be developed which adds value during the project phase and also has the capacity to continue value-creating activities

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http://dx.doi.org/10.1016/j.ijproman.2015.05.003
0263-7863/00/

in the operations phase of the system lifecycle. We rely on the systems view (Cleland and King, 1968; Morris, 1983) when analyzing value creation mechanisms within the system lifecycle (Morris, 2013). We also draw on the value stream (Davies, 2004) concept to illustrate how the value creation process can continue throughout the system lifecycle.

The Big Apple shopping center was the subject of our empirical research (Big Apple is a direct translation of Iso Omena, the Finnish name). Big Apple is located 13 km to the west of downtown Helsinki and is located within the Helsinki Metropolitan Area. The project for developing and building Big Apple was launched in 1997 and operations at the shopping center began early in 2001. Since the center opened, 115 organizations including users, service providers, commercial firms and public organizations have been involved in its operations as an integrated network that has created value for all the organizations belonging to it. In our empirical study, we identify value-enhancing integration mechanisms and derive project management approaches that can be employed during a project to add value when developing this type of value-creating operational system. Our analysis looks at these integration mechanisms at a micro-level, i.e. we scrutinize concrete activities by individuals or teams and examine individual choices and intentions in order to identify value-enhancing integration mechanisms in the shopping center's multi-organizational system over its lifecycle. Four distinct integration mechanisms are identified. Four propositions are then derived for new project management approaches that add value by developing a value-creating operational system during the project phase which has the capacity to both initiate new and continue existing value-creating activities in the operations phase.

2. Prior literature

2.1. Value creation and system lifecycle

Morris (2013) suggests that project management should aim to add value by achieving the outcome desired by the project sponsor and other stakeholder organizations. If we accept the notion that the outcome of a value-adding project is a multi-organizational system capable of creating use value for involved stakeholders, we can then argue that value creation within the project takes place through project management's activity of creating this operational system – or network – of multiple organizations. Creating a well-functioning operational network of organizations is often a long and evolving process that requires integration through social interactions. We therefore argue that initiating and developing this value-creating operational network as early as possible, i.e. during the front-end phase of a project, yield substantial increases in the value created over the system lifetime.

To broaden our perspective from that of a project to an entire system lifecycle, we adopt a systems view (Cleland and King, 1968; Morris, 2013). The contemporary project management standard BS6079 (2010) also broadens the project lifecycle view to the lifecycle of an entire system by establishing the notion of an extended project lifecycle that covers operation and ends with withdrawal. The CADMID acquisition cycle used by the UK's MoD (Ministry of Defence) also provides a view of an entire system lifecycle, starting with the concept phase and ending with disposal (DSE, 2002). Based on these views, and for the purposes of the current study, we determine that the system lifecycle involves two major phases: the project phase and the operations phase. In connection with expanding the system lifecycle perspective from technical to organizational systems, Sayles and Chandler (1971) used the systems view to describe how organizations interact with technologies within a system, and how a development project interacts with operations in the organizational system's lifecycle. Morris (2013) links the foundations of the systems approach with the work of Ludwig von Bertalanffy (e.g. von Bertalanffy, 1950). In more recent research into integrated solutions, Davies (2004) has developed a value stream concept which describes the continuous value creation process among multiple organizations throughout the system lifecycle from project phase to operations phase. The interesting link between the project and operations phases includes the project's task of establishing an operational networked organization for the operations phase that will add value during operations. Moving from a value-adding project to full-scale operations requires that the multi-organizational network which will handle the operations phase is at least partly established during the project phase, and also that during the project phase, the network becomes a mature operational entity that is capable of running operations and simultaneously developing new ways of creating value.

Early work by Morris (1983) on project interfaces is relevant for understanding the aims of value creation within the system lifecycle, since it is suggested that value is cast forward from the project phase to future operations. Morris (1983) establishes that the project system's temporal lifecycle subsystem involves dynamic interfaces. If we accept the notion that this kind of dynamic link also exists in the project-to-operations interface in the entire system lifecycle, it is then natural that project management's key activity in terms of adding value is to establish a network of multiple organizations which evolves throughout the project and is finally transformed into a value-enhancing network in the operations phase.

Temporal integration across the system lifecycle is typically expected to take place as a result of plans that manage sequential interdependence (Morris, 1983, 2013), but when system complexity and dynamism are raised as results of multiple organizations participating in different phases, mutual adjustment and interaction among multiple organizations are then needed as integration devices to address the reciprocal interdependence between organizations (Morris, 1983; Sayles and Chandler, 1971). Morris (1983) further establishes that higher organizational levels are involved in the project-to-operations transformation in a system lifecycle, and therefore, because such interdependencies are both strategic and complex in nature, integration through planning is not necessarily effective — plans usually focus on a project's concrete outputs and may ignore the need to take account of desired outcomes which arise from the interdependencies between organizations. This observation related to a complex (and value-creating) organizational system as the actual outcome of a

project also provides good reason to question many project success studies which suggest 'planned' long-term impacts from projects: can success ever be planned when a project and its outcome are parts of an ever-changing complex multi-organizational system? We could thus expect that in creating these kinds of complex multi-organizational systems through projects, arrangements for mutual adjustment and interaction between multiple organizations in the project and operations phases are probably the only effective way of guaranteeing value creation in the future post-project phase.

If long-term value creation facilitated by the project is the ultimate project aim, we can argue that the value created by multiple organizations in the system's operations phase can be considered to be a lagging measure of project success. Research into project success attempts to link the project phase to the post-project operations phase of the system lifecycle by asserting that the long-term consequences of projects (or the results of specific project management approaches) serve as the projects' pre-determined success criteria. Such consequences, however, can only be observed much later in the operations phase. For example, Shenhar et al. (2001) argue that project success is a multi-dimensional concept that is further complicated by the temporal dimension: they introduce two long-term success criteria — 'business success' and 'preparing for the future', that are both facilitated by a project and its management, but can only be measured at the back end of the system lifecycle, a long period of time after completion of the project. Many managerial suggestions made in connection with existing project success studies concern the use of long-term success criteria in project management and rely on the establishment of long-term future scenarios and goals. For this reason, these suggested success criteria-based managerial approaches tend to be highly prescriptive in nature. It is however difficult to demonstrate a clear cause–effect relationship between a project (and/or its specific project management approach) and its potential long-term consequences considered as prospective successful project outcomes.

