
THE ROLE OF BUSINESS MODEL-BUILDING AND MODEL-CHANGING IN DRIVING HEALTHCARE VALUE

A PHYSIOTHERAPY PRIMARY HEALTHCARE ORGANISATION PERSPECTIVE



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Rutger Friso IJntema

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A physiotherapy primary healthcare organisation perspective

Utrecht University – The Netherlands

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De rol van bedrijfsmodel bouwen en veranderen in
waardegedreven gezondheidszorg
Een eerstelijns fysiotherapie organisatie perspectief
(met een samenvatting in het Nederlands)

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"Out beyond ideas of wrongdoing and rightdoing,
there is a field. I'll meet you there"

Jalāl al-Dīn Muḥammad Rūmī – 1207-1273

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1

GENERAL INTRODUCTION

PHYSIOTHERAPY

Physiotherapy provides services that develop, maintain and restore people's maximum movement and functional ability. These services can help people at any stage of life when movement and function are threatened by ageing, injury, diseases, disorders, conditions or environmental factors [1]. Such services include assessments of patient needs, formulation of a diagnosis, prognosis and plan, treatment, and determination of treatment outcomes. Physiotherapy plays an important role in healthcare, both in the Netherlands and worldwide. Globally, the physiotherapy workforce is estimated at 600,000 physiotherapists, approximately 6 percent of whom are located in the Netherlands [1,2]. In the Netherlands, approximately four million people per year (1.5 percent of total Dutch healthcare expenditure) receive physiotherapy services [2].

INTERNAL ORGANISATION: PHYSIOTHERAPY PRIMARY HEALTHCARE ORGANISATIONS

Approximately 35–53 percent of the global physiotherapy workforce is active in private practice physiotherapy primary healthcare organisations (PTPHO) [3-5]. In order to offer physiotherapy services, PTPHOs must deal with their internal organisation. PTPHOs are mainly organised as micro (< 10 employees) organisations [6,7] and located in neighbourhoods close to where people live and work. In the Netherlands, there are approximately 10,000 PTPHOs [8]. These organisations are oriented towards a complex mix of healthcare quality such as offering equitable, safe and timely services, that are efficient and effective. In addition, these organisations are also oriented towards financial outcomes, have limited resources, personalised management, and are flexible in addressing patients' needs [9,10]. Furthermore, PTPHOs are led by multitasking managers who have tasks performed by employed physiotherapists, administrative staff and external collaboration partners [11] like general practitioners, other healthcare providers and health insurers.

EXTERNAL ENVIRONMENT: MANAGED COMPETITION

In their pursuit of healthcare quality and financial outcomes, PTPHOs also need to take their external environment into account, like their specific neighbourhood and external collaboration partners. Dutch PTPHOs operate in a healthcare market that is characterised by managed competition. The idea of managed competition is that the government establishes rules and incentives to stimulate insurers and providers of care to compete on price and quality to guarantee access to good-quality care for patients [12]. Furthermore, managed competition entails achievement of lower cost, value for money, and standardised products and services [13,14]. Thus, with managed competition, business principles have been introduced in healthcare markets [15,16].

Managed competition takes place between health insurers, healthcare providers, and patients (Figure 1.1). First, managed competition encourages health insurers to compete for patients (health insurance market). Concurrently, healthcare providers vie for managed competition contracts with health insurers (healthcare purchasing market). Similarly, patients are encouraged to select a healthcare

provider of their choice (healthcare provision market) [17-19]. This may mean that a Dutch PTPHO must at least consider both the healthcare provided to the patients and the requirements issued by health insurers.

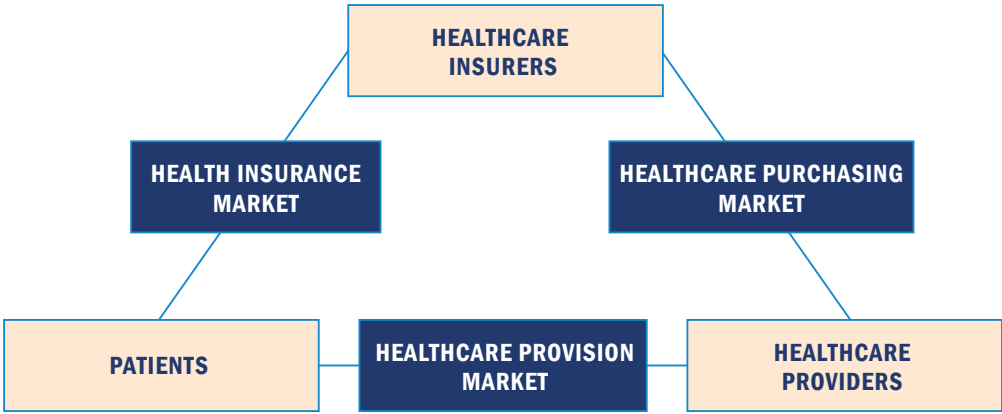


Figure 1.1 Managed competition actors and markets [18]

Governments have introduced managed competition in healthcare systems since the 1990s, at varying speeds and with varying levels of success in Europe (including the Netherlands), and countries such as the United States, the United Kingdom and New Zealand [20-22]. The Dutch healthcare market may have the longest experience with managed competition of any country [17]. Since 2006, the Health Insurance Act and the Health Care Market-Regulation Act have been in effect as a legislative framework, which formed the foundation for managed competition in the Netherlands [18,23]. Moreover, in the Netherlands, the PTPHOs were the first group selected to act as test case for the introduction of managed competition during a successful Dutch government-led experiment from 2005 to 2007 [24]. Although the experiment was successful, most PTPHOs lacked the business principles insights to make an impact in managed competition [25].

LINKING THE INTERNAL ORGANISATION AND EXTERNAL ENVIRONMENT

Despite great efforts to develop managed competition in the Dutch healthcare market, it is questionable whether assumptions about managed competition also apply to specific contexts [14,26,27] like PTPHOs. Especially considering that a PTPHO's internal organisation and external environment are context-specifically linked. For example, characteristics of a PTPHO internal organisation, like skilled managers and physiotherapists, need to match aspects of its external environment such as patient needs and coordination with stakeholders to attain and sustain healthcare quality and financial outcomes. To further explain the challenges of PTPHOs to link their internal organisation and external environment, Box 1.1 presents the case of a fictitious PTPHO that connects its internal organisation characteristics with aspects of its changing external environment in a context-specific manner.

A fictitious PTPHO is located in a newly built neighbourhood. The organisation is small (< 10 employees). A multitasking practice manager and administrative staff support the highly skilled physiotherapists employed in their treatment of patients.

The organisation is well aware of the characteristics and needs of families that live in the neighbourhood (**healthcare provision market**). For example, the school-aged children go to primary and secondary school and most parents are employed. Residents also spend time on sports such as football and hockey. Logically, the treatment services are based on guidelines and protocols with a focus on movement and function problems related to work and sports injuries and developmental problems in children. **Internal organisation** employees and **external environment** stakeholders of the PTPHO, such as general practitioners, residents and health insurers, know how to collaborate **efficiently**. Because guidelines and protocols based on high healthcare quality and low costs are applied, health insurers are willing to pay for the treatment services (**healthcare purchasing market**). Because existing activities are known to the **internal organisation** and its **external environment** stakeholders, innovation budgets are low.

At a certain point, the organisation consults the residents. It emerges from this consultation that a considerable portion of the residents have a strong preference for online treatment instead of exclusively face-to-face care (**healthcare provision market**). The organisation decides to comply with this need, even though doing so has major consequences for its business. In reaction to the consultation, **novel** activities take place. Besides face-to-face interaction, online treatment service will also be provided from now on. This means that a blended form of physiotherapy is offered. This profound innovation crosses the existing activities of the organisation and its stakeholders.

The profound **change** in residential needs raises several 'business' questions. What **healthcare value** in terms of **healthcare quality** and **financial outcomes** should the organisation steer towards? How can the interests of the **internal organisation** and its **external environment** be properly **linked**? What organisational **business activities** should the PTPHO **build** based on an integral plan? What kind of **organisational orientation** toward learning and the PTPHO's market does the PTPHO possess? Is the PTPHO able to **change** its **business activities** over time?

Box 1.1 Case of a fictitious PTPHO.

Box 1.1 shows that the fictitious PTPHO is concerned with both its internal organisation like skilled physiotherapists and its external environment like the consultation of residents. Furthermore, the fictitious PTPHO is involved in modelling its business activities. First, this modelling involves one-time business model-building designs, like business model efficiency and novelty. Examples of business model-building related to a business model efficiency design are high healthcare quality, low costs and efficient transactions between the internal organisation and external environment [28]. An instance of business model novelty involves aspects of new services, innovative links

with collaboration partners and, unconventional solutions to patient needs [28]. Second, the PTPHO reacts to resident's needs by business model-changing activities from face to face to also online treatment services. Such activities may for example, also have implications for the PTPHO's financial investments, and employee and technology development.

AIM, DETAILED DESCRIPTION OF RESEARCH GAPS, AND OUTLINE OF THIS DISSERTATION

This dissertation aims to gain insights into business model-building and model-changing related to healthcare value for PTPHOs within the context of Dutch PTPHOs.

HEALTHCARE VALUE FOR PTPHOS

In the managed competition market, PTPHOs must offer high-quality and efficient care in terms of money and time, expressed in overall healthcare quality aims such as being equitable, safe, timely, effective, efficient, and patient-centred [1,29,30]. In addition, besides adjusting to overall quality aims, PTPHOs fulfil local context-specific needs, such as the individual patient's needs, efficient and effective collaboration with local staff and stakeholders, and positive financial results of the organisation itself [31-33]. To achieve and sustain these desired outcomes of overall healthcare quality aims and local context-specific needs, PTPHOs need to deploy change [9,34]. This diverse set of conflating components, such as overall healthcare quality aims, local context-specific needs and deployment of change, can be viewed as *healthcare value for PTPHOs* [29].

As mentioned above, it is difficult for a PTPHO to attain healthcare value, let alone to sustain healthcare value. For example, the fictitious PTPHO in Box 1.1 originally focuses entirely on treatment service based on efficiency-based protocols and guidelines. A shift in local context-specific needs calls for a change in treatment service, from mainly face-to-face care toward blended physiotherapy treatment services. To realise this change, PTPHOs need information that they can use to measure adjustment of their internal organisation to their external environment and, consequently, their healthcare value. For example, will the PTPHO illustrated in Box 1.1 remain obedient to health insurer healthcare quality requirements so that financial reimbursement is guaranteed? Or, in case the PTPHO neglects health insurer requirements (healthcare purchasing market) and fully complies with local future patient needs, are patients willing to pay for the treatment service themselves (healthcare provision market)?

To guide organisations in responding to such relevant questions, several widely adopted total quality management frameworks, such as the European Foundation of Quality Management and Malcolm Baldrige, have been described in the healthcare literature [9]. However, these frameworks were originally developed outside the healthcare context and focused on large organisations (>500 employees). In contrast to small businesses, these large organisations have resources for quality management and tend to be bureaucratic, hierarchical, and managerial [9,34].

This leads to **Research Gap 1 – Healthcare value for PTPHOs**. Within the literature, discussions on overall healthcare quality aims, local context-specific needs and deployment of change are fragmented. Moreover, hardly any studies have coherently addressed healthcare value for small business organisations that operate in a managed-competition context, like PTPHOs. For example, the current healthcare quality literature lacks coherent healthcare value-based frameworks that include healthcare quality for PTPHOs. There is also a lack of studies of context-specific performance that addresses outcome measures like individual patient needs, collaboration with patients and stakeholders and financial results of the organisation itself, that are feasible for the context of PTPHOs [9,35]. Concerning the feasibility of the frameworks, two areas are mentioned specifically: (1) a lack of coherent context-specific outcome metrics for quantitative evaluation [9,35,36] and (2) the bureaucratic character and complexity, hampering an organisation's need for change in a changing environment [9,34]. Hence, PTPHOs may not know how to define healthcare value for PTPHOs, including feasible outcome measures and which coherent healthcare value-based framework to adopt. The research question that addresses this gap is: *What is known in the literature on healthcare value for PTPHOs, incorporating both healthcare quality and context-specific performance?* (Chapter 2).

BUSINESS MODEL-BUILDING AND BUSINESS MODEL-CHANGING

Managed competition has led to the introduction of business principles in healthcare because healthcare providers, and specifically PTPHOs, need to compete on factors such as healthcare quality and price. This dissertation draws from business model research because business model theory fits researching organisations within their specific context. A business model is a design of how a focal firm (like a PTPHO) transacts with customers, partners and vendors; that is, how it chooses to connect with (healthcare) markets [28], such as the healthcare purchasing market and health insurance market (Figure 1.1). Furthermore, it is a system of activities that links the internal organisation with its external environment [37] to make an integral plan to remain viable, solve patients' needs, and involve internal staff and external stakeholders. Again, as shown in Box 1.1, with respect to PTPHOs, such an integral plan may entail the involvement of external environment stakeholders like patients and health insurers, new standards, guidelines and protocols, and means of financial compensation [26]. To support the alignment of the PTPHO's internal organisation and its external environment, and to attain and sustain healthcare value for PTPHOs, business model-building and model-changing are both necessary [39–40]. Business model-building involves a one-time organisation-specific configuration of the elements and interactions between these elements that an organisation chooses in order to achieve certain outcomes [41]. Examples of business model elements are patient population, treatment service, physiotherapy staff, physiotherapy equipment, key partners, and financial costs and revenues. As PTPHOs have to continuously match needs in a managed competition healthcare market, a one-time business model building is not enough. PTPHOs also need to deploy business model-changing over time to sustain healthcare value for PTPHOs [9,34,42]. This leads to Research Gap 2.

Research Gap 2 – Business model-building and model-changing and healthcare value for PTPHOs – indicates that, to date, the business model literature lacks discussions about building and changing business models related to attaining and sustaining value [38,43], specifically in a changing PTPHO context. This could mean that PTPHOs lack the insights needed to ensure the correct deployment of people, resources and partners, and also that value creation by a PTPHO may not be optimal or cannot be sustained in the long term. Hence, PTPHOs, including their managers, lack insights into what business model-building and model-changing aspects make their PTPHO attain and sustain healthcare value for PTPHOs in a continuously changing external environment. The research question that addresses Gap 2 is: *What business model-building and model-changing aspects make PTPHOs attain and sustain superior performance in a changing environment, according to their managers?* (Chapter 3).

BUSINESS MODEL-BUILDING: BUSINESS MODEL EFFICIENCY AND NOVELTY

The business model lens can be useful for studying organisations within their specific context. In terms of business model-building, two main business model designs are discussed within the business model literature: efficiency and novelty [28]. Business model efficiency refers to the measures an organisation takes to achieve efficient transactions with its customers, partners and vendors [28]. It also refers to the use of information, treatment services, and material that is verifiable and evaluable, by means of employing efficient transactions to reduce transaction costs [11,44]. As described in Box 1.1, an example of the efficiency design in a PTPHO context pertains to efficient collaboration with external environment healthcare providers and health insurers, the use of accepted guidelines and protocols based on high healthcare quality and low costs, and optimisation of existing activities. In contrast, business model novelty refers to the adoption of new and different ways of making transactions between the internal organisation and its external customers, partners, and vendors compared to other PTPHOs [28]. It also refers to how an organisation chooses to connect with (sector-wide or local community healthcare) markets in a novel way [28,44,45]. This entails profound innovation that could disrupt the existing activities of the organisation and its stakeholders. In the PTPHO context (in Box 1.1), business model novelty could be imaged by the PTPHO's novel activities like blended care while balancing the outcomes of patients, partners and the organisation itself [46]. This leads to Research Gap 3.

Research Gap 3 – Business model efficiency and novelty, and healthcare value for PTPHOs – indicates that business model and healthcare management literature currently lack comprehensive insights into the relation between business model designs (efficiency or novelty) and organisational outcomes [15,43,47,48], and specifically healthcare value for PTPHOs outcomes. In addition, the business model efficiency and novelty literature lacks context-specific empirical research and has evolved outside the primary healthcare managed competition context. For that reason, PTPHO managers may not know with which business model design (efficiency or novelty) they attain outcomes of healthcare value for PTPHOs, which can potentially lead to, for example, treatment

service quality and financial outcomes. The research question that addresses Gap 3 is: *What are the relations between business model efficiency and novelty, and outcomes of healthcare value for PTPHOs while accounting for managed competition contract in Dutch healthcare?* (Chapter 4).

BUSINESS MODEL-BUILDING: ORGANISATIONAL ORIENTATION AND BUSINESS MODEL NOVELTY

The introduction of business principles in the healthcare market may call for the adoption of business model novelty [42]. Specific organisational orientations are known to have a high influence on business model novelty, which may lead to improved organisational outcomes of small businesses [49,50]. Two examples of high influence organisational orientations that precede business model novelty are organisational double-loop learning orientation [42,51-54] and proactive market orientation [55,56]. Organisations with a double-loop learning orientation are open to thinking differently and to reconsidering their values, assumptions and routines [57,58]. Herewith, a changing environment can be explored, new suggestions can be shared, and uncertainty can be reduced. Proactive market orientation has been defined as the “organisational culture that most effectively and efficiently creates the necessary behaviours for creating superior value for buyers (patients) and, thus, continuous superior performance” [55]. With this orientation, changes in the external environment of a small business organisation can be anticipated and organisational outcomes can be attained. However, although the aforementioned insights have already been explored in small-business contexts, they have not yet been delineated for the PTPHO context.

Research Gap 4 – Organisational orientation, business model novelty, and healthcare value for PTPHOs – specifies the relations among organisational double-loop learning orientation and proactive market orientation, business model novelty, and healthcare value for PTPHOs. Although such relations have been identified in other small business contexts, these relations have not been delineated for the PTPHO context. PTPHO managers may not know how to achieve organisation-centred outcomes and translate business model novelty, organisational double-loop learning orientation and proactive market orientation to their PTPHO context. PTPHO managers may need this knowledge to learn and anticipate as a PTPHO to enhance business model novelty and to attain outcomes of healthcare value for PTPHOs. Gap 4 is addressed by the research question: *What are the relations between organisational double-loop learning orientation and proactive market orientation, business model novelty, and healthcare value for PTPHOs?* (Chapter 5).

BUSINESS MODEL-CHANGING: LINKING THE INTERNAL ORGANISATION AND EXTERNAL ENVIRONMENT

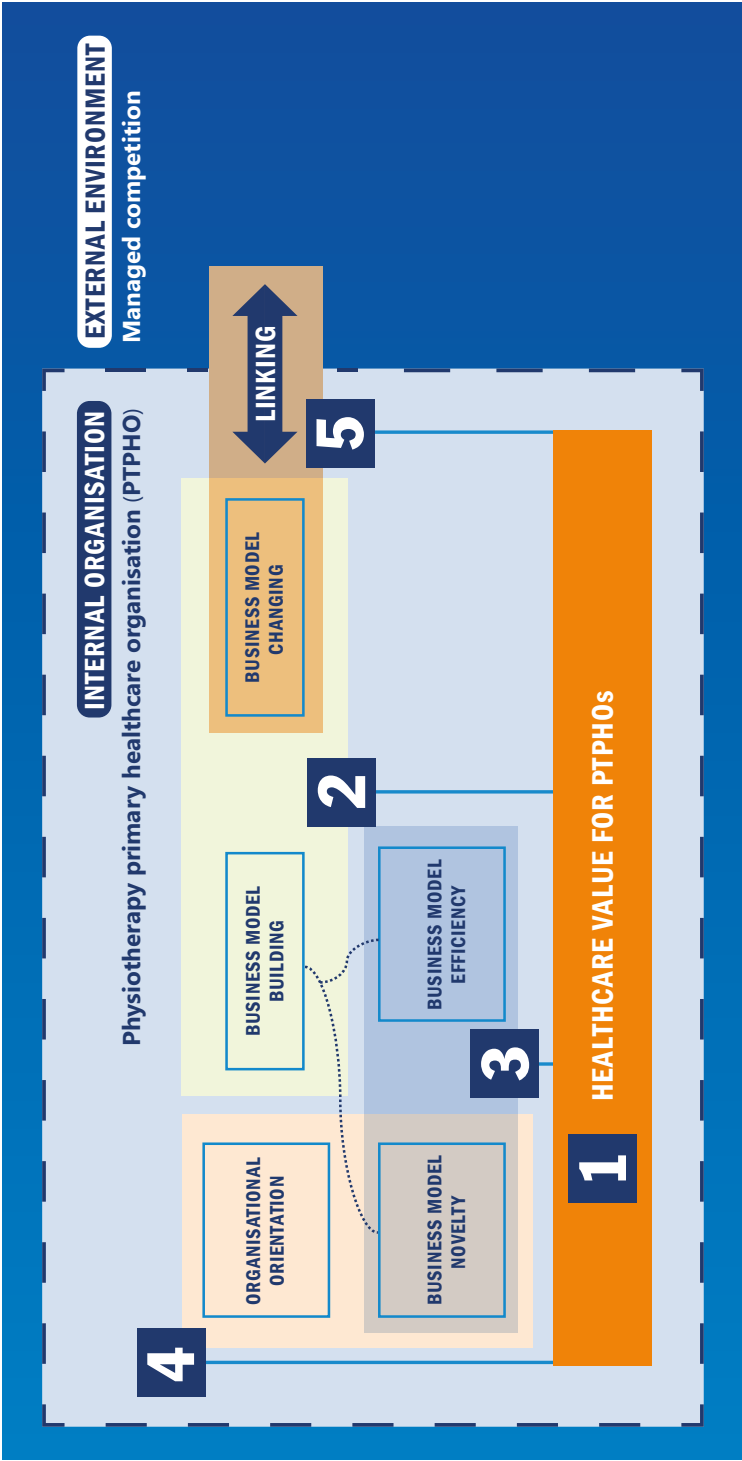
Besides business model-building related to the attainment of outcomes of healthcare value for PTPHOs, in order to remain viable over time it is necessary to have business model change [42]. Business model-changing is the adjustment of the business model over time based on internal organisation and external environment information. In addition, business model changing

implies change in the business model activities linking the internal organisation and external environment over time [37]. For example, the fictitious PTPHO (Box 1.1) receives information from its external environment that a health insurer has expanded its annual requirements for payment of care provided with new innovation conditions. The information may force the PTPHO to make adjustments to its blended form of physiotherapy that were not previously considered. The PTPHO must then be able to adapt its business model and activities over time such that it can meet the new requirements and can guarantee treatment service quality and financial income.

Research Gap 5 – Business model-changing and healthcare value for PTPHOs, linking the internal organisation and external environment – points at a lack of empirical, context-specific detailed interpretation of how business model change is pursued within PTPHOs, especially related to linking the internal organisation and the external environment [39]. Empirical research in larger organisations indicates that it is necessary to understand this topic in order to create value [59]. However, the business model literature lacks empirical, context-specific detailed interpretation of how business model change is pursued within small businesses [39,59,60]. Furthermore, business model change research tends to focus on the internal organisation, instead of linking the internal organisation with the external environment [39]. This focus on the internal organisation may result in an inadequate response by PTPHOs in their attempt to remain viable over time. Gap 5 is addressed by the following research question: *How are business model change activities linking the internal organisation and external environment pursued within one viable PTPHO?* (**Chapter 6**).

The five research gaps introduced in this general introduction are coherently illustrated in Figure 1.2.

In **Chapter 7**, a general discussion addresses theoretical and methodological considerations of business model-building and model-changing related to healthcare value for PTPHOs within the context of Dutch PTPHOs. Furthermore, practical considerations for PTPHO managers, policy makers and health insurers, and physiotherapy education complement this discussion. Last, directions for future research and conclusions are considered.



Five research gaps:

1. Healthcare value for physiotherapy primary healthcare organisations (PTPHO)
2. Business model-building and model-changing, and healthcare value for PTPHOs
3. Business model efficiency and novelty, and healthcare value for PTPHOs
4. Organisational orientation, business model novelty, and healthcare value for PTPHOs
5. Business model-changing and healthcare value for PTPHOs, linking the internal organisation and external environment

Figure 1.2. Five research gaps introduced in this dissertation

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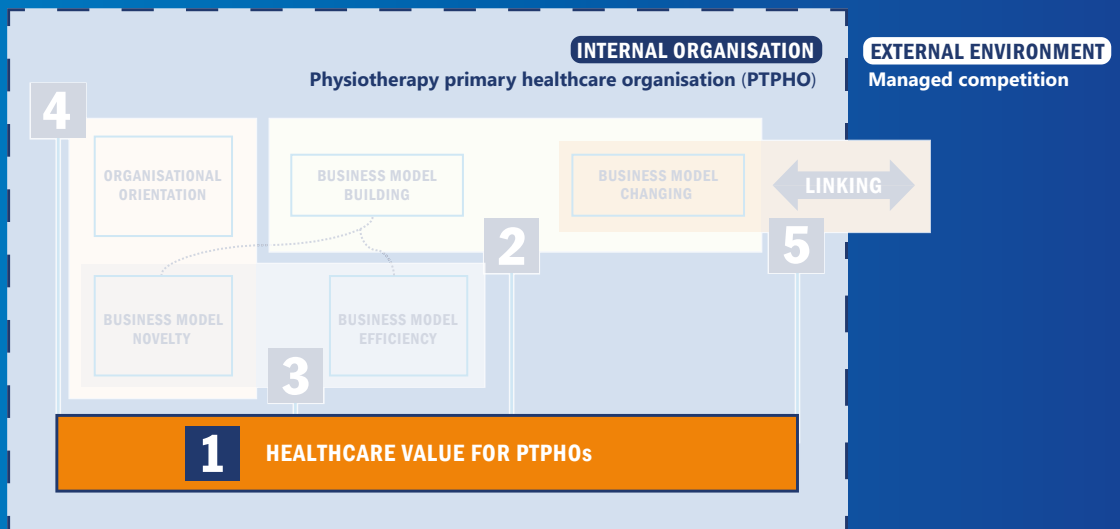
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2

A HEALTH CARE VALUE FRAMEWORK FOR PHYSICAL THERAPY PRIMARY HEALTH CARE ORGANIZATIONS

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Five research gaps:

1. Healthcare value for physiotherapy primary healthcare organisations (PTPHO)
2. Business model-building and model-changing, and healthcare value for PTPHOs
3. Business model efficiency and novelty, and healthcare value for PTPHOs
4. Organisational orientation, business model novelty, and healthcare value for PTPHOs
5. Business model-changing and healthcare value for PTPHOs, linking the internal organisation and external environment

ABSTRACT

Background and objective

To develop a health care value framework for physical therapy primary health care organizations including a definition.

Method

A scoping review was performed. First, relevant studies were identified in 4 databases ($n = 74$). Independent reviewers selected eligible studies. Numerical and thematic analyses were performed to draft a preliminary framework including a definition. Next, the feasibility of the framework and definition was explored by physical therapy primary health care organization experts.

Results

Numerical and thematic data on health care quality and context-specific performance resulted in a health care value framework for physical therapy primary health care organizations—including a definition of health care value, namely “to continuously attain physical therapy primary health care organization-centered outcomes in coherence with patient- and stakeholder-centered outcomes, leveraged by an organization’s capacity for change.”

Conclusion

Prior literature mainly discussed health care quality and context-specific performance for primary health care organizations separately. The current study met the need for a value-based framework, feasible for physical therapy primary health care organizations, which are for a large part micro or small. It also solves the omissions of incoherent literature and existing frameworks on continuous health care quality and context-specific performance. Future research is recommended on longitudinal exploration of the HV (health care value) framework.

Key words

finance/economics, organizational change, physical therapy, primary health care organization, quality health care, value-based health care

INTRODUCTION

Physical therapy primary health care organizations (PHOs) are, like other PHOs, challenged to continuously match the needs of patients and society in a changing health care environment [1,2]. PHOs offer high-quality and efficient care in terms of money and time, expressed in overall health care quality aims such as being equitable, safe, timely, effective, efficient, and patient-centered [3]. Concurrently, physical therapy PHOs fulfill local context-specific needs like the support of the individual patient, efficient and effective collaboration with staff and professional and voluntary stakeholders, and positive financial results of the organization itself. To achieve desired outcomes of health care quality and context-specific performance, and deal with the challenge to continuously match needs, physical therapy PHOs need to deploy change [4,5]. This diverse set of conflating components can be viewed as health care value (HV) for physical therapy PHOs [3]. In literature, widely adopted total quality management frameworks like the European Foundation of Quality Management and Malcolm Baldrige have already been successfully applied to HV-based approaches. Those frameworks stimulate self-evaluation and focus integrally on enablers, staff, stakeholder, and social outcomes, and also encourage data analysis, indicating challenges, learning, creativity, and innovation [4]. Markedly, the frameworks were originally developed outside the health care context, by large organizations (>500 employees), which have resources for quality management and tend to be bureaucratic, hierarchical, and managerial. However, based on numbers gathered in the United States and Europe, physical therapy PHOs are mainly organized as micro (0-9 employees) and small (10-99 employees) organizations, which are outcome-oriented, have limited resources, personalized management, and flexible, informal structures and strategies [4-11]. Furthermore, the number of physical therapists employed in private practices is increasing as shown by data derived in Canada, Australia, and Denmark. About 35% to 53% of the physical therapists work in private practice [12-14].

A preliminary search by the authors of the current study suggests that, within the literature, nearly no papers coherently address HV related to physical therapy PHOs specifically, nor to PHOs in general. It is questionable to what extent the mentioned frameworks are feasible to match the contextual needs of PHOs. Concerning the feasibility of the frameworks for micro or small organizations, such as physical therapy PHOs, 2 areas are mentioned specifically: (1) a lack of coherent context-specific outcome metrics for quantitative evaluation [4,7,15] and (2) the bureaucratic character and complexity, hampering an organization's need for change in a dynamic environment [4,5].

Hence, physical therapy PHOs may not know how to define HV for PHOs and which feasible HV-based framework to adopt. To solve the omissions of incoherent literature and existing frameworks on continuous health care quality and context-specific performance, the purpose of the current study is to develop a HV framework for physical therapy PHOs including a definition of HV for physical therapy PHOs. This potentially reconciles outcomes and additionally applies to an organization's need for change to deal with challenges to continuously match needs and to remain viable over time. The research question for this study is: "What is known in the literature on HV for physical therapy PHOs, incorporating both health care quality and context-specific performance?"

METHODS

Because literature mainly comprises separated streams, a scoping review consisting of 6 phases was performed [16,17]. After identifying the research question (phase 1), relevant studies relatable to PHOs were identified in PubMed, SPORTDiscus, Business Source Elite, and Academic Search Premier databases (phase 2). Because a search for physical therapy PHOs specifically generated few relevant results, the strategy was to search for PHOs in general. Two search strategies were performed separately based on 2 related but mainly separated areas to primary care: quality and performance. A “year of publication ≥ 2006 ” filter was applied because, in 2006, the Institute of Medicine introduced an influential framework to translate performance and accountability into measures of health care quality [3]. During phase 3, articles were reviewed against selection criteria, which comprised: mature primary health care context; language; relatable to PHOs (including physical therapy PHOs); and literature type. Detailed information about the supplemental digital content search strategy is available at <http://links.lww.com/QMH/A46>. Included studies were analyzed for relevant aspects of HV for physical therapy PHOs by directed content analysis [18]; subsequently, a preliminary HV framework for physical therapy PHOs, including a definition of HV for physical therapy PHOs, was collated and reported (phase 4 and 5). Finally, 2 groups of Dutch physical therapy PHO experts were consulted over 2.5 hours. At an early stage, 10 experts attended to build a preliminary framework and build consensus. At a later stage another 10 experts attended to reduce bias of being familiar with the framework, and to ensure the feasibility of the HV framework and definition for physical therapy PHOs (phase 6).

RESULTS

The results of phases 1 to 6 of the previously outlined method are subsequently described.

Phase 1: Identifying the research question

“What is known in the literature on HV for physical therapy PHOs, incorporating both health care quality and context-specific performance?”

Phase 2: Identifying relevant studies

Based on the proposed research question, 2 separate search strings resulted in 1334 unique articles regarding the “quality” domain and 909 unique articles regarding the “performance” domain (Figure 2.1).

Phase 3: Study selection

After reviewing the identified articles against the mentioned selection criteria, 37 publications for quality and 39 publications for performance were eligible for inclusion. After removing duplicates, 74 publications were included in this scoping review concerning HV for physical therapy PHOs. Throughout the selection, quality and performance related to primary care showed limited overlap (Figure 2.1).

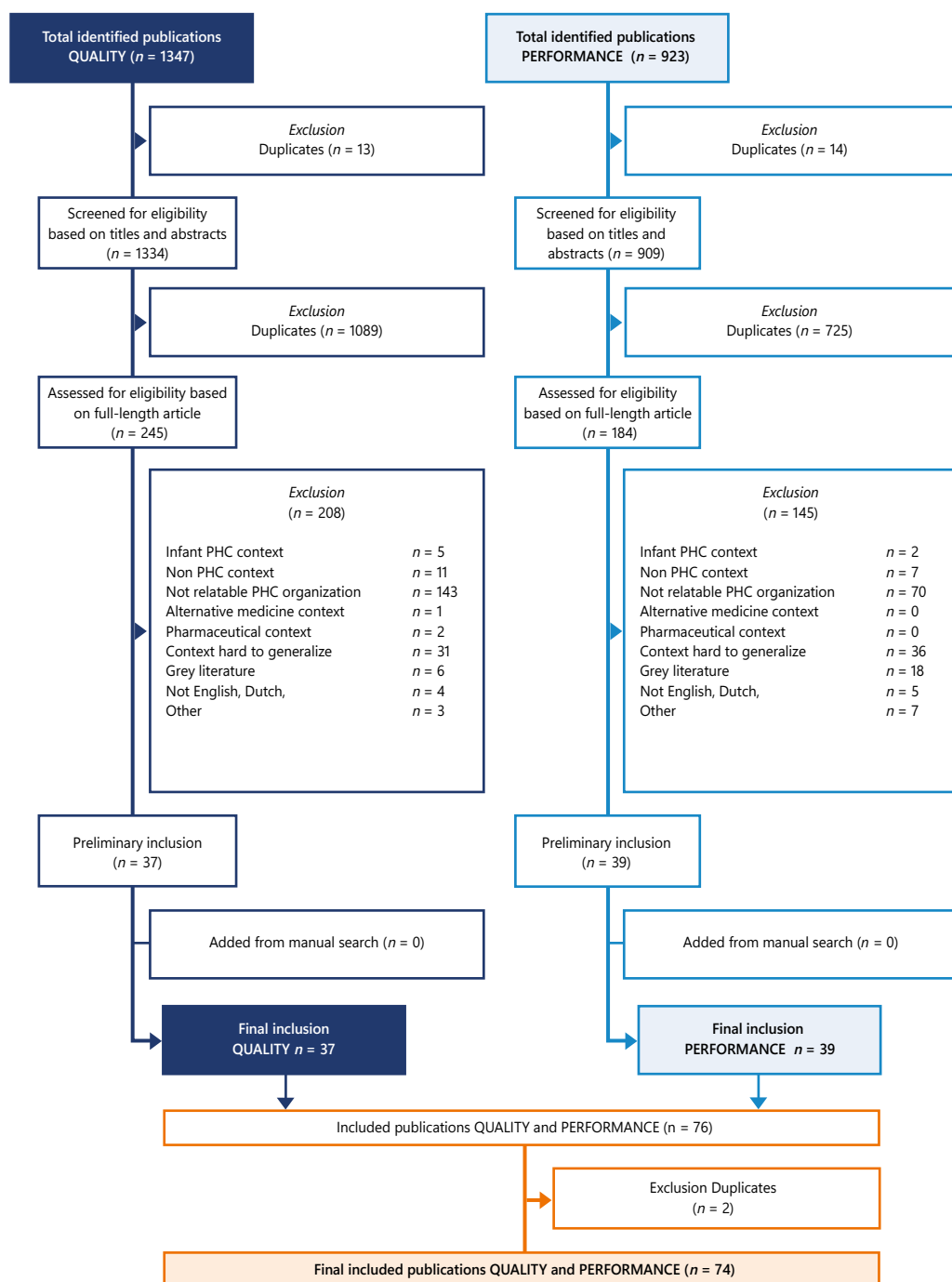


Figure 2.1. Study selection for health care value for physical therapy primary health care organizations

Phase 4: Charting the data

The result of a basic numerical analysis and a thematic analysis is shown in Table 2.1. Analysis of study designs showed that quantitative studies ($n = 90$) outnumber conceptual ($n = 58$) and qualitative ($n = 17$) studies. Numbers concerning country/region revealed that North America ($n = 83$) exceeds Europe ($n = 75$) and Australia ($n = 34$) in publication volume. Most attention was given to the themes of this study during the years 2014-2017. PHO setting appeared to be diverse. Content analysis showed that various characteristics were discussed in the selected publications. Mainly discussed themes were financial performance ($n = 48$), efficiency ($n = 41$), patient-centeredness ($n = 37$), stakeholder perspective ($n = 31$), and effectiveness ($n = 22$). Least discussed descriptions were timely ($n = 10$), equitable ($n = 7$) and safe ($n = 5$). Cross-sectional studies ($n = 33$) outnumbered longitudinal studies ($n = 7$) (not shown in Table 2.1).

Phase 5: Collating, summarizing, and reporting results and consultation of experts

Definition of HV for physical therapy PHOs

Based on the thematic analysis and consultation of experts, a definition of HV for physical therapy PHOs could be presented: HV for physical therapy PHOs is to continuously attain physical therapy PHO-centered outcomes in coherence with patient- and stakeholder-centered outcomes, leveraged by an organization's capacity for change. This definition presumes a coherent interaction between 3 types of elementary units: outcome dimensions, organization's capacity for change, and organizational challenges. Although the elements show major similarities with existing value-based frameworks, the elementary units reconcile health care quality and context-specific performance related to PHOs (including physical therapy PHOs) mentioned in primary care literature or by physical therapy PHO experts. The elementary units are explained later.

Outcome dimensions

Physical therapy PHO-centered outcomes. Physical therapy PHO-centered outcomes are captured by overall organization-level outcomes of HV-creating services and products. First, overall technical quality is based on the overall technical accuracy, like medical diagnoses, standards, guidelines, protocols, and accreditation, mostly within the purview of professionals and health care organizations [32,46]. Second, overall perceived quality is how health care is delivered by the organization to the patients, as perceived by the patients [32,46,78]. Third, financial outcome is expressed in organization revenue, cost, and profit [34,88].

Patient-centered outcomes. Patient-centered outcomes capture results of HV-creating services and products as perceived by the individual, offered by PHOs over time. Literature and consulted experts indicate that there are 4 outcome types: first, patient-related outcome [1] pertains to the individually perceived clinical outcome of specific diseases in connection with evidence-based guidelines. Second, patient-related experience [75] is related to the patient's perceived satisfaction with interventions, service, the physical environment where care is provided, and intangible work [55]. Third, patient-empowerment outcome measures the patient's adaptation and self-management with a combination of perceived clinical outcomes, related to the individual patient

context [22]. Fourth, a patient's willingness to pay [74] is linked to the individual's perception of quality-payment combinations and the value of services provided [24].

Stakeholder-centered outcomes. Stakeholder-centered outcomes are outcomes valued by stakeholders —such as individuals, groups, or organizations— that are relevant to PHOs. First, patient representatives value outcomes such as health improvement, service aspects related to the availability of appointments, the behavior of staff, and direct costs of care [57]. These representatives do not necessarily receive care but rather speak for patient groups. Second, several internal stakeholders of PHOs value these outcomes. For example, managers focus on efficiency, resource use, profitability [31], staff satisfaction [32], and change management [84]. Clinicians give importance to clinical results and training standards [64,84]. Furthermore, internal administrators [1] play an important role in keeping patient and financial records. Third, external stakeholders have an interest in PHOs as well. For example, politicians and purchasers of care are concerned with the health care system [57,74] and payment for predictable outcomes [19]. Also, voluntary agencies, informal caregivers, and external health care providers play their role as well [30].

Organization's capacity for change

An organization's capacity for change refers to PHOs' internal capability to leverage HV. This capacity enhances PHOs to continuously adapt to and influence changing outcomes so that organization-, patient-, and stakeholder-centered outcomes are continuously attained. So too, varying organizational challenges can be dealt with by continuous alignment of the organization [22,24,30,46,58,78,84].

Organizational challenges

To attain HV for physical therapy PHOs, organizations encounter organizational outcome interdependency challenges. First, in relation to PHO-centered and patient-centered outcomes, organizations are challenged to apply standardization to reduce variation such that processes are still sensitive to a patient's needs [21]. Second, balancing PHO-centered and stakeholder-centered outcomes poses a challenge because organization and stakeholder perspectives may differ [1]. Last, to providing care continuity based on various appointments and health care settings over time, rather than care related to a specific time and setting, is a challenge for balancing stakeholder-centered and patient-centered outcomes. For example, organizations are challenged to share real-time patient data with the patient, the patient's context, and various stakeholders [22,30,84].

The elementary units are graphically summarized in an HV framework for physical therapy PHOs (Figure 2.2).

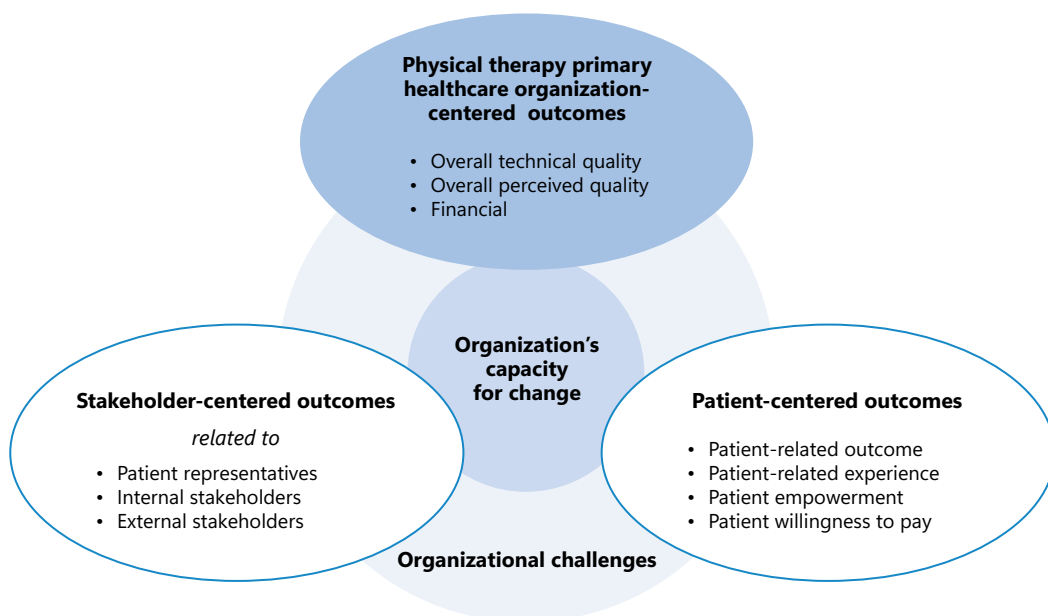


Figure 2.2. Health care value framework for physical therapy primary health care organizations

Phase 6: Consultation of experts: Feasibility of the HV framework for physical therapy PHOs

To get insight into the feasibility of the HV framework for physical therapy PHOs, it was explored through consultation of Dutch physical therapy PHO experts: physical therapy private practice owners, managers, and directors. At an early stage, 10 experts attended to building a preliminary framework with the purpose of consensus building. At a later stage a new group of experts discussed, based on their experience, a practice-based case of blended physical therapy (from face-to-face to online physical therapy), to which the framework was applied. This second round was done for feasibility testing purposes. This revealed 3 key learning points: First, the experts appreciated the cohesion between outcomes, organization's capacity for change, and organizational challenges in the HV framework. For example, HV outcomes appeared hard to attain if one or more of the elementary units was under-resourced, like innovation budget (outcome), staff competence (capacity for change), or stakeholder alignment (challenge) (Table 2.2). Second, the experts indicated the framework was feasible for their unique physical therapy PHO and confirmed that the 3 elementary units reflected their daily practice. It helped them to keep the focus on all elementary units. Third, experts emphasized the importance of a physical therapy PHO's capacity for change while aiming for HV outcomes. Table 2.2 shows the elementary units, related outcomes, and elaborated examples from the current review and expert illustrations.

Table 2.2. Health Care Value for Physical Therapy Primary Health Care Organizations: Blended Physical Therapy

Elementary unit	Outcome	Literature review example	Expert illustrations
Physical therapy PHO-centered outcomes	Overall technical quality	Medical diagnoses, standards, guidelines, protocols, and accreditation	From overall high standard face to face to online physical therapy treatment
	Overall perceived quality	How health care is delivered by the organization, perceived by the patients	From overall high standard face to face to online hospitality
	Financial	Organization revenue, cost, and profit	From low to high innovation budget
Patient-centered outcomes	Patient-related outcome	Individually perceived clinical outcome based on evidence-based guidelines	From personalized high standard face to face to personalized online physical therapy
	Patient-related experience	Individual patient satisfaction with interventions, service, care environment	High standard hospitality for the individual physical therapy patient
	Patient-empowerment	Patient's self-management linking with the patient context	Access to blended physical therapy
	Patient willingness to pay	The individual's perception of the value of services provided	Acceptable payment for value offered by physical therapy PHO
Stakeholder-centered outcomes	Patient representatives	Representatives do not necessarily receive care but rather speak for patient groups	High acceptance of online physical therapy services
	Internal stakeholders	Several internal stakeholders of PHOs itself value outcome	Satisfied patient representatives
	External stakeholders	Purchasers of care concerned with payment. Informal caregivers	High manager, physical therapist, and administration staff satisfaction From simple ICT to an affordable high standard ICT provider
Organization's capacity for change	-	Continuous alignment of the organization	De-implementation of protocols Implementation of new protocols Build new staff competences Build new ICT systems
Organizational challenges	-	Balancing PHO-centered and stakeholder-centered outcomes	Collaboration with ICT experts Patient representatives involvement Internal/external stakeholders alignment New payment models. Create budget: des-investment in face to face contact

DISCUSSION AND CONCLUSION

The current study succeeded in providing an HV framework for physical therapy PHOs including a definition, namely, “to continuously attain physical therapy PHO-centered outcomes in coherence with patient- and stakeholder-centered outcomes, leveraged by an organization’s capacity for change.” The framework accounts for both health care quality outcomes and performance outcomes relevant to the physical therapy PHO-specific context. The framework articulates outcome dimensions, organizational challenges, and organizational capacity for change to remain dynamic and viable over time. In addition, based on one example, the HV framework for PHOs seems feasible for physical therapy PHOs.

Contributions

HV for physical therapy PHOs was discussed in prior studies; however, narrow views were adopted ignoring PHO context-specific factors that confound HV achievement [1,4-6,10,61]. This study confirms that health care quality and context-specific performance related to physical therapy PHOs specifically, and to PHOs in general, was mainly discussed incoherently in the literature (Figure 2.1). Yet, this study has a unique point because it reconciles the separated literature to a feasible HV framework for physical therapy PHOs including a definition. The study integrated prior work with its focus on organization-centered outcomes along with patient and stakeholder-centered outcomes. Therewith, it creates a focus on physical therapy PHO context-specific performance outcomes, which supports physical therapy PHOs to indicate and systematically perform measurable HV outcomes. Lastly, this article added a notable extension to the existing body of knowledge by focusing on an organization’s capacity for change, which is a need for physical therapy PHOs. Although this could potentially be immoderate because numerical analysis indicates that longitudinal design is underexposed in the results of this study (Table 2.1), it may enable a physical therapy PHO to continuously determine HV for physical therapy PHOs. To do so, these organizations continually need to estimate their possibilities within their variable and specific context. In addition, the study may enable the physical therapy PHO to deal with challenges to remain viable and innovative over time in a feasible manner.

Strengths and limitations

This study entails some strengths. First, this study is conducted based on a generally adopted scoping review method including a highly sensitive search strategy. Also, physical therapy expert consultation, and a practice-based case in which the HV framework for physical therapy PHOs was explored, is included. Second, 2 separate search strategies are performed to test the overlap between quality and performance, related to primary care, throughout the study selection (Figure 2.1). Third, the HV framework for physical therapy PHOs reveals a unique perspective for physical therapy PHOs and may provide the groundwork for a shared language between a physical therapy PHO, internal and external stakeholders, and patients. Finally, the HV framework for physical therapy PHOs and the definition presented in this study are believed to be the first of their kind. This study entails several limitations as well. First, instead of a systematic review, a scoping review cannot differentiate between results and interpretation of results, nor the level of evidence found

in the literature. However, because the literature mainly comprises separated streams, systematic review was not possible. Second, differences in research contexts found in the literature, like country-specific issues, and PHO issues that potentially might not apply to physical therapy PHOs, may have influenced the current framework and definition.

Implications

Although the HV framework for physical therapy PHOs was well accepted by the consulted physical therapy PHO experts, the framework needs further empirical testing in various PHO contexts. For the practice community, the framework can be used to experiment with a shared language between stakeholders. Policymakers could consider the framework as a bridge between (inter)national health care quality aims and physical therapy PHO context-specific performance outcomes. For the research community, the framework could be operationalized and tested as a whole or on its constituent parts. Future research based on longitudinal case studies is recommended to further empirically explore and potentially determine the feasibility of the framework in physical therapy PHO-specific contexts.

CONCLUDING REMARK

Prior literature mainly discussed health care quality and context-specific performance for physical therapy PHOs separately. The current study met the need for a value-based framework, feasible for physical therapy PHOs, which are for a large part micro or small. It also solves the omissions of incoherent literature and existing frameworks on continuous health care quality and context-specific performance. Future research is recommended on longitudinal exploration of the HV framework for physical therapy PHOs in various PHO contexts.

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APPENDIX 2.1: DATABASE-SPECIFIC QUERIES

22-05-2017 Academic Search Premier Quality

Because ASP is a general database, we used this as a complementary source. Therefore, the search string we used was relatively simple. First we searched key words such as "quality of service" AND "medical care." This resulted in fuzzy results. Our final search string, with filters on peer reviewed journals and publication date 01012006 – 31122017, was primary health care quality, which led to more relevant results (353)

Search string:

Primary health care quality

22-05-2017 Academic Search Premier Performance

Because ASP is a general database, we used this as a complementary source. The descriptor ORGANIZATIONAL performance led to fuzzy results. Therefore, the search string we used was relatively simple, with key word: primary health care performance. Filters on scholarly peer reviewed journals and publication date 01012006 – 31122017 led to more relevant results (73).

Search string:

Primary health care performance

29-05-2017 Business source Elite Quality

The search string we used was a combination of descriptors and key words related to allied health practitioners, primary care, and quality. Filters on scholarly peer reviewed journals and publication date 01012006 – 31122017 led to results (237)

Search string

((DE "QUALITY of service") OR (DE "RETURN on quality")) OR (DE "QUALITY standards")) OR (DE "QUALITY control" OR DE "ACCEPTANCE sampling" OR DE "ACCOUNTING firms – Quality control" OR DE "AUDITING – Quality control" OR DE "AUTOMOBILE industry – Quality control" OR DE "BEVERAGE processing plants – Quality control" OR DE "CALL centers – Quality control" OR DE "CARRIERS – Quality control" OR DE "CEMENT plants – Quality control" OR DE "CHEMICAL plants – Quality control" OR DE "COMPUTER software – Quality control" OR DE "DISTRIBUTORS (Commerce) – Quality control" OR DE "DRUG factories – Quality control" OR DE "ELECTRIC utilities – Quality control" OR DE "ELECTRONICS plants – Quality control" OR DE "ENGINEERING inspection" OR DE "FAILURE analysis (Engineering)" OR DE "FOOD processing plants – Quality control" OR DE "INDUSTRIAL procurement – Quality control" OR DE "INDUSTRIAL supply houses – Quality control" OR DE "NURSING home care – Quality control" OR DE "PAPER industry – Quality control" OR DE "PHYSICAL distribution of goods – Quality control" OR DE "PLASTICS plants – Quality control" OR DE "PLATING shops – Quality control" OR DE "PRINTING plants – Quality control" OR DE "PROCESS control" OR DE "QUALITY circles" OR DE "QUALITY function deployment" OR DE "QUALITY of service" OR DE "RAILROADS – Quality control" OR DE "RUBBER factories – Quality control" OR DE "RUG & carpet mills – Quality control" OR DE "STEEL mills – Quality control")

AND

DE "ALLIED health practitioners' offices" OR (primary health care OR primary healthcare OR physiotherapy OR physiotherapist OR primary care OR physical therapy OR physical therapist OR physical therapists)

29-05-2017 Business Source Elite Performance

The search string we used was a combination of descriptors and key words related to allied health practitioners, primary care, and organizational performance. We decided to add medical care terms to avoid a too-narrow search. Filters on scholarly peer-reviewed journals and publication date 01012006 – 31122017 led to results (385).

Search string:

DE "ALLIED health practitioners' offices" OR (primary health care OR primary healthcare OR physiotherapy OR physiotherapist OR primary care OR physical therapy OR physical therapist OR physical therapists) OR DE "MEDICAL care" OR DE "COMMUNITY health services" OR DE "CONSUMER-driven health care" OR DE "DIAGNOSTIC services" OR DE "EMPLOYER health care coalitions" OR DE "FIRST aid in the workplace" OR DE "HEALTH facilities" OR DE "MANAGED care plans (Medical care)" OR DE "NURSING services" OR DE "OCCUPATIONAL health services" OR DE "PHARMACEUTICAL services" OR DE "VETERINARY services"

AND

DE "COMPETITIVE advantage" OR "competitive advantage*" OR DE "ORGANIZATIONAL performance" OR "organizational performance*" OR "organisational performance*" OR "business performance*" OR "company performance*" OR "corporate performance*" OR "firm performance*" OR "financial performance*" OR DE "BUSINESS revenue" OR "business revenue*" OR DE "FINANCIAL performance" OR "financial performance*" OR DE PROFITABILITY OR profitab* OR DE "RATE of return" OR DE "TURNOVER (Business)" OR DE "RENT (Economic theory)") AND (DE "BUSINESS models" OR "business model" OR "business models" OR "business modelling" OR "business concept" OR "business concepts" OR "activity system" OR "activity systems" OR DE "BUSINESS planning" OR "business planning" OR "business plan" OR "business plans"

Sportdiscus Quality 30-05-2017

Sportdiscus is a specific sports-related database, including medical and physical therapy articles. The search string we used was a combination of descriptors and key words such as medical care, primary care, and quality. A filter on peer-reviewed journals is not possible in this database. A filter on publication date 01012006 – 31122017 led to results (58).

Search string:

(primary health care OR primary healthcare OR physiotherapy OR physiotherapist* OR primary care OR physical therapy OR physical therapist OR physical therapists OR DE "MEDICAL care") OR (DE "PHYSICAL therapy services")) OR (DE "MEDICAL care costs")) OR (DE "OUTPATIENT medical care" OR DE "PRIMARY care (Medicine)")

AND

OR "quality indicator*" OR "quality management" OR "quality measurement"

Sportdiscus Performance 30-05-2017

Sportdiscus is a specific sports-related database, including medical and physical therapy articles. The search string we used was a combination of descriptors and key words such as medical care, primary care, and performance. A filter on peer-reviewed journals is not possible in this database. A filter on publication date 01012006 – 31122017 led to results (54).

Search string:

(primary health care OR primary healthcare OR physiotherapy OR physiotherapist* OR primary care OR physical therapy OR physical therapist OR physical therapists OR DE "MEDICAL care") OR (DE "PHYSICAL therapy services")) OR (DE "MEDICAL care costs")) OR (DE "OUTPATIENT medical care" OR DE "PRIMARY care (Medicine)")

AND

"performance measurement" OR "performance indicator*" OR "performance management"

PubMed Quality 30-05-2017

The search string we used was a combination of selected subheadings related to the descriptors Quality of healthcare and Primary care. Filters on core clinical journals and publication date 01012012 – 31122017 lead to results (459).

Search string

(((((("Quality of Health Care/economics"[Mesh] OR "Quality of Health Care/methods"[Mesh] OR "Quality of Health Care/organization and administration"[Mesh] OR "Quality of Health Care/standards"[Mesh] OR "Quality of Health Care/therapeutic use"[Mesh])) AND "last 5 years"[PDat] AND jsubsetaim[text])) OR (quality performance*[Title/Abstract]) OR quality improvement[Title/Abstract]) OR quality measurement[Title/Abstract]) OR quality management[Title/Abstract]) OR quality indicator*[Title/Abstract])) AND ((((((Primary Health Care/economics"[Mesh] OR "Primary Health Care/organization and administration"[Mesh] OR "Primary Health Care/standards"[Mesh]))) OR primary health care[Title/Abstract]) OR primary care[Title/Abstract]) OR primary healthcare[Title/Abstract])

PubMed 29-05-2017 Performance

For this search string, we first searched with descriptors suggested by PubMed related to the term performance. This resulted in a low number of articles discussing performance. Therefore we used key words related to performance. A filter on publication date 01012006 – 31122017 led to results (207). We did not filter for core clinical journals because this would limit the results to 14 articles.

Search string

((((quality performance[Title/Abstract]) OR performance improvement[Title/Abstract]) OR performance

measurement[Title/Abstract]) OR performance management[Title/Abstract]) OR performance indicator*[Title/Abstract])) AND ((((((Primary Health Care/economics"[Mesh] OR "Primary Health Care/organization and administration"[Mesh] OR "Primary Health Care/standards"[Mesh]))) OR primary health care[Title/Abstract]) OR primary care[Title/Abstract]) OR primary healthcare[Title/Abstract]) Filters: published in the last 5 years.

A rerun was performed with filter 01052017 – 03072019

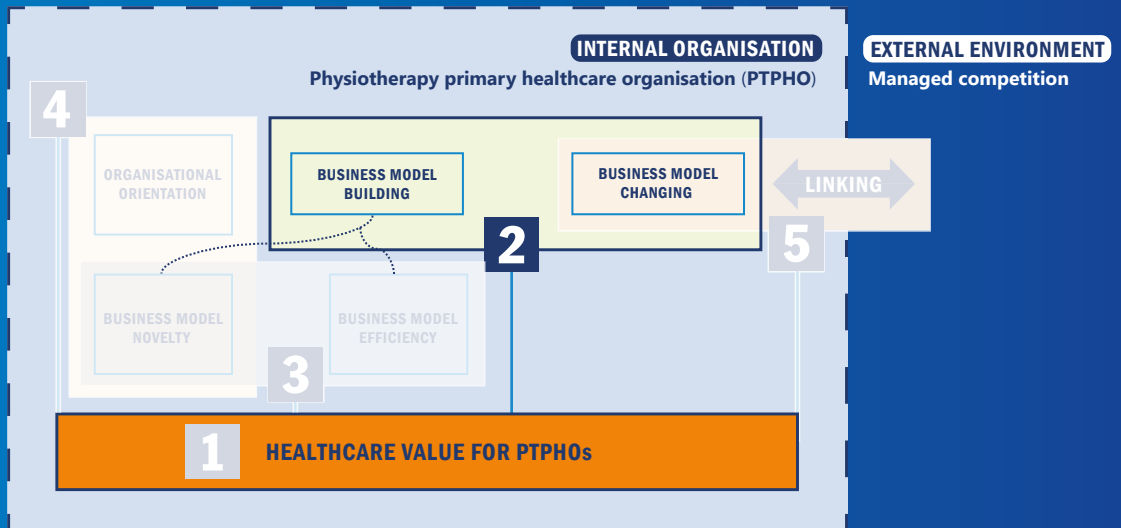
Database	Quality	Performance
ASP	87	20
BSE	6	82
SPDsc	11	11
PubMed	136	91
Total	240	204
After removal duplicates	236	197

3

BUILDING AND CHANGING BUSINESS MODELS: A QUALITATIVE STUDY AMONG DUTCH PHYSIOTHERAPY PRIMARY HEALTHCARE ORGANISATIONS

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Five research gaps:

1. Healthcare value for physiotherapy primary healthcare organisations (PTPHO)
2. **Business model-building and model-changing, and healthcare value for PTPHOs**
3. Business model efficiency and novelty, and healthcare value for PTPHOs
4. Organisational orientation, business model novelty, and healthcare value for PTPHOs
5. Business model-changing and healthcare value for PTPHOs, linking the internal organisation and external environment

ABSTRACT

Aim

To gain insights into what business model-building and model-changing aspects make physiotherapy primary healthcare organisations (PTPHOs) attain and sustain superior performance in a changing environment, according to their managers.

Background

Since 2006, the transition towards managed competition in the Dutch healthcare market has been intended to improve the performance of primary healthcare organisations like PTPHOs. In such a market, competition on efficiency with reimbursement system has been introduced. Consequently, performance entails achieving and sustaining quality, efficiency, and financial outcomes. Superior performance requires that PTPHOs continuously align their external environment and internal organisation. The business model literature suggests that business model-building and model-changing support this alignment process.

Methods

This qualitative study had an explorative design. A pre-defined interview guide based on business model theory was applied. Semi-structured interviews were conducted with physiotherapy primary healthcare organisation managers and transcribed verbally. The transcripts were analysed using directed content analysis.

Findings

The study results show, both verbally and graphically, that PTPHOs generate superior performance in a changing environment through business model-building and model-changing. Participating managers ($n = 25$) confirmed extant findings that business model-building consists of strategy and business model configuration. In addition, business model-building entails establishing interfaces to exploit external environment and internal organisation information. Also, these interfaces are evaluative techniques and tools, action, and process – make sense of knowledge and information. To sustain superior performance, it is essential to change the business model. This can be achieved through three change cycles: business model change, short-term change, and long-term change.

Conclusion

Managers of both superior and lower performance organisations independently stress the importance of the same business model-building and model-changing aspects related to attainment and sustainment of superior performance. However, superior performance PTPHOs address building and changing business models in a more diversified and integrated way than their lower performance counterparts.

Keywords

business model innovation, healthcare quality, organisation, performance outcome, physiotherapy, primary healthcare

INTRODUCTION

Imposed by governments, business principles have been introduced, with managed competition, in healthcare markets to stimulate the efficient use of scarce resources with corresponding reimbursements [1]. Managed competition has emerged, at varying speeds, in countries such as the United Kingdom, Sweden, Finland, Germany, Italy, New Zealand, the United States, and Switzerland [2-4]. Since 2006, managed competition also has been introduced in the Dutch healthcare market.

Dutch physiotherapy primary healthcare organisations (PTPHOs) must adjust to managed competition in order to achieve quality, efficiency, and financial outcomes. It is not only overall technical quality outcomes that represent physiotherapy primary healthcare organisation (PTPHO) quality based on professionals guidelines that need to be attained but also the overall patient perceived quality outcomes like patient satisfaction. In addition, financial outcomes need to be attained such as profit for reinvestment in the organisation [5].

To sustain superior performance, PTPHOs must be able to respond to changes in and pressure from their external (managed competition) environment. This pressure can be caused by (inter) nationally imposed healthcare quality aims such as being equitable, effective, efficient, timely, safe, and patient-centred [6,7]. These aims stimulate organisations to change towards low-cost, high-standard accountable care, which includes cost-effective standardisation of services. Organisations are also prompted to respond to changing local and patient-context-specific needs. To do so, customised patient support needs to be organised in the community in collaboration with local stakeholders [8-10].

While the alignment of the PTPHO's external environment is challenging, so too is the alignment of their internal organisation. The alignment of a PTPHO's internal organisation is characterised by personalised management approaches and flexible informal ways of working. Dutch organisations may experience financial pressure since their turnover increased by 56.7 % over a 10-year period, while their profit remained nearly unchanged [11]. In the Netherlands and internationally, PTPHOs are small and have limited resources to respond to change [12-14].

To support the alignment of the PTPHO's external environment and internal organisation, and to attain and sustain superior performance, business model-building and model-changing is necessary [15-17]. Business model-building means a one-time organisation-specific configuration of the elements and interactions between these elements that an organisation chooses to attain superior performance [18]. Examples of business model elements are patient population, treatment service, physiotherapy staff, physiotherapy equipment, key partners, and financial costs and revenues. Changing a business model also makes it possible to sustain superior performance in a changing environment. To date, however, the business model literature lacks discussions on building and changing business models related to attaining and sustaining performance outcomes, specifically in a changing PTPHO context [15,19]. Therefore, the research question for this study is: What business model-building and model-changing aspects make PTPHOs attain and sustain superior performance in a changing environment, according to their managers?

METHODS

The consolidated criteria for reporting qualitative research have been adhered to [20].

Design

This study adopted an explorative qualitative approach. The expert area of building and changing business models related to attaining and sustaining superior performance was explored. The approach was selected because if the business model literature is not fully developed, qualitative work allows for the identification of new elements and concepts. Another factor that necessitated qualitative work was that the study was conducted in a new context: PTPHOs that perform in a changing healthcare market, aligning the external environment and internal organisation.

Participants

The primary subject of this study was the PTPHO manager. General announcements of the current study during three Dutch physiotherapy conferences were applied to recruit managers of Dutch PTPHOs for voluntary participation. No financial inducements or other forms of persuasion were offered. To be purposefully included in this study, these potential participants indicated their level of performance based on a self-perceived instrument (see Appendix 3.1 for more details). The instrument consisted of three performance parts: outcome of overall technical quality, overall perceived quality by the patients, and financial metrics [5].

Procedure

Single semi-structured, audio-recorded interviews with PTPHO managers were conducted by the primary author at a time and place that was convenient for these managers between April 2018 and March 2020. Prior to the interviews, the selected managers were informed about the primary author's academic position in physiotherapy and the business administration domain. Also, the research question and the nature of PTPHO performance outcomes were explained. At the beginning of the interviews, the written response on the self-perceived instrument was explored and verbally confirmed by the participating managers. Subsequently, the interviews followed the pre-defined interview guide based on business model theory described by Wirtz and Daiser [17]. The interview guide topics included business model configuration, the value proposition to patients, and exploitation of information (see Appendix 3.2 for more details). To assess the appropriateness of the questions, the interview guide was piloted by the primary author in two PTPHOs. Field notes were made during the pilot tests.

Data analysis

The interviews were transcribed verbatim and returned to the participants for comments or correction. The transcripts were analysed in random order using directed content analysis. The goal of a directed content analysis is to validate or conceptually extend a theoretical framework or theory. New codes can be given if initial codes are insufficient. Saturation will be reached when no additional codes are found [21]. Theory on business model-building and model-changing guided the current discussion of findings [17]. To prevent bias, both the first and second authors of this

study independently analysed 12 out of 25 transcripts. Both authors were specifically trained in conducting qualitative research. The first and second authors held discussions until agreement was reached on topics. For literal replication [22], these findings were compared with the 13 remaining transcripts by reading the interviews. In the end, for theoretical replication, the interviews with managers representing superior performance organisations were compared with the interviews with managers representing lower performance organisations [22]. ATLAS.ti version 8.4.15 (www.atlasti.com) was used.

FINDINGS

In total, 25 managers of PTPHOs were interviewed. Based on a written email response, by filling in three boxes labelled superior, 20 managers indicated their organisation as one that has ‘superior performance’. Another five organisations did not attain exclusively superior scores on those outcomes and were indicated as ‘lower performance’ organisations. None of the included managers refused the interview or dropped out. The interviews lasted between 34 and 63 min. Table 3.1 shows the characteristics of included organisations – as in the number of owners, employed physical therapists, and employed office staff – separately for organisations with superior and lower performance. No prior relationship was established between the interviewer and the managers of the PTPHOs. Superior performance organisations mostly employ six to ten physical therapists. Lower performance organisations employ one to five physical therapists. In addition, almost half of the organisations employed disciplines other than physical therapist or staff, mostly personal trainers and exercise therapists (not shown in Table 3.1).

Table 3.1. Characteristics of included PTPHOs

	Superior performance		Lower performance
	Number	% (total n = 20)	% (total n = 5)
Owners	1	60%	60%
	2	40%	40%
Employed physical therapists	1-5	10%	60%
	6-10	45%	20%
	11-15	20%	
	16-20	15%	20%
	21-25	10%	
Employed office staff	0	5%	40%
	1	20%	40%
	2	25%	
	3	35%	20%
	5	10%	
	7	5%	

After completing all interviews, four overarching topics incorporating 11 minor topics were derived from the data, covering the vast majority of the selected quotes for this study. Three of the major topics relate to business model-building blocks: business model configuration, interfaces, and strategy. One relates to specifically changing business models: change cycles (Table 3.2). All topics

were consistent with prior business model literature. Saturation occurred after analysing seven of the 20 interviews with managers representing organisations with superior performance. Detailed data on the derived topics are available from the authors upon request.