An important aspect in project success studies is the often ignored fact that beauty [i.e. success] is in the eye of the beholder: different stakeholders perceive success in different ways. An existing multi-stakeholder setting is ignored in many success studies, and these studies are therefore often conducted by only examining success from the viewpoint of a single focal stakeholder (e.g. a supplier or a sponsor), or by not making any statement at all regarding the underlying assumptions of an anticipated focal stakeholder. For this reason, in regard to Shenhar et al.'s (2001) 'business success' success criterion, we could ask "whose business?" — and with the 'preparing for the future' criterion, we could ask: "whose future?" Turner (2014) has addressed this issue by distinguishing between different stakeholders in a project (investor, sponsor, customer, operators, users, project team, suppliers, service providers, consumers), all of whom have their own specific and different success criteria for measuring achievements at different points of time within the system lifecycle, i.e. measuring: 1) project output at the end of the project, 2) project outcomes in the short-term (months after the project), and 3) project outcomes in the long-term (years after the project).

We can summarize the above discussion on success criteria and stakeholders' perspectives on success by arguing that assigning the responsibility for long-term value creation to a project's management by issuing 'planned long-term consequences' (e.g. success criteria) as targets for future achievement, is not necessarily as effective as the project management approach of creating, while the project is running, a multi-organizational network that has the capacity of operating the system and initiating value-creating activities in the operations phase. This network then connects the project phase to the operations phase by using mutual adjustment and interaction between multiple organizations, which in turn helps to avoid potential pauses in value creation when responsibilities and roles are transferred between the two phases.

2.2. Integration among multiple organizations in order to add value

The core function of project management is integration (Morris, 2013). Organizational integration addressed in the extant research into organization design (Jaspers and van den Ende, 2006; Morris, 1983, 2013) forms one important theoretical foundation for understanding integration within projects. In this connection, for example, Thompson's (1967) work on integration and interdependency, Galbraith's (1973) work on integration and information processing, and Lawrence and Lorsch's (1967) work on integration and differentiation, are all relevant. In project management research, however, both organizational and technical (or product/outcome related) aspects are found to be strongly present in integration: Gaddis (1959) suggests that the job of the project manager is to create the product, and Morris (2013) argues that a project organization has a division organized around the end-product. Integration in projects includes systems integration activities in which products and services are integrated into the whole of a project product or solution, by, in essence, integrating in an organizational manner the work and capabilities of multiple suppliers that provide those products and services (Brady and Davies, 2004; Hobday et al., 2005). The combination of product and organizational dimensions in integrating within projects is further emphasized by the fact that the work (and the product) breakdown structure (WBS) has become one of the best-known techniques for project management. WBS, however, does not directly address interdependency issues among multiple organizations, a topic which arose in work by early system theorists such as Simon (1962) and Alexander (1964).

In projects, the product (or more broadly: a project outcome such as the long-term value implications of a system in the operations phase) will play an important role in shaping the organization that surrounds it, and therefore the choice of product structure and the organizational design of a project interact (Sanchez and Mahoney, 1996; Sosa et al., 2004; Steward, 1981). This means that interdependencies within the project product (or an outcome which can be evaluated in the post-project operations phase in terms of the capability of multiple interacting commercial organizations creating value), translate fairly well into the needs for organizational integration within a project, thus providing a

basis for developing new project management processes tailored to create the desired system outcomes.

2.3. The research framework and central concepts in this study

Our research framework, see Fig. 1, summarizes the review of prior literature and indicates the focus of the empirical study. There is no earlier research into project management approaches that add value by creating and developing a network of multiple organizations during the project phase which then transits to the operations phase. The ultimate purpose of this type of project management approach is to create an appropriately designed arrangement involving multiple organizations that can continue the process of value creation as an adaptive and self-organizing system in the operations phase.

Our research analyzes value creation mechanisms within a multi-organizational system in the commercial operations phase of a shopping center. We identify four integration mechanisms for value creation in the operations phase of the system lifecycle (see Fig. 1). These findings on value-enhancing integration mechanisms enable us to derive four propositions regarding new project management approaches (see Fig. 1) that increase understanding of how project management can add value by establishing and developing an operational system that has the capacity to continue value-creating activities in the operations phase of the system lifecycle. Our findings regarding new project management approaches for creating an appropriately designed organizational system expand the traditional view of a project that simply produces a physical facility: we find that in addition to delivering a facility, a value-enhancing project also results in the creation of an operating organization. This type of project must therefore be viewed from a broader perspective, and new project management approaches are accordingly required. For this reason, in this research we suggest new project management approaches that also focus on the development of appropriate organizational systems and not just the development of facilities.

As regards Fig. 1, the notion that an organizational system changes continuously throughout its lifecycle is important. For example, the existing industry-wide practice of focused facility construction projects suggests that a coalition of organizations in the project phase typically includes a large number of project-based firms (e.g. architects, construction contractors) who are not engaged in the operations phase, while a coalition in the operations phase includes many organizations (e.g. users, service providers, commercial retailer firms) who are not engaged in the project phase. In this existing industry practice, however, owners are typically involved in systems over their entire lifecycle (Winch, 2014). The new value-enhancing project management approaches identified in this study facilitate the participation of several organizations central to the system in both the project and operations phases; these organizations then carry over the creation of value from the project phase to the operations phase.

As regards considering a shopping center to be a multi-organizational system, the ultimate aim of multiple organizations participating in the commercial operations phase of a

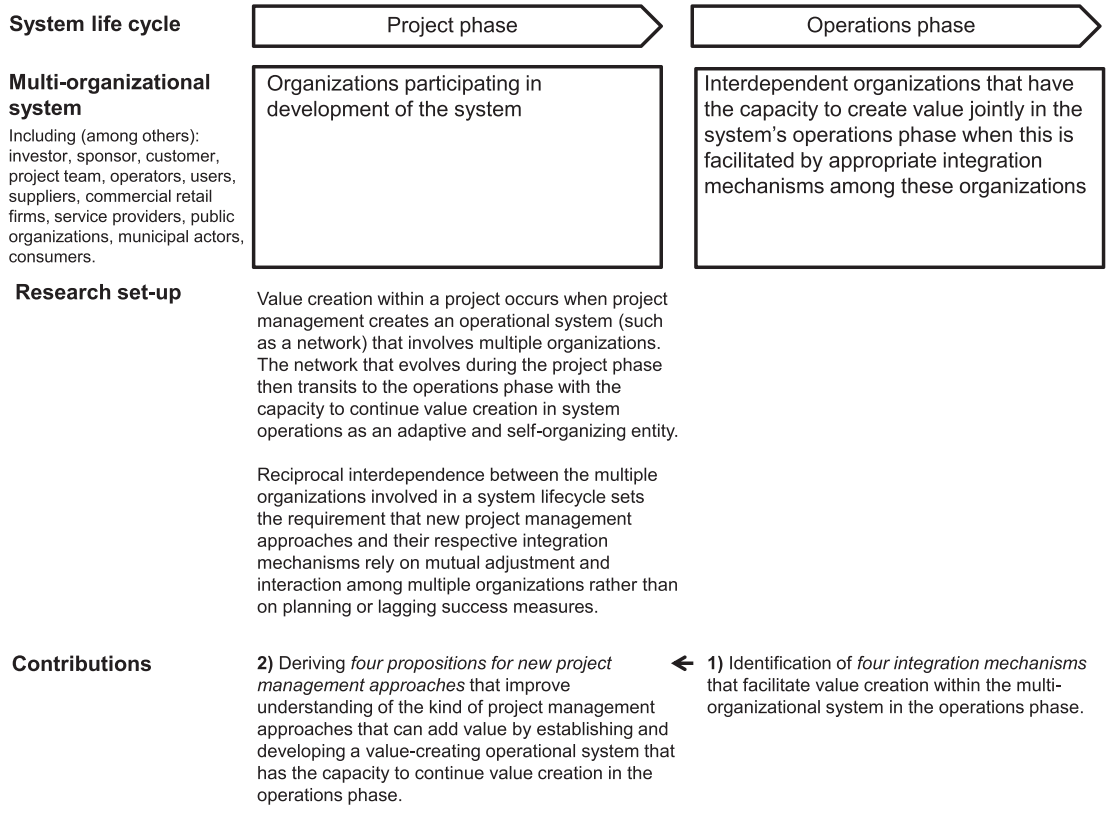

Fig. 1. Research framework: value creation among multiple organizations throughout the system life cycle.

shopping center is the creation of value for the center's final customers, i.e. local residents or other individuals attracted to the shopping center's offering. As this offering is provided by multiple organizations that work together, enhancing value creation for the final customer means that there is a need for integration between all these organizations. This, in turn, increases profitable growth for both individual organizations and the entire shopping center. As regards value creation in a project that aims to develop a smoothly-functioning shopping center, the aim in the project phase is to establish and develop a multi-organizational network that assumes the responsibility for conducting operations after the project phase, and continues to create value both for final customers and all organizations in the system.

3. Research method and data

The unit of analysis used in our research is a shopping center. We focus on analyzing integration mechanisms among multiple organizations in the operations phase of the center's lifecycle, and on deriving new project management approaches to be used in projects for establishing a value-creating operational system. We employ a case research strategy, utilizing rich empirical data to build constructs and propositions inductively (Eisenhardt and Graebner, 2007).

In a manner similar to Dutton and Dukerich (1991), we selected a single unique case in a clearly defined geographical location for our study. The Big Apple shopping center has 50,000 m^2 of retail space and is located in Finland in the city of Espoo, the western section of the Helsinki Metropolitan Area. Separate buildings for customer parking, office accommodation and senior housing are situated next to the shopping center. The main building has three floors and a parking hall that extends across the entire basement below ground level. The ground floor is occupied by two large hypermarkets. In addition to shops, restaurants and cafés on the first and second floors, Big Apple also incorporates a unique solution in which the third floor is, in the main, occupied by private and public service providers, including a large library operated by City of Espoo, a cinema, a chapel, postal services, a pharmacy, and private companies offering sports and healthcare services. At the end of 2012 — and until the opening of the metro and bus terminal extension that was under construction during the course of our study, 115 businesses were operating in Big Apple. These included fashion stores (28), cafes and restaurants (15), furnishing and home supplies (15), beauty and health (14), commercial and public services (8), hypermarkets and grocery stores (5) and specialty retailers (5).

In order to develop a rich understanding of the integration mechanisms we interviewed 12 individuals who were actively involved with shopping center operations on a daily basis. The process of selecting interviewees was iterative, in that during each interview, we always asked whether each interviewee could suggest other individuals who might be good sources of complementary information regarding value-enhancing integration mechanisms among multiple organizations in Big Apple. As most of the respondents involved in our study had worked in Big Apple from the time when it began operating in 2001, they had had ample opportunities to develop and observe integration practices between organizations operating in the shopping center. The 12 respondents represented ten organizations operating in Big Apple which differed significantly in both size and ownership structure. Table 1 details our respondents and their respective organizations.

Data was gathered primarily through semi-structured interviews. In addition, we obtained access to a variety of documents and archival records which provided detail concerning the subjects of our study, i.e. the context and operation of organizational actors

Table 1
Interviews carried out for the study.