Table 3.2. Major and minor topics for building and changing business models

	Major topic	Minor topic	Definition
Building	1. Business model configuration	Value delivery constellation	Integral plan for superior performance
		Value proposition	The value proposed to solve patients' needs
		Key partners	Stakeholders relevant to the organisation
		Key resources	Relevant staff and resources
	2. Interfaces	Evaluative techniques and tools	Ways of external environment and internal organisation information collection and evaluation
		Action	Generating external environment and internal organisation information by doing
		Process and make sense of knowledge and information	Making plans based on external environment and internal organisation information
Changing	3. Strategy	Strategic alignment	Alignment of external environment and internal organisation with strategy
	4. Change cycles	Business model change	Business model configuration adjustment based on external environment and internal organisation information exploitation
		Short-term change	Check business model change against performance
		Long-term change	Check strategy against performance

Major topic 1: business model configuration

Managers representing superior performance organisations stressed the importance of a *value delivery constellation*. This is an organisation-specific plan for the integral coordination of all business model aspects to attain superior performance. This includes revenues and costs, and collaboration with internal staff and external partners based on equivalence and mutual benefit. Attention is given not only to balancing the PTPHO's overall performance but also to keeping the individual patients' needs in mind:

Manager 7 (superior performance PTPHO): 'We hired a company with a personal trainer and lifestyle coach to develop activities for our vitality pillar. Last year we stopped this collaboration. I realised I would receive less rent and collaboration fees. The therapists in my organisation asked: what are we doing? Lifestyle behaviour change of patients was promised but not realised by this company'.

By contrast, managers of lower performance organisations reported that their *value delivery constellation* was insufficient. Their integral coordination of business model components was lacking. Explanations were sought regarding limitations in financial incentives and resources, or not making full use of these resources:

Manager 2 (lower performance PTPHO): 'I want to be able to say this is where we are heading, this is the current situation. In my view, we still need to reach this point, because financially we are not healthy yet. Also, we need extra physical therapists'.

The managers of superior-performing organisations also pointed at investment in selected *key partners* based on a shared concern and a positive long-term relation and short lines of contact:

Manager 1 (superior performance PTPHO): 'Investment in time in all those networks. I think this is a quality promotion too'.

Managers of lower-performing organisations reported that their *key partners* are limited and hardly support the PTPHO:

Manager 4 (lower performance PTPHO): 'We do not yet have a good relationship with the family physicians'.

To fully stimulate performance, managers of superior-performing organisations also invest in *key resources*. Aspects that are considered important are the support of a team with mixed talents, attention to employee satisfaction, investment in facilities, and heavy investment in staff training:

Manager 4 (superior performance PTPHO): 'Always heavily invested in people, in staff. A very large education budget'.

By contrast, the managers of lower-performing organisations argued that investments are risky because their limited key resources cause a limited turnover and vice versa. They plan and try to build *key resources*, but these are either unsatisfactory or being worked on:

Manager 3 (lower performance PTPHO): 'This is the problem of wanting to hire someone without having the financial resources because we don't have a buffer. At the same time, without hiring someone new we can't increase turnover'.

Superior-performing organisations mention that their business model configuration also includes a *value proposition*, which entails a proposed solution to the patient's needs. This proposition encompasses a well-organised contact between well-trained therapists, staff, and patients. This contact is based on courteousness, sincerity, and service with a smile. Concurrently, value is proposed to the patient by medical care, complemented with care and welfare support for the local community. Examples are prevention, health stimulation, vitality, and self-management:

Manager 3 (superior performance PTPHO): 'Well, I want to move away from pathologies. We focus on what is needed in well-being, much more in the pre-care than in the care phase'.

Lower-performing organisations also propose value. However, some managers report that the *value propositions* made by their therapists towards patients are vague. This is because the organisation's therapists have a hard time to predict the probable course of an ailment. Furthermore, these propositions consist of medical care that tends to be a mono-disciplinary approach. These managers wish for inter-professional and integral care collaboration:

Manager 1 (lower performance PTPHO): 'Then I want to know from my therapists how many appointments it approximately will take to reach a patient's goals. They simply can't describe. Patients don't know what they will get'.

Major topic 2: interfaces

Interfaces between their external environment and internal organisation enable PTPHOs to exploit external environment and internal organisation information in the short term.

Interviews with managers of both superior and lower performance organisations revealed various *evaluative techniques* and tools to exploit external environment and internal organisation information. For example, the managers mentioned frequent internal management and team meetings and external stakeholder/network meetings in an open atmosphere. These meetings were either formal or informal. Markedly, the managers of superior performance organisations specifically reported the involvement of the entire organisation during their internal meetings. Also, their external meetings were mainly inter-professional organised at local, regional, and national levels. By contrast, the managers of lower performance organisations organised mainly mono-professional meetings, either at local or regional levels. Besides, unlike the lower performance organisations, the superior performance organisations regard being in touch with the community as an important tool to exploit external environment and internal organisation information. Additionally, possessing an organisation's dashboard with real-time integral data on external environment and internal organisation information is key for evaluating the PTPHO's performance.

Another interface that managers of both superior- and lower-performing organisations identified as being useful for information exploitation was *action*. Managers of superior performance organisations report that their organisation acts on an occurring opportunity, change or problem. This action is either planned or unplanned. Also, the action deliberately varies from limited to full commitment, in terms of efficiency. Ultimately, the action results in information they can exploit:

Manager 7 (superior performance PTPHO): 'At a given moment, together, you must make progress through concrete action. As long as we talk about the fact that we will do things, nothing happens'.

Managers of lower performance organisations also mentioned that planned and unplanned *action* results in information they can profit from. However, they articulated less initiative and varying commitment in terms of efficiency.

The managers of superior-performing organisations report that they *process and make sense of knowledge and information*. Furthermore, these managers report that they exploit this information to contemplate products, choices, opportunities, and avoidance of problems and to make short-term adjustments to plans:

Manager 2 (superior performance PTPHO): 'You should know in which direction the profession evolves, what stakeholder policies are, and make sure you are pro-active based on conscious choices and that you will not let yourself be surprised'.

Managers of lower performance organisations apply to this *process and make sense of knowledge and information* interface, only to a certain extent.

Major topic 3: strategy

A strategy is a plan of action to achieve long-term organisational goals. *Strategic alignment* is regarded by the participants as long-term alignment of the external environment and internal organisation with the organisation's strategy. The managers of superior performance organisations urged on forecasting and testing future scenarios at a measured and prudent pace. They also mentioned a structural investment in the alignment of the internal organisation. In the wake of the organisation's purpose, an evaluation takes place regarding positioning, mission, vision, goals, responsibilities, management, the team, and daily activities. Furthermore, long-term alignment of the external environment with the organisation's purpose was mentioned as a distinctive feature; for example, involvement in policy development and structural investment in external stakeholders:

Manager 2 (superior performance PTPHO): 'So I am already planning to organise an allied healthcare entity in the same catchment area as the family physicians. We align with the physiotherapy, but also with the dietetics and the pharmacist, so you can discuss, together, policy matters with the local governments'.

Lower performance organisations disclosed that their long-term activities in reaching *strategic alignment* appear to be problematic and less structural:

Manager 5 (lower performance PTPHO): 'I need to learn to think in terms of long-term activities. So far, I never really worked on these activities'.

Figure 3.1 presents the three major topics regarding business model-building. Another major topic has a specific focus on evolving from a one-time business model configuration through business model-building to changing business models, namely change cycles. According to both superior and lower performance PTPHO managers, changing business models is a prerequisite for sustaining superior performance. The major topic change cycles will be explained below.

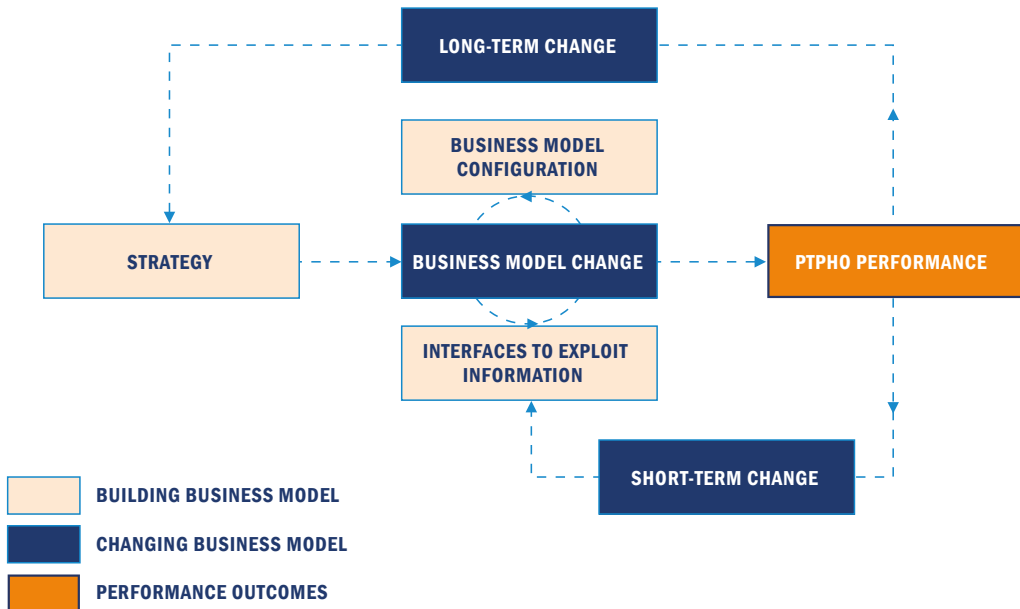


Figure 3.1. PTPHO building and changing business model framework

Major topic 4: change cycles

Three change cycles were derived from the study results. These cycles enhance a continuous fit between strategy, business model configuration, interfaces, and PTPHO performance.

The first cycle concerns *business model change* and consists of interfaces and business model configuration. The interfaces encompass evaluative techniques and tools, action, and process, and make sense of knowledge and information. So too, these three interfaces need to be put in use by the PTPHO to exploit their external environment and internal organisation information. This exploitation enhances a continuous change and optimisation of the PTPHO's business model configuration. Superior performance organisations seem to complete business model change full circle and avail the interfaces and business model configuration adjustment possibilities:

Manager 4 (superior performance PTPHO): 'Sometimes these things happen very swiftly. We try to place these in a structure while at the same time we are overruled by new occurrences every day that must be promptly addressed. In a way, it's a challenge to composedly find a structure for this. Ad-hoc and planned'.

By contrast, concerning *business model change* managers of lower performance organisations report an intention to go full circle, but their organisation still seems to be preparing for a sufficient approach.

Short-term change represents the second change cycle. This cycle enables an organisation to learn from the short-term effects of business model change on its PTPHO performance. For example, this means that performance outcomes can inform the PTPHO manager about the effectiveness of the PTPHO business model adjustments. Furthermore, these outcomes can be evaluated and ultimately lead to a newly aligned PTPHO business model configuration. Superior performance organisation managers report that they act on this change cycle. Managers of lower performance organisations report that going through this *short-term change* cycle is hampered:

Manager 1 (lower performance PTPHO): 'We share our success insufficiently, not externally nor internally, so this is quite a thing. But now we intend to do a quarterly evaluation, instead of bi-annually'.

The third cycle, *long-term change*, enables an organisation to learn from the effect of long-term investments in the strategic alignment of the external environment and internal organisation, with the organisation's performance outcomes. In addition, managers of superior performance organisations report they protect the organisation's mission, vision, values, and core purpose, despite tempting opportunities:

Manager 2 (superior performance PTPHO): 'I have my own vision and values, and that's what I hold on to'.

Contrastingly, managers of lower performance organisations mention the intention or the recent start to monitor a strategic purpose with their performance outcomes, but seem less experienced or less equipped for this task. They also seem less aware of their values and core purpose, which could tempt them to take opportunities that do not align with the internal organisation.

DISCUSSION

The study results show, both verbally and graphically, that PTPHOs generate superior performance in a changing environment through business model-building and model-changing. Participating managers ($n = 25$) confirmed extant findings that business model-building consists of strategy and business model configuration. In addition, business model-building entails establishing interfaces to exploit external environment and internal organisation information. In addition, these interfaces are evaluative techniques and tools, action, and process – make sense of knowledge and information. To sustain superior performance, it is essential to change the business model. This can be achieved through three change cycles: business model change, short-term change, and long-term change.

Markedly, managers of both superior and lower performance organisations independently stress the importance of the same set of business model-building and model-changing aspects related to attainment and sustainment of superior performance. However, the way they address these

aspects varies widely. Superior performance organisations address building and changing business models in a more diversified and integrated way than their lower performance counterparts.

Prior business model literature has broadly classified building and changing business models into two groups: one in terms of change in mental models or managerial conceptualisations and the other concerning the actual alteration of an organisation's activities [23]. The current study complements this insight by indicating that superior performance not only requires the processing and making sense of knowledge and information but also action and evaluative techniques and tools [17,24,25]. This resembles the experiential learning theory described in business model literature. This theory comprises a conceptualisation, action, and evaluation cycle to sustainably reach superior performance outcomes [26-28]. On one hand, in line with the results of the current study, conceptualisation starts with a cognitive search. For example, the development of a preconceived business model configuration. Ultimately, when this conceptualisation is brought into action, this generates new information. The new information can be evaluated and exploited for business model change purposes [24,25]. On the other hand, the action starts with doing, for example, engaging in a stakeholder network or starting a pilot project. Yet, this action generates new information, which can again be evaluated and exploited for building new business model configurations.

Study strengths and limitations

A point for discussion is the self-reported instrument for purposive sampling of PTPHO managers that was used for the current study. This instrument was based on one conducted literature review that theoretically discussed a coherent set of performance outcomes for PTPHOs, but has not been validated for the PTPHO context yet. However, to the knowledge of the authors of the current article no other PTPHO context-specific instrument was available at the time of use.

This study also has certain strengths. To the best of our knowledge, the literature has not previously described the linking of building and changing business models, with a coherent set of PTPHO performance outcomes. Based on the present study, knowledge about building and changing business models potentially becomes manageable and relevant for PTPHOs. Another strength of this study is its systematic rigour. Prior to the interviews with managers of PTPHOs, a pilot-tested deductive interview guide was derived from business model literature and applied to a bounded PTPHO context to link theoretical and empirical insights. Besides, the interviews were checked by the participants and analysed by two authors. A further strength of this study is the application of literal replication [22]. Twelve out of 25 transcripts were compared with the remaining 13 transcripts by reading the interviews. Consequently, the generalisability of the model was improved. For theoretical replication, five lower performance organisations were analysed and compared with superior performance organisations [22].

Implications of this research

The current study has several implications for both management practice and research, which are worth unravelling through a building and changing business model lens in various healthcare contexts. It is desirable to have real-time data through the use of various evaluative techniques and tools as an interface between the organisation's external environment and internal organisation. It is beneficial to proactively engage key staff and partners in creating value delivery constellations and value propositions. Furthermore, it is advisable that PTPHOs stick to a long-term strategy and put effort into aligning their external environment and internal organisation to this strategy. To ensure business model change in the light of superior performance sustainment, the organisation must carry out diverse activities, such as processing and making sense of knowledge, and adjustments to information, action, evaluation, and business model configuration. To safeguard PTPHO superior performance outcomes for the future, the results of the current study could potentially be included in physiotherapy education, clearly involving medical and business principles. Further insights into this matter are needed in business model literature and in various empirical contexts. This is because, to date, the business model literature has lacked discussions on the impact of building and changing business models on superior performance outcomes. Developing cross-sectional and longitudinal quantitative surveys based on the framework of the current study could help gain validity and generalisability.

CONCLUDING REMARK

The study results verbally and graphically show PTPHOs generate superior performance in a changing environment through business model-building and model-changing. Managers of both superior and lower performance organisations independently stress the importance of the same business model-building and model-changing aspects related to the attainment and sustainment of superior performance. However, superior performance PTPHOs address building and changing business models in a more diversified and integrated way than their lower performance counterparts.

Supplementary material

To view supplementary material for this article, please visit
<https://doi.org/10.1017/S1463423621000840>

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Authors' Contribution

RIJ Responsible for the research activity planning and execution, D-JB daily supervisor, HD, BT supervisor, CV principal supervisor.

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Conflicts of interest

None.

Ethical standards

Ethics approval was obtained for this study from the ethical committee research healthcare domain. Department of health studies HU University of applied sciences Utrecht. Written (or Verbal) informed consent was obtained from all subjects/patients. Verbal consent was witnessed and formally recorded.

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APPENDIX 3.1 SELF-PERCEIVED INSTRUMENT

How would you rate your physiotherapy primary healthcare organisation performance outcomes on:			
Overall technical quality (professional guidelines)?	0 Lower	0 Moderate	0 Superior
Overall perceptual quality (patient perspective)?	0 Lower	0 Moderate	0 Superior
Financial profit for reinvestment in quality?	0 Lower	0 Moderate	0 Superior

APPENDIX 3.2 INTERVIEW GUIDE

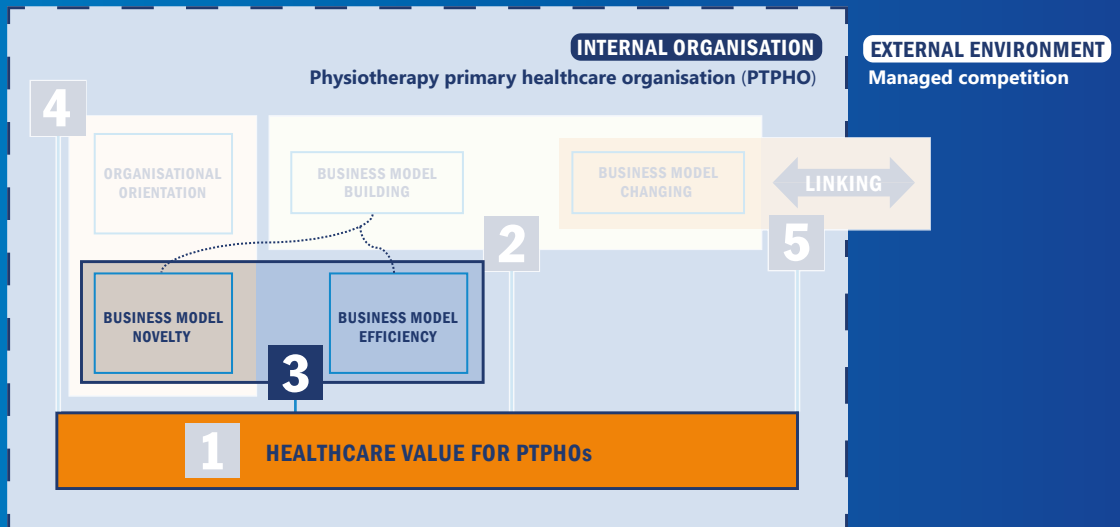
Interview guide theory-based (Wirtz and Daiser, 2017)		
Internal organisation	Characteristics	Related questions
BMI micro-organisational elements	Changing customer needs Product service innovation Competition Firm dynamics	How do you take up the challenge to: Deliver changing customer needs? Innovate products and services? Deal with competitors in the market? Deal with firm dynamics?
BMI factors	Who? (Target group/customer) What? (Value proposition) How? (Value constellation)	Who are your target patients? What value do you offer to these patients? What value do you capture in relation to these patients? How do you create this value?
Interface: BMI techniques and tools	Knowledge creation (and renewal) pool - Evaluative tools for business model components and processes (efficient and effective BMI)	How do you evaluate the success of your company? In relation to business model components? Over time?
Interface: Knowledge/ information processing and sense making	Information processing Sense making Goal: understanding the customer and interpreting signals of the market	How do you: Understand the customer? Interpret signals of the market? Collect and share information?
BMI areas		How do you: Innovate business model components? Innovate the actual BMI process?

4

THE RELATIONS BETWEEN BUSINESS MODEL EFFICIENCY AND NOVELTY, AND OUTCOME WHILE ACCOUNTING FOR MANAGED COMPETITION CONTRACT: A QUANTITATIVE STUDY AMONG DUTCH PHYSIOTHERAPY PRIMARY HEALTHCARE ORGANISATIONS

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Five research gaps:

1. Healthcare value for physiotherapy primary healthcare organisations (PTPHO)
2. Business model-building and model-changing, and healthcare value for PTPHOs
3. **Business model efficiency and novelty, and healthcare value for PTPHOs**
4. Organisational orientation, business model novelty, and healthcare value for PTPHOs
5. Business model-changing and healthcare value for PTPHOs, linking the internal organisation and external environment

ABSTRACT

Background

Since 2006, business principles have been introduced to foster efficient healthcare by way of managed competition. Managed competition is expressed by a contract between a health insurer and a physiotherapy primary healthcare organisation (PTPHO). In such a managed environment, PTPHOs have to attain treatment service quality and financial PTPHO-centred outcomes. Research shows that business model designs may enhance organisation-centred outcomes. A business model is a design (efficiency or novelty) of how a firm transacts with customers, partners, and vendors; how it connects with markets. However, research on managed competition contract and business model designs, in relation to PTPHO-centred outcomes is new to the healthcare literature. PTPHOs may not know how business model designs enhance outcomes. This study aims to delineate the relations between business model efficiency and novelty, and PTPHO-centred outcomes, while accounting for managed competition contract in Dutch healthcare.

Methods

A quantitative crosssectional design was adopted. Using a questionnaire, the relations between managed competition, business model efficiency and novelty, and PTPHO-centred outcomes were investigated among PTPHO managers ($n = 138$). Theory-based expectations were set up and multiple linear regression analyses were applied.

Results

Managed competition and business model efficiency show no relation with PTPHO-centred outcomes. Moderation of the business model efficiency and PTPHO-centred outcomes relation by managed competition contract is not detected. Business model novelty shows a positive relation with PTPHO-centred outcomes. Moderation of the business model novelty and PTPHO-centred outcomes relation by managed competition contract is found.

Conclusions

There seem to be positive relations between business model novelty and PTPHO-centred outcomes on its own and moderated by managed competition contract. No relations seem to exist with business model efficiency. This implies that the combination of persistent use of health insurer-driven managed competition contracts and a naturally efficient PTPHOs may have left too few means for these organisations to contribute to healthcare reforms and attain PTPHO-centred outcomes. Organisation-driven innovation could stretch system-level regulations and provide room for new business models. Optimising contracts towards organisation-driven healthcare reform, including novelty requirements and corresponding reimbursements is suggested. PTPHO managers may want to shift their attitudes towards novel business models.

Keywords

Physiotherapy, Physical therapy, Business model efficiency, Business model novelty, Managed competition contract, Primary healthcare, Performance, Outcomes

BACKGROUND

Managed competition

Managed competition was introduced in healthcare systems by governments and has emerged since the 1990s, at varying speeds and levels of success, in countries such as the United Kingdom, Germany, the United States and the Netherlands [1,2,3]. Managed competition uses rules to instil efficiency in healthcare systems, that is, higher quality, lower costs, value for money, and achievement of standardised products and services [4,5]. With managed competition, business principles have been introduced in the healthcare markets [6,7]. For example, within healthcare markets, managed competition stimulates health insurers to compete for patients and contract healthcare organisations like primary healthcare organisations. Concurrently, healthcare organisations vie for contracts with health insurers. Likewise, patients are encouraged to select a health insurer and healthcare organisations of their choice [8,9,10]. However, many preconditions for managed competition are not fulfilled. An example is that the competition activities of health insurers, healthcare organisations and patients are rather weak, and health care costs are still rising so far [8,11]. Another example is that negotiation power is not equally divided between managed competition participants [6,12-14].

Healthcare organisation context

The effects of managed competition depend to a significant extent on the context and measurement of the organisation providing the healthcare [5,15-18]. However, managed competition effects may not yet be known because of a paucity of healthcare organisation context-specific empirical evidence. If such evidence is available, most discussions revolve around the hospital context instead of the primary healthcare organisation context [18,19]. The managed competition debate is about the degree of healthcare system-level rules versus the degree of healthcare organisation-level competition [7,18]. Rules-based efficient, standardised products and services may hinder healthcare organisation context-specific responses and lead to organisational stagnation instead of innovation. Although proponents of managed competition mention that the competition urges healthcare organisations to boost their efficiency, the opponents state that the competition between healthcare organisations is ineffective [20]. Among managed competition participants the healthcare providers are most dissatisfied. The healthcare providing organisations need better compensation for evidence-based innovations [6,21]. Turning attention to context-specific concerns may be necessary to further managed competition [5,6,7,22,23].

Managed competition contract and organisationcentred outcomes

A contract between a healthcare organisation and a health insurer that specifies intended outcomes in return for financial reimbursement is often how managed competition is expressed [10,15,16]. The healthcare management literature seems inconclusive on the relation between managed competition contract and organisations-centred outcomes. On one hand the healthcare management literature suggests that healthcare organisations that do the best job of improving treatment service quality, cutting cost, and satisfying patients, are rewarded with more patients and revenue [4,5,15,18,20,21,24]. Also, in an empirical paper on a contract pilot in dental practices

an increase in registered patients, a reduction in volumes of treatments, increased financial income and changes in patient satisfaction was seen [25]. In a conceptual paper, Boone and Schotmüller [14] suggest that managed competition contracts reduce healthcare organisation costs. In a health policy paper Shmueli et al. [13] mention that contracting may lead to increased patient satisfaction. On the other hand, healthcare management literature suggests that no healthcare system thus far has achieved the necessary mix of incentives for healthcare organisations. Furthermore, to achieve optimal contracts the tension between rules-based standardisation and (business model) innovation must be reconciled [16]. Little empirical basis for treatment service quality outcomes in relation to managed competition contract is found within healthcare organisations [15,26].

Dutch PTPHO context

To advance understanding on managed competition contracts, an exemplary example of managed competition in a specific context is found in the Dutch healthcare market. First, in 2006, the Health Insurance Act and the Health Care Market-Regulation Act were introduced as a legislative framework, which formed the foundation for managed competition in the Netherlands [9,27]. Internationally, the Dutch healthcare market may have the longest experience with managed competition [8]. Second, Dutch physiotherapy primary healthcare organisations (PTPHO) pioneered managed competition during a government-led experiment from 2005 to 2007 [28]. Particular characteristics of Dutch PTPHOs are that these organisations provide “services for individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan” within their local context [29]. Of these approximately 10,000 PTPHOs 96% have less than 10 persons working. This means that PTPHOs are small businesses. Furthermore, PTPHOs are private businesses with limited resources to respond to managed competition [30-32]. Qualified and multitasking PTPHO managers with context-specific knowledge that delegate to the employed physiotherapist, administrative staff, and hired external professionals lead these organisations [33]. Although theory on managed competition contract in relation to organisation-centred outcomes seems inconclusive, in the Dutch context a health insurer has power by offering contracts to PTPHOs that include high efficiency requirements and corresponding reimbursements. Recorded requirements are, for example, a Dutch PTPHO receives the highest reimbursement level if they participate in a national treatment efficiency index for specified patient populations. As well, if they report on improvements in efficiency indicators at healthcare system level and external audits [34,35]. This means that a PTPHO that complies with the highest contract requirements receives the highest reimbursement level, resulting in increased revenue. In summary, although theory seems inconclusive, based on the daily reality of contract requirements and corresponding reimbursement for PTPHOs, it could be expected that managed competition contract is positively related to PTPHO-centred outcomes.

Dutch context and PTPHOcentred outcomes

Organisation-centred outcomes in the specific context of the Dutch PTPHOs are described in a review by IJntema et al. [38]. The review indicates treatment service quality and financial results as the main PTPHO-centred outcomes. Treatment service quality is related to the overall accuracy of

the care-providing organisation, like medical diagnoses, standards, guidelines, protocols, and a variety of treatment options. Also, how the care delivered by the organisation is perceived by the patients. Financial outcomes are expressed in for example revenue, cost, sales growth, revenue growth, and profit. Other healthcare policy and management studies indicate similar outcomes [10,27,36-38].

Business model designs

Because business principles are involved in managed competition contracts, this study draws from the business model lens delineated in business model theory. A business model is a design of how a focal firm transacts with customers, partners, and vendors; that is, how it chooses to connect with (healthcare) markets [39]. For example, a business model may link administration, finances, monitoring and supervising staff, partners, and overseeing healthcare market developments [15]. Another example is how a focal PTHPO connects with general practitioners, other healthcare professionals, and a health insurer to start a multi-professional primary healthcare programme, including a cost and earnings model. The business model literature refers to business model efficiency and novelty designs [40]. Business model efficiency refers to the measures an organisation takes to achieve efficient transactions with its customers, partners and vendors [39]. Within the context of PTPHOs, the efficiency design pertains to accurately sharing patient-related and financial data information with patients, healthcare providers, and health insurers to ensure informed decisions. It also refers to the use of information, treatment services, and material that is verifiable and evaluable. In the context of PTPHOs business model efficiency means employing efficient transactions to reduce transaction costs [33,40]. In line with business model theory, *it could be expected that business model efficiency is positively related to PTPHO-centred outcomes.* Business model novelty refers to the conceptualisation and adoption of new ways of transactions between a focal PTPHO and its customers, partners and vendors [39]. Business model novelty has shown to be a pre-condition for organisation-centred outcomes [41]. In the PTPHO context, this means the organisation exploits different transactions compared to other competitors [41,42]. Examples are new treatment services and brand-new ways of information administration and exchange, like real-time patient-related and financial data information, and connecting to untried stakeholders to create new opportunities. The need for business model novelty is further expressed in the healthcare management literature. For example, new business models have stimulated new treatment services like e-Exercise by physiotherapists [43]. Also, with a novelty design barriers to innovation adoption by organisations could be resolved [44]. In addition, novel models may enhance a PTPHO to modify treatment content, change the order or timing of services and organise multi-professional collaboration [45]. In line with current business model theory, *it could be expected that business model novelty is positively related to PTPHO-centred outcomes.*

Moderating influence of managed competition contract

Business model designs may be needed to attain managed competition contract requirements and PTPHO-centred outcomes [6,15,39]. Several studies recommend that context-specific innovation-driving requirements, and treatment service quality and financial organisation-centred outcomes

may need to be included in contracts [10,16,23,27]. However, the healthcare management literature lacks research on the moderating influence that a managed competition contract can have on the relation of business model efficiency and novelty, with PTPHO-centred outcomes [6,20,24].

Managed competition contract and business model efficiency might both enable a PTPHO to foster efficiency and to attain PTPHO-centred outcomes. One might expect that compliance with the highest contract requirements enhances the relation between business model efficiency and PTPHO-centred outcomes. In contrast, non-compliance with the highest contract requirements may hinder that relation, resulting in fewer revenues. *It could be expected that the relation between business model efficiency and PTPHO-centred outcomes is moderated by managed competition contract such that when the contract requirements are the highest, the relation is positive, and when the contract requirements are not the highest, the relation is negative.*

Because of a difference in organisation-level requirements and healthcare system-level requirements, contract requirements may not match the needs at the organisational level [46]. The healthcare management literature suggests that although business model novelty may enable organisation-centred outcomes, a managed competition contract may hinder PTPHO-centred outcomes because the highest contract requirements focus on rewarding efficiency, not novelty [23]. For example, although potentially helpful, a novel idea like preventative care instead of curative care may not be reimbursed based on managed competition contract efficiency requirements. Underinvestment in novelty by the health insurer may result in a limitation of innovation and decreased PTPHO-centred outcomes [10,21]. Investments in novelty outside the highest contract requirements may well lead to PTPHO-centred outcomes because organisations may be more flexible to assert themselves through innovative ideas [10]. *It could be expected that the relation between business model novelty and PTPHO-centred outcomes is moderated by management competition contract, such that when the contract requirements are the highest the relation is negative and when the contract requirements are not the highest the relation is positive.*

The business model and healthcare management literature lack comprehensive insights into business model designs related to PTPHO-centred outcomes, while accounting for managed competition contract [6,36,37,47,48]. Furthermore, the existing body of knowledge on business model efficiency and novelty has evolved outside the primary healthcare context. As a consequence, PTPHO managers may not know which business model design (efficiency or novelty) explains their organisation's outcomes. This study aims to delineate the relations between business model efficiency and novelty, and PTPHO-centred outcomes, while accounting for managed competition contract in Dutch healthcare.

METHODS

Data collection and sample

A quantitative cross-sectional design was adopted and applied to the Dutch PTPHO context. Data were collected during 2 months from August 2020 by an online self-administered questionnaire which was sent to Dutch managers responsible for PTPHO-centred outcomes. Via an open online announcement in regular newsletters of Dutch physiotherapy and healthcare associations, and public and private physiotherapy networks, the PTPHO managers were invited to voluntarily and anonymously respond to the questionnaire.

Illustration of expected relations

Figure 4.1 illustrates the relations that could be expected between business model efficiency and novelty, and PTPHO-centred outcomes while accounting for managed competition contract.

Measurement

As a result of a search in healthcare and management literature instruments were selected to compose a questionnaire. The starting point was to select only existing and validated instruments for measuring the introduced constructs. These instruments have already proven their worth in contexts other than the PTPHO context.

PTPHO-centred outcomes

To measure PTPHO-centred outcomes, the perceived organisational performance scale designed for small and medium-sized businesses used by Hung and Chiang [49], was selected. This instrument was previously used in small and medium enterprises. The six items were evaluated on a five-point Likert scale ranging from 'much lower' (1) to 'much higher' (5). The scale was calculated by the mean value of all items.

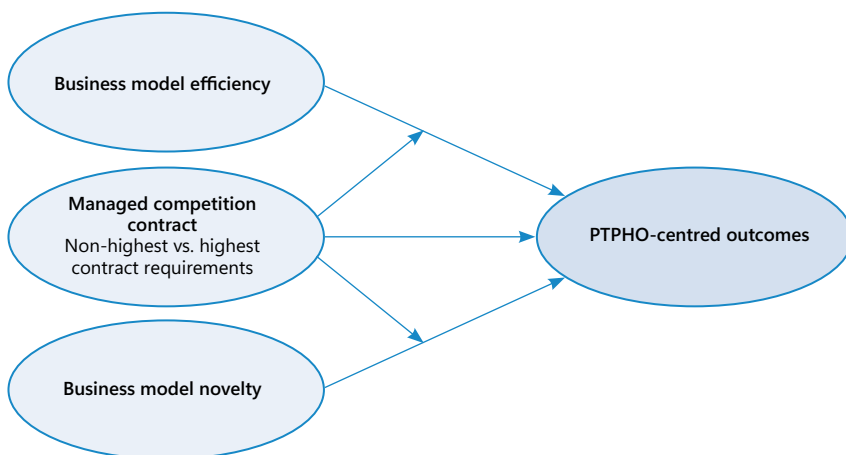


Figure 4.1. Illustration of expected relations

Managed competition contract

Managed competition contract measurement was based on publicly available contract terms of Dutch health insurers. Because the terms showed a split in contract requirements including corresponding reimbursements, managed competition contract was dichotomised by 'non-highest contract requirements' (0) or 'highest contract requirements' (1).

Business model designs

The scale for business model efficiency was originally tested by Zott and Amit [39] in a population of publicly listed entrepreneurial firms. That scale included 13 items that were evaluated on a four-point Likert scale: 'strongly disagree' (0), 'disagree' (0.25), 'agree' (0.75), 'strongly agree' (1). The scale was calculated by the mean value of all items. The scale for business model novelty was a nine-items scale used by Guo et al. [42], that was tested in small- and medium enterprises was adopted. The items were evaluated on a five-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (5). The scale was calculated by the mean value of all items.

Control variables

Control variables were included that are common in management research, or relevant in the PTPHO context, which potentially confound the relations illustrated in Fig. 4.1 [50]. PTPHO manager control variables were gender, age and education degree (that is, bachelor or master degree). Organisational control variables were organisation type (that is, private ownership or shareholders involved), number of departments (one or more than one departments), number of employees (full-time equivalent) and specialised physiotherapist employed by the PTPHO (no or yes). The latter is relevant for the Dutch context. In the Netherlands, a specialised therapist (paediatrics, sports, mental health, etc.) applies skills that may influence business model efficiency or novelty of a PTPHO. In addition, a specialised therapist may receive a higher financial reimbursement than a non-specialised physiotherapist, which may influence PTPHO-centred outcomes. In Table 4.1 an overview of the measurement instruments is shown.

All measurement instruments adopted were originally developed in English, so for the current study, the instruments were translated into Dutch. The selection of measurements was followed by pre-testing the online questionnaire by two PTPHO managers to gain insight into potential technical failures, response time, and the face validity for the PTPHO context. The comments of the managers were collected and discussed between the first and second authors of the current article. Where needed improvements to the questionnaire were made.

Table 4.1 Overview of the measurement instruments

Variable	Short description of the study's variables	Instrument	Authors, year	Context	Scale
PTPHO-centred outcomes	Outcomes related to the overall accuracy of the care, like medical diagnoses, standards, guidelines, protocols, and variety of treatment options Outcomes expressed in cost, sales growth, revenue growth and profit	Small/medium enterprise performance	Hung and Chiang, 2010 [49]	Small/Medium enterprises	5 point Likert
Managed competition contract	Contract between health insurer and healthcare organisation that specifies intended outcomes in return for financial reimbursement	-	-	PTPHO context	Dichotomised
Business model efficiency	Measures an organisation takes to achieve efficient transactions with its customers, partners and vendors	Business model efficiency	Zott and Amit, 2007 [40]	Entrepreneurial firms	4 point Likert
Business model novelty	Conceptualisation and adoption of new ways of transactions between an organisation and its customers, partners and vendors	Business model novelty	Guo et al., 2017 [42]	Small/Medium enterprises	5 point Likert
Control variables	Variables that potentially confound the relations under study	-	Atinc and Simmering, 2021 [50]	Large, Medium and small enterprises	Dichotomised Numerical

Preparation for statistical analyses

Preparations for statistical analyses were made because the applied measurement instruments were not tested in advance on psychometric properties like the reliability or appropriateness for use in the particular PTPHO setting. The reliability of the scales was calculated by determining Cronbach's alpha and factor loadings. The minimum level of Cronbach's alpha was > 0.7 for all instruments which indicates appropriate internal consistency [51]. Exploratory factor analysis was conducted for each scale item with an applied factor loadings cut-off point of > 0.6 which indicates appropriate internal reliability [51]. The exploratory factor analysis revealed that PTPHO-centred outcomes contained two dimensions: treatment service quality and financial. Because managed competition contract concerned one question, no exploratory factor analysis nor Cronbach's alpha was applied. More information about the scale, scale-items, factor loadings and Cronbach's alpha is shown in Additional file 4.1. Last, a Pearson correlation test was used to assess correlations between all variables and to check for collinearity. No indication of a strong or very strong correlation was detected based on a < 0.6 cut-off point [52]. The result of the correlation test is shown in Additional file 4.2. To describe the significance level for each correlation, a cut-off point p value < 0.05 was applied.

Statistical analysis

Descriptive analyses were performed on all outcomes by describing the number (percentage), mean of sample, and standard deviation when applicable. The statistical significance of the sample concerning the response rate of PTPHO managers including a confidence interval was calculated as well. Multiple linear regression analyses were used to delineate the relations between business model efficiency and novelty, and both treatment service quality and financial PTPHO-centred outcomes, while accounting for managed competition contracts. Because the concepts were new to the PTPHO context, all scale items were included based on theory, rather than techniques like stepwise analysis. All variables included in the study were checked in advance on criteria for multiple linear regression conditions by analysis of the mean, median, standard deviation, maximum, minimum, skewness and kurtosis. Furthermore, a variance inflation factor (VIF) test was applied with a < 2.5 cut-off point that was set for multicollinearity. Various theory-based models, were fitted and compared with each other (Tables 4.3 and 4.4). Because moderation is analysed, to alleviate possible multicollinearity, age, number of departments, number of employees, business model efficiency and novelty, were mean-centred [53]. To describe the significance level for each variable within a model, a cut-off point p value < 0.05 was applied. Also, R^2 adjusted was calculated to describe the explanatory power of each constructed model. Statistical analysis was performed by R version 4.1.0. Finally, possible moderation by managed competition contract was illustrated (Figs. 4.2 and 4.3).

RESULTS

Descriptive characteristics

Table 4.2 shows the descriptive characteristics of the PTPHO managers, the PTPHOs, and the dependent and independent variables. The sample included 138 valid questionnaires returned by the participants. The sample comprises small businesses with a mean number of 6.65 (sd 5.6) employees full-time equivalent. Furthermore, the majority (77%) of the PTPHOs represent a private ownership type of organisation and the vast majority (89%) of the PTPHOs employ one or more specialised therapists. Managed competition contract highest contract requirements comprise 45% of the sample.

Table 4.2. Descriptive characteristics

	N (percent)	Mean of sample	Standard deviation
PTPHO manager characteristics			
Gender			
Male	76 (55)		
Female	62 (45)		
Age		50.50	10.44
Education			
Bachelor	85 (62)		
Master	53 (38)		
PTPHO characteristics			
Organisation type			
Private ownership	106 (77)		
Shareholders	32 (33)		
Number of departments			
One	59 (43)		
More than one	79 (57)		
Number of employees (full time equivalent)		6.65	5.58
Specialised therapist			
No	15 (11)		
Yes	123 (89)		
Dependent variables			
PTPHO-centred outcomes – treatment service quality (range 1–5)		3.18	0.40
PTPHO-centred outcomes – financial (range 1–5)		3.34	0.69
Independent variables			
Business model efficiency (range 0–1)		0.74	0.12
Business model novelty (range 1–5)		3.56	0.63
Managed competition contract			
Non-highest contract requirements	76 (55)		
Highest contract requirements	62 (45)		

Sample size: 138

All variables included in the study met conditions for normal distribution. In addition, with 138 valid questionnaires returned, based on a 10,000 PTPHO population, the margin of error is 8.3% (not shown in Table 4.2).

Delineation of relations

Table 4.3 shows the relations between business model efficiency and novelty and PTPHO-centred outcomes treatment service quality while accounting for managed competition contract controlled for potential confounders.

Table 4.3. Regression analysis on PTPHO-centred outcomes - treatment service quality

	Model				
	1	2	3	4	5
Control variables	β	β	β	β	β
Gender	0.05	0.05	0.05	0.05	0.06
Age	0.00	0.00	0.00	0.00	0.00
Education degree	-0.01	-0.01	-0.02	-0.02	-0.03
Organisation type	0.01	0.01	-0.04	0.01	-0.09
Number of departments	-0.03	-0.04	-0.06	-0.04	-0.02
Number of employees (full time equivalent)	0.00	0.01	0.00	0.00	-0.01
Specialised therapist	0.11	0.11	0.10	0.12	0.12
Expected relations	β	β	β	β	β
Managed competition contract	0.04			0.03	0.09
Business model efficiency		0.18		0.06	
Business model novelty			0.18***		0.03
Business model efficiency*Managed competition contract				0.26	
Business model novelty*Managed competition contract					0.38***
R^2_{adj}	-0.03	-0.03	0.04	-0.04	0.11

*** $P < 0.001$; ($n = 138$); β = estimate

The relations between business model efficiency and novelty and financial PTPHO-centred outcomes while accounting for managed competition contract controlled for potential confounders are delineated in Table 4.4.

Managed competition contract related to PTPHO-centred outcomes

Managed competition contract shows no significant relation with treatment service quality nor financial PTPHO-centred outcomes (Models 1, Table 4.3 and 4.4)

Business model efficiency related to PTPHO-centred outcomes

Based on models 2 (Table 4.3 and 4.4), business model efficiency shows no significant relation with treatment service quality and financial PTPHO-centred outcomes.

Table 4.4. Regression analysis PTPHO-centred outcomes - financial

	Model				
	1	2	3	4	5
Control variables	β	β	β	β	β
Gender	0.13	0.12	0.11	0.13	0.14
Age	-0.01	-0.01	0.00	-0.01	0.00
Education degree	0.12	0.11	0.09	0.11	0.09
Organisation type	-0.20	-0.21	-0.27	-0.20	-0.31**
Number of departments	-0.13	-0.13	-0.17	-0.14	-0.13
Number of employees (full time equivalent)	0.04***	0.04***	0.03**	0.04***	0.03**
Specialised therapist	0.52**	0.50**	0.47**	0.53**	0.52***
Expected relations	β	β	β	β	β
Managed competition contract	-0.16			-0.16	-0.11
Business model efficiency		0.01		-0.06	
Business model novelty			0.25**		0.09
Business model efficiency*Managed competition contract				0.22	
Business model novelty*Managed competition contract					0.40**
R^2_{adj}	0.11	0.11	0.15	0.10	0.18

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; ($n = 138$); β = estimate

Business model novelty related to PTPHO-centred outcomes

Model 3 in Table 4.3 (R^2_{adj} 0.04) shows a significant positive relation between business model novelty and treatment service quality PTPHO-centred outcomes (β 0.18, $p < 0.001$). Also, Model 3 in Table 4.4 shows a significant positive relation between business model novelty and financial PTPHO-centred outcomes (β 0.25, $p < 0.01$, R^2_{adj} 0.15).

Relation between business model efficiency and PTPHO-centred outcomes moderated by managed competition contract

Models 4 (Table 4.3 and 4.4) also show results with managed competition contract as a possible moderator of the relation between business model efficiency, and treatment service quality and financial PTPHO-centred outcomes. No significant moderation of the business model efficiency and treatment service quality PTPHO-centred outcomes relation is detected. Likewise, no significant moderation of the business model efficiency and financial PTPHO-centred outcomes relation is found.

Relation between business model novelty and PTPHO-centred outcomes moderated by management competition contract

Model 5 in Table 4.3 shows a significant moderation of the business model novelty and treatment service quality PTPHO-centred outcomes relation (β 0.38, $p < 0.001$, R^2_{adj} 0.11). Furthermore, Model 5 in Table 4.4 shows a significant moderation of the business model novelty and financial PTPHO-centred outcomes relation (β 0.40, $p < 0.01$, R^2_{adj} 0.18).

Figure 4.2 illustrates how managed competition contract may moderate the business model novelty and treatment service quality PTPHO-centred outcomes relation. The highest managed competition contract requirements seems to entail a stronger positive relation with the business model novelty and treatment service quality PTPHO-centred outcomes relation than the non-highest contract requirements.

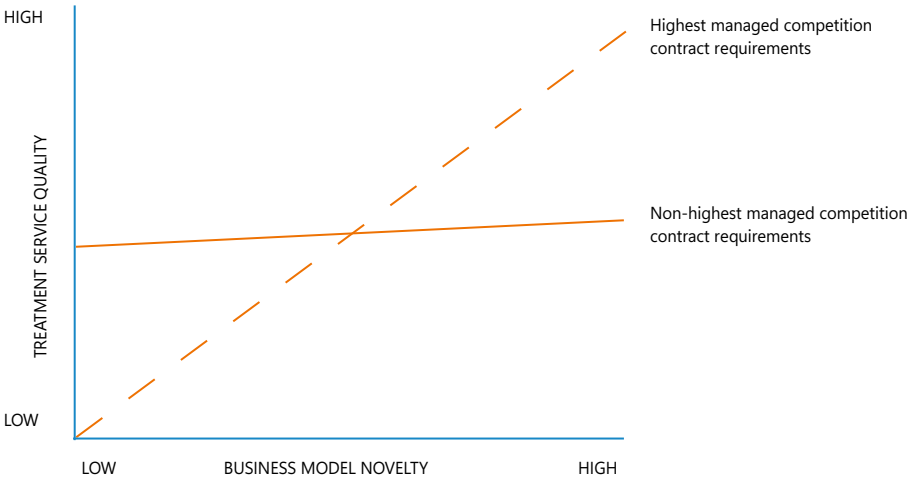


Figure 4.2. Illustration of business model novelty – treatment service quality relation moderated by managed competition contract

Figure 4.3 illustrates a detailed insight on how managed competition contract may moderate the business model novelty and financial PTPHO-centred outcomes relation. The figure shows that the highest managed competition contract requirements may entail a stronger positive relation with the business model novelty and financial PTPHO-centred outcomes relation than the non-highest contract requirements.

DISCUSSION

This study shows that, rather than efficiency, both business model novelty on its own and business model novelty moderated by managed competition contract show a significant positive relation with PTPHO-centred outcomes treatment service quality and financial. The reason that business model efficiency may not have significant relations could be that persistent health insurer-driven use of managed competition contracts have pushed PTPHOs to the limits of their business model efficiency possibilities [7]. Besides, PTPHOs are considered microbusinesses that are naturally efficient, regardless of contract requirements [54]. The combination of managed competition contracts and naturally efficient PTPHOs may explain why it is not relevant for these organisations to strive for business model efficiency in relation to PTPHO-centred outcomes [5]. The positive relation between business model novelty and PTPHO-centred outcomes, while accounting for managed competition contract may as well be explained by the combination of

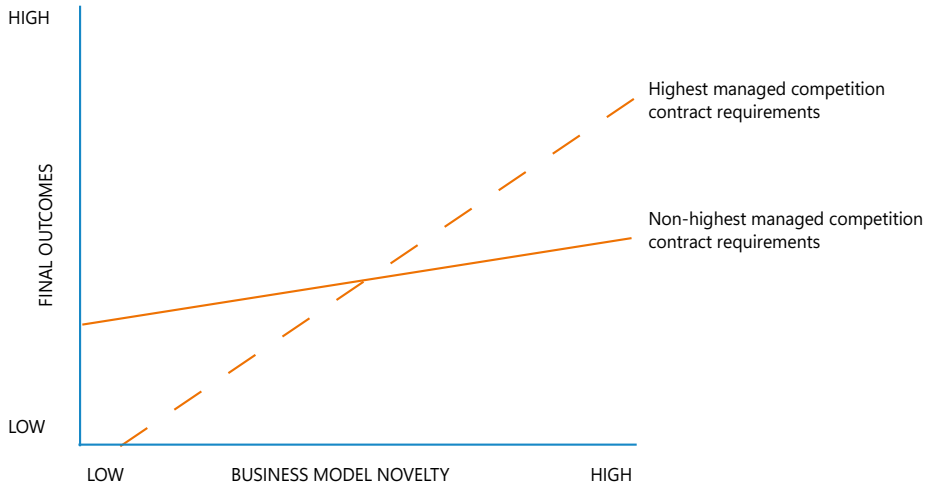


Figure 4.3. Illustration of business model novelty – financial outcomes moderated by managed competition contract

persistent health insurer-driven use of managed competition contracts and naturally efficient PTPHOs. The significant result is notable because it goes against the expectation that the highest managed competition contract requirements would hinder PTPHO-centred outcomes. In addition, the healthcare management literature does not seem to corroborate the positive relation. For example, Mühlbacher et al. [10]. suggest that, outside the highest contract requirements, PTPHOs may be more flexible by asserting themselves through innovative ideas. Nevertheless, one could reason that PTPHOs that do not comply with the highest contract requirements may have less (financial) scope to invest in business model novelty because they receive less reimbursement. The highest contract reimbursement level may create (financial) room for a PTPHO to invest in novelty rather than business model efficiency.

From a theoretical perspective this study may have detected a trade-off between managed competition contract compliance at the PTPHO sector level, and the focal PTPHO business model design (that is, efficiency or novelty). In other words, this study sheds light on insurer-driven healthcare reform contrasted by organisation-driven healthcare reform [7]. On one side, insurer-driven reforms have focussed on fostering efficient healthcare by rewarding healthcare providers that do the most efficient job. However, the compound of persistent health insurer-driven use of managed competition contracts and a naturally efficient PTPHO sector may have left too few means for the physiotherapy sector to contribute to healthcare reforms. On the other side, at the level of the focal PTPHO, instead of efficiency, both business model novelty and business model novelty moderated by managed competition contract may enhance treatment service quality and financial PTPHO-centred outcomes. To achieve the best possible outcomes, it seems that an above-average business model novelty effort by the PTPHO is needed in combination with the highest contract requirements (Figs. 2 and 3). A trade-off between regulator-driven versus organisation-driven reform seems also evident in research outside the PTPHO context.

For example, Uber introduced innovative services in several regulated markets enhanced by innovative internet platform technology business models. These services were so innovative that regulators, after initial resistance, had to adapt to Uber's taxi drivers [55]. An example from the highly regulated financial sector is that financial entrepreneurs are cautiously allowed by regulators to test organisation-driven innovations with fewer regulatory constraints and less risk of enforcement action [56]. Last, solar industry research suggests that although not guaranteed, organisation-driven innovation could stretch existing system-level regulations and provide room for new business models [57].

The exchange between insurer-driven healthcare reform contrasted by organisation-driven healthcare reform may have three practical policy implications that may need in-depth consideration. First, efficiency contract requirements may need to be alleviated and novelty requirements introduced. For example, PTPHOs could receive reimbursement for new ideas, like bonding with patients, partners and vendors in novel ways. Second, because health insurers and PTPHO managers may each have their unique perspectives, literature suggests to optimise managed competition contracts associated with insurer-driven perspectives towards provider-driven viewpoints. For example, optimisation of contracts could be realised by balancing efficiency and innovation requirements [7,16,27]. Third, apart from the current state of managed competition contracting, PTPHO-managers may want to shift their attitudes toward new routines [58,59], implementing E-health services [60], and introducing novel business models, including treatment service quality and financial outcomes [61].

Strengths and limitations

Findings should be generalised with caution. Because the study context of small business PTPHOs has a novel character, pioneering research may run the risk of having used a unique sample. To the knowledge of the authors, this is the first study to focus on business model efficiency and novelty concerning physiotherapy organisation-centred outcomes while accounting for managed competition contract in the primary healthcare context. The applied measurement instruments, originally developed and validated in small business contexts, are not tested in advance on psychometric properties like the reliability or appropriateness for use in the particular PTPHO setting. However, the sample of PTPHOs comprises small businesses with a mean number of 6.65 (sd 5.6) employees full-time equivalent. This is similar to the population of Dutch PTPHOs [32]. In addition, the instruments, are pre-tested by PTPHO managers. Calculations indicated appropriate scale and internal reliability. As a result, measurement instruments manageable for PTPHO managers are adopted, developed and applied.

Another important aspect of this study is that the explanatory power of the calculated models could be regarded low, as shows by the R^2_{adj} of model 5 in Table 4.3 (0.11) and model 5 in Table 4.4 (0.18). This may be because a PTPHO is a multidimensional context and it may be hard to cover relevant elements in one questionnaire [5,20,58,62]. For example, other potential variables, like organisational learning [63] and market orientation [64] that justify the complexity of the PTPHO context, may have been neglected.

Despite limitations, knowledge is added to the business model and healthcare management body

of knowledge by researching both business model efficiency and novelty within a PTPHO context, and the moderating role of managed competition contract.

Because this study is cross-sectional by design, it is not possible to claim causal relations between the business model design, managed competition contract and outcome variables. Based on the current study, a longitudinal design could be used in future research to investigate causal relations between these variables. Furthermore, observational studies could shed light on context specific measures. Because Likert scales with perceived questions were used, future studies could apply objective measures, like financial data.

CONCLUSIONS

There seem to be positive relations between business model novelty and PTPHO-centred outcomes on its own and moderated by managed competition contract. No relations seem to exist with business model efficiency. This implies that the combination of persistent use of health insurer-driven managed competition contracts and a naturally efficient PTPHOs may have left too few means for these organisations to contribute to healthcare reforms and attain PTPHO-centred outcomes. Organisation-driven innovation could stretch system-level regulations and provide room for new business models. Optimising contracts towards organisation-driven healthcare reform, including novelty requirements and corresponding reimbursements is suggested. PTPHO managers may want to shift their attitudes towards novel business models.

Abbreviation

PTPHO: physiotherapy primary healthcare organisation.

Supplementary Information

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Authors' contributions

All authors analysed and interpreted the questionnaire data. They also read and approved the final manuscript.

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Availability of data and materials

The data that support the findings of this study are available from PTPHO managers but restrictions apply to the availability of these data, which were used under license for the current study, and so

are not publicly available. Data are however available from the authors upon reasonable request and with permission of PTPHO managers.

Declarations

Ethics approval and consent to participate

Ethics approval was obtained for this study from the institutional review board (IRB) named HU University of Applied Sciences Utrecht ethical committee research healthcare domain. The committee stated that all methods were performed in accordance with the relevant guidelines and regulations in light of European law and ethics regarding medical research. In addition, based on the Dutch civil code article 446 (treatment agreement contracts), written or informed consent does not apply to this research because the participating PTPHO managers are not patients [65]. In addition, based on article 4.1 of the regulation (EU) 2016/679 of the European parliament and of the counsel, written or verbal consent by the PTPHO managers was deemed unnecessary because survey data were collected anonymously [66].

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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ADDITIONAL FILE 4.1. SCALE, ITEMS, FACTOR LOADINGS AND CRONBACH'S ALPHA

Scale	Items	Factor loadings	Cronbach's alpha
PTPHO-centred outcomes financial	<i>To what extent does your organisation attain its expected results in terms of:</i>		0.91
	Treatment service sales growth	0.88	
	Revenue growth	0.96	
	Net profit margin	0.89	
PTPHO-centred outcomes treatment service quality	<i>To what extent does your organisation attain its expected results in terms of:</i>		0.78
	Quality of treatment service	0.85	
	The variety of treatment services offered	0.79	
	Patient satisfaction	0.80	
BM efficiency	The business model enables stakeholders and patients to make informed decisions	0.68	0.76
	Transactions are transparent: flows and use of information, treatment services, and materials can be verified	0.73	
	As part of transactions, information is provided to stakeholders and patients	0.63	
	Access to a large range of treatment services, information, stakeholders, and patients is provided	0.64	
	The business model enables fast transactions	0.66	
	The business model, overall, offers high transaction efficiency	0.62	
BM novelty	<i>Our business model:</i>		0.87
	Offers new combinations of treatment services and information	0.76	
	Attracts a lot of new healthcare suppliers and partners	0.66	
	Bonds stakeholders and patients together in novel ways	0.76	
	Links stakeholders and patients to transactions in novel ways	0.74	
	<i>We frequently introduce new:</i>		
	Ideas and innovation into our business model	0.77	
	Operational processes, routines, and norms into our business model	0.66	
	We are pioneers of the business model	0.75	
	Overall, our business model is novel	0.64	
Managed competition contract	<i>Does your PTPHO have one or more contracts with a health insurer:</i>		
	The contract meets the highest contract requirements of these health insurers	-	-
	The contract does not meet the highest contract requirements of these health insurers	-	-

ADDITIONAL FILE 4.2. PEARSON CORRELATION FOR ALL REGRESSION VARIABLES

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Gender	-											
(2) Age	-.07	-										
(3) Education	-.07	-.17*	-									
(4) Organisation type	.07	-.01	-.01	-								
(5) Number of departments	.04	-.09	.02	.23**	-							
(6) Number of employees (full time equivalent)	.12	-.07	-.04	.44**	.50**	-						
(7) Specialised therapist employed	.03	.09	.17	.13	.34**	.31**	-					
(8) Managed competition contract	.11	-.00	.04	.30**	.31*	.56**	.26**	-				
(9) Business model efficiency	.01	.11	.15	-.00	.12	.02	.10	.08	-			
(10) Business model novelty	.04	-.19*	.10	.29**	.28**	.34**	.17	.17*	-.01	-		
(11) PTPHO-centred outcomes, treatment service quality	.08	-.10	.01	.05	.05	.11	.09	.10	.05	.28**	-	
(12) PTPHO-centred outcome, financial	.12	-.10	.11	.01	.11	.28**	.27**	.09	.02	.29**	.45**	-

The numbers in the column titles refer to the variables with the same number as in the first row

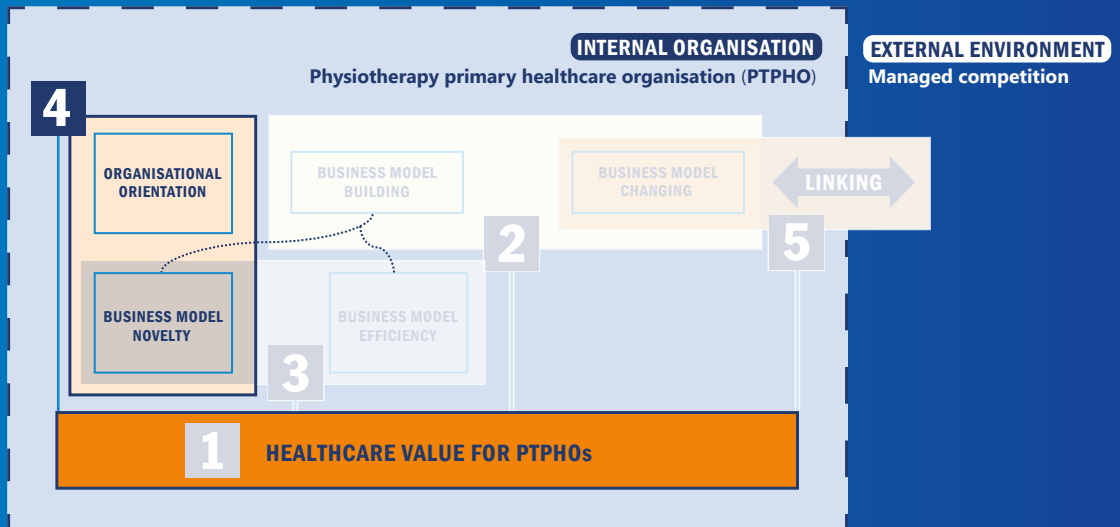
* $p < 0.05$; ** $p < 0.01$; $n = 138$

5

ORGANISATIONAL LEARNING ORIENTATION, PROACTIVE MARKET ORIENTATION, AND ORGANISATION- CENTRED OUTCOMES: THE MEDIATING ROLE OF BUSINESS MODEL NOVELTY. A QUANTITATIVE STUDY AMONG DUTCH PHYSIOTHERAPY PRIMARY HEALTHCARE ORGANISATIONS

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Under review



Five research gaps:

1. Healthcare value for physiotherapy primary healthcare organisations (PTPHO)
2. Business model-building and model-changing, and healthcare value for PTPHOs
3. Business model efficiency and novelty, and healthcare value for PTPHOs
- 4. Organisational orientation, business model novelty, and healthcare value for PTPHOs**
5. Business model-changing and healthcare value for PTPHOs, linking the internal organisation and external environment

ABSTRACT

Background

Physiotherapy primary healthcare organisations (PTPHO) are small businesses with limited resources. These organisations operate in a managed competition context in which business principles that relate to efficient healthcare systems, higher quality, patient satisfaction, and lower costs have been introduced. Within the context of PTPHOs one may expect that business model novelty is positively related to organisation-centred outcomes, like treatment service quality and financial outcomes. In addition, organisational double-loop learning orientation and proactive market orientation may, mediated by business model novelty, may have high impact on the attainment of such outcomes. However, empirical research on these topics is scarce and the body of knowledge has mainly developed outside the PTPHO context. Consequently, in general PTPHO managers may not know how to achieve organisation-centred outcomes and specifically translate business model novelty, organisational double-loop learning orientation and proactive market orientation to their PTPHO context.

Methods

Based on a quantitative cross-sectional design, organisation-centred outcomes, business model novelty, organisational double-loop learning orientation and proactive market orientation were examined among 138 PTPHO managers by a questionnaire. Expected relations were built and multiple regression (mediation) analyses were conducted.

Results

The relation between both organisational double-loop learning orientation and proactive market orientation, and business model novelty is confirmed. Not confirmed is the relation between business model novelty, and both treatment service quality and financial organisation-centred outcomes. A small mediating role of business model novelty between both organisational double-loop learning orientation and proactive market orientation, and both treatment service quality and financial organisation-centred outcomes is found. In addition, the mediating role is indicated by low estimates and between 25% and 72% of the role explained by yet unknown variables.

Conclusions

PTPHO managers may cautiously focus on investment in organisational double-loop learning orientation and proactive market orientation, and business model novelty that promise a return on their investment. Policymakers and health insurers could consider putting extra effort into gaining accurate insights into how organisation-centred outcomes are achieved, and under which PTPHO context-specific conditions. Although the mediating role of business model novelty may be indicated, more empirical research is needed to better determine this role within the PTPHO context.

BACKGROUND

Physiotherapy primary healthcare organisations

Physiotherapy primary healthcare organisations (PTPHO) are small businesses (< 10 full-time equivalents) with limited resources that offer “services for individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan” [1-4]. These organisations are mostly privately owned and are led by qualified and multitasking PTPHO managers that delegate to employed physiotherapist, administrative staff, and hired external professionals [5]. The market for PTPHOs is changing because these organisations need to adhere to managed competition regulations imposed by governments. Managed competition applies rules to establish efficiency in healthcare systems, with a focus on higher quality, lower costs, value for money, and achievement of standardised products and services [6,7]. Also, patient satisfaction is a core managed competition outcome [8]. With managed competition, business principles have been introduced in the healthcare market in the Netherlands, as in many other countries [5,8-10]. Currently, Dutch PTPHOs are challenged to compete with other healthcare providers to address local community needs and patient needs and to both attain as well as to sustain organisation-centred outcomes.

Organisation-centred outcomes

An overview of PTPHO context-specific organisation-centred outcomes was provided by a review by IJntema et al. [11]. First, treatment service quality organisation-centred outcomes are related to the overall accuracy of the PTPHO. Examples of such outcomes are use of guidelines and protocols, treatment options, and how the treatment is perceived by the patients. Second, financial organisation-centred outcomes that relate to revenue, cost, sales growth, revenue growth, and profit. Other healthcare policy and management literature also point to outcomes that are comparable with these two context-specific physiotherapy organisation-centred outcomes [12-15].

Business model designs

A design business model efficiency refers to the measures an organisation takes to achieve efficient transactions with its customers, partners and vendors [16]. Unlike research evidence in other small business contexts, the healthcare literature suggests business model efficiency may not relate to organisation-centred outcomes in the PTPHO context [17]. One reason for this could be that persistent use of managed competition contracts and a naturally efficient Dutch physiotherapy sector may have left limited room for PTPHOs to contribute to healthcare reforms and to achieve organisation-centred outcomes [17]. Another design named business model novelty refers to the adoption of new and different ways of transactions between an organisation and its customers, partners, and vendors compared to other competitors. It also refers to how an organisation chooses to connect with (sector-wide or local community healthcare) markets in a novel way [16,18]. Business model novelty could resolve barriers to innovation, modify treatment content and timing of services, and stimulate effective collaboration [19,20]. Furthermore, healthcare and business model research suggests that, under managed competition, PTPHO business model

novelty may positively relate to organisation-centred outcomes [5,17,21]. In line with the current business model theory, it could be expected that, within the PTPHO context, business model novelty is positively related to organisation-centred outcomes.

Organisational orientations

Organisational learning orientation is expressed by cultural values like open-mindedness and willingness to share knowledge [22]. This orientation can be seen as a continuum from single-loop learning to double-loop learning [23-25]. On the one side of the continuum single-loop learning organisations are typified by strategies that keep existing organisational values, assumptions, routines, and services constant [26]. These organisations may be ineffective at learning within a changing environment such as the managed competition healthcare market, which can result in poor organisation-centred outcomes [27,28]. On the other side of the continuum double-loop learning organisations are open to thinking differently and to reconsidering their values, assumptions and routines [22,28]. Herewith, a changing environment like managed competition in a healthcare market can be explored, new suggestions can be shared and uncertainty can be reduced.

Proactive market orientation is approached in different ways in the business literature context [29,30], one of which corresponds best to the small business PTPHO context. Proactive market orientation can be defined as the “organisational culture that most effectively and efficiently creates the necessary behaviours for creating superior value for buyers (patients) and, thus, continuous superior performance” [29]. Although this orientation may risk less attention being given to patient needs and current competencies and markets, it means that a PTPHO aims to satisfy patients’ latent needs by focusing on the development of new competencies and future healthcare markets.

Mediating role of business model novelty

Both organisational learning and market orientation are considered highly influential on for example business model novelty [31-33]. Furthermore, organisational double-loop learning orientation [34-38] and proactive market orientation [39,40] are known to precede the conceptualisation and execution of a novel business model in a changing environment, which may also lead to improved organisation-centred outcomes. In addition, the impact of organisational double-loop learning and proactive market orientation on the attainment of organisation-centred outcomes may be enhanced when PTPHOs also use business model novelty [31,33,41,42]. In line with current business model literature, it could be expected that, within the PTPHO context, both organisational double-loop learning orientation and proactive market orientation are positively related to organisation-centred outcomes and that this relationship is mediated by business model novelty.

Delineation of expected relations in the PTPHO context

To the best of the knowledge of the authors of the current study, to date, the expected relations described in the current study have not been validated for the PTPHO context. This is because empirical research on these topics is scarce and the body of knowledge has mainly developed outside the PTPHO context [41-43]. Consequently, PTPHO managers may not know how to achieve

organisation-centred outcomes and translate business model novelty, organisational double-loop learning orientation and proactive market orientation to their PTPHO context. Delineation of the expected relations may enrich empirical research in the PTPHO context and potentially support PTPHO managers in their attainment of organisation-centred outcomes.

METHODS

Study design and source of data

A quantitative cross-sectional design was applied to the context of Dutch PTPHOs. Cross-sectional designs have the potential to explore insights into areas such as the antecedents and mediators of change and connections between such variables [44].

Participants

PTPHO managers responsible for organisation-centred outcomes were asked to anonymously self-administer an online questionnaire from September to November 2020. No extra selection criteria were used. These managers were openly invited via newsletters of associations and private and public networks that are active in the Dutch physiotherapy sector to respond voluntarily.

Study procedure and outcomes

An online self-administered questionnaire was used to collect data. Existing measurement instruments valid for the small business context were used to measure study outcomes.