Informant position	Organization	Business focus locally in Big Apple	Interview length (minutes)	Date of interview
Director of Commercial Operations	Citycon (real estate company)	Real estate investment, private company	89	12-Apr-12
Store Manager	Suomalainen kirjakauppa (bookstore)	Retail bookstore chain, private company	84	12-Apr-12
Entrepreneur	Life (wellbeing store)	Retail chain of health and organic food stores, private franchising company	89	30-May-12
Development Director	HOK-Elanto (co-operative retailer)	Restaurant services belonging to HOK-Elanto, part of the S Group	68	8-Jun-12
Store Manager	Alko (alcoholic beverages)	Alcoholic beverage retail chain, government-owned enterprise	74	4-Jun-12
Deputy Plot Manager	City of Espoo	Real estate management-focused division of the City of Espoo	90	12-Jun-12
Store Manager	Aleksi 13 (department store)	Retail clothing chain, private company	85	14-Jun-12
Retailer/entrepreneur	K-citymarket (hypermarket)	Retail grocery and commodity chain belonging to Kesko Corporation	55	9-May-12
Entrepreneur	Parkkipesu (car wash)	Car wash, cleaning and maintenance services chain, private company	55	31-May-12
Restaurant Manager	Ravintolamaailma (restaurant services)	Restaurant services unit, part of HOK-Elanto	83	23-May-12
Service Manager [a]	Kirjasto Omena (library)	Library organization of the City of Espoo	105	16-May-12
Director of Services [a]	Kirjasto Omena (library)	Library organization of the City of Espoo	105	16-May-12

[a] Joint interview.

within the shopping center. All interviews were recorded and transcribed. Our respondents were senior members of the 10 organizations involved in our study and held positions such as entrepreneur or CEO, store manager and development director. Table 1 includes details of all the respondent positions. We asked each respondent to describe inter-organizational integration practice at Big Apple in detail. We placed particular focus on recurring practices that connect the activities of multiple organizations. We also focused significant events involving multiple organizations such as joint marketing campaigns or meetings. As our study was explorative, we made every effort to let each respondent speak freely about the subject of integration and intervened only when the subject of discussion moved to topics clearly unrelated to the current study. While interviews represented the primary method of collecting data for our study, we also obtained and analyzed supplementary documents and archival data that helped us verify important details such as dates, places, and the names of involved organizations and individuals. For additional contextual information, we also familiarized ourselves with several newspaper articles published about Big Apple in the 14 years of its existence, and we also studied brochures, advertisements, campaign flyers and magazines published by both the shopping center and its business actors.

Our analysis is conducted at the micro-level, i.e. we use a microfoundational (Felin et al., 2012) approach to consider lower-level entities such as individuals with their choices, purposes and activities, and microprocesses (Reay et al., 2006) to derive a macro explanation of value-enhancing integration mechanisms and management approaches. After identifying micro-level activities and processes, we produced written summaries that combined and summarized the information received from different informants, and this resulted in a detailed and rich description of the focal processes. The development of these summaries was supported by the parallel development of different visual models and timelines that helped us form a shared understanding of how the focal processes emerged and functioned in Big Apple's operations. The following section presents the results of this analysis.

4. The development of integration mechanisms and propositions concerning project management approaches

Our analysis revealed four integration mechanisms that connected multiple organizations within Big Apple's operations into joint value creation activities, and the roles played by different organizations in these activities (i.e. which organizations participated in integrating activities by, for example, serving as coordinating bodies or integrators). Furthermore, we derived four propositions concerning new project management approaches that aim at value creation by effectively integrating organizations involved in a project into a value-enhancing network. We have categorized the four integration mechanisms and propositions concerning new project management approaches under four themes: coordinating body; external image and internal identity; non-living technical system and living organizational system, and; competing businesses and value. These mechanisms and propositions are summarized in Table 2, and a discussion of how they emerge follows.

4.1. Coordinating body

Our observations indicate that individual businesses cannot survive in a shopping center alone and that the prosperity of the shopping center as a whole, i.e. the integrated entity of multiple interconnected businesses, requires the coordination of activities between those businesses. Shopping centers mostly compete for customer footfall with other nearby shopping centers and department stores by offering multiple differentiated businesses and their brands, as well as public and municipal services. In Big Apple, we discovered that several organizations which we refer to as coordinating bodies had been established to ensure that an ideal mix of organizations, offerings, and mutually agreed ways of doing business is in place. More specifically, we identified three coordinating bodies that serve as integrators: Citycon, the building owner; Linnunrata, an advertising agency; and the Big Apple shopkeeper association.

The shopping center owner took the role of a coordinating body when decisions were being made about actors operating in the center and the retail space allocated to each organization within the center. In this respect, the owner acted as an integrator who had an understanding of the bigger picture, thus avoiding sub-optimal arrangements in which individual organizations would only attempt to optimize their own short-term business objectives without contributing to value creation by the entire center and its businesses. For example, actors were not selected by the owner solely on the basis of their willingness to pay rent. Rather, when selecting tenants, the owner took account of value creation in a much broader context by examining the impact that each individual actor would have on long-term value creation by the center and its multiple organizations. The owner thus adopted the role of a coordinating body that viewed each business from the perspective of the entire shopping center, aiming to facilitate the creation of "value for all". While serving in this coordinating role, the ultimate goal of the owner's decision making was to enhance the value proposition offered to potential customers by the shopping center through a broad offering of products, services and brands, and to continuously renew this offering by regularly refreshing aspects of the center to ensure its continuing attractiveness. At times, the owner's decisions conflicted with the business interests of individual actors. For example, the owner chose to impose long opening hours, ensuring that all shops within Big Apple were also open on Sundays when many actors external to Big Apple competing with businesses inside Big Apple were closed. Even though, according to the short-term perspective of some individual businesses, such long opening hours were not commercially feasible, these businesses contributed to value creation within the shopping center by complying with the specified common opening hours.