Organisation-centred outcomes (dependent variable) were measured with a six-item perceived organisational performance scale used by Hung and Chiang [45]. Factor analysis revealed that organisation-centred outcomes needed to be split up into treatment service quality (three items) and financial (three items) organisation-centred outcomes. Likert scales ranging from 1 ('much lower') to 5 ('much higher') were applied to all items and the final scores were calculated by the mean value of all items.

Organisational double-loop learning orientation (independent variable) was measured using a nine-item scale originally developed by Chaston et al. [24]. The items were assessed on a five-point Likert scale ranging from 1 ('strongly disagree') to 5 ('strongly agree') and the final score was calculated by the mean value of all items. The developers proposed that the nearer a PTPHO rates the statements as 'strongly agree', the greater the probability that the organisation is exhibiting a double-loop learning orientation.

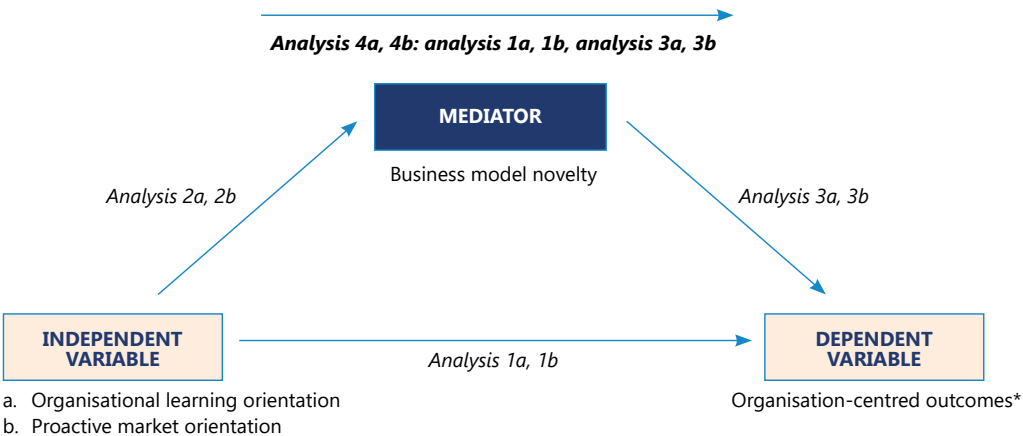
The instrument developed by Tan and Liu [40] was used to measure *proactive market orientation* (independent variable). Proactive orientation entailed four items. The scale was evaluated on a five-point Likert scale that ranged from 1 ('strongly disagree') to 5 ('strongly agree') and the final score was calculated by the mean value of all items.

Business model novelty (mediator) was measured by a nine-item scale used by Guo et al. [46]. A Likert scale that ranged from 1 ('strongly disagree') to 5 ('strongly agree') was applied and the final score was calculated by the mean value of all items.

Additional variables were included that potentially influence the expected relations among organisation-centred outcomes, organisational double-loop learning orientation and proactive market orientation, and business model novelty. At the PTPHO manager level, the variables chosen were gender (male or female), age (years) and education degree (bachelor or master) were selected. The variables selected at the organisation level were organisation type (private ownership or shareholders involved), number of departments (one or more than one department), number of employees (full-time equivalent), and specialised physiotherapist employed by the PTPHO (yes or no) (for example, geriatrics, mental health, heart/lung, etc.). The latter variable may influence organisation-centred outcomes as in the Netherlands, a specialised therapist uses specific knowledge, and some are rewarded with higher financial reimbursements compared to non-specialised therapists. These variables at manager and organisation characteristics level are common or feasible in the PTPHO context [47]. To control for healthcare market characteristics, the managed competition contract variable was added (non-highest contract or highest contract with health insurer). The highest contract guarantees the highest revenues for a PTPHO.

Relations between outcomes

As shown in Figure 5.1, first, relations of organisational double-loop learning orientation respectively proactive market orientation with organisation-centred outcomes were described (Relation 1a-b). Second, relations between organisational double-loop learning orientation respectively proactive market orientation, and the potential mediator business model novelty, were studied (Relations 2a-b). Third, relations between the business model novelty and organisation-centred outcomes were specified (Relations 3a-b). Fourth, the mediating role of business model novelty between organisational double loop learning respectively proactive market orientation, and organisation-centred outcomes were outlined (Relations 4a-b).



* Analyses were performed separately for treatment service quality - and financial organisation-centred outcomes

Figure 5.1. Illustration of expected relations

Preparation for statistical analyses

Because the instruments measuring outcomes used in this study were not tested on psychometric properties specifically for the context of PTPHOs, several preparatory steps were taken to enhance measurement validity. First, after translation from English into Dutch, the questionnaire was pre-tested by two PTPHO managers to obtain a better understanding of the face validity of the instruments, which resulted in relevant items for the PTPHO context and an easy-to-fill questionnaire. For example, to make the questionnaire more relevant, the word 'participants' was replaced with 'patients and stakeholders' in the business model novelty scale of Guo et al. [46]. Second, because PTPHO manager time may be limited and public or non-public objective data relating to specific PTPHOs are not easily available, a short scale self-report questionnaire was used to collect perceptual measures at the same time from the same PTPHO managers. Such an approach carries the risk of common method bias [32,48]. Despite, to minimise such bias within the questionnaire measurement items were clearly separated and voluntariness, anonymity and confidentiality of the study was assured [48]. Third, to indicate appropriate internal consistency, a cut-off point of > 0.7 for Cronbach's alpha was applied [49]. Fourth, exploratory factor analysis was performed to determine the extent to which the individual items belong to underlying constructs. Appropriate internal reliability was indicated by a > 0.6 cut-off point for exploratory factor analysis factor loadings [49]. Appendix 5.1 shows detailed information of the scale, items, factor loadings, and Cronbach's alpha. Finally, to assess collinearity, a variance inflation factor (VIF) test was applied with a < 2.5 cut-off point that was set for multicollinearity. In addition, a Pearson correlation test was calculated based on a < 0.6 cut-off point to exclude inappropriate items [50, Appendix 5.2].

Statistical analysis

Descriptive statistics were used to describe the study population and study context. To determine the relations as illustrated in Figure 5.1, a mediation analysis was performed using the causal step method described by Baron and Kenny [51]. This is a widely used method in mediation analysis [52]. The goal of mediation analysis is to demonstrate whether a relationship between an independent variable and dependent variable is strengthened by a mediating variable. In the current study this is expressed in the average casual mediating effect (ACME) of business model novelty including the determination whether it is statistically significant. In the current study, the independent, mediator, and dependent variables were included based on theory and findings in small business and medium contexts other than PTPHOs, instead of statistical methods such as forward selection or backward elimination. The level of significance is 5% ($p < 0.05$). The testing of statistical significance was calculated by percentile bootstrapping based on 1000 simulations [53]. The mediation analysis consisted of linear regression analyses to gain insight into the expected relations and the ACME. First, simple linear regression analyses were conducted to gain insight into the univariate relations. Finally, the mediating role of business model novelty was calculated by a multiple regression analysis (Relation 4a-b).

Prior to the mediation analysis, assumptions for multiple linear regression conditions were checked, including the normal distribution of the mediator and the dependent variables necessary for mediation analysis [54]. To be able to discuss the likelihood of meeting causal mediation

analysis assumptions, several calculations were undertaken. First, reversed causation was tested by interchanging the mediator and dependent variables. If the results appear like the non-reversed model, one will have less confidence in the model [55] (data not shown). Second, a possible moderating influence of business model novelty on the relations between the independent and dependent variables was analysed (data not shown). If moderation takes place, caution should be taken when interpreting mediation analysis [56]. Third, sensitivity analyses were performed to detect possible variance explained by unobserved confounders. Calculations were based on the correlation (ρ) between the residuals of the mediator and independent variable regressions. When the average causal mediating effect is zero, the variance explained by unobserved confounders can be indicated [57]. Fourth, confidence intervals (CI) for each estimate and each estimate adjusted for potential confounders were reported.

For all statistical analyses, R version 4.1.2 was used. The mediation package was applied [57] and a guideline for reporting mediation analyses was followed [58].

RESULTS

Study population

Table 5.1 shows the descriptive characteristics of the study population. One hundred and thirty-eight participating PTPHO managers completed the questionnaire. In relation to PTPHO characteristics, shareholders are involved in 23% of the PTPHOs and 77% are identified as private ownership. Similar to the population of PTPHOs in the Netherlands [4], the sample covers small businesses (employees full-time equivalent, mean 6.65, sd 5.58). Concerning healthcare market characteristics, 55% the PTPHOs adhere to the managed competition contract's non-highest requirements.

Relations between outcomes

In Tables 5.2 and 5.3 (page 110-111), results are presented regarding the expected relations between the study outcomes. Table 5.2 shows the results related to treatment service quality organisation-centred outcomes. Similarly, Table 5.3 shows the results related to financial organisation-centred outcomes.

Organisational double-loop learning orientation – organisation-centred outcomes (Relation 1a)

The relation between organisational double-loop learning orientation and treatment service quality organisation-centred outcomes (Table 5.2, Relation 1a) is low, but significant without ($\beta = 0.10$) and with adjustment for potential confounders ($\beta = 0.09$). A significant relation between organisational double-loop learning orientation and financial organisation-centred outcomes (Table 5.3, Relation 1a) is found ($\beta = 0.16$), but the significance disappears after adjustment for potential confounders.

Table 5.1. Descriptives of study population and measurements

	N (percent)	Mean of sample	Standard deviation
PTPHO* manager characteristics			
Gender			
<i>Male</i>	76 (55)		
<i>Female</i>	62 (45)		
Age		50.50	10.44
Education			
<i>Bachelor</i>	85 (62)		
<i>Master</i>	53 (38)		
PTPHO characteristics			
Organisation type			
<i>Private ownership</i>	106 (77)		
<i>Shareholders</i>	32 (23)		
Number of departments			
<i>One</i>	59 (43)		
<i>More than one</i>	79 (57)		
Number of employees (full-time equivalent)		6.65	5.58
Specialised therapist employed			
<i>No</i>	15 (11)		
<i>Yes</i>	123 (89)		
Healthcare market characteristics			
Managed competition contract			
<i>Non-highest contract requirements</i>	76 (55)		
<i>Highest contract requirements</i>	62 (45)		
Dependent variables			
Organisation-centred outcomes – treatment service quality (range 1–5)		3.18	0.40
Organisation-centred outcomes – financial (range 1–5)		3.34	0.69
Mediator variable			
Business model novelty (range 1–5)		3.56	0.63
Independent variables			
Organisational learning orientation (range 1–5)		4.20	0.68
Pro-active market orientation (range 1–5)		3.55	0.65

Sample size: 138

* PTPHO: Physiotherapy primary healthcare organisation

Organisational double-loop learning orientation – business model novelty (Relation 2a)

As given in Tables 5.2 and 5.3, a significant relation between organisational double-loop learning orientation and business model novelty without ($\beta = 0.29$), and with adjustment for potential confounders ($\beta = 0.23$) is found.

Business model novelty – organisation-centred outcomes (Relation 3a)

No significant relation is found between business model novelty and treatment service quality organisation-centred outcomes (Table 5.2, Relation 3a). Also, the business model novelty–financial organisation-centred outcomes relation (Table 5.3, Relation 3a) is not significant, whether adjusted for potential confounders or not.

Mediating role of business model novelty (Relation 4a)

The mediation of business model novelty between organisational double-loop learning orientation and treatment service quality organisation-centred outcomes is low, but significant for both the estimate ($\beta = 0.05$) and the estimate adjusted for potential confounders ($\beta = 0.04$) (Table 5.2, Relation 4a). Sensitivity analysis indicates that approximately 72% of the mediation of the estimate adjusted for potential confounders is explained by unobserved confounders (at ACME = 0, $p = 0.2$). The mediation of business model novelty between organisational double-loop learning orientation and financial organisation-centred outcomes indicates a significant relation without ($\beta = 0.08$) and with adjustment for potential confounders ($\beta = 0.05$) (Table 5.3, Relation 4a). Sensitivity analysis shows that approximately 47% of the mediation is explained by unobserved confounders (at ACME = 0, $p = 0.2$).

Proactive market orientation – organisation-centred outcomes (Relation 1b)

As presented in Table 5.2, no significant relation between proactive market orientation and treatment service quality organisation-centred outcomes is found (Relation 1b). Also, the relation between proactive market orientation and financial organisation-centred outcomes (Table 5.3, Relation 1b) is insignificant.

Proactive market orientation – business model novelty (Relation 2b)

As Tables 5.2 and 5.3 show, a significant proactive market orientation – business model novelty relation for both the estimate ($\beta = 0.41$) and estimate adjusted for potential confounders ($\beta = 0.36$) exists.

Business model novelty – organisation-centred outcomes (Relation 3b)

Business model novelty with treatment service quality organisation-centred outcomes shows no significant relation (Table 5.2, Relation 3b). Likewise, Relation 3b in Table 5.3 shows no significant relation between the business model novelty and financial organisation-centred outcomes.

Mediating role of business model novelty (Relation 4b)

A significant relation for mediation of business model novelty between proactive market orientation and treatment service quality organisation-centred outcomes was detected. This applies to without ($\beta = 0.07$) adjustment for potential confounders and with it ($\beta = 0.06$) (Relation 4b in Table 5.2). Sensitivity analysis indicates that approximately 35% of the mediation is explained by unobserved confounders (at ACME = 0, $p = 0.2$). The mediation of business model novelty between the proactive market orientation – financial organisation-centred outcomes relation is significant for both the estimate ($\beta = 0.14$) and the estimate adjusted for potential confounders ($\beta = 0.09$) (Table 5.3, Relation 4b). Sensitivity analysis shows that the mediation is explained by unobserved confounders for approximately 25% (at ACME = 0, $p = 0.2$).

Table 5.2. Delineation of relations regarding treatment service quality organisation-centred outcomes

Treatment service quality organisation-centred outcomes				Business model novelty			
	β [95% CI]	Level of significance (p-value)	β adjusted for potential confounders [95% CI]	Level of significance (p-value)	β [95% CI]	Level of significance (p-value)	Level of significance (p-value)
Organisational double-loop learning orientation (a)							
Relation 1 (Total)	0.10[0.02; 0.20]	0.010	0.09[-0.01; 0.20]	0.032			
Relation 2					0.29[0.14; 0.44]	<0.001	0.23[0.08; 0.37]
Relation 3 (BMN direct)	0.05[-0.04; 0.16]	0.244	0.05[-0.04; 0.16]	0.270			0.002
Relation 4 (BMN mediating)	0.05[0.01; 0.10]	0.012	0.04[-0.00; 0.09]	0.030			
Proactive market orientation (b)							
Relation 1 (Total)	0.08[-0.03; 0.21]	0.160	0.09[-0.02; 0.19]	0.138			
Relation 2					0.41[0.26; 0.56]	<0.001	0.36[0.22; 0.51]
Relation 3 (Direct)	0.01[-0.12; 0.14]	0.868	0.03[-0.09; 0.14]	0.690			<0.001
Relation 4 (Mediating)	0.07[0.02; 0.14]	0.002	0.06[0.00; 0.13]	0.036			
CI = confidence interval; ACME = average causal mediating effect; p = correlation; BMN = Business model novelty; Level of significance p <0.05; Potential confounders: gender, age, education, organisation type, number of departments, number of employees (full time equivalent), specialised therapist employed, managed competition contract							

Table 5.3. Delineation of relations, financial organisation-centred outcomes

Financial organisation-centred outcomes				Business model novelty			
	β [95% CI]	Level of significance (p-value)	β adjusted for potential confounders [95% CI]	Level of significance (p-value)	β [95% CI]	Level of significance (p-value)	β adjusted for potential confounders [95% CI]
Sensitivity analysis: variance explained by unobserved confounders At ACME = 0 ($p = 0.2$)							
Organisational double-loop learning orientation (a)							
Relation 1 (Total)	0.16[0.00; 0.36]	0.048	0.13[-0.01; 0.33]	0.780	0.29[0.14; 0.44]	<0.001	0.23[0.08; 0.37]
Relation 2							
Relation 3 (BMN direct)	0.07[-0.11; 0.28]	0.430	0.08[-0.07; 0.28]	0.334			
Relation 4 (BMN mediating)	0.08[0.02; 0.17]	0.004	0.05[0.00; 0.12]	0.042			
Proactive market orientation (b)							
Relation 1 (Total)	0.09[-0.10; 0.27]	0.350	0.09[-0.09; 0.28]	0.358	0.41[0.26; 0.56]	<0.001	0.36[0.22; 0.51]
Relation 2							
Relation 3 (Direct)	-0.05[-0.26; 0.14]	0.610	0.00[-0.20; 0.22]	0.980			
Relation 4 (Mediating)	0.14[0.06; 0.25]	<0.001	0.09[0.00; 0.20]	0.042			

CI = confidence interval; ACME = average causal mediating effect; p = correlation; BMN = Business model novelty; Level of significance $p < 0.05$; Potential confounders: gender, age, education, organisation type, number of departments, number of employees (full time equivalent), specialised therapist employed, managed competition contract

Causal mediation analysis assumptions

The likelihood of meeting causal mediation analysis assumptions and the robustness of findings were confirmed. First, tests showed that reversed causation is not likely. Also, calculations showed that the moderating influence of business model novelty between the independent and dependent variables is not indicated. Furthermore, multi-item scales with acceptable internal reliability and consistency based on factor loadings and Cronbach's alpha were used (Appendix 5.1). The mediation analyses include confidence intervals for each estimate, and each estimate adjusted for potential confounders. Finally, as shown in this article, a sensitivity analysis at $ACME = 0$, $p = 0.2$ was conducted. In general, when $ACME = 0$, a higher p value indicates a lower sensitivity. The sensitivity analysis in the current study suggest that the $ACME$ estimates are sensitive to unobserved confounders [59].

DISCUSSION

This study examined expected relations including the mediating role of business model novelty between organisational double-loop learning and proactive market orientation, and organisation-centred outcomes in a study sample representative for the population of PTPHOs in the Netherlands. In this discussion, the relations will be compared with existing literature. However, to compare the study results, to the best knowledge of the authors of the current study no quantitative empirical papers exist that discuss the relations as exactly operationalised in the current study. Therefore, comparing results provides limited insights. Most estimates reported in this study can be considered low and are for a large part explained by unobserved variables. An explanation could be that, besides the selected organisational orientations in the current study, many more variables that precede business model novelty may be worth delineating. In business literature, potential variables that precede business model novelty, like organisational double-loop learning and proactive market orientation, are also referred to as change capabilities. For example, Laaksonen and Peltoniemi [32] identified 232 distinct operationalisations of change capabilities. However, organisational learning and market orientation are considered highly influential on for example business model novelty [31-33].

Relations

The study results suggest that the more a PTPHO leans towards double-loop learning orientation the more it tends toward superior treatment service quality organisation-centred outcomes. Although the aforementioned relation may be confirmed, the estimate seems low ($\beta = 0.09$). Contrary to expectations, the current study suggest that organisational double-loop learning orientation may not impact financial organisation-centred outcomes. This result suggests that investment by PTPHOs in double-loop learning orientation may not reward financial organisation-centred outcomes attainment. An explanation why organisational double-loop learning orientation has a significant relationship with treatment service quality and not with financial organisation-centred outcomes may lie in the fact that managed competition drives high quality and low costs [7]. As a consequence, managed competition may leave room for PTPHOs for treatment service quality

attainment, but less for financial organisation-centred outcomes. Other quantitative empirical papers investigated the organisational learning – organisation-centred outcomes relation within small and medium businesses as well. For example, studies report positive estimates that range from $\beta = 0.11$ to $\beta = 0.30$ [60-64]. In addition, also negative estimates between $\beta = -0.10$ and $\beta = -0.22$ were reported [65]. These results might suggest that the estimate for the organisational double-loop learning orientation – treatment service quality organisation-centred outcomes relation could be similar to estimates in other studies but not for financial organisation-centred outcomes.

In the current study proactive market orientation may not influence both treatment service quality and financial organisation-centred outcomes. The insignificant relations reported may imply that, for example, when putting effort in discovering additional needs of patients a PTPHO may not be rewarded with improved organisation-centred outcomes. Other quantitative empirical papers that investigated the aforementioned relation within small and medium businesses report very contrasting results. Namely, significant estimates of $\beta = 0.44$ [66,67].

The relation between both organisational double-loop learning orientation and proactive market orientation, and business model novelty may be indicated. This may mean that when a PTPHO gets involved in double-loop learning and proactive market orientation, the PTPHO's adoption of new and different ways of transactions between the organisation and its customers, partners, and vendors could increase.

In the current study no significant direct relations between business model novelty, and both treatment service quality and financial organisation-centred outcomes were indicated. This may mean that when a PTPHO applies business model novelty this does not contribute to organisation-centred outcomes attainment. This is against expectations. For example, other quantitative empirical studies in the small and medium business context on the aforesaid relation do indicate significant estimates [46,68,69].

Mediating role of business model novelty

The study results suggests that partial mediation may occur between both organisational double-loop learning orientation and proactive market orientation, and treatment service quality organisation-centred outcomes. Likewise, partial mediation may occur between organisational double-loop learning orientation and financial organisation-centred outcomes. This may mean that when a PTPHO invests in organisational double-loop learning or proactive market orientation, mediated by business model novelty, the PTPHO's treatment service quality and financial outcomes could improve. Partial mediation is the case in which the relation between organisational double-loop learning orientation and proactive market orientation and treatment service quality and financial organisation-centred outcomes is reduced but is still different from zero when the mediator (business model novelty) is introduced [56]. It should be mentioned that between 35% and 72% of the partial mediations are explained by unobserved confounders. Full mediation may occur between proactive market orientation and financial organisation-centred outcomes. In addition, 25% of the full mediation is explained by unobserved confounders. Full mediation is the case in which proactive market orientation no longer affects the organisation-

centred outcomes after the mediator business model novelty has been controlled [56]. At all, the low estimates and explanations by unobserved confounders suggest a very limited room for mediation. Although the mediation estimates presented in the current study are low (range $\beta = 0.04 - \beta = 0.09$) other studies show similar results. For example, studies within small and medium businesses report mediation estimates between $\beta = -0.06$ and $\beta = 0.16$ [68-70].

Strengths and limitations

Empirical research in the context of PTPHOs business model research is scarce and the body of knowledge has mainly developed outside the PTPHO context [71]. Therefore, a strength of the current study is that it has an empirical and novel character. An interesting debate that needs to be advanced is whether the insights gained in the current study are applicable to PTPHOs other than the ones selected for this study or to small and medium businesses [72]. First, the concepts and instruments applied are used in the PTPHO context for the first time. Therefore, these concepts and instrument may not have optimally measured the PTPHO context. However, in the current research, measures have been taken to mitigate measurement problems. For example, the study builds on existing knowledge about organisational double-loop learning orientation, proactive market orientation, business model novelty and organisation-centred outcomes, in small and medium business contexts that are comparable to PTPHOs. In addition, an appropriate internal consistency of each measurement instrument and related constructs was indicated. Furthermore, factor analysis indicated clear dimensions in each instrument. The used instruments were pre-tested by two PTPHO managers to obtain a better understanding of the face validity of the instruments as well. Future research could repeat the measurement over time to indicate the internal reliability of the applied measurement instruments. Furthermore, to provide insight into whether the instruments consistently produce the same results. In addition, pilot tests and fine-tuning with PTPHO managers could contribute to improved and accurate definitions and measurements. Second, in the current study a set of variables that describe the base of the organisation and that are common or feasible in the PTPHO context were carefully selected. These variables describe manager -, organisation – and healthcare market characteristics [47]. However, other variables that describe the base of the organisation may be relevant for the PTPHO context as well. Suggestions to consider are variables like manager years of experience, firm age, start-up or mature organisation, and characteristics of the PTPHO's adherence area such as urban or rural. Future research could experiment with context-specific organisation profiles [32]. This potentially allows researchers to make better comparisons between PTPHOs or small and medium businesses.

A strength of a cross-sectional design is that it is useful to explore insights into antecedents, mediators of change and connections between such variables [44]. However, statistical mediation analysis does not allow conclusions about causality and the direction of causation. To support the likelihood of meeting causal mediation analysis assumptions several calculations performed in this study. In the future, longitudinal empirical research is needed so that conclusions can be drawn regarding causality [32,73].

There are two points for discussion in relation to the mediation analysis conducted in the current research. First, except for the organisational double-loop learning – treatment service quality organisation-centred outcomes relation, the relations between organisation double-loop learning orientation and proactive market orientation and, organisation-centred outcomes are not significant. Baron and Kenny (1986) stated that no mediation can be calculated when the relation between the independent and dependent variable lacks statistical significance [51]. However, more recent literature on mediation recommends that such a significant relation could be absent in case of, for example, strong theoretical arguments are used in the selection of variables rather than statistical ones [52,74,75]. Second, organisational double-loop learning and proactive market orientation are related to organisation-centred outcomes via business model novelty, while there is no direct relationship between business model novelty and organisation-centred outcomes. This raises the question how a direct relation can be non-significant and an indirect relation significant given the same set of confounders. Such an outcome is possible because the mediation of business model novelty is calculated by relation 2a-b multiplied by relation 3-ab. This means that, regardless of the insignificance of the business model novelty - organisation-centred outcomes relation, mediation can be significant [76]. Additional analysis is needed to further determine business model novelty mediation.

CONCLUSIONS

The relation between both organisational double-loop learning orientation and proactive market orientation, and business model novelty is confirmed. Not confirmed is the relation between business model novelty, and both treatment service quality and financial organisation-centred outcomes. A small mediating role of business model novelty between both organisational double-loop learning orientation and proactive market orientation, and both treatment service quality and financial organisation-centred outcomes is found. In addition, the mediating role is indicated by low estimates and between 25% and 72% of the mediating role explained by yet unknown variables.

To create clarity in theoretical stances, business model research could mature via empirical, longitudinal, and small business context-specific measurement. More empirical research is needed to better understand the mediating role of business model novelty within the PTPHO context. PTPHO managers run resource-constrained small businesses that need to attain and sustain organisation-centred outcomes under changing circumstances. To meet government regulations, local community and patient needs and competition, they may cautiously focus on investment in business model novelty activities, and organisational double-loop learning orientation and proactive market orientation that promise a return on their investment [64,77]. Policymakers and health insurers could consider putting extra effort into gaining accurate insights into how healthcare organisation-centred outcomes are achieved, under which PTPHO context-specific conditions. The extra effort could potentially contribute to designing managed competition contracts with the right incentives for business model novelty resulting in increased value for

patients and return on investment [12,64].

Abbreviations

PTPHO: Physical therapy primary healthcare organisation

ACME: Average causal mediating effect

CI: Confidence interval

VIF: variance inflation factor

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Author's contributions

All authors analysed and interpreted the questionnaire data. They also read and approved the final manuscript.

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Availability of data and materials

The data that support the findings of this study are available from PTPHO managers but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of PTPHO managers

Declarations

Ethics approval and consent to participate

Ethical approval was received for this study from the institutional review board (IRB) named HU University of Applied Sciences Utrecht ethical committee research healthcare domain. The committee stated that all methods were performed in accordance with the relevant guidelines and regulations in light of European law and ethics regarding medical research. In addition, based on the Dutch Civil Code Article 446 (treatment agreement contracts), written or informed consent does not apply to this research because the participating PTPHO managers are not patients [78]. Furthermore, based on Article 4.1 of Regulation (EU) 2016/679 of the European Parliament and of the council, written or verbal consent by the PTPHO managers was deemed unnecessary because survey data were collected anonymously [79].

Consent for publication

Not applicable.

Competing interest

Not applicable

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APPENDIX 5.1. DETAILED INFORMATION OF THE SCALE, ITEMS, FACTOR LOADINGS AND CRONBACH'S ALPHA

Scale	Items	Factor loadings	Cronbach's alpha
Organisation-centred outcomes - Financial	<i>To what extent does your organisation attain its expected results in terms of:</i>		0.91
	Treatment service sales growth	0.88	
	Revenue growth	0.96	
	Net profit margin	0.89	
Organisation-centred outcomes - Treatment service quality	<i>To what extent does your organisation attain its expected results in terms of:</i>		0.78
	Quality of treatment service	0.85	
	The variety of treatment services offered	0.79	
	Patient satisfaction	0.80	
Business model novelty	<i>Our business model:</i>		0.87
	Offers new combinations of treatment services and information	0.76	
	Attracts a lot of new healthcare suppliers and partners	0.66	
	Bonds stakeholders and patients together in novel ways	0.76	
	Links stakeholders and patients to transactions in novel ways	0.74	
	<i>We frequently introduce new:</i>		
	Ideas and innovation into our business model	0.77	
	Operational processes, routines and norms into our business model	0.66	
	We are pioneers of the business model	0.75	
	Overall, our business model is novel	0.64	
Organisational learning orientation	Constructive feedback on how they are doing is given to all employees	0.85	0.91
	Employees share training/development learning lessons with others	0.84	
	Employees are encouraged to undertake training and development activities	0.84	
	Employees share knowledge and resources	0.87	
	Company goals are made clear to all employees	0.84	
	Employees, suppliers and patients are all encouraged to let the firm know if anything goes wrong	0.72	
	Employees are not afraid to voice differing opinions	0.72	
Pro-active market orientation	<i>We:</i>		0.74
	Continuously try to discover additional needs of our patients of which they are unaware	0.75	
	Search for opportunities in areas where patients have a difficult time expressing their needs	0.81	
	Extrapolate key trends to gain insight into what patients will need in the future	0.75	
	Help our patients anticipate developments in their use of our treatment services	0.69	

APPENDIX 5.2 PEARSON CORRELATION FOR ALL REGRESSIONS
VARIABLES

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Gender	-												
(2) Age	-.01	-											
(3) Education	-.07	-.17*	-										
(4) Organisation type	.01	-.01	-.01	-									
(5) Number of departments	.04	-.09	.02	.23**	-								
(6) Number of employees (full time equivalent)	.12	-.07	-.04	.44**	.50**	-							
(7) Specialised therapist employed	.03	.09	.17	.13	.34**	.31**	-						
(8) Managed competition contract	.11	.00	.04	.30**	.31*	.56**	.26**	-					
(9) Business model novelty	.04	-.19*	.10	.29**	.28**	.34**	.17	.17*	-				
(10) Organisational double-loop learning orientation	.01	.01	.03	.13	.21**	.15	.14	.15	.32**				
(11) Pro-active market orientation	-.13	-.10	.07	.17*	.14	.17	-.04	.12	.43**	.18*			
(12) Organisation-centred outcomes - treatment service quality	.08	-.10	.01	.05	.05	.11	.09	.10	.28**	.17	.14		
(13) Organisation-centred outcomes - financial	.12	-.10	.11	.01	.11	.28**	.27**	.09	.29**	.16	.08	.45**	-

The numbers in the column titles refer to the variables with the same number as in the first row

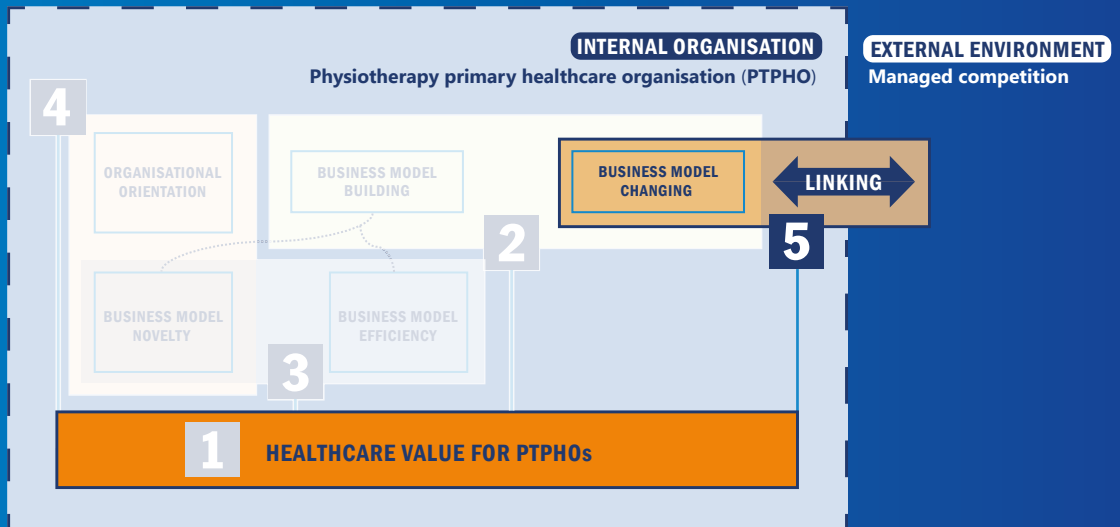
* $p < 0.05$; ** $p < 0.01$; $n = 138$

6

BUSINESS MODEL CHANGE EXPLOITATION AND EXPLORATION ACTIVITIES. A CASE STUDY IN ONE VIALE PHYSIOTHERAPY PRIMARY HEALTHCARE ORGANISATION

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Under review



Five research gaps:

1. Healthcare value for physiotherapy primary healthcare organisations (PTPHO)
2. Business model-building and model-changing, and healthcare value for PTPHOs
3. Business model efficiency and novelty, and healthcare value for PTPHOs
4. Organisational orientation, business model novelty, and healthcare value for PTPHOs
5. **Business model-changing and healthcare value for PTPHOs, linking the internal organisation and external environment**

ABSTRACT

Aim

To empirically learn from one viable physiotherapy primary healthcare organisation (PTPHO) on how business model change activities that specifically link the internal organisation and external environment are pursued.

Background

PTPHOs are mostly small businesses. With managed competition, the healthcare market has been changing, and business principles have been introduced as PTPHOs need to vie with other healthcare providers to meet community and patient needs. A business model enables an organisation to deal with business principles and to make an integral plan to remain viable by for example, attain superior treatment service quality and financial organisation-centred outcomes, solve patients' needs, and involve stakeholders and staff. Business model change is the adjustment of the business model over time based on internal organisation and external environment information.

Methods

A qualitative longitudinal, interpretive, single-case study, within a viable PTPHO was performed. Data were collected mainly through non-participant observations. An iterative process was completed that consisted of informant-centric first-order coding of data, second-order business model theory-centric themes and overarching theoretical dimensions.

Findings

Business model change exploitation and exploration activities that link the internal organisation and external environment are observed within the selected PTPHO. In addition, the organisation pursues short-term activities like immediately resolving and addressing. Medium-term concerns systematically assessing and in-depth problem solving. Long-term entails (bi)annual evaluation and structuring new activities.

Conclusions

One viable PTPHO seems to pursue business model change activities over time that link the internal organisation and external environment through concurrent short, medium, and long-term exploitation and exploration activities. In addition, these activities are pursued to react or anticipate to obstacles that hinder value creation and the viability of the organisation and to ensure that operations run smoothly.