The Big Apple shopkeeper association also acted as a coordinating body as it integrated multiple organizations and the ways in which they ran their businesses and their operations. Informal joint activities such as seminars and excursions to other shopping locations abroad were organized by the association,

Table 2
Summary of integration mechanisms and propositions derived from the empirical research.

Theme	Integration mechanisms (IMs) among multiple organizations within a multi-organizational system	Propositions concerning new project management approaches
Coordinating body	IM1: "A coordinating body that integrates activities in commercial operations by multiple organizations is an essential element for joint value creation within the entire system."	Proposition 1: "Establishing several coordinating bodies in a project enhances value creation in that project by developing a coordinated network of organizations that can transform into a smoothly-functioning multi-organizational system in the operations phase."
External image and internal identity	IM2: "Activities aimed at creating an external image of a system for increased business value in the operations phase reinforce internal identity building and thereby further internal integration among multiple organizations over the system lifecycle."	Proposition 2: "Involving multiple organizations from different phases of the system lifecycle in external image building activities early in a project contributes to increased integrative value-enhancing activities and identity building within that project, and also connects organizations in the project and operations phases through a shared brand image and identity."
Non-living technical system and living organizational system	IM3: "Even though the manner in which they are interrelated is complex, integration between the living organizational and non-living technical system dimensions is beneficial: in the operations phase, continuous change in multiple organizations and their businesses require adjustments, refurbishment and the expansion of technical systems, and technical systems which feature inbuilt flexibility offer higher use value to the system of multiple organizations in the operations phase."	Proposition 3: "Creating long-term scenarios involving possible future developments in the multi-organizational business system of the operations phase and the careful selection of an appropriate strategy for incorporating flexibility into the design of the capital element and its technical systems are likely to increase the system's use value."
Competing businesses and value	IM4: "Individual organizations competing within a multi-organizational system increase value for both the final customer and the system as a whole because as a single integrated system, the competing organizations working together represent a broader overall offering to final customers than would be the case with similar organizations in a non-competitive setting."	Proposition 4: "Starting in the project phase, value creation over the lifetime of a multi-organizational system can be enhanced by involving a combination of business organizations with operations that include internally-competing offerings and brands."

and this integrated effectively the multiple organizations doing business in Big Apple. In the early stages of the operations phase, however, many of these organizations only represented the unconnected perspectives of their own businesses at meetings of the board of the association. Following additional informal meetings and trips by members of the board and the association's members to other similar retail establishments abroad, the atmosphere at board meetings gradually became increasingly collaborative. Regarding their own contribution as part of collective efforts to improve the profitability of the entire shopping center also meant that the degree of integration between organizations increased. The retailer/entrepreneur of K-citymarket describes one excursion involving the association as follows:

> "Change for the better began in 2004. Actually, there was an obvious date when this all began — the date of the shopkeeper association's joint excursion. We all sat down and talked without a busy schedule. When the excursion was over, the association started to function in an entirely new manner, which meant that individuals participating in its activities also collaborated in new ways."

The Linnunrata advertising agency adopted an informal coordinating role by organizing weekly 'Monday-morning coffee' meetings involving the center owner, store managers and other stakeholders. Even though the informal emergence of such an organization in a coordinating role was unexpected, the integration work performed by Linnunrata was considered to be highly valuable. To summarize, in our empirical analysis we observed that there can be more than one coordinating body, and that in a multi-organizational setting during the operations phase, several coordinating bodies increase overall value through their integrative activities: in this case the advertising agency; the shopkeeper association; and the owner who has power over the actor selection process. We therefore present Integration Mechanism 1 (IM1):

> IM1: "A coordinating body that integrates activities in commercial operations by multiple organizations is an essential element for joint value creation within the entire system."

Our findings suggest that the formal establishment of such coordinating bodies in projects of the shopping center type would significantly enhance value creation over the system lifecycle. These kinds of coordination bodies may include advertising [or other equivalent] agencies that organize joint activities and/or user associations that take a formal role in integrative activities or help initiating both formal and informal integrative practices among multiple organizations. Also, project management approaches should encourage a range of organizational arrangements that allow for openness and flexibility to emerge, including a variety of 'unexpected' or informal coordinating bodies or entrepreneurial individuals who offer their services voluntarily. These emerging informal bodies can then be made formal when such action is appropriate, and given even broader authority in connection with value-enhancing integrative activities. Our observations further indicate that encouraging these kinds of bodies and individuals to arrange informal events, meetings,

excursions or other informal and open joint activities is beneficial for enhancing integration and joint value creation within a multi-organizational setting. Even though, during the project phase of the system lifecycle, it may be difficult to identify which bodies and individuals could become effective integrators in the operations phase, we argue that the early identification of potential integrating bodies and equipping these kinds of bodies with both legitimacy and power early in the project timescale can enhance the value of the entire system significantly. Doing this at an early stage should make it easier to create coalitions that will continue to be effective in later phases of the system lifecycle and also contribute to project designs that enhance the use value of the system from the very beginning of the operations phase. We therefore offer Proposition 1:

Proposition 1. "*Establishing several coordinating bodies in a project enhances value creation in that project by developing a coordinated network of organizations that can transform into a smoothly-functioning multi-organizational system in the operations phase.*"

4.2. External image and internal identity

Organizations belonging to the Big Apple shopkeeper association – including the shopping center owner, the city library and other municipal service providers – participated in an extensive joint project to design a brand image for Big Apple in collaboration with the Linnunrata advertising agency. Specific activities included the joint design of marketing campaigns, holding brand image-building meetings at which logos, slogans and visual identities were developed, designing brochures and advertisements, and scheduling joint campaigns. These external image-building activities were coordinated by Linnunrata, and decisions concerning external brand image profiles were made by organizations belonging to the shopkeeper association.