Key words

physiotherapy, business model change, exploitation, exploration, organisational performance, managed competition.

INTRODUCTION

PTPHOs are mostly small businesses (< 10 employees) that have limited resources to respond to internal organisation and external environment change [1-3]. These organisations offer “services for individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan” [4]. Examples of internal organisation actors are managers, physical therapists, and office staff. The PTPHO’s external environment involves government-imposed managed competition regulations, to stimulate efficient healthcare, quality improvement, cost reduction, and patient satisfaction [5]. Patients, family doctors, and health insurers are examples of external environment actors. Managed competition has been widely introduced in countries like the Netherlands, the United Kingdom, Germany and the United States since the nineties. With managed competition, the healthcare market is changing, and business principles have been introduced as PTPHOs need to vie with other healthcare providers to meet community and patient needs [6]. However, managed competition still has imperfections [2,3,5]. For example, it is not clear whether managed competition creates value for both the healthcare providing internal organisation and external stakeholders involved [5,7,8].

To deal with the introduced business principles in the healthcare market PTPHOs stress the importance of a business model [9]. A business model can be viewed as a system of activities that links the internal organisation with its external environment [10]. Based on internal organisation and external environment information evaluations such a model guides the internal organisation to choose its activities to create value [11,12]. Value creation refers to business model activities that empower the internal organisation to be viable in collaboration with its external environment [13,14]. In addition, a viable PTPHO is associated with superior treatment service quality and financial organisation-centred outcomes, solve patients’ needs, and involve stakeholders and staff [9,15]. However, to remain viable over time a one-time business model is not enough as PTPHOs have to adapt to the changing healthcare market. Therefore, it is necessary to apply business model change, the adjustment of the business model over time [9]. In addition, in line with the business model definition used in the current study [10], business model change implies change in the activities linking the internal organisation and external environment over time.

Empirical research in larger organisations suggests that in order to create value it is helpful to understand this business model change topic [16]. The business model literature lacks empirical, context-specific detailed interpretation of *how* business model change is pursued within small businesses [16-18]. Furthermore, business model change research tends to focus on the internal organisation, instead of linking the internal organisation with the external environment [17]. This focus on the internal organisation only may result in an inadequate response by PTPHOs to remain viable over time. The present study aims to learn from one viable PTPHO on how business model change activities that specifically link the internal organisation and external environment are pursued. This knowledge is potentially useful in future observational research on business model change within the context of PTPHOs. The main research question is: How are business model change activities linking the internal organisation and external environment pursued within one viable PTPHO?

METHODS

Design

To observe business model change activities linking the internal organisation and external environment of one viable PTPHO, a single interpretative case study was conducted. Because business model change occurs over time, a longitudinal approach was selected [19]. A qualitative methodology was chosen to answer ‘how questions’ and understand context-specific complex processes, especially since phenomena are not sufficiently established in literature [19]. The consolidated criteria for reporting qualitative research have been adhered to [20].

Case selection

The study focused on one PTPHO in the Netherlands. The PTPHO was purposively selected on the following criteria: located in the Netherlands, small business (< 10 employees), and viable (superior treatment service quality and financial organisation-centred outcomes) [9]. Further selection criteria were: meets highest physiotherapy sector quality requirements as to participation in the highest section of the Dutch physiotherapy quality register, meets highest health insurer contract requirements, and complies with the Dutch national benchmark for patient satisfaction (≥ 8.85 out of 10). Access to the organisation was gained through the primary author’s network, liaising with the manager, and presenting the research interests and proposal to the management team. No prior relationship was established between the primary author and the management team. None of the participant refused participating in the study or dropped out. Table 6.1 describes the organisation’s characteristics of one viable PTPHO studied in an interpretative case study.

Table 6.1. Organisation's characteristics of one viable PTPHO studied in an interpretative case study

Characteristic	Description
Organisation	PTPHO independently embedded within a multidisciplinary primary healthcare centre
Legal entity	Private limited company
Location	Dutch village (13,000 inhabitants)
Number of staff	Nine (small business)
Specific skills	Offers services for individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan specialized in paediatrics, sports, manual therapy, medical training, and echo diagnostics.
Quality label	Meets highest quality requirements within sector (participation in highest section of national physiotherapy quality register, meets highest health insurer contract requirements)
Overall patient satisfaction	Complies with Dutch national benchmark (≥ 8.85 out of 10)
Profit (% turnover)	10 percent (Dutch national benchmark is estimated at two percent)

Data collection

The main research question concerning business model change activities that link the internal organisation with its external environment within one viable PTPHO guided the data collection. Data-collection comprised primary and secondary data sources (Table 6.2). Primary source data were collected by the primary author (male) by means of non-participant observations within the PTPHO. For example, by seeing and listening during PTPHO team meetings and front/back-office activities. Additionally, in-depth informal personal interviews were conducted with the manager, front-office staff, back-office staff, and senior physical therapists. To administer the primary information, fieldnotes were made. Secondary data were collected from sources like management team meeting minutes, management reports on topics such as finances and patient satisfaction, and pictures. Data were collected one day a week during a 12-month period (2019–2020) mainly by the first author of this study. The PTPHO manager and employees agreed with informed consent and publication of findings, and primary researcher access to the organisation. No patients or patient files were involved, for patient privacy reasons.

Data coding and analysis

Because for business model change research the physiotherapy primary healthcare context is novel, an inductive approach was applied evolving from observations toward possible explanations [19]. To develop a comprehensive understanding of the research and to improve credibility, data triangulation by the use of multiple data sources over time was applied [21]. Furthermore, following the data collection, retrospectively a data structure based on Gioia et al. [22] was applied for data coding and analysis. The structure entails an iterative process of initial first-order coding of data which tries to adhere to informant terms (informant-centric). The first-order codes were then organised into second-order business model theory-centric themes found in business model literature. Finally, it was investigated whether the second-order themes could be ordered into overarching theoretical dimensions. During the data coding and analysis, existing business model literature was consulted that addresses business model change and related concepts in the context of linking the internal organisation and external environment of small and medium businesses. This iterative approach led to a conceptual model. The primary author performed the data coding and analysis. Discussions and reconciliations were weekly conducted between the primary and secondary (female) authors until theoretical saturation and agreement was reached [19]. Both first and second author have experience with qualitative research in the field of physiotherapy. The data coding and analysis, along with results, were presented to the PTPHO manager for verification. ATLAS.ti version 8.4.15 (www.atlasti.com) was used.

Table 6.2. Overview of primary and secondary data sources used in an interpretative study

Primary data sources	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Team meeting on organisation management												
Team meeting on treatment service quality												
Management team meeting												
Team meeting space activities												
Front office activities												
Back office activities												
In-depth informal interview manager												
In-depth informal interview front office employee												
In-depth informal interview back office employee												
In-depth informal interview senior physical therapist												
Secondary data sources												
	1	2	3	4	5	6	7	8	9	10	11	12
Team meeting agenda												
Pictures team meeting space, front/back-office												
Picture communication white board												
National and regional healthcare policy documents												
Dutch health insurer policy documents												
Family doctors/Allied healthcare policy documents												
Minutes management team meeting												
Minutes team meeting on organisation management												
Quarterly patient satisfaction management report												
Monthly finances report												
Annual PTPHO policy plan												
PTPHO quality manual												
Pictures of PTPHO quality certificates												
Annual PTPHO magazine												
Agenda team meeting on organisation management												

FINDINGS

The extensive longitudinal data-collection revealed six first-order informant-centric codes: patient satisfaction monitoring, patient intake and registration, vacancy filling, product innovation, preventive services and quality management system renewal. Table 6.3 shows a description of the first-order codes revealed. In addition, the description of the first-order codes relate to links between the internal organisation and external environment.

Table 6.3. Description of the first-order codes revealed

First-order codes	Description
Patient satisfaction monitoring	Patients (external environment) are asked how satisfied they are with aspects of care provided by the PTPHO (internal organisation). Based on this data, improvement activities are initiated by the PTPHO
Patient intake and registration	The PTPHO front-office employee (internal organisation) executes activities such as registration of the patient's name, identification, and answering patient's questions (external environment)
Vacancy filling	Consulting PTPHO network, placing a promotional advertisement, using a employment agency (all external environment), and routinely assessing personnel needs (internal organisation)
Product innovation	The PTPHO (internal organisation) collaborates with an external developer of new physiotherapy care products (external environment). These products involve new physiotherapy services for neck, lower back or shoulder problems and innovative patient data collection and declaration protocols. Health insurers (external environment) have gained interest to pay for the products. Evaluations whether the PTPHO (internal organisation) meets requirements take place based on data.
Preventive services	A merger is imminent between two soccer clubs (external environment) located in the PTPHO catchment area. This has created an opportunity for the PTPHO (internal organisation) to set up new extensive injury prevention services in a newly built part of the clubhouse
Quality management system renewal	The PTPHO (internal organisation) has started a new quality management system. This system is more user-friendly than the previous that was dependent on the PTPHO manager. In the new system, the entire team can look at the PTPHO goals, with real-time information. Furthermore, complaints about the PTPHO can be processed directly by patients (external environment).

Guided by existing business model literature, as part of the coding and analysis the first-order codes are organised into second-order business model theory-centric themes that all have in common that they link the internal organisation and external environment over time. These themes are: short, medium and long-term exploitation and exploration activities [9,23]. Exploitation activities involve business model change activities related to the refinement and extension of the existing business model. Exploration activities encompass experimentation with novel activities seeking to change the business model. Finally, also guided by prior business model literature insights, the first-order codes and the second-order business model theory-centric themes short-, medium-, and long-term exploitation and exploration activities are organised into two overarching theoretical dimensions: business model change exploitation and business model change exploration [15].

Figure 6.1 shows results of the study that are structured based on Gioia et al. [22].

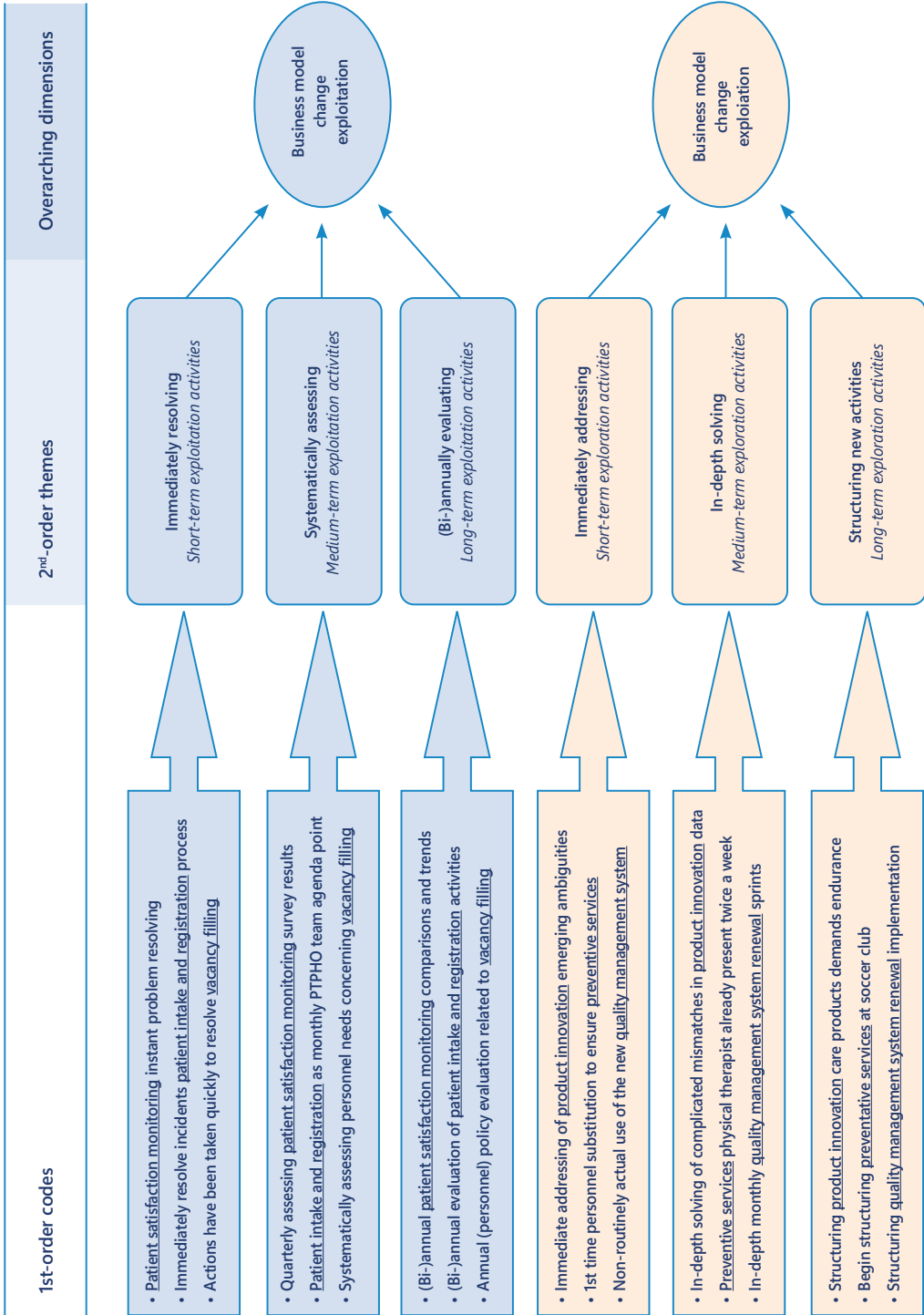


Figure 6.1. Data structure

To explain and give context to the first-order codes, second-order themes and overarching dimensions two examples of the observed business model change activities that link the internal organisation and external environment are elaborated in further detail: patient satisfaction monitoring and product innovation. Both examples reveal short-, medium-, long-term exploitation and exploration activities that relate to business model change exploitation and exploration.

Observed activities

First, concerning patient satisfaction monitoring patients are asked how satisfied they are with aspects of care (external environment). This data is made public at PTPHO level. Non-public data is also shared with the individual physical therapists of the PTPHO (internal organisation). Based on these data, improvement activities are initiated by the PTPHO and employees. Second, product innovation involves physiotherapy services for neck, lower back or shoulder complaints and novel patient data collection and declaration protocols, new to the PTPHO (internal organisation). In addition, the PTPHO collaborates with an external developer (external environment) of these new physiotherapy products. Health insurers (external environment) have gained interest to pay for the products. Evaluations between the PTPHO and external developer and health insurer whether the PTPHO meets requirements take place based on data.

Business model change exploitation and exploration

Short-term

Concerning short-term exploitation activities, the results indicate that the PTPHO (internal organisation) responds swiftly to incidents by immediately resolving deviations from existing activities. Regarding patient satisfaction, monitoring takes place as described in the PTPHO quality manual. Routinely, a request is sent by the internal organisation to the patients (external environment) to complete an online survey at home or on a computer available in the PTPHO waiting room. Based on the questionnaire outcomes business model change activities that link the internal organisation and external environment are performed to remain viable. For instance, an observation is that during a PTPHO team meeting, a problem is detected related to the functioning of the patient satisfaction survey. The issue is discussed and short-term action undertaken to immediately resolve problems so that sufficient reliable information collection is guaranteed on the basis of which the organisation creates value and monitors its viability:

The patient satisfaction survey is poorly legible on the computer in the waiting room. The letters are too small. A senior physical therapist goes to see if the website can be displayed in a larger font.

Respecting short-term exploration activities, swift actions are also observed for immediate addressing of errors in novel activities. Regarding product innovation, the PTPHO (internal organisation) collaborates with an external developer of new physiotherapy care products (external environment). In addition, health insurers (external environment) have gained interest to pay incentives for these products. Although the PTPHO is free to offer treatment at its own

discretion, the products are used with a division into patient profiles (external environment) based on the level of care, a predetermined price per profile, and a fixed set of clinical measurements. Observations during a PTPHO team meeting show that one senior physical therapist informs the team that working with program selection criteria is not yet going well. Immediate addressing of problems is needed to sustain value creation for all parties involved in product innovation and superior treatment service quality and financial organisation-centred outcomes for the internal organisation:

"Because new insurers become involved in the products, the agreement is that, from now on, if you receive a patient you first look at where the patient is insured and whether it falls into the program selection criteria."

Medium-term

Regarding medium-term exploitation activities the PTPHO (internal organisation) systematically assesses its existing activities. Quarterly patient satisfaction management reports (external environment) are assessed by the PTPHO with the personnel, as indicated in the PTPHO quality manual:

Evaluation of the improvement measures takes place on the basis of the outcome of the next survey. It can be assessed whether the improvement measures have had the desired effect.

The reports show scores concerning individual physical therapists, and overall scores (internal organisation). The individual scores are shared with the physical therapists, and the overall scores are displayed in the staff room on the communication whiteboard, to create awareness systematically. Also, during team meetings on organisation management, staff are reminded of patient satisfaction monitoring (external environment) so that evaluation of improvement measures and potential refinement and extension of the existing activities that link the internal organisation and external environment is based on reliable data. It appears that the response to the survey is too low. The manager has made a note of this on the communication whiteboard in the team room:

It is noted on the communication whiteboard that the response to the patient satisfaction survey is too low. The staff are asked to take action here.

Pertaining to medium-term exploration activities, with regard to product innovation it is observed that the PTPHO front-office employee and manager (internal organisation) in-depth solve a complicated mismatch between what their internal data, and external software supplier (external environment) data indicate care products have been purchased. In-depth solving of the mismatch between the organisation and software supplier is needed. Because the activities and the involved system are under development, coordinated action is needed to ensure similarity of data between the internal organisation and external environment and viable outcomes for the organisation. The PTPHO manager mentions:

"I'm going to call the software supplier later to coordinate. This system is still being set up. Our physiotherapy primary healthcare organisation is the first to test these care products".

As product innovation is gaining interest, more health insurers (external environment) are drawing up their own specific requirements on the basis of which they want to provide financial incentives. If this continues, it will create a tangle of external criteria that will be difficult to work with. To avoid ambiguity and to strive for clarity in value creation, during a meeting on organisation management, the PTPHO (internal organisation) shows in-depth problem solving by taking a position to keep product innovation feasible, while still monitoring product innovation:

"New conditions have been drawn up by various health insurers. Let's decide to approach every health insurer in the same way".

Long-term

Observed long-term exploitation activities show that the PTPHO (internal organisation) completes (bi)annual evaluation cycles including patient satisfaction monitoring. For example, quarterly patient satisfaction (external environment) management reports are discussed during (bi)annual individual employee performance interviews. In addition, bi-annual management reviews and an annual internal audit instrument are processed to refine activities such as patient satisfaction monitoring to enable value creation and ensure the viability of the organisation. Another long-term example is that the PTPHO quality manual indicates that the patient satisfaction is compared over time, so trends are identified that will potentially lead to change of the business model:

Based on the results of multiple [patient satisfaction] surveys over a longer period, deviations or trends can be identified that can lead to refinement measures.

Related to long-term exploration activities, during an informal interview a senior physical therapist mentioned that the PTPHO (internal organisation) discovered early on that the organisation is a frontrunner. A long-term commitment to work toward structuring new activities related to product innovation is conditional to create value and to remain viable as an organisation. To guarantee that all treatment processes related to product innovation run smoothly endurance in structuring new care product agreements including incentives in collaboration with stakeholders (external environment) is required:

"We have to reinvent the wheel for care product agreements. We have written out what we want and implemented all treatment processes in our physiotherapy primary healthcare organisation. You notice that you are a frontrunner."

A conceptual model evolved from the data, as depicted in Figure 6.2. This conceptual model depicts the simultaneous business model change activities that link the internal organisation and external environment. These activities involve concurrent short-, medium- and long-term exploitation

and exploration activities. All exploitation and exploration activities involve linking the viable internal organisation, and its external environment, characterised by managed competition and a changing healthcare market. The dashed line that runs through the activities (circles) represent this linking. Because in this study it is assumed that to remain viable, the PTPHO's internal organisation chooses its activities that link the internal organisation and external environment [11], a larger part of the circles lie within the dashed line.

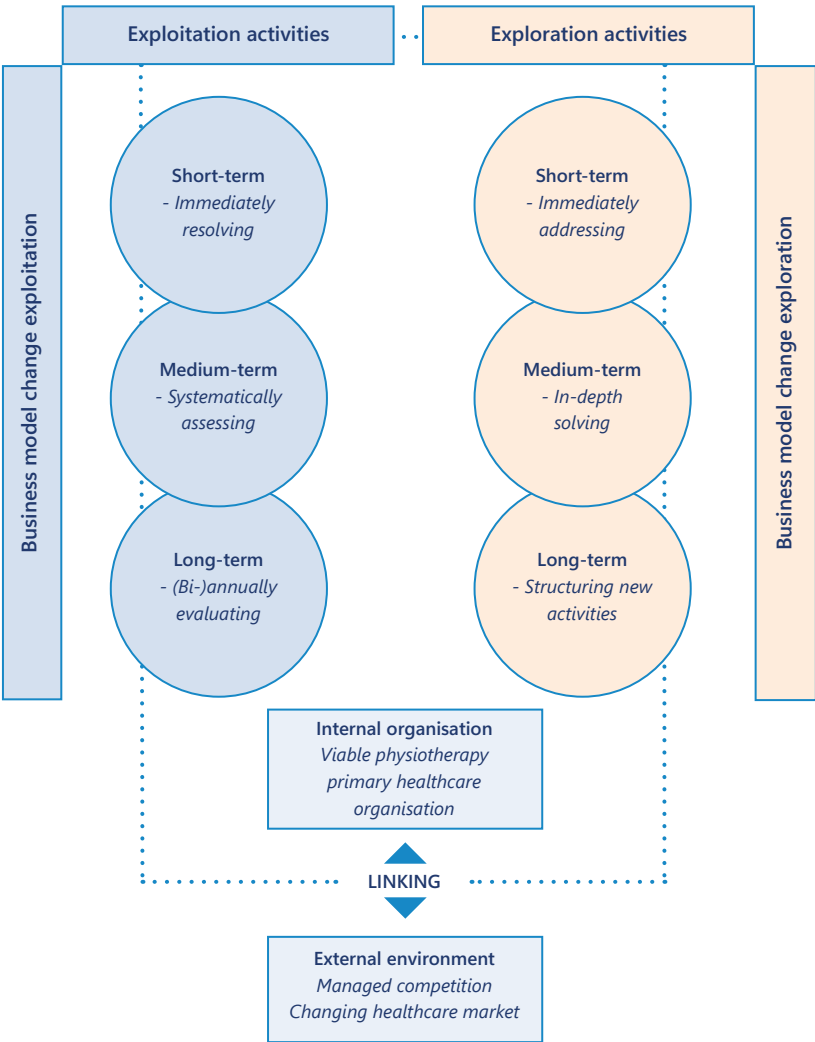


Figure 6.2. Conceptual model of business model change exploitation and exploration activities linking the internal organisation and external environment

DISCUSSION

This research aimed to learn from one viable PTPHO on *how* business model change activities that link the internal organisation and external environment are pursued. This study indicates that the business model change activities that link the internal organisation with its external environment may involve exploitation and exploration activities. The activities that were observed within the PTPHO all seem to involve that the internal organisation and external environment are linked by activities over time to react or anticipate to obstacles that hinder value creation and the viability of the organisation and to ensure that operations run smoothly. These type of activities related to value creation can be labelled value in use [24].

An insight gained is that the PTPHO under study may pursue business model change activities that specifically link the PTPHO's internal organisation and external environment by concurrent short-, medium-, and long-term exploitation and exploration activities over time. The PTPHO may pursue exploitation and exploration short-term activities, both of which are characterized by immediate action. The former focuses on definitively resolving deviation of existing activities. The latter on addressing errors in new activities by finding solutions. The PTPHO's medium-term activities seem to respect exploitation that represents systematic assessment based on known activities (for example activities recorded in the PTPHO quality manual), whereas exploration might concern in-depth solving of problems related to new activities. Regarding the PTPHO's long-term activities, exploitation may enhance the PTPHO with existing evaluation activities, whereas exploration pictures new activities that need structuring.

The observed business model change exploitation activities may have revealed activities that link the internal organisation and external environment that aim at the refinement and minimal adjustment of the business model [14]. Furthermore, these actions seem to ensure that there is constant attention within the organisation for value creation and the viability of the organisation based on internal organisation and external environment information. Exploitation activities seem to resemble low intensity business model change [13]. Besides exploitation, in business model literature these activities are also discussed in terms of evolutionary activities [18], or incremental activities [15]. Business model change exploration activities seem to involve activities that link the internal organisation and external environment and embrace and test the unknown while keeping value creation and the viability of the organisation in mind. In addition, the PTPHO's choices in these activities also seem based on internal organisation and external environment information. Exploration activities seem to resemble high intensity business model change [13]. In addition, in business model literature exploration activities are also discussed in terms of revolutionary activities [18], or radical activities [15].

The current study also revealed that the PTPHO may pursue business model change exploitation and exploration activities simultaneously. In business model literature, simultaneous exploitation and exploration activities is labelled as ambidexterity [25,26]. Although it is unclear whether ambidexterity enhances or impedes organisational viability [25], business model literature may

provide a possible explanation for why and how the PTPHO investigated may pursue exploitation and exploration simultaneously. On the one hand, exploitation is linked to an established business model that changes incrementally with low intensity, in a stable external environment [13,27]. From this point of view the business model change exploitation activities pursued by the PTPHO may be explained by imposed managed competition regulations that create a stable external environment with guaranteed patient flows and income [5]. On the other hand, exploration is associated with radically changing business models in reaction to a changing (healthcare) market, which requires new and radically changing business models [13,26,27]. This may explain the PTPHO's pursuit of business model change exploration to vie with other healthcare providers in a changing environment, to meet community and patient needs.

Study strength and limitations

This study may be the first 12-month period qualitative longitudinal interpretive case study on how business model change activities that link the internal organisation and external environment is pursued within one viable single PTPHO that is active in a managed competition context. This is a strength, because the business model literature lacks empirical research on business model change within small businesses in general and PTPHOs specifically. In addition, the focus of business model research is on the internal organisation and less on the link between the internal organisation and external environment. Internationally, and in the Dutch context PTPHOs are mainly small businesses (internal organisation) that operate in a managed competition healthcare market (external environment). Therefore, the conceptual model of business model change exploitation and exploration activities linking the internal organisation and external environment depicted in Figure 6.2 may potentially be relevant for PTPHOs other than the PTPHO covered in this article. The study has certain limitations as well. Firstly, the study data were collected during a 12-month period (2019–2020). Despite healthcare organisations were challenged by COVID developments after this period, recent insights in the Dutch PTPHO context show that PTPHOs are performing at the same level as before COVID [28]. Secondly, only the primary researcher observed the specific context, potentially introducing bias. However to reduce bias, coordination, critical questioning and agreement between experienced qualitative researchers in the physiotherapy domain was applied. Furthermore, once a month the other authors of this article that are all experienced in qualitative research gave feedback on the research process. Thirdly, to strive for optimal representation of non-participant observations informal interviews were not audio-recorded, which risks an overly personal interpretation of data. However, to minimise personal interpretation of data and to improve confirmability, field notes were made during each observation day. Furthermore, credibility is gained by over-time in-depth observations and the use of primary and secondary data, including participant quotations. Also, data coding, analysis, and results were verified with the manager by way of member checking.

Implications of this research

To give substance to business principles and to address managed competition, policy makers could learn from PTPHOs that endeavour simultaneous business model change exploitation and exploration. For example in terms of linking the PTPHO's internal organisation with its external environment, this study implicates that stimulation by health insurers of both exploitation and exploration activities may improve physiotherapy services offered to patients. Likewise, PTPHOs could cautiously seek such an endeavour by linking their internal organisation with their external environment. For example, by organising collaboration with stakeholders to maintain or develop physiotherapy products and services. Furthermore, by deploying exploitation and exploration activities which have a concurrent short, medium, and long-term character. These activities may potentially contribute to value creation and the viability of the organisation. Future research could compare the study results in other viable PTPHOs contrasted by non-viable organisations, either qualitatively or quantitatively to enhance external validation of the insights gathered in this study. Furthermore, because change is involved in this study, longitudinal quantitative surveys could help to gain validity and generalisability of the conceptual model of business model change exploitation and exploration activities illustrated in this study.

CONCLUSION

One viable PTPHO pursues business model change activities over time that link the internal organisation and external environment through concurrent short, medium, and long-term exploitation and exploration activities. Furthermore, these activities are pursued to react or anticipate to obstacles that hinder value creation and the viability of the organisation and to ensure that operations run smoothly.

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Conflict of interest

The authors declare none.

Ethical standards

Ethics approval was obtained for this study from the ethical committee research healthcare domain. Department of health studies HU University of applied sciences Utrecht. Written informed consent was obtained from all subjects.

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7

GENERAL DISCUSSION

The general aim of this dissertation was to gain insights into business model-building and model-changing related to healthcare value for PTPHOs within the context of Dutch PTPHOs. This general discussion presents the main findings from Chapters 2–6. After a summary, the main findings are depicted in a ‘Business model-building and model-changing for PTPHOs’ integrative model (Figure 7.1).

SUMMARY OF THE MAIN FINDINGS

Chapter 2 provides a definition of healthcare value for PTPHOs, which is “to continuously attain PTPHO-centred outcomes in coherence with patient- and stakeholder-centred outcomes, leveraged by an organisation’s capacity for change”. **Chapter 4** further refines this definition by providing the empirical insight that healthcare value for PTPHOs’ outcomes need to be split into treatment service quality and financial outcomes.

PTPHOs seem to apply a system of activities that links the internal organisation with its external environment. Such a system can be defined as business model-building respectively model-changing. In this summary first business model-building is recapped, followed by business model-changing.

Regarding business model-building, **Chapter 3** suggests that three aspects were deemed important by PTPHO managers: selecting a business model design, establishing interfaces to use internal organisation and external environment information, and aligning the internal organisation and external environment with the organisation’s strategy to achieve organisational goals. Furthermore, **Chapter 4** reporting on an empirical study among PTPHO managers, indicates that rather than efficiency, business model novelty on its own and business model novelty moderated by managed competition contract show a significant positive relation with treatment service quality and financial outcomes. These results suggest that, to improve outcomes, PTPHOs may consider moving towards new routines and pioneering, instead of efficiency. Focussing on the preconditions of business model novelty, **Chapter 5** suggests that the relations between organisational double-loop learning orientation and proactive market orientation, and both treatment service quality and financial outcomes may be mediated by business model novelty. However, business model novelty on its own has no significant relation with both outcomes. Furthermore, organisational double-loop learning orientation on its own showed a positive relation with treatment service quality outcomes, but not with financial outcomes. These results suggest that a PTPHO may want to cautiously focus on business model-building elements like organisational double-loop learning orientation and proactive market orientation, and business model novelty, all of which promise a return on their investment.

Regarding business model-changing, in **Chapter 3** two aspects emerged. The first is business model change, which entails a change of the business model design based on interface information. The second is change cycles as to short-term effects of business model change, and long-term effects of aligning the internal organisation and external environment with the organisation’s strategy.

Chapter 6 pointed out that, to remain viable, PTPHOs could cautiously endeavour simultaneous business model-change, short-, medium-, and long-term exploitation, and exploration. These insights suggest that, to remain viable, PTPHOs may make a distinction between incremental and radical change within their organisation. Furthermore, to react to or anticipate obstacles that hinder value creation, PTPHOs could invest in the link between their internal organisation and external environment characterised by managed competition and a changing healthcare market.

‘BUSINESS MODEL-BUILDING AND MODEL-CHANGING FOR PTPHOS’ INTEGRATIVE MODEL

The insights gained in this dissertation are visualised in a ‘Business model-building and model-changing for PTPHOs’ integrative model (Figure 7.1). The integrative model will be explained in more detail below.

EXPLANATION OF THE INTEGRATIVE MODEL

To ensure that the explanation of the integrative model remains concrete enough for PTPHO practice, several references will be made to the fictitious PTPHO previously described in Box 1.1 of Chapter 1. As a reminder, this fictitious PTPHO changed from offering face-to-face treatment services towards online physiotherapy treatment services while keeping its healthcare value for PTPHOs in mind. Notably, during this dissertation the relations in the integrative model were described and delineated for the first time; therefore, the relations are potential. This is why the arrows that represent the relations are drawn with a dashed line.

Business model-building and model-changing for PTPHOs’ integrative model elements

The integrative model stipulates that PTPHOs may have a multitude of ‘business principle’ options available within their own organisation to attain and sustain healthcare value for PTPHOs. In the integrative model, healthcare value (Chapter 2) is placed on the right of Figure 7.1. Here, a breakdown into treatment service quality and financial outcomes is shown (Chapter 4). Besides healthcare value for PTPHOs, the integrative model includes business model-building elements like business model designs efficiency and novelty (Chapter 4 and 5), interfaces (Chapter 3), organisational-double-loop learning, proactive market orientation (Chapter 5), and strategy (Chapter 3). Also, business model-changing elements like business model change, short-, medium-, and long-term exploitation, and exploration activities are depicted. Last, a link between the internal organisation (PTPHO) and external environment (managed competition) is displayed (Chapter 6).