In connection with external brand image-building activities and related joint meetings, the internal identity of Big Apple began to develop among business organizations within the center. This identity influenced integration by enhancing rich communication among organizations, and this led to many collaborative joint activities. Furthermore, development of the center's external brand image and the marketing issues were continuous processes throughout the operations phase at meetings and discussions involving members of the Big Apple shopkeeper association, and these joint meetings have correspondingly created and enforced an ever-strengthening identity among organizations operating within the center. Gradually, once operations had been launched and a collaborative spirit and joint identity began to develop among members of the shopkeeper association, the most active managers of local businesses were appointed to the association's board, and this further enhanced the promotion of Big Apple's identity. Active members of the board fostered a feeling of pride in Big Apple being 'the best' shopping center and superior to its competitors in all respects, and members of the association promoted the idea that Big Apple has the best customers who always deserve the best service in any possible situation regardless of their specific need or problem. The result was a virtuous circle which enhanced both the center's external image and its internal identity, with external PR-related communication and internal branding developing hand-in-hand. The Aleksi 13 store manager commented as follows on these joint activities:

> "You can openly share your views. You'll be asked for your opinion on marketing issues, how the shopping center as a whole is performing, and whether you have new ideas for shared campaigns involving multiple actors operating within the shopping center. We also discuss opening hours, and what the actors involved think about them."

Joint activities aimed at building a system's external image tend to serve as integration mechanisms that directly enhance collaboration among multiple organizations. These activities also indirectly enhance internal integration among multiple organizations by strengthening the shared internal identity within a multi-organizational system. We therefore suggest Integration Mechanism 2 (IM2):

> IM2: "Activities aimed at creating an external image of a system for increased business value in the operations phase reinforce internal identity building and thereby further internal integration among multiple organizations over the system lifecycle."

Building of the shopping center's external image among the multiple organizations operating within Big Apple began at the start of the commercial operations phase when formal marketing and advertising activities were launched. We suggest that these types of marketing-related arrangements should ideally be initiated early in the project phase of a system lifecycle. We argue that establishing external image building activities at an early stage and creating a shared identity which is continuously reinforced over the system lifetime both result in steadily increasing system value. The components which contribute to system value come from having a commercial brand established at an early stage, from internal organizations that are tightly coupled through long experience of collaborating in image-building activities, and from the shared feeling of identity that results from such collaboration. Specific practical suggestions would be the hiring of an advertising agency and establishment of marketing campaigns early in the project phase, and the launching of marketing campaigns to achieve tight integration between organizations involved in the project phase and organizations that will subsequently be engaged in the operations phase. We therefore offer Proposition 2:

Proposition 2. "*Involving multiple organizations from different phases of the system lifecycle in external image building activities early in a project contributes to increased integrative value-enhancing activities and identity building within that project, and also connects organizations in the project and operations phases through a shared brand image and identity.*"

4.3. Non-living technical system and living organizational system

Our observations indicated that a multi-organizational setting is a living business organism which demands that the non-living

built environment context and its technical systems be adjusted as required to adapt to different business needs. The integration that occurs through owner-initiated change in the actor mix and through the allocation of retail spaces also implies the need to change physical business locations to better support the selection of the most suitable businesses, their offerings and their brands. One example of how the built environment was adjusted in Big Apple's operations is the rebuilding of the rooftop parking space in 2012 to convert the former parking area into retail units. Furthermore, changes in external market conditions and business needs provide new opportunities for the center's businesses, but also require changes to the building which often means sizeable construction projects and changes to the center's technical systems. The director of commercial operations at Citycon commented on the continuing need to make physical changes to the Big Apple building:

> "Every time a new organization establishes operations [in Big Apple], it doesn't just occupy empty space. There is a corresponding need to make a large number of specific changes. We modify access routes, move escalators, and sometimes a facelift is required to improve an area's visual appearance. And if we find that our supply of restaurant services is less than adequate, we focus attention on where additional space for locating those services could be found."

Our analysis shows that business actors and public service providers are active in launching initiatives based on their own business visions. Furthermore, both the center owner and the municipality have, by expanding the business space available to Big Apple and by developing surrounding housing units to increase local clientele, demonstrated continuing interest in adjusting the physical element of the shopping center solution to match the differing business needs of organizations in the current and future network and the opportunities open to them. Changing the internal built environment context to better support effective integration among multiple businesses supports the business goals associated with taking advantage of these opportunities. Conversion of the rooftop parking area into leasable shopping units by Big Apple's owner, the new metro station and the current bus terminal extension all involve significant construction activity. We offer Integration Mechanism 3 (IM3):

> IM3: "Even though the manner in which they are interrelated is complex, integration between the living organizational and non-living technical system dimensions is beneficial: in the operations phase, continuous change in multiple organizations and their businesses require adjustments, refurbishment and the expansion of technical systems, and technical systems which feature inbuilt flexibility offer higher use value to the system of multiple organizations in the operations phase."

Significant construction work is required to execute changes in the built environment context. Because technical systems are subject to changes that originate in the dynamic organizational system with its changing business needs, we argue that building flexibility into the technical systems used in projects is important as this will affect value in the operations phase. Implementing built-in flexibility at the front end of a construction project when the main design principles are selected is advantageous. Project management should therefore take into account potential business needs that will set requirements for updating technical systems and create optimized long-term product and organization designs that enhance integration between non-living technical and living multi-organizational systems. To select the appropriate forms of flexibility, the creation of different scenarios for use of the technical system is essential in the project phase. Focusing on forms of flexibility that can be incorporated into the solution at the front end of a project allows for changes in the commercial operations phase that will probably be considered necessary in the future to facilitate increases in the system's use value.

This in turn implies that project management should, at an early stage, include both forecasting and scenario building to model the possible future needs of business actors in the operations phase. On the basis of these observations, we suggest that project management activities should include analysis of scenarios involving potential changes in the dynamic multi-organizational business system during the operations phase, and the selection of appropriate strategies to build flexibility into the design of the capital element. We therefore offer Proposition 3:

Proposition 3. "*Creating long-term scenarios involving possible future developments in the multi-organizational business system of the operations phase and the careful selection of an appropriate strategy for incorporating flexibility into the design of the capital element and its technical systems are likely to increase the system's use value.*"

4.4. Competing businesses and value

Multiple similar and therefore competing product and service offerings are located within the Big Apple shopping center, including multiple fashion stores, two large hypermarkets and numerous restaurants and coffee shops. Even though these competing offerings have strongly differentiated brands, we were able to identify several concrete collaborative activities involving the businesses operating in Big Apple. For example, the city library ran a theme campaign featuring novels but also advised visitors about the local bookshop's offering, and an outdoor activity shop offered its customers information about the city library's theme campaign that featured books on outdoor activities and trekking. Businesses have also collaborated to increase the cost-efficiency of their operations, for example a supermarket and a liquor store jointly operate a beverage container recycling point. HOK-Elanto's development director described value creation through competition as follows:

> "Customers are attracted by this [hypermarket] and we have a loyalty scheme in place that also results in some additional revenue for us. It is the critical mass [of the center as a whole] that influences all of us [in Big Apple]. We seek synergies and view the customer relationship as something that we share. And we work together in many service areas."

We observed that Big Apple's business logic is built on creating customer value within the center by being able to offer a wide selection of multiple differentiated businesses and brands. In this context, the behavior of individual businesses aiming to protect their brand (usually backed up by the presence of a strong national or international brand) by differentiating their local offering within the center can be seen as behavior that enhances Big Apple's ability to offer added value through a broader set of specific offerings which attract customers to the center. A wide range of competing offerings guarantees that customers have many options to choose between. This logic allows the internally competing offerings to be seen as complementors that reinforce the shopping center's overall competitiveness compared to other nearby retail locations and other shopping centers or department stores in the Helsinki Metropolitan area. We therefore offer Integration Mechanism 4 (IM4):

> IM4: "Individual organizations competing within a multi-organizational system increase value for both the final customer and the system as a whole because as a single integrated system, the competing organizations working together represent a broader overall offering to final customers than would be the case with similar organizations in a non-competitive setting."

Competing offerings enhance both value creation within a multi-organizational system and final customer value. It is thus beneficial to arrange a mix of business organizations within a system and include multiple alternative and internally-competitive offerings. We suggest that in future projects, the mix of such competing complementors should be chosen as a specific project management activity, since the early involvement of organizations that will be part of the multi-organizational system in the operations phase allows for effective planning of project outcomes and overall value-creation capabilities. We therefore encourage the project management practice of arranging for a mix of multiple organizations within each system to ensure multiple competitive offerings, as these operations will complement each other in terms of value creation at the system level. This suggestion means that the scope of the project management function should be expanded in future projects: for example, future project management could include simulation exercises focused on the dynamics of the operations phase and related interactions between multiple businesses in order to reach decisions on ideal value-enhancing designs for each multi-organizational system and the capital element. We therefore offer Proposition 4:

Proposition 4. "*Starting in the project phase, value creation over the lifetime of a multi-organizational system can be enhanced by involving a combination of business organizations with operations that include internally-competing offerings and brands.*"

5. Discussion

5.1. Contribution to existing knowledge

Our study contributes to project management research in three ways. Firstly, using the concept of system lifecycle allowed us to take a broader view of a project's temporal dimension: we examined the period of operations extending beyond project completion. Furthermore, the notion of a continuously evolving multi-organizational system with integration between the involved organizations through social interaction provided us with a conceptual formulation for actual value creation in a project that involves creating a multi-organizational system for operations. In this regard, value creation occurs when, during the project phase, the project management function builds and develops a network of multiple organizations that can transit from the project phase to the operations phase. In other words, one task of project management is to create a network that continues to evolve by transforming into a multi-organizational entity that has the capacity to continue value creation in the operations phase as an adaptive and self-organizing system. This conceptual view of value creation is novel: it complements existing views of creating value by following a plan which is designed to match the needs and requirements of a focal organization such as a sponsor (Morris, 2013). Furthermore, this view of value creation in a project context relies on mutual adjustment and interaction between organizations within the networked system (Cleland and King, 1968), and is in contrast with the prescriptive view of long-term value creation that relies on lagging success measures (Shenhar et al., 2001).

Secondly, our findings – four integration mechanisms and four propositions – are based on concrete micro-level activities observed in our empirical research, which included detailed descriptions of how individuals and specific activities contributed to creating value. We analyzed how value creation through the development of a value-enhancing network of multiple organizations actually took place at the level of lower micro-level activities, events and purposes. This detailed level of analysis is new to research on the theme of long-term value creation in projects: existing research tends to suggest that value is created through more general (i.e. macro) level practices at the project's strategic front end (Morris, 2013). Furthermore, our propositions regarding new project management approaches for value creation by initiating a multi-organizational network, derived from observations at the micro-level, are in contrast with suggestions in prior project management research regarding generalized macro-level approaches that focus on guidelines for models and methods which typically reflect the content of contemporary standard project management documents (e.g. PMI, 2013). 'Generalizations' of this kind in contemporary project management have been criticized for considering projects as working to 'given' and pre-determined time, cost, and specified scope constraints that are guided by pre-determined plans (Morris et al., 2006).

Thirdly, each of our four propositions suggests a new approach to project management, increasing understanding of how project management can be focused to establish and develop a value-creating multi-organizational system which has the capacity to continue value-creating activities in system operations. Our findings concerning new project management approaches aimed at creating an appropriately-designed organizational system expand the traditional view of construction projects from that of producing mere physical facilities. The contributions made by each proposition are now discussed in detail.