Explanation of the relations between the integrative model elements

The arrows in Figure 7.1 represent relations between the integrative model elements. Regarding business model-building, perhaps the most surprising insight of the current dissertation is that PTPHOs may be more successful in attaining healthcare value for PTPHOs when they apply business model novelty and avoid getting stuck in business model efficiency activities (Chapter 4). This

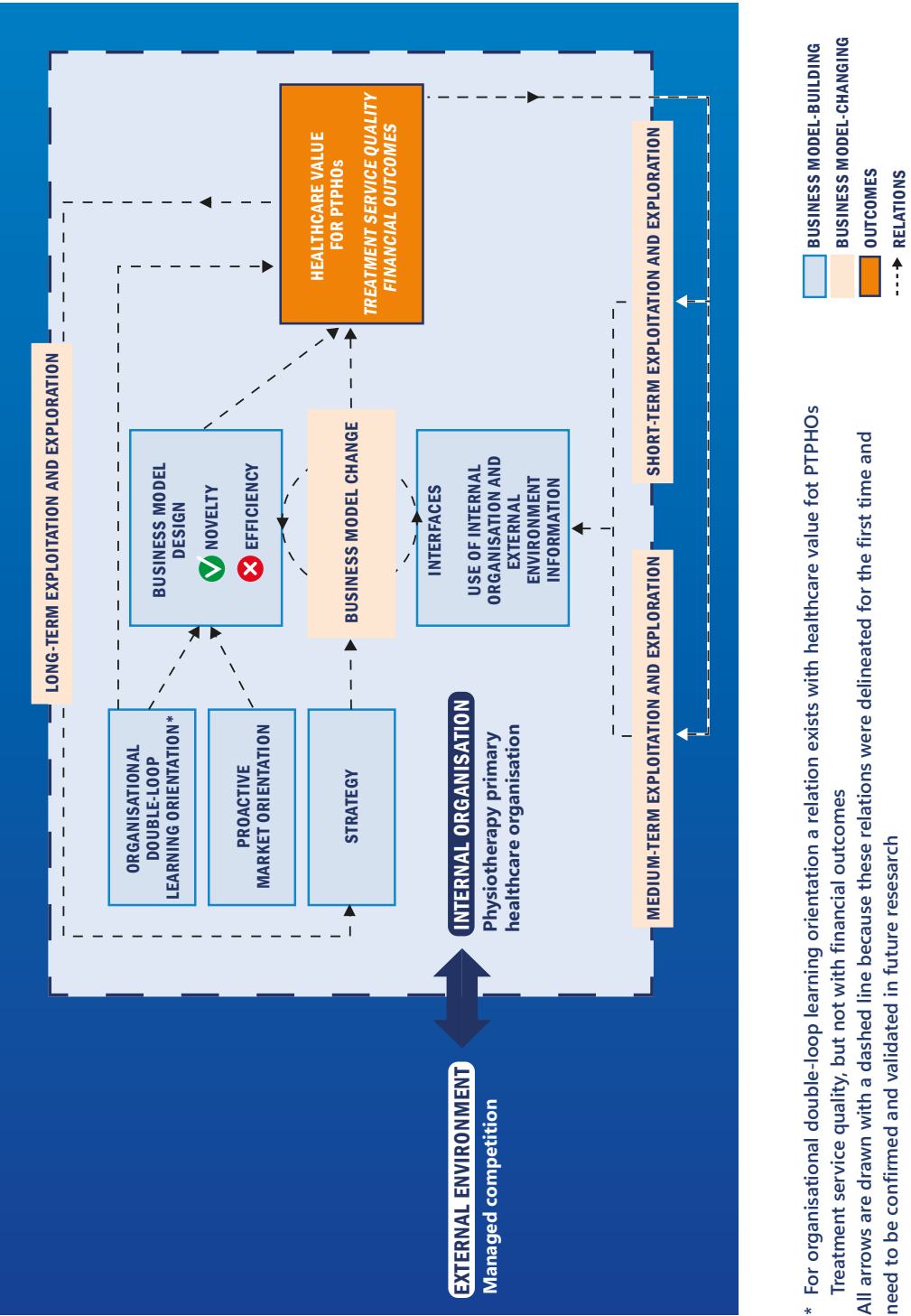


Figure 7.1. 'Business model-building and model-changing for PTPHOs' integrative model

insight suggest that the introduction of ideas new to the market, new combinations of treatment services and, new links between the PTPHO, stakeholders, and patient may all lead to improved healthcare value for PTPHOs. An example of new ideas, combination and links is that may lead to improvement is the online physiotherapy developed by the fictitious PTPHO in Box 1.1 Chapter 1. This dissertation shows conflicting results regarding the direct relation between business model novelty and healthcare value for PTPHOs (Chapters 4 and 5). This may be explained by the fact that, in both studies, in addition to business model novelty other elements were used that could strengthen or weaken the relations. For example, Chapter 4 examined the element managed competition contract which could influence the relation between business model novelty and healthcare value for PTPHOs, while in Chapter 5 this element was one the confounders included in mediation calculations. Another example is that in Chapter 5 the elements organisational double-loop learning and proactive market orientation were part of the calculations, while these were not included in Chapter 4. Therefore, caution should be exercised in drawing too firm conclusions on the direct influence of business model novelty. However, this dissertation may also provide additional evidence concerning the mediating role of business model novelty. As evidence in Chapter 5, business model novelty mediates between both organisational double-loop learning orientation and proactive market orientation, and healthcare value for PTPHOs. This may mean that when a PTPHO encourages employees to voice differing opinions and learn from such suggestions, mediated by business model novelty, both treatment service quality and financial outcomes may improve. Furthermore, with a proactive orientation, PTPHOs could satisfy patients' latent needs by focusing on the future. This could imply that when the trends that are happening among patients (like in the fictitious PTPHO neighbourhood in Box 1.1, Chapter 1) are proactively addressed, mediated by business model novelty, healthcare value for PTPHOs may improve. Another insight gained in Chapter 5 is that organisational double-loop learning orientation may have a direct positive relation with treatment service quality, but not with financial outcomes. Because Chapter 5 shows that proactive market orientation does not have a direct relation with healthcare value for PTPHOs, no arrow that represents this direct relation is shown in the integrative model. Notably, the integrative model suggests that the external environment (managed competition) may influence the relation between business model novelty and healthcare value for PTPHOs' treatment service quality and financial outcomes (Chapters 3 and 4). This implies that PTPHOs may want to specifically consider their external environment in order to attain healthcare value for PTPHOs. Like the fictitious PTPHO that offers new online physiotherapy services could carefully consider the conditions agreed in the managed competition contract with a health insurer (Box 1.1 Chapter 1).

Another insight gained is that business model-building may need to be complemented with business model-changing (Chapter 3 and 6). The integrative model shows that it seems possible for PTPHOs to opt for a business model change activities over time that link the internal organisation and external environment by concurrent exploitation and exploration activities. Exploitation activities involve business model change activities related to the refinement and extension of the existing business model. Exploration activities encompass experimentation with novel activities seeking to change the business model. This means that PTPHOs may want to simultaneously exploit existing

activities while exploring novel activities in order to sustain healthcare value for PTPHOs. Short- and medium-term exploitation and exploration activities that link the internal organisation and external environment could enhance business model change via interfaces (Chapters 3 and 6). This means that a PTPHO could collect information inside and outside the organisation by holding frequent internal management and team meetings and external stakeholder/network meetings. In addition, a PTPHO could make incremental or more radical plans based on information that results from such meetings. Similarly, long-term exploitation and exploration activities could enhance a PTPHO's strategy. For example, PTPHOs may want to put effort into long-term planning protecting its mission, vision, values, and core purpose and, by forecasting and testing future scenarios. Like the fictitious PTPHO in Box 1.1 Chapter 1, alignment between its neighbourhood needs (external environment) and its internal organisation could be necessary in order to be able to change the business model. Notably, both interfaces and strategy may stimulate a PTPHOs business model change. In turn, business model change may have a positive influence on healthcare value for PTPHOs (Chapters 3 and 6).

THEORETICAL CONSIDERATIONS

Theoretically, business model scholars seem to agree that a business model is a system of activities that links the internal organisation with its external environment [1] to make an integral plan to remain viable, solve patients' needs, and involve internal staff and external stakeholders. Based on internal organisation and external environment information evaluations such a model guides the internal organisation to choose its activities to create value [2,3]. Furthermore, in relation to business model designs like efficiency and novelty, the importance of the context of small businesses (like PTPHOs) is stressed, specifically concerning linking the internal organisation and external environment [4]. Here, the small business context relates to the internal organisation [5-8], and its external environment such as institutions, regulations and dominant stakeholders [5, 9-13]. Business model theory may need to be complemented with a less static transformational view that leads to business model-changing over time [14]. Yet, an organisation should consider continuously adapting its business model activities to sustain organisation-centred outcomes [5-7,9-12,15-18]. Finally, the business model theory often involves conceptual discussions and less conversations based on empirical data [5].

The insights in this dissertation extend these recent discussions on business model theory. First, findings were gained context-specifically and empirically and therefore extend conceptual business model theory discussions. Second, in terms of outcomes, the healthcare management and business model literature has examined healthcare quality and context-specific performance incoherently rather than in context (Chapter 2). To date, the external PTPHO environment (managed competition) has introduced business principles into primary healthcare and has so far mainly focused on the institutional and health insurer dynamics. But less so on the consideration of well-defined organisation-level contexts [19-21], like the PTPHO context. In contrast to other (healthcare quality) concepts, this dissertation offers a 'Business model-building and model-

changing for PTPHOs' integrative model (Figure 7.1) including a healthcare value for PTPHOs definition (Chapter 2) that may be more suitable for the PTPHO context. Third, the insights gained in this dissertation suggest that PTPHOs may want to be involved with context-specific business model-building possibly with a focus on business model novelty instead of business model efficiency. Notably, this dissertation extends these business model-building insights by indicating that PTPHOs may go through business short-, medium, and long-term model-changing cycles through which signals from the internal organisation (PTPHO) and the external environment (managed competition) are continuously tested against outcomes. This implies that PTPHO treatment service quality and financial outcomes may be optimised when information that flows continuously between a PTPHO's internal organisation and its wider enabling external environment is considered. Regarding business model-changing, the integrative model in Figure 7.1 also indicates that a PTPHO could simultaneously apply business model-change activities over time that link the internal organisation and external environment by exploitation and exploration activities while sustaining healthcare value for PTPHOs.

METHODOLOGICAL CONSIDERATIONS

This section examines methodological considerations in terms of strengths and limitations.

Strengths

All studies that led to the development of the integrative framework in Figure 7.1 are unlikely to have been successful if worked with a monodisciplinary research team. The research has been conducted by a transdisciplinary team with three distinct academic disciplines: healthcare, strategic management, and financial-economic innovation. This team was formed to stimulate knowledge exploration and integration and to potentially create novel insights such as a new integral framework that goes beyond the knowledge of any discipline [22,23]. A transdisciplinary team is especially useful during empirical research of complex problems within a specific context [23,24]. If studies require cross-over of knowledge from different disciplines, it is recommended that this is approached from a transdisciplinary perspective because the gains are worth the time invested in understanding each other's language [22]. One example of collaboration between the team members occurred during defining healthcare value for PTPHOs (Chapter 2). To arrive at a joint definition, the members discussed whether patient-centred outcomes or organisation-centred outcomes should be central. Patient-centred outcomes was the established preference of the healthcare discipline and organisation-centred outcomes were the habitual preference of strategic management and financial-economic innovation disciplines. The issue was solved through frequent transdisciplinary team meetings with sincere input from all perspectives. Notably, it is important to prevent misunderstandings due to jargon and adherence to familiar definitions and concepts. With this transdisciplinary approach, it is advisable to not be afraid of challenging the dogma in the field. In addition, trust in each other's skills, acceptance of each team member, and developing shared language and concepts is necessary [24-26].

The findings summarised in Figure 7.1 could, to some extent, be generalised to PTPHOs in other

contexts, such as the United States, Europe, Australia and New Zealand. This is because, in these contexts, as in the Netherlands, PTPHOs are often small businesses too and a form of managed competition exists [27-31]. However, specific attention will be needed to apprehend contexts outside the Netherlands in detail to see the extent to which the insights gained in this dissertation are generalisable.

Limitations

Healthcare value for PTPHOs that is part of the business model-building and model-changing integrative model is still a generic concept and may require further refinement and detail. Nevertheless, this dissertation indicates that a PTPHO can measure its outcomes based on treatment service quality and financial outcomes, coherently rather than incoherently.

PTPHO managers involved in the studies may have been confronted with concepts outside their own discipline. For example, these PTPHO managers may feel comfortable with healthcare quality concepts, but less so with concepts related to business principles. Therefore, the insight gained in this dissertation may be biased because a PTPHO manager may interpret concepts used in this dissertation differently than managers from a domain that are used to business principles, like finance or strategic management. However, in Chapter 2, two rounds of PTPHO managers consultations were conducted to gain insights into the feasibility of gathered insights. Furthermore, in Chapters 3 and 6, member checking took place by feeding back insights to the PTPHO managers involved in the qualitative studies. In addition, measurement instruments used in the quantitative studies in Chapters 4 and 5 were pre-tested by PTPHO managers to obtain a better understanding of the face validity of the instruments, which resulted in relevant items for the PTPHO context and an easy-to-fill questionnaire.

The insights gained were mainly based on cross-sectional studies (Chapters 3, 4 and 5). Because a one-time measurement may not capture the impact over time, the methods used do not make it possible to draw conclusions about the causality and direction of relations between the elements shown in the 'Business model-building and model-changing for PTPHOs' integrative model (Figure 3). However, Chapter 6 provided a one-year qualitative longitudinal case study within one viable PTPHO in which business model change over-time was studied. Although research within a larger number of PTPHOs is desirable, this case study generated fine-grained insights regarding short-, medium- and long-term business model change exploitation and exploration activities.

PRACTICAL CONSIDERATIONS

PTPHO managers independently emphasise the importance of business model-building and model-changing aspects in relation to healthcare value for PTPHOs (Chapter 3). Before capturing the potential positive effects, business model-building and model-changing may have potential adverse effects. For example, business model change activities that are new to the market potentially may not be reimbursed by the health insurer when these activities do not comply with current contracts with associated fees. Such misalignment between a PTPHO and its stakeholder potentially may result in uncertainty towards change and may cause PTPHO manager stress.

In addition, PTPHO employees possibly may resist change because of bad team dynamics or difficulties in integrating new activities [32,33]. Despite this, the insights gained in this dissertation may have important practical implications that inspire PTPHO managers, policymakers and health insurers and, physiotherapy and primary healthcare educators. They may shift their attitudes toward business model-building related business model novelty instead of business model efficiency. They may also want to get involved into business model change. To capture the potential positive effects of business model-building and model-changing, recommendations are provided below.

PTPHO manager

PTPHO managers may consider investing less in efficient transactions and compliance with managed competition contract requirements because such transactions may not lead to healthcare value for PTPHOs. An example of efficient transactions is that administrative flows and use of information, treatment services, and materials can be verified by parties such as health insurers. Instead, treatment service quality and financial outcomes could be attained and sustained when PTPHOs introduce new ideas and new combinations of treatment services and link patients and stakeholders in new ways. For example, in line with the integrative model (Figure 7.1), the changes in the imaged PTPHO's (Box 1.1, Chapter 1) external environment, such as residents who have a strong preference for online treatment instead of exclusively face-to-face care, prompted business questions that evoked business model change activities.

It may be advisable for PTPHO managers to cautiously balance context-specific exploitation related to the refinement and extension of their business model activities and exploration such as experimentation with novel business model change activities. On one hand, lingering for too long in refining a PTPHO's business model carries the risk that the PTPHO will not respond timely to market changes. On the other hand, not every experiment is successful, which creates an investment risk for the PTPHO [34]. For example, PTPHO managers in the Netherlands report that they currently experience little room to experiment and feel they have low business confidence [33].

The integrative model of this dissertation indicates that organisational double-loop learning orientation may influence healthcare value for PTPHOs. Based on this insight, PTPHO managers may want to learn from each other's context by lowering the barrier to organisational double-loop learning. This can be done, for example, by participating in existing PTPHO manager networks that have proven success in obtaining innovative ideas and/or projects, including matching innovation subsidies. Furthermore, it may be desirable to learn from real-time data. Such real-time data may be necessary so that timely context-specific adjustments to the PTPHO's business model can be learned and a proactive market orientation can be developed. These real-time data concern organisation-centred outcomes like treatment service quality and financial outcomes, as well as patient-centred data like patient empowerment and patient willingness to pay, and stakeholder-centred outcomes, such as the future needs of patient representatives, the welfare of PTPHO employees and joint outcomes for collaboration between the internal PTPHO and external stakeholders.

Business model-building and model-changing insights may not only be discussed within external PTPHO manager networks. Insights may also be discussed inside the organisation with the PTPHO's

management team and physiotherapist and administrative staff involved. For example, the viable PTPHO studied in Chapter 6 creates time available for non-patient treatment activities. Examples of such activities are regular team meetings and anticipating future region and neighbourhood patient needs by developing new solutions for pressing health issues.

Healthcare policy and health insurers

The Dutch Ministry of Health recently emphasised value-driven healthcare evidenced by the Integral Healthcare Agreement (Dutch: Integraal Zorg Akkoord) [35]. Insights gained in this dissertation may support such healthcare policy for three reasons. First, like this dissertation, the agreement emphasises the relevance of context-specific primary healthcare like in a region or neighbourhood [35]. In addition, the Dutch Health Institute has stressed the link and interdependencies between a primary healthcare organisation (internal organisation) and its local network (external environment) in future healthcare [36]. Second, given the definition of value-driven healthcare, there may be a need for business model-changing exploitation. Value-driven healthcare means that care is effective, complies with the state of science and practice and has added value for the patient, and also makes efficient use of people, resources and materials [35]. Notably, aspects like effective and efficient use of people, resources and materials mentioned in this definition resemble business model change exploitation associated with refinement and incremental change. Third, the agreement clearly states that future healthcare is about a profound change from illness toward health [35]. This profoundly different approach to patient needs may involve business model-change exploration associated with radical change and innovation. For example, the profound change from illness toward health may require exploration, creativity and innovative business models from PTPHOs as well as PTPHO employees and external stakeholders in their specific and local context.

In line with the three reasons mentioned, healthcare policy and health insurers could consider enabling PTPHO managers to respond to changing healthcare policy and market conditions proactively and in a timely manner by optimising managed competition contracts associated with insurer-driven perspectives towards provider-driven context-specific viewpoints. For example, health insurers could offer PTPHO context-specific instead of generic contracts that fit well with neighbourhood-specific patient needs. Furthermore, health insurers could reward local innovation instead of efficiency, with specific reimbursements.

Health insurers could stimulate PTPHO business confidence and room for failure while balancing exploitation and exploration activities. This could be done by offering multi-year contracts instead of one-year contracts. For example, with a multi-year contract, a PTPHO could continue its current business model activities by efficient use of people, resources and materials to enhance value-driven care (exploitation) while safely learning to participate in innovations and interprofessional networks (exploration).

Policy makers, health insurers and PTPHOs could jointly experiment with promising alternative financing models new to the PTPHO context to stimulate the desired transition from illness to health and to stimulate healthcare value for PTPHOs. For example, the fee for service financing

model that is currently common in the Dutch context stimulates productivity and monodisciplinary orientations. Instead, transdisciplinary approach may be essential, especially when one realises that recent healthcare policy changes in the Netherlands concern integrated care and collaboration between different disciplines, involving primary healthcare, healthcare policy, financial and strategic management professionals and citizens [35]. Monodisciplinary approaches experiments like bundled payment or population financing models could be set up to stimulate novelty, change and collaboration between primary healthcare organisations (including PTPHOs), policy makers and health insurers and citizens [37-39].

Physiotherapy and healthcare education

Currently, physiotherapists in the Netherlands are educated with the best skills concerning evidence-based practice [40]. Traditionally, masters-level physiotherapy education in the Netherlands has focused on specific skills related to, for example, paediatrics, geriatrics or mental health. Less attention has been given to business principles and business model approaches. To contribute to future value-driven healthcare and the fulfilment of societal and patient needs, innovation, business and collaboration skills may need to be cultivated and extended within physiotherapy education [41-43]. This includes impactful handling of complex internal organisation of a PTPHO and external environment interdependencies based on sound theory [26]. Examples of external environment factors are context-specific patient needs and health system policies [44]. Interestingly, two Universities of Applied Sciences have both recently offered masters-level education programmes that specifically address physiotherapy innovation for defined contexts like a region or neighbourhood [45,46]. These programmes include business principles like business models, proactive market orientation, cocreation and collaboration with PTPHO internal and external stakeholders, which are necessary to address managed competition. Such programmes that incorporate value creation may set a trend towards future-proof physiotherapy services.

Interdisciplinary healthcare education could be stimulated and extended with transdisciplinary insights including embracement of business model theory, not least to enable context-specific attainment and sustainment of healthcare value for PTPHOs and potentially for other primary healthcare organisations [47,48]. An example of how to teach students about business model aspect and related learning outcomes is already described in the business model literature by [49]. Another example is that Dutch universities in the Utrecht region emphasise interdisciplinary innovation and collaboration by way of 'De Nieuwe Utrechtse School' [50]. This 'School' represents an interdisciplinary platform that aims to prepare a new generation of professionals in the health domain for the changes of the 21st century. This platform stimulates discussions about the interaction between health and science in a broader sense. Another initiative is a Health and Well-being interdisciplinary education program. For example, during this programme, physiotherapy, speech therapy, skin therapy and optometry students cooperatively develop interdisciplinary oriented answers to patients' requests for help [51]. However, this education programme is not yet transdisciplinary oriented, including business principles. In addition, there is still uncertainty concerning collaborative education on healthcare outcomes [26]. For example, each mono-

discipline involved in transdisciplinary education may have its own discipline-specific indicators for healthcare value. Such mono-disciplinary indicators may obstruct transdisciplinary collaboration. Therefore, working with shared indicators may be desirable.

DIRECTIONS FOR FUTURE RESEARCH

This dissertation is characterised by preliminary research, which means that directions for future research are needed.

This dissertation indicates that a PTPHO can measure its' organisation-centred outcomes based on treatment service quality and financial outcomes. In the future, relevant detailed outcomes will have to be detected that justify the complexity of PTPHO business model-building and model-changing [52]. In the case of treatment service quality outcomes, a PTPHO could consider balancing between measuring very specific outcomes such as patient-reported experience measurement (PREM) and patient-reported outcome measurement (PROM) versus more transcendent outcomes based on patient-reported outcomes measurement information systems (PROMIS) [53,54]. With regard to financial outcomes, potential more detailed indicators that could be included in future research include an organisation's costs, turnover and net margin [55,56]. Other potential indicators are the organisation's ability to pay bills on time, a PTPHO manager's business confidence and willingness to invest in innovation [33]. To encourage a PTPHO manager to coherently use treatment service quality and financial outcomes information, research could be strengthened by business intelligence and analytics research [57] to analyse and act on PTPHO-related data.

Qualitative longitudinal case studies are recommended in order to further explore the feasibility of the integrative framework presented in this dissertation. For example, PTPHO managers and PTPHO stakeholders could reflect on potential issues and problems that could arise while applying the insights gained in this dissertation. In addition, longitudinal observational studies could shed light on PTPHO context-specific measures on the sustainment of healthcare value for PTPHOs. Quantitative research is needed to determine the reliability, validity and generalisability of the measurement instruments used in this dissertation, and to develop context-specific instruments for the measurement of PTPHO characteristics and outcomes. Examples of such instruments are measurement of outcomes concerning strategy, stakeholder satisfaction, organisational capabilities for change and organisational financial health, as discussed by Soysa et al. [58]. Furthermore, instruments could be developed to measure innovation performance and competitiveness [8,10]. Given the changing context of PTPHOs over time, empirical longitudinal confirmatory and explanatory research is needed to capture linear and more complex business model change processes [52,59]. These processes include feedback loops and vicious change cycles within the organisation and between the internal organisation and external environment [15,18,60]. Quantitative longitudinal studies are needed to assess the direction of causality of the relations between the elements in, for example, the 'Business model-building and model-changing' integrative model (Figure 7.1).

To gain validity and credibility and to confirm gained insights, this research needs to be repeated and extended in various primary healthcare organisation contexts. For example, business model-building could be tested in contexts like start-ups versus established PTPHOs, organisations without employees versus organisations with employees, and high-, moderate- or low-performing PTPHOs [6,12,13]. Apart from these internal organisation characteristics, the PTPHOs external environment needs to be sifted through by including, for example, the influence of different stakeholders, and other institutions like local and regional authorities [6,13,32,52].

Recent developments in research methodology indicate that participative action research may enhance transdisciplinary approaches in research. This methodology has the major advantage that it offers a set of methods with creative and innovative ways of working to stimulate respecting and linking differences in perspective, in ways that embrace change and impact in multiple domains, such as science, professional practice, education and society [61].

CONCLUSIONS

The general aim of this dissertation was to gain insights into business model-building and model-changing related to healthcare value for PTPHOs within the context of Dutch PTPHOs. Business model-building and model-changing may enhance the attainment and sustainment of healthcare value for PTPHOs depending on contingencies that PTPHOs encounter. Concerning business model-building, it may be advisable for a PTPHO to apply a planned strategy, encourage organisational double-loop learning orientation and proactive market orientation and, business model novelty. It may also be desirable for a PTPHO to have interfaces in place for the use of internal organisation and external environment information. Regarding business model-changing, it is suggested that a PTPHO may conduct business model change over-time that link the internal organisation and external environment by concurrent short-, medium- and long-term exploitation and exploration. Such a simultaneous approach may allow a PTPHO to adapt to a changing market in both an incremental and radical way. To stimulate transitions in healthcare, healthcare policy and health insurers could encourage PTPHO business model-building and model-changing. The business principles-related questions that arise from the Dutch managed competition healthcare market are challenging for PTPHOs. For that reason, physiotherapy and healthcare education may need to offer transdisciplinary knowledge related to business principles in their educational programs to enhance healthcare value for PTPHOs. The insights gained in this dissertation may help PTPHOs shift their attitudes toward new routines, business model novelty instead of efficiency, and business model change.

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APPENDIX

SUMMARY

SAMENVATTING (SUMMARY IN DUTCH)

LIST OF ABBREVIATIONS AND TERMS

PHD PORTFOLIO

ABOUT THE AUTHOR

AUTHOR AFFILIATIONS

AUTHORS CONTRIBUTIONS

DANKWOORD (ACKNOWLEDGEMENTS)

SUMMARY

Physiotherapy provides services that develop, maintain and restore people's maximum movement and functional ability. These services can help people at any stage of life when movement and function are threatened by ageing, injury, diseases, disorders, conditions or environmental factors. As in other Western countries, a significant proportion of physiotherapy services in the Netherlands is provided by physiotherapy primary healthcare organisations (PTPHOs). PTPHOs are mainly organised as micro (< 10 employees) organisations and are located in neighbourhoods close to where people live and work. Interaction with this local neighbourhoods is important for PTPHOs, both to attain and to sustain healthcare value for PTPHO outcomes, like treatment service quality and financial outcomes. The healthcare market in which Dutch PTPHOs operate is characterised by managed competition. With managed competition, business principles have been introduced. Despite management competition already exists for two decades, PTPHOs still struggle to make impact in this healthcare system approach.

This dissertation focuses on gaining insights into to business model-building and model-changing which could support PTPHOs to increase their impact, taking into account the Dutch PTPHO context. First, Chapter 2 focuses on defining 'healthcare value for PTPHOs', including outcomes that are relevant to treatment service quality as well as financial outcomes. The subsequent Chapters 3 – 6, explore in what ways PTPHOs could attain healthcare value for PTPHOs and sustain such outcomes over time, indicated by 'business model-building and model-changing'.

The general purpose of this thesis is to gain insights into business model-building and model-changing related to healthcare value for PTPHOs within the context of Dutch PTPHOs.

Healthcare value for PTPHOs

Chapter 2 concentrates on addressing relevant outcomes for PTPHOs. A healthcare value for PTPHOs framework, including a definition of healthcare value, was presented based on a scoping literature review. The definition of healthcare value for PTPHOs is "to continuously attain PTPHO-centred outcomes in coherence with patient- and stakeholder-centred outcomes, leveraged by an organisation's capacity for change". The scoping literature review met the need for a value-based framework that is feasible for PTPHOs, and also solved the omissions of incoherent literature and existing frameworks on continuous healthcare quality and PTPHO context-specific performance. The definition and concurring framework created support for PTPHOs to indicate and systematically perform measurable healthcare value outcomes. The research also specifically identified a characteristic that enhances PTPHOs to continuously adapt to and influence changing healthcare value outcomes: an organisation's capacity for change. **Chapter 4** revealed that healthcare value for PTPHOs outcomes need to be split into treatment service quality and financial outcomes.

Business model-building and model-changing

After identifying relevant outcomes for PTPHOs in their context, the question is how these outcomes can be attained and sustained. Building and changing an appropriate business model is one way to do so. A business model is a system of activities that links the internal organisation with its external environment to make an integral plan to remain viable, solve patients' needs, and involve internal staff and external stakeholders. The business model literature lacks discussions on building and changing business models related to attaining and sustaining (healthcare value for PTPHOs) outcomes, specifically in a changing PTPHO context. Therefore, **Chapter 3** discussed business model-building and model-changing related to the healthcare value for PTPHOs outcomes presented in Chapter 2. In order to gain insights into what aspects make PTPHOs attain and sustain PTPHO-centred outcomes, results derived from semi-structured interviews with PTPHO managers were discussed. PTPHO managers of superior and lower-performing organisations reported that PTPHOs generate superior PTPHO-centred outcomes through both business model-building and model-changing. However, superior-performing PTPHOs may address building and changing business models in a more diversified and integrated way than their lower-performance counterparts. In this summary first business model-building is recapped, followed by business model-changing.

Business model-building

To attain superior performance, business model-building aspects need to be in place, such as selecting a business model design. Furthermore, the managers reported that, to attain superior outcomes, their organisations need interfaces that link the internal organisation and external environment to collect, evaluate and generate information, and make sense of information (**Chapter 3**). To date, the business model and healthcare management literature lack comprehensive insights into business model designs related to healthcare value for PTPHO outcomes, while accounting for managed competition. **Chapter 4** elaborated on business model-building by a quantitative cross-sectional study among Dutch PTPHO managers on business model designs (or business model configurations) like efficiency and novelty, related to PTPHO-centred outcomes. During this study, the influence of managed competition was taken into account. This study showed that, rather than efficiency, both business model novelty on its own and business model novelty moderated by managed competition contract show a significant positive relation with PTPHO-centred outcomes. These results suggest that PTPHOs may consider moving towards new routines and business model novelty, instead of efficiency. **Chapter 5** further explored the role of business model novelty in relation to attainment of healthcare value for PTPHOs. The design business model novelty was linked to two relevant organisational characteristics: organisational double-loop learning orientation and proactive market orientation. In a quantitative study, the relations between the two organisational orientations, and PTPHO-centred outcomes, including the influencing role of business model novelty were examined. The study offered the insight that organisational double-loop learning orientation on its own showed a positive relation with healthcare value for PTPHOs outcomes' treatment service quality, but not with financial outcomes. Proactive market orientation did not have a significant relation with healthcare value for PTPHO

outcomes. Based on low estimates, the study also provided the insight that the relations between organisational double-loop learning orientation and proactive market orientation and both PTPHO-centred outcomes may be positively influenced by business model novelty. These results suggest that a PTPHO may want to focus on organisational double-loop learning orientation and proactive market orientation and business model novelty, all of which may promise a return on investment.

Business model-changing

In addition to one time business model-building, business model change over-time is deemed important to sustain healthcare value for PTPHOs outcomes. Interviews with PTPHO managers described in **Chapter 3** indicated that business model change can be achieved through three change cycles: business model change, short-term change, and long-term change. **Chapter 6** raised the question how business model change is pursued within small businesses, especially related to linking the internal organisation with the external environment. Results of a one-year qualitative longitudinal interpretative case study showed that the viable PTPHO under study pursues simultaneous business model change activities over time that link the internal organisation and external environment through concurrent short-, medium-, and long-term exploitation and exploration. Here, exploitation involves the refinement and extension of existing PTPHO activities, whereas exploration encompasses experimentation with novel PTPHO activities. These results imply that, to remain viable over time, PTPHOs could cautiously endeavour simultaneous business model change short-, medium-, and long-term exploitation and exploration. Furthermore, to react to or anticipate obstacles that hinder value creation, PTPHOs could invest in the link between their internal organisation and external environment characterised by managed competition and a changing healthcare market.

In **Chapter 7**, the main findings of this dissertation were discussed and visualised in a 'Business model-building and model-changing for PTPHOs' integrative model (Chapter 7, Figure 7.1). This model is built upon the elements and mutual relationship between 'healthcare value for PTPHOs' and 'business model-building and model-changing' which have acquired context-specific significance in Chapters 2 to 6 of this dissertation. The integrative model shows the coherence between the internal organisation and external environment of Dutch PTPHOs when driving healthcare value for PTPHOs, including both treatment service quality and financial outcomes. With respect to business model-building, interfaces that enable information exchange between the internal organisation and external environment are deemed important to attain healthcare value for PTPHOs. In addition, organisational double-loop learning, proactive market orientation, strategy, business model configuration (innovation or efficiency), seem to matter when building a business model in a PTPHO context. Business model-changing insights essentially refer to business model change and cycles of change that represent short, medium and long-term exploitation and exploration activities performed by PTPHOs to sustain their healthcare value for PTPHOs.

This dissertation contributes to business model theory by new insights based on mainly context-specific empirical data instead of the much more common conceptual discussions. Furthermore, healthcare quality and PTPHO specific performance were examined coherently and in context. PTPHO managers could be recommended to continuously reflect on information that flows between a PTPHO's internal organisation and its' wider enabling external environment to optimise their PTPHO treatment service quality and financial outcomes. In consequence, PTPHOs that use business-model building and model-changing may be better able to anticipate on current healthcare policies such as the 'Integraal Zorg Akkoord' ('Integrated Care Agreement') by being able to align their internal organisation with the external environment. In addition, to stimulate transitions in healthcare, healthcare policy and health insurers could encourage PTPHO business model-building and model-changing. The business principles-related questions that arise from the Dutch managed competition healthcare market are challenging for PTPHOs. For that reason, physiotherapy and healthcare education may need to offer transdisciplinary knowledge related to business principles in their educational programs to enhance healthcare value for PTPHOs. The insights gained in this dissertation may help PTPHOs shift their attitudes toward new routines, business model novelty instead of efficiency, and business model change.

SAMENVATTING (SUMMARY IN DUTCH)

Fysiotherapie is een paramedische discipline gericht op het ontwikkelen, behouden en herstellen van bewegend functioneren van mensen. Fysiotherapie kan mensen helpen in elke levensfase waarin beweging en functioneren worden bedreigd door veroudering, letsel, ziekten, aandoeningen of omgevingsfactoren. Fysiotherapie in Nederland wordt net als in andere westerse landen vaak verleend via eerstelijns fysiotherapie organisaties. Deze eerstelijns fysiotherapie organisaties zijn voornamelijk georganiseerd als kleinbedrijven (< 10 werknemers) en gevestigd in buurten waar mensen wonen en werken. Interactie met deze buurten is belangrijk om zowel goede behandelkwaliteit als goede financiële resultaten te bereiken en te behouden. Het streven naar deze 'waardegedreven gezondheidszorg' vormt het uitgangspunt van eerstelijns fysiotherapie organisaties in een gezondheidszorgmarkt die gekenmerkt wordt door gereguleerde marktwerking. Ondanks het feit dat gereguleerde marktwerking al twee decennia bestaat, worstelen eerstelijns fysiotherapie organisaties nog steeds met het passend inrichten van hun bedrijfsmodel om impact te maken binnen deze benadering van het gezondheidszorg systeem.