Proposition 1 on multiple coordinating bodies is based on our findings that integration activities in the operations phase are not restricted to a single integrator. Multiple organizations are connected through the shopping center's business operations and because their businesses differ, it is quite natural that multiple integrators and the roles they adopt can complement each other and in this way better satisfy the differing needs of the heterogeneous network of organizations. Our proposition that multiple coordinating bodies be involved at an early stage complements previous research on a single focal organization serving as the integrator (e.g. sponsor, Morris, 2013; or systems integrator, Hobday et al., 2005). Proposition 1 expands the single integrator view to include consideration of several coordinating bodies – or simultaneously-acting integrators – which differ in both their integrative activities and their ability to enhance jointly-created value within the entire multi-organizational system.

Proposition 2 concerns external image and internal identity building activities and is based on the observation that joint activities aimed at external image building serve as integration mechanisms that enhance collaboration between multiple organizations. We observed that these joint image building activities also strongly enhance internal integration among multiple organizations by strengthening the shared internal identity within a multi-organizational system. While similar observations have been made in research on organizational identity (Clegg et al., 2007; He and Baruch, 2010), these findings are new to scholarly knowledge in project management research. Based on our findings, we propose that the integration process be reinforced by initiating external image-building activities at an early point in a project. This will probably create space for market-related integration mechanisms within the system: the operations phase of a shopping center – or any other multi-organizational system – will thus be driven by the 'market view' of multiple organizations rather than by the 'hierarchy view' of a centralized integration locus that a lone integrator will generate.

Proposition 3 is based on the observation that the continuously-changing organizational system in the operations phase of a shopping center raises continuing demands for changes to the center's technical system. Proposition 3 therefore proposes a project management approach in which a variety of scenarios are created focusing on identifying the potential need for changes in the multi-organizational system, and on the new requirements that will continuously emerge for integration of technical system into the continuously-changing organizational setting. To guarantee its adoption by the organizational system and the implementation of technical systems that allow for increased value in the dynamic operations phase, this approach to project management includes the selection of appropriate detailed designs that include the right kinds of built-in flexibility to be utilized during the technical system lifetime. The observations that support Proposition 3 could be theorized using the concepts in the literature on modularity: our proposition suggests an organization-to-technical system interface that is addressed as an organization–product interface in modularity research. In connection with this interface, existing modularity research addresses product–organization interdependency by arguing that the arrangement of product components determines the need for organizational arrangements such as integration arrangements in projects (Miller et al., 1995; Sosa et al., 2004), but also vice versa, i.e. that an organization plays a significant role in forming the product: the existing organization and its capacity may determine the product design rather than the other way round (Sako, 2003). Furthermore, Proposition 3 touches on the issue of investing in a product's design flexibility within a complex project as discussed by Gil and Tether (2011).

Proposition 4 establishes that an optimal mix of organizations with competing and complementary offerings can be selected at an early stage in the project phase. This proposition relies on the importance of using market-driven behavior in creating value through the careful selection and inclusion of the most suitable actors in the value-creating network of organizations. In our view, the phenomenon at the core of Proposition 4 can be seen in research into the network form of governance (e.g. Jones et al., 1997), a worthwhile theoretical perspective that should be adopted in further research in this area. Dynamism and degrees of freedom within the market are relevant parameters that should be taken into account when selecting an optimal mix of organizations within a system. Our observations regarding this kind of dynamism indicate that a project can take the role of serving as an open source information node concerning forthcoming operations among expected stakeholders over a system lifecycle. In terms of designing the project scope in a manner that adds value for future users and their anticipated needs, this is beneficial.

5.2. Future research

Our findings open up two avenues for further research. Firstly, as our findings connect value creation with two important concepts – the system lifecycle and a multi-organizational system – we welcome future research that investigates the role of these two concepts in project management in more detail. However, we also suggest that system lifecycle can be examined from the viewpoint of a more general concept of 'time', and that multi-organizational systems should be viewed more broadly as 'multiple stakeholders'. As regards the concept of time, while Morris (2013) expands his research "in time" into managerial activities towards the front end of the system lifecycle, i.e. the project phase, our study pushed the focus of research towards back end operations where the use value of project outcomes is realized. In connection with researching the role of time in an even wider context, we welcome future research into the temporal connectedness of projects to events and activities that occur either before the project or after it, at earlier or later stages than those covered by the usual concept of the system lifecycle. Furthermore, we suggest future research on using the concepts handled in classic project success studies (Pinto and Slevin, 1987; Slevin and Pinto, 1987) which build on interdependencies and dynamism across different phases of project lifecycle, and on expanding the temporal view in these classic studies from the project lifecycle to the system lifecycle. As regards research on stakeholders, analyzing value creation within a multi-organizational system as a whole enabled us to examine value creation among multiple interdependent stakeholders. We suggest that previous research on project stakeholders (Winch, 2010;

Winch and Bonke, 2002), coalitions (Winch, 2006), and the dynamism of stakeholder networks over time (Aaltonen and Kujala, 2010), be used in further research to broaden the project stakeholder view within a system lifecycle. Finally, our research results include four propositions that allow for further research work testing these propositions in other contexts and against other underlying theories.

Secondly, many of our findings on value creation were based on observations related to business-focused phenomena such as a) the use of market-driven logic in value creation for the final customer and b) the integration of competing and complementary offerings. On this basis, to build a bridge between studies of project management and business – fields that that have been considered separate in prior research – we suggest that business-focused literature be used in future project management research on value creation. For example, network forms of governance (Jones et al., 1997; Powell, 1990) with an emphasis on markets, networks and hierarchies (Adler, 2001; Powell et al., 1996; Williamson, 1975, 1985) is a theoretical background that merits further investigation. Furthermore, the literature on business models provide concepts for a relevant extension of future research into project management and contribute to explaining our findings on competing and complementary offerings (Casadesus-Masanell and Ricart, 2011). Furthermore, we suggest that the value proposition and value creation pattern concepts in the literature on business models (Osterwalder and Pigneur, 2010) are useful in explaining value creation in future project management research.

Conflict of interest statement

The authors declare that they have no conflict of interest.

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