Dit proefschrift richt zich op het verkrijgen van inzicht in het bouwen en het veranderen van een bedrijfsmodel voor eerstelijns fysiotherapie organisaties waardoor zij hun impact in hun omgeving kunnen versterken. Eerst richt Hoofdstuk 2 zich op het definiëren van 'waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties', waarbij aandacht is voor zowel behandelkwaliteit als financiële resultaten. De daaropvolgende Hoofdstukken 3 tot en met 6 verkennen op welke manieren eerstelijns fysiotherapie organisaties waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties kunnen bereiken en in de loop van de tijd kunnen behouden, geduid vanuit 'bedrijfsmodel bouwen' en 'bedrijfsmodel veranderen'.

Het algemene doel van dit proefschrift is het verkrijgen van inzicht in bedrijfsmodel bouwen en veranderen in relatie tot waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties binnen de context van Nederlandse eerstelijns fysiotherapie organisaties.

Waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties

Hoofdstuk 2 concentreert zich op het identificeren en definiëren van relevante uitkomsten voor eerstelijns fysiotherapie organisaties, samengevat onder de noemer 'waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties'. Op basis van een *scoping literatuur review* wordt hiervoor een raamwerk gepresenteerd, inclusief een definitie. Deze definitie luidt: "het continu bereiken van eerstelijns fysiotherapie organisatiegerichte resultaten in samenhang met patiënt- en stakeholdergerichte resultaten, ondersteund door de capaciteit van een organisatie om te veranderen". De scoping literatuur review voldeed aan de behoefte aan een waardegedreven gezondheidszorg raamwerk dat werkbaar is voor eerstelijns fysiotherapie organisaties. Bovendien loste het onderzoek omissies op voor wat betreft onsamenhangende literatuur en bestaande kaders voor het behalen van continue gezondheidszorgkwaliteit en voor eerstelijns fysiotherapie organisatie context-specifieke resultaten. In **Hoofdstuk 4** komt naar voren dat waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties

opgesplitst kan worden in behandelkwaliteit - en financiële resultaten. De definitie en het hieraan verbonden raamwerk ondersteunt eerstelijns fysiotherapie organisaties in het systematisch en meetbaar uitvoeren van waardegedreven gezondheidszorg. Ook wees het onderzoek specifiek op een kenmerk dat eerstelijns fysiotherapie organisaties versterkt in het continu aanpassen aan en invloed uitoefenen op steeds veranderende omstandigheden waarbinnen ze hun diensten verlenen: 'de verandercapaciteit van een organisatie'.

Bedrijfsmodel bouwen en bedrijfsmodel veranderen

Na het definiëren van relevante uitkomsten voor de context van eerstelijns fysiotherapie organisaties, rijst de vraag hoe deze uitkomsten bereikt én behouden kunnen worden. Het bouwen en veranderen van een passend bedrijfsmodel is een manier om dit te doen. Een bedrijfsmodel is een systeem van activiteiten dat de interne organisatie verbindt met haar externe omgeving om levensvatbaar te blijven, om patiëntbehoeften op te lossen en om intern personeel en externe samenwerkingspartners te betrekken. In de bedrijfsmodelliteratuur ontbreken discussies over het bouwen en veranderen van bedrijfsmodellen gerelateerd aan het bereiken en behouden van waardegedreven gezondheidszorg voor fysiotherapie organisaties en hun continu veranderende context. Daarom wordt in **Hoofdstuk 3** het bouwen en veranderen van een bedrijfsmodel besproken in relatie tot waardegedreven gezondheidszorg voor fysiotherapie organisaties zoals gepresenteerd in Hoofdstuk 2. Om inzicht te krijgen in welke aspecten ervoor zorgen dat eerstelijns fysiotherapie organisaties waardegedreven gezondheidszorg bereiken en behouden, werden semigestructureerde interviews gehouden met managers van eerstelijns fysiotherapie organisaties. Managers van hoger én lager presterende organisaties melden dat eerstelijns fysiotherapie organisaties hogere resultaten op waardegedreven gezondheidszorg genereren wanneer zij zowel een bedrijfsmodel bouwen als ook het bedrijfsmodel veranderen. Managers van hoger presterende organisaties pakken het bouwen en veranderen van hun bedrijfsmodel echter gevarieerder en meer geïntegreerd aan dan managers van lager presterende praktijken.

In deze samenvatting wordt nu eerst het bouwen van een bedrijfsmodel toegelicht, gevolgd door het veranderen van het bedrijfsmodel.

Bedrijfsmodel bouwen

Om hoge resultaten te bereiken op waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties, moeten organisaties een ontwerp selecteren aan de hand waarvan ze hun bedrijfsmodel kunnen bouwen. Bovendien komt uit de interviews met managers van eerstelijns fysiotherapie organisaties naar voren dat in het bedrijfsmodel koppelingen nodig zijn tussen de interne organisatie en de externe omgeving om informatie te verzamelen, te evalueren en te genereren en om informatie betekenis te geven (**Hoofdstuk 3**). Tot op heden was in de bedrijfsmodel - en gezondheidszorgmanagementliteratuur geen samenhangend inzicht te vinden in bedrijfsmodelontwerpen in relatie tot waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties, rekening houdend met gereguleerde marktwerking. **Hoofdstuk 4** beschrijft een kwantitatieve cross-sectionele studie naar twee veelvoorkomende

bedrijfsmodelontwerpen (of bedrijfsmodelconfiguraties), namelijk efficiëntie en nieuwheid, in relatie tot waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisatiegerichte uitkomsten. In tegenstelling tot een bedrijfsmodel geënt op efficiëntie, vertoont een bedrijfsmodel geënt op nieuwheid een significant positieve relatie met waardegedreven gezondheidszorguitkomsten voor eerstelijns fysiotherapie organisaties. Deze relatie is sterker wanneer er rekening gehouden wordt met de gereguleerde marktwerking waarmee fysiotherapie organisaties te maken hebben. Deze resultaten suggereren dat eerstelijns fysiotherapie organisaties kunnen overwegen om over te gaan op nieuwe routines en bedrijfsmodel nieuwheid, in plaats van het vasthouden aan een bedrijfsmodel gericht op efficiëntie wanneer zij streven naar waardegedreven gezondheidszorg.

Hoofdstuk 5 ging dieper in op de rol van bedrijfsmodel nieuwheid in relatie tot waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties. Bedrijfsmodel nieuwheid werd gelinkt aan twee relevante organisatiekenmerken: organisatie *double-loop* leren oriëntatie en proactieve marktorientatie. De relaties tussen de twee organisatiekenmerken, waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties en de beïnvloedende rol van bedrijfsmodel nieuwheid werden hierbij onderzocht. Eerstelijns fysiotherapie organisaties die *double-loop* leren hanteren binnen hun organisatie, lijken betere resultaten te behalen op behandelkwaliteit, maar niet voor wat betreft financiële resultaten. Proactieve marktorientatie heeft geen significante relatie met waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties. Hoewel enige voorzichtigheid in acht genomen moet worden, lijkt het zo te zijn dat de relaties tussen organisatie *double-loop* leren en proactieve marktorientatie en waardegedreven gezondheidszorg uitkomsten positief worden beïnvloed door bedrijfsmodel nieuwheid. Deze resultaten suggereren dat een eerstelijns fysiotherapie organisatie zich mogelijk wil concentreren op organisatie *double-loop* leren oriëntatie en proactieve marktorientatie en bedrijfsmodel nieuwheid. Deze elementen dragen mogelijk allemaal de belofte in zich van rendement op het investeren hierin.

Bedrijfsmodel veranderen

In aanvulling op het eenmalig bouwen van een bedrijfsmodel is verandering van het bedrijfsmodel over de tijd belangrijk om de waardegedreven gezondheidszorg uitkomsten voor eerstelijns fysiotherapie organisaties te behouden. Interviews met managers van deze organisatie managers (**Hoofdstuk 3**) wijzen er op dat verandering van het bedrijfsmodel kan worden bereikt via drie veranderingscycli: verandering van het bedrijfsmodel, verandering op de korte termijn en verandering op de lange termijn. In **Hoofdstuk 6** is ingegaan op de vraag hoe het veranderen van het bedrijfsmodel wordt nagestreefd binnen een kleinbedrijf in de eerstelijns fysiotherapie. Vooral met betrekking tot het linken van de interne organisatie aan de externe omgeving. Hiervoor werd een jaar lang één hoog-presterende eerstelijns fysiotherapie organisatie via een kwalitatieve, longitudinale interpretatieve case studie. Deze eerstelijns fysiotherapie organisatie blijkt de interne organisatie en de externe omgeving met elkaar te verbinden door gelijktijdig bezig te zijn met verfijning en uitbreiding van bestaande activiteiten (exploitatie) én te experimenteren met nieuwe activiteiten (exploratie), zowel op de korte -, middellange - als lange termijn. Deze

resultaten impliceren dat eerstelijns fysiotherapie organisaties, om levensvatbaar te blijven in de loop van de tijd, voorzichtig bedrijfsmodel veranderen kunnen uitproberen. Dit kan in de vorm van gelijktijdige korte-, middellange- en lange termijn- exploitatie en -exploratie activiteiten. Ook kunnen eerstelijns fysiotherapie organisaties in reactie of anticipatie op obstakels die waardecreatie verhinderen, investeren in de link tussen hun interne organisatie en hun externe omgeving. Deze externe omgeving kenmerkt zich als gereguleerde marktwerking en een veranderende gezondheidszorgmarkt.

In **Hoofdstuk 7** werden de verkregen inzichten in dit proefschrift bediscussieerd en gevisualiseerd in een integratief model met als titel: 'Bedrijfsmodel bouwen en - veranderen voor eerstelijns fysiotherapie organisaties' (Hoofdstuk 7, Figuur 1). Dit model is opgebouwd uit de elementen en wederzijdse relaties tussen 'waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties', 'bedrijfsmodel bouwen' en 'bedrijfsmodel veranderen', die context-specifieke betekenis hebben gekregen in de Hoofdstukken 2 tot en met 6 van dit proefschrift. Het integratieve model laat de samenhang zien tussen de interne organisatie en de externe omgeving van Nederlandse eerstelijns fysiotherapie organisaties tijdens hun streven naar het bereiken en behouden van waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties. Wat betreft bedrijfsmodel bouwen worden koppelingen belangrijk geacht. Deze koppelingen maken informatie-uitwisseling tussen de interne organisatie en de externe omgeving mogelijk. In aanvulling hierop lijken organisatie *double-loop* leren, proactieve marktorientatie, strategie en bedrijfsmodelconfiguratie (efficiëntie of nieuwheid) er toe te doen tijdens het bouwen van een bedrijfsmodel binnen de context van een eerstelijns fysiotherapie organisatie. De inzichten verkregen rond bedrijfsmodel bouwen betreffen bedrijfsmodelverandering en verandercycli die korte-, middellange- en langetermijn exploitatie en exploratie activiteiten. Uitgevoerd door eerstelijns fysiotherapie organisaties om hun waardegedreven gezondheidszorg voor eerstelijns fysiotherapie organisaties te behouden.

Dit proefschrift draagt bij aan de bedrijfsmodeltheorie door middel van nieuwe inzichten die voornamelijk zijn gebaseerd op context-specifieke empirische data in plaats van de meer gangbare conceptuele discussies. Ook werden voor het eerst gezondheidszorg kwaliteit en eerstelijns fysiotherapie organisatie-specifieke prestaties in samenhang en in context bekeken. Aan managers van eerstelijns fysiotherapie organisaties kan worden aanbevolen om continu te reflecteren op informatie die stroomt tussen de interne eerstelijns fysiotherapie organisatie en haar bredere ingeschakelde externe omgeving. Deze continue reflectie is nodig om behandelkwaliteit van de eerstelijns fysiotherapie organisatie en financiële resultaten te optimaliseren. Een gevolg hiervan is dat eerstelijns fysiotherapie organisaties die het bouwen én veranderen van hun bedrijfsmodel benutten mogelijk beter zijn in het anticiperen op actueel gezondheidszorgbeleid zoals het 'Integraal Zorg Akkoord'. Mogelijk komt dit doordat zij in staat zijn hun interne organisatie en externe omgeving in lijn te brengen met elkaar.

In aanvulling op het voorgaande, om transities in de gezondheidszorg te stimuleren kan gezondheidszorgbeleid en kunnen zorgverzekeraars het bedrijfsmodel bouwen en -veranderen

door eerstelijns fysiotherapie organisaties aanmoedigen.

Voor veel eerstelijns fysiotherapie organisaties is het toepassen van bedrijfsprincipes binnen het gezondheidszorgsysteem van gereguleerde marktwerking nog een uitdaging. Daarom zou fysiotherapie- (en ander gezondheidszorg) onderwijs naast vakinhoudelijke kennis ook transdisciplinaire kennis over bedrijfsprincipes moeten aanbieden in hun curricula om waardegedreven gezondheidszorg te versterken. Mogelijk helpen de inzichten die zijn verkregen in dit proefschrift eerstelijns fysiotherapie organisaties om hun attitude te verschuiven richting nieuwe routines, bedrijfsmodel nieuwheid in plaats van efficiëntie en bedrijfsmodel veranderen.

LIST OF ABBREVIATIONS AND TERMS

Abbreviations	
ACME	Average causal mediating effect
CI	Confidence interval
HV	Healthcare value
PHO	Primary healthcare organisation
PTPHO	Physiotherapy primary healthcare organisation
PTPHO-centred outcomes	Overall technical quality, overall perceived quality and financial outcomes of a PTPHO
PTPHOs	Physiotherapy primary healthcare organisations
PREM	Patient related experience measurement
PROM	Patient related outcome measurement
PROMIS	Patient related outcomes measurement information system
Terms	
Business model	Design of how a focal firm (like a PTPHO) transacts with customers, partners, and vendors; that is, how it chooses to connect with (healthcare) markets. It is a system of activities that links the internal organisation with the external environment
Business model-building	One-time organisation-specific configuration of the elements and interactions between these elements
Business model-change	The adjustment of the business model over time. A continuous change and optimisation of the PTPHO's business model configuration
Business model change exploitation	The refinement and extension of existing activities
Business model change exploration	Experimentation with novel activities
Business model configuration	The way business model elements like value delivery constellation, value proposition, key partners and key resources are configured.
Business model design	A business model configuration that reflects for example efficiency or novelty transactions
Business model efficiency	Measures an organisation takes to achieve efficient transactions with its customers, partners and vendors
Business model elements	Patient population, treatment service, physiotherapy staff, physiotherapy equipment, key partners, and financial costs and revenues
Business model novelty	Conceptualisation and adoption of new and different ways of transactions between the internal organisation and its customers, partners, and vendors compared to other competitors
Double-loop learning orientation	Open to thinking differently and to reconsidering values, assumptions and routines
Exploration	Experimentation with novel PTPHO activities
Exploitation	Refinement and extension of existing PTPHO activities
External stakeholders	Politicians, purchasers of care, voluntary agencies, informal caregivers, and external health care providers

Terms (continued)	
Health insurance market	Health insurers compete for patients
Healthcare provision market	Patients select a healthcare provider
Healthcare purchasing market	Healthcare providers vie for a managed competition contract with health insurers
Healthcare quality aims	Equitable, safe, timely, effective, efficient, and patient-centred
Healthcare value for PTPHOs	To continuously attain PTPHO-centred outcomes in coherence with patient- and stakeholder-centred outcomes, leveraged by an organisation's capacity for change
Interfaces	Enable PTPHOs to exploit external environment and internal organisation information
Internal stakeholders	Managers, clinicians, and internal administrators
Key partners	Positive long-term relation and short lines of contact with partners based on a shared concern
Key resources	Staff, a team with mixed talents, and facilities
Large organisation	> 500 employees full time equivalent
Long-term change	Enables an organisation to learn from the effect of long-term investments in the strategic alignment of the external environment and internal organisation, with the organisation's performance outcomes
Lower performance	Lower outcomes of overall technical quality, overall perceived quality by the patients, and financial metrics
Managed competition	Government established rules and incentives to stimulate insurers and providers of care to compete on price and quality to guarantee universal access to good-quality care
Managed competition contract	Contract between a healthcare provider and health insurer
Micro organisation	< 10 employees full time equivalent
Organisation's capacity for change	Refers to the primary healthcare organisation's internal capability to leverage healthcare value
Patient-empowerment	Outcome measures the patient's adaptation and self-management with a combination of perceived clinical outcomes, related to the individual patient context
Patient-related experience	Is related to the patient's perceived satisfaction with interventions, service, the physical environment where care is provided, and intangible work
Patient-related outcome	Pertains to the individually perceived clinical outcome of specific diseases in connection with evidence-based guidelines
Patient representatives	Representatives that do not necessarily receive care but rather speak for patient groups
Patient's willingness to pay	Is linked to the individual's perception of quality-payment combinations and the value of services provided
Physical therapy	Provides services that develop, maintain and restore people's maximum movement and functional ability
Physiotherapy	Provides services that develop, maintain and restore people's maximum movement and functional ability

Terms (continued)	
Proactive market orientation	Organisational culture that most effectively and efficiently creates the necessary behaviours for creating superior value for buyers (patients) and, thus, continuous superior performance
Short-term change	Represents the second change cycle. This cycle enables an organisation to learn from the short-term effects of business model change on its PTPHO performance
Single-loop learning orientation	Strategies that keep existing organisational values, assumptions, routines, and services constant
Small organisation	> 9 < 100 employees full time equivalent
Stakeholder-centred outcomes	Outcomes valued by stakeholders —such as individuals, groups, or organisations— that are relevant to PHOs
Strategy	A plan of action to achieve long-term organisational goals
Superior performance	High outcomes of overall technical quality, overall perceived quality by the patients, and financial metrics
Value delivery constellation	An organisation-specific plan for the integral coordination of all business model aspects to attain superior performance
Value proposition	A proposed solution to the patient's needs

PHD PORTFOLIO

Name of PhD student: Rutger IJntema
 PhD period: 2017 - 2024
 Name of PhD Supervisors: Cindy Veenhof
 Brian Tjemkes
 Name of PhD Co-supervisors: Di-Janne Barten
 Hans Duits

Courses	Year	Workload (ECTS)
Introduction PhD curriculum School of life sciences <i>Brain Centre Rudolf Magnus, Utrecht University</i>	2017	0.5
Philosophy of science for business administration <i>Amsterdam Business Research Institute, Vrije Universiteit Amsterdam</i>	2017	3
Academic writing English <i>BABEL</i>	2017	3
Senior qualification for examination (SKE) <i>HU University of Applied Sciences Utrecht</i>	2017	8
Qualitative research methods business administration <i>Amsterdam Business Research Institute, Vrije Universiteit Amsterdam</i>	2018	6
Ethics in business research <i>Amsterdam Business Research Institute, Vrije Universiteit Amsterdam</i>	2019	3
Process research methods <i>Amsterdam Business Research Institute, Vrije Universiteit Amsterdam</i>	2019	6
Senior qualification for education design (SKO) <i>HU University of Applied Sciences Utrecht</i>	2019	8
Quantitative research methods business administration <i>Amsterdam Business Research Institute, Vrije Universiteit Amsterdam</i>	2020	6
X-talks <i>Brain Centre Rudolf Magnus, Utrecht University</i>	2017-2019	1
Personal leadership <i>HU University of Applied Sciences Utrecht</i>	2022	
Leadership for Applied Sciences Researchers <i>HU University of Applied Sciences Utrecht</i>	2024	2
Presentations		
KNGF Café in de Regio. Thema: Een Gezonde bedrijfsprestatie met een eerstelijns fysiotherapiepraktijk. <i>Royal Dutch Physiotherapy Association region South-West Netherlands</i>	2017	

Presentations (continued)	Year	Workload (ECTS)
KNGF Inspiratiesessies Gezonde Bedrijfsprestatie <i>Royal Dutch Physiotherapy Association</i>	2017- 2018	
Een gezonde praktijk?! Lecture series Dutch Association Manual Therapists <i>Dutch Association Manual Therapists</i>	2017	
Workshop gezond presteren op twee fronten met een eerstelijns praktijk. <i>Medisch ondernemen Live</i>	2017	
Ontwikkel en pitch samen een nieuw fysiotherapie businessmodel. <i>SpotOnMedics Gebruikersevent</i>	2018	
'Waarde van de fysiotherapie' <i>COPD netwerk Utrecht</i>	2018	
Healthcare value voor eerstelijns gezondheidszorg organisaties <i>Key note Fysio Groep Haaglanden</i>	2018	
'Waarde van de fysiotherapie; ontwerp je businessmodel' <i>Key note Zorggroep FEL. KNGF Ondernemerscafé</i>	2019	
Healthcare value voor eerstelijns fysiotherapiepraktijken <i>Key note Het Gezonde Net Kasteel overleg</i>	2019	
Healthcare value voor eerstelijns gezondheidszorg organisaties <i>Key note Wittemeer</i>	2019	
Praktijkcase: Het businessmodellenspel: oefen met nieuwe businessmodellen voor de zorg. <i>Medisch Ondernemen Live (healthcare entrepreneurs conference)</i>	2019	
Workshop: waar stuur jij op als praktijkhouder? <i>Intramed</i>	2019	
Samenwerken in je wijk of regio als eerstelijns fysiotherapiepraktijk. Wie ben jij? Wie neem je mee? Waar naar toe? <i>Royal Dutch Physiotherapy Association region North-West Netherlands</i>	2022	
Zorgaanbieder - of zorgverzekeraar gedreven fysiotherapie aanbod. Wat leidt tot meer succes? <i>FysioAnnoNu (physiotherapy entrepreneurs conference)</i>	2022	
(Inter)national conference abstracts/presentations		
IJntema RF , Barten, DJ, Duits HB, Tjemkes BV, Veenhof C. <i>A Health Care Value Framework for Physical Therapy Primary Health Care Organizations, Quality Management in Health Care</i> . International Conference for Systems and Complexity for Health, University of Tennessee, USA. Platform presentation. 2019.	2019	
IJntema RF , Barten DJ, Duits HB, Tjemkes BV, Veenhof C. <i>A Health Care Value Framework for Physical Therapy Primary Health Care Organizations</i> . ENPHE (European Network Physiotherapy Higher Education), Groningen, the Netherlands. Platform presentation. 2019.	2019	
IJntema R , Barten DJ, Duits H, Tjemkes B, Veenhof C. <i>Building and changing business models: a qualitative study among Dutch physiotherapy primary healthcare organisations</i> . <i>European Forum for Primary Care</i> . e-Event. Platform presentation. 2020.	2020	

(Inter)national conference abstracts/presentations	Year	Workload (ECTS)
IJntema RF , Barten DJ, Tjemkes BV, Duits HB, Veenhof, C. <i>Organisational learning orientation, market orientation, and organisation-centred outcome performance, the mediating role of business model novelty. A quantitative study among Dutch physiotherapy primary healthcare organisations</i> , Business model Conference, IAE Lille University School of Management Lille, France. Platform presentation. 2022.	2022	
IJntema RF , Barten DJ, Duits HB, Tjemkes BV, Veenhof C. <i>Relaties tussen bedrijfsmodel efficiëntie en bedrijfsmodel nieuwheid, en organisatie-gerelateerde resultaten, rekening houdend met zorgverzekeraar contract. Kwantitatieve studie binnen Nederlandse eerstelijnsfysiotherapie praktijken</i> . Dag van de Fysiotherapeut. Royal Dutch Physiotherapy Society. Den Bosch Netherlands. Poster presentation. 2022.	2022	
IJntema RF , Barten DJ, Tjemkes B, Duits H, Veenhof C. <i>Business model change exploitation and exploration in one viable physical therapy primary healthcare organization. A qualitative longitudinal interpretive single case study</i> . Business model conference. University of Bologna, Forli, Italy. Platform presentation. 2023.	2023	
IJntema RF , Barten DJ, Duits HB, Tjemkes BV, Veenhof, C. <i>The relations between business model efficiency and novelty, and outcome while accounting for managed competition contract: a quantitative study among Dutch physiotherapy primary healthcare organisations</i> , World Physiotherapy conference, Dubai, United Arab Emirates. E-poster (5 minute platform). 2023.	2023	
IJntema RF , Barten DJ, Tjemkes BV, Duits HB, Veenhof C. <i>Organisational learning orientation, market orientation, and organisation-centred outcome performance, the mediating role of business model novelty. A quantitative study among Dutch physiotherapy primary healthcare organisations</i> . World Physiotherapy conference, Dubai, United Arab Emirates. E-poster (5 minute platform). 2023.	2023	
Contributions to education		
Master course developed: Entrepreneurial healthcare professional (15 EC) <i>Institute for movement studies HU University of Applied Sciences</i>	2017	
Teach the teacher entrepreneurial healthcare professional: teachers Institute movement studies <i>HU University of Applied Sciences</i>	2017	
Initiator/project leader transdisciplinary business community physiotherapy primary healthcare entrepreneurs <i>HU University of Applied Sciences</i>	2018-2020	
Master course developed: Innovative movement care professional (15 EC) <i>Institute for movement studies HU University of Applied Sciences</i>	2019	
Teaching and examination master physiotherapy students: innovation, healthcare value, change management and entrepreneurship <i>Leiden University of Applied Sciences</i>	2021-2023	
Teaching and examination bachelor and master physiotherapy students: innovation, healthcare value and entrepreneurship <i>Institute for movement studies HU University of Applied Sciences</i>	2017-2023	

Contributions to education	Year	Workload (ECTS)
Member development team government funded master physiotherapy (redesign and extension entire programme) Institute for movement studies HU University of Applied Sciences	2023	
Chair healthcare innovation and entrepreneurship expert group Institute for movement studies HU University of Applied Sciences	2024	
List of peer reviewed international publications		
IJntema RF , Barten DJ, Duits HB, Tjemkes BV, Veenhof, C. A Health Care Value Framework for Physical Therapy Primary Health Care Organizations. Quality Management in Health Care. 2021;30(1):27–35.	2021	
IJntema R , Barten DJ, Duits H, Tjemkes B, Veenhof C. Building and changing business models: a qualitative study among Dutch physiotherapy primary healthcare organisations. Primary Health Care Research & Development 2022;23(e19):1–7. DOI: 10.1017/S1463423621000840.	2022	
IJntema RF , Barten DJ, Duits HB, Tjemkes BV, Veenhof C. The relations between business model efficiency and novelty, and outcome while accounting for managed competition contract: a quantitative study among Dutch physiotherapy primary healthcare organisations. BMC Health Services Research, 2022;22:990.	2022	
List of publications under review		
IJntema RF , Barten DJ, Tjemkes BV, Duits, H, Veenhof C. Business model change exploitation and exploration activities. A case study in one viable physiotherapy primary healthcare organisation.		
IJntema RF , Barten DJ, Tjemkes B, Duits H, Veenhof C. Organisational learning orientation, proactive market orientation, and organisation-centred outcomes: the mediating role of business model novelty. A quantitative study among Dutch physiotherapy primary healthcare organisations.		
List of national publications		
IJntema RF , Van Erp W. Pleidooi voor alternatieve bekostiging: Betaling per verrichting geeft perverse prikkel. Wat werkt dan wel? https://www.medischondernemen.nl/ opinie/alternatieve-bekostiging-betaling-per-verrichting-geeft-een-perverse-prikkel-wat-werkt-wel . Retrieved November 13th 2024.	2024	
IJntema RF , Teeffelen L. Kleinbedrijf Index Logopedie Q4 2023, 2de editie, NVLF/HU. 2024.	2024	
IJntema RF , Teeffelen L. Kleinbedrijf Index Fysiotherapie Q4 2023, 3e editie, SKF/HU i.s.m. KNGF/WVF/IPF. 2024.	2024	
IJntema RF , Teeffelen L. Kleinbedrijf Index Logopedie Q2 2023, 1e editie, Logopedie presteert beter dan overig mkb, maar praktijkhouders onder (te) grote druk, NVLF/HU. 2023.	2023	
IJntema RF , Teeffelen L. Kleinbedrijf Index Fysiotherapie Q2 2023, 2e editie, Nauwelijks verschillen tussen praktijk met of zonder medewerkers, SKF/HU i.s.m. KNGF/WVF/IPF. 2023.	2023	

List of national publications	Year	Workload (ECTS)
IJntema RF , Teeffelen L. Kleinbedrijf Index Fysiotherapie Q4 2022, Te hoge werkdruk, te weinig innovatie en scherpe tweedeling in de fysiotherapie, SKF/HU i.s.m. KNGF/WVF/IPF. 2023.	2023	
IJntema RF (2021) Samenwerken: voorwaarde voor succes fysiotherapie in veranderende zorgmarkt. Medisch Ondernemen. https://www.medischondernemen.nl/nieuws/samenwerken-voorwaarde-voor-succes-fysiotherapie-in-veranderende-zorgmarkt Retrieved May 4th 2023.	2021	
IJntema R , Barten D-J, Duits H, Tjemkes B, Veenhof C. Continu gezondheidszorgwaarde leveren - Bedrijfsmodel bouwen en veranderen voor fysiotherapiepraktijken. Fysiopraxis. 2022;31-34.	2022	
IJntema RF , Deuss-Joosten, D (2022). Aanbieder of verzekeraargedreven Fysiotherapie? Wat heeft meer succes? Medisch Ondernemen. https://www.medischondernemen.nl/interview/fysiopraktijk-anno-nu-op-26-november-aanbieder-of-verzekeraar-gedreven-fysiotherapie Retrieved May 4th 2023.	2022	
IJntema RF , Deuss-Joosten D (2022). Fysio-organisaties met een gevarieerd netwerk zijn innovatiever. Medisch Ondernemen. https://www.medischondernemen.nl/opinie/fysio-organisaties-met-een-gevarieerd-netwerk-zijn-innovatiever Retrieved May 4th 2023.	2022	
Vriezolkolk A, IJntema RF , (2018). Betere marketing door fysiotherapeuten met PROSPECT-model. Medisch Ondernemen. https://www.medischondernemen.nl/nieuws/betere-marketing-door-fysiotherapeuten-met-prospect-model Retrieved May 4th 2023.	2018	

ABOUT THE AUTHOR

Curriculum Vitae

Rutger IJntema was born in Nijkerk, the Netherlands on February 26, 1972. In 1988, he received a MAVO degree at the Willem Frederik MAVO in Leeuwarden. Two years later, he received a HAVO degree at the Lienward College in the same town. He completed his physiotherapy bachelor's degree in 1996 at the University of Applied Science Amsterdam. In the same year, he started working at the physiotherapy primary healthcare organisation Haardstee, followed in 1998 by the primary healthcare centre Gein, both in the Amsterdam Bijlmer region. From 2000 until 2006, IJntema was employed by Zorggroep Almere, also to work in a primary healthcare centre. In 2001 he finished a three-year post-bachelor course in



physiotherapy in mental health at Stichting Flow. He was coordinator of the same course from 2001 to 2006. During a take-over in 2005, he transferred to HU University of Applied Sciences Utrecht to merge this post-bachelor course into a pioneering Master of Physiotherapy in Mental Health. As head of this education programme, IJntema collaborated intensively with four other physiotherapy specialism education programmes within one management team. In 2011 he received his Master of Business Administration degree (with distinction) at the Business School Nederland (In 2017, he was awarded Q+ status by this business school). From 2011 to 2015 he was president of the HU University of Applied Sciences Utrecht Faculty of Health staff/student participation council. Besides his educational tasks, IJntema joined the HU University of Applied Sciences' Financial Economic Innovation research group to focus on innovation and entrepreneurship in primary healthcare. In 2013, the Dutch Physiotherapy in Mental Health Association (NFP) awarded him the Joost de Bie Prize. In 2014 he organised the International Conference Physiotherapy in Mental Health in Utrecht. From 2014–2018 he was secretary of the executive committee of the International Organisation of Physiotherapy in Mental Health (subgroup World Confederation Physiotherapy), representing 21 member countries. In 2017 he joined a second research group at the HU University of Applied Sciences on Innovation of Movement Care and achieved the 'senior examiner higher education qualification'. The same year (2017) was also the starting point of IJntema's HU University of Applied Sciences-funded PhD track at Utrecht University. In 2019, he achieved his 'senior higher education design qualification' by co-designing 15 European Credits of education on innovation for the Master of Physiotherapy Innovation of Movement Care HU University of Applied Sciences. Also in 2019, IJntema started the foundation Innovation Platform Physiotherapy, becoming a co-board member/director. In 2023 he led a research project that focussed on healthcare financing for the benefit of regional interprofessional collaboration for primary healthcare. In 2024 Rutger co-initiated a new research programme within the research group Financial Economic Innovation: Finance: Social & Healthy. This programme focuses on the important role for entrepreneurs and

organisations in primary care and the social domain in relation to the Integrated Care Agreement and Healthy Active Living Agreement. Rutger continues his research, committed to healthcare value for primary healthcare organisations while connecting with the primary healthcare field, the social domain and education.

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AUTHORS' CONTRIBUTIONS

Chapter 2: A Health Care Value Framework for Physical Therapy Primary Health Care Organizations, Quality Management in Health Care	
Study concept and design	RIJ, D-JB, HD, BT, CV
Data collection	RIJ
Data analysis and interpretation	RIJ, D-JB
Draft of manuscript	RIJ
Manuscript editing and review	RIJ, D-JB, HD, BT, CV
Chapter 3: Building and changing business models: a qualitative study among Dutch physiotherapy primary healthcare organisations	
Study concept and design	RIJ, D-JB, HD, BT, CV
Data collection	RIJ
Data analysis and interpretation	RIJ, D-JB
Draft of manuscript	RIJ
Manuscript editing and review	RIJ, D-JB, HD, BT, CV
Chapter 4: The relations between business model efficiency and novelty, and outcome while accounting for managed competition contract: a quantitative study among Dutch physiotherapy primary healthcare organisations	
Study concept and design	RIJ, D-JB, HD, BT, CV
Data collection	RIJ
Data analysis and interpretation	RIJ, D-JB
Draft of manuscript	RIJ
Manuscript editing and review	RIJ, D-JB, HD, BT, CV
Chapter 5: Organisational learning orientation, proactive market orientation, and organisation-centred outcomes: the mediating role of business model novelty. A quantitative study among Dutch physiotherapy primary healthcare organisations	
Study concept and design	RIJ, D-JB, HD, BT, CV
Data collection	RIJ
Data analysis and interpretation	RIJ, D-JB
Draft of manuscript	RIJ
Manuscript editing and review	RIJ, D-JB, HD, BT, CV
Chapter 6: Business model change exploitation and exploration activities. A case study in one viable physiotherapy primary healthcare organisation	
Study concept and design	RIJ, D-JB, HD, BT, CV
Data collection	RIJ
Data analysis and interpretation	RIJ, D-JB
Draft of manuscript	RIJ
Manuscript editing and review	RIJ, D-JB, HD, BT, CV

RIJ = Rutger IJntema, D-JB = Di-Janne Barten, HD = Hans Duits, BT = Brian Tjemkes, CV = Cindy Veenhof

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