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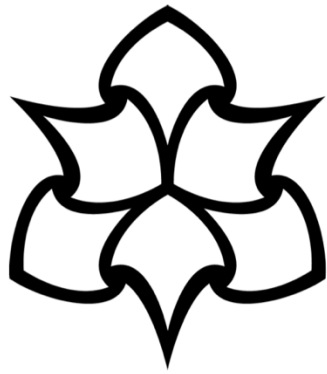
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Journal of Service Theory and Practice

Servitisation through Structural Adaptation

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Abstract

Purpose: This study investigates the structural changes needed for project-based organisations (PBOs) to synthesise their project operations and services following the servitisation strategy. It addresses the question of how PBOs should change their organisational structure fitting with service provision strategy.

Design/methodology/approach: This study followed an exploratory research method using a single in-depth case with evidence collected from 51 project managers from 5 different industry sectors: construction; oil and gas; IT, logistics, and health care

Findings: Capitalising on organisational design theory, it has been found that successfully extending PBOs' outcomes into a system of both project output and extra services requires an adjustment of organisational structure that creates greater value for both companies and customers. This required adjustment has been divided into five main categories: i) collaboration cross-project and customers; ii) flexible workflow; iii) decentralised decision-making; iv) a wide span of control and; v) project governance. However, the findings indicate that success can only be ensured by particular mutually coordinated organisational designs with a suitable balance of products and services.

Originality: This study contributes to the body of knowledge and proposes a structural alteration process in PBOs to help align project operations and service provision activities. It explains how project-based organisations reconfigure their resources to provide services.

Practical implications: This study presents vital indicators to PBOs practitioners when deploying servitisation within their operational strategy by adjusting the organisation's design.

Societal Implications: Servitisation could add both economic and social values for a diverse set of project stakeholders. However, the sustainability performance of servitisation in servitised project-based organisations is an outcome of reducing the discrepancy between project operation and service provision activities.

Keywords: Organisational Design Theory; Organisational Structure; Product-Oriented; Service Orientation; Project-Service System; Servitisation.

1. Introduction

Recognising the importance of service provision across different industrial sectors, this study explores structural adaptation aspects following the implementation of servitisation that best synthesise the project operation and services provision in project-based organisations (PBOs).

Since the introduction of servitisation (Vandermerwe & Rada, 1988), several studies advocate the integrative view of products and services and emphasising the importance of the service element in creating more customer value (Mathieu, 2001; Oliva & Kallenberg, 2003; Smith et al., 2014; Zhang & Banerji, 2017). Servitisation refers to the integrated application of products and services to create superior customer value (Oliva & Kallenberg, 2003). Mathieu (2001) highlighted the strategic, financial, and marketing benefits of servitisation. Nevertheless, it also implies a significant challenge (Cheng & Shiu, 2016; Nudurupati et al., 2016). The risk and failure rates of servitisation are exceptionally high (Oberle, 2019). Nuutinen & Lappalainen (2012, p.137) argue, “the main reasons for the difficulties in service business development seem to be a strongly manufacturing-oriented way of doing business.” The shift from product-orientation to service-orientation is one of the most critical challenges facing organisations when pursuing the servitisation strategy (Vaittinen et al., 2018). Although both product-orientation and service-orientation focus on meeting customers’ needs, they are different (Annarelli et al., 2019). A product-oriented organisation is designed to focus on efficiency, effectiveness, productivity, and economies of scale. It seeks standardisation and operational sustainability (Smith et al., 2014). A service-oriented organisation is designed to focus on great variety, co-produced and customised services according to the customer’s particular needs and preferences (Webster & White, 2010). The operating system in a service-oriented organisation tends to be more visible, with high flexibility and diverse processes to meet the variation of customer

demands (Quang & Hara, 2019). Thus, the transformation from product-orientation to service-orientation following servitisation strategy is challenging to be achieved without challenging the current organisational structure (Nudurupati et al., 2016).

Researchers have contributed considerably to our understanding of servitisation, focusing on the requirements for integrating service into products without considering the organisational design and structure (Baines et al., 2017). Scholars argued When servitising, organisations should change their structures, recommending the separation of service-oriented and product-oriented units (Oliva & Kallenberg, 2003; Nordin & Kowalkowski, 2010; Kinnunen & Turunen, 2012; Raja et al. 2018). However, creating separate business units requires large investments, decreases coordination, and collaboration (Sklyar et al., 2019). Organisations also could become stuck in the middle without a clear strategic path, where businesses have to focus on both units (Raddats & Burton, 2011).

Furthermore, in the servitisation literature, the broadest researches have discussed servitisation in a manufacturing context. Few studies investigated the servitisation in the context of PBOs, where servitisation has received considerable interest. It leverages the way in which a project generates, captures, and delivers more customer value (Rabetino et al., 2017). Such a significant role makes the subject of servitisation for the (PBOs) highly critical (Kujala et al., 2013). Still, this phenomenon of adding service to the project creates both benefits and challenges. It requires substantial modifications and adjustments to the organisational design (Zighan et al., 2018). The PBOs have to adopt a flexible and adaptive organisational structure to offer extra services (Arto et al., 2015; Galera-Zarco et al., 2014; Kujala et al., 2013). However, few studies are focusing on structural adaptation in PBOs (Miterev et al., 2017). Research to date does not offer PBOs prescriptions on how to changes the organisational structures for successfully servitising. This research aims to

address these literature gaps and answer how PBOs should change their organisational structure fitting with the servitisation strategy. Capitalising on organisational design theory, we propose a process for structural alteration in PBOs, which can be used as guidance to increase the success probability of service provision.

In the next section, the literature will be reviewed to introduce the concept of servitisation and its applications in project-based organisations. It mainly examines the necessary structural changes following the servitisation strategy and the challenges associated with those changes. Then, we applied the organisational design theory to establish the conceptual model of the organisational structure following the servitisation strategy.

2. Literature review

2.1 Overview on servitisation

The term ‘Servitisation’ is often described as a shift from focusing on product to a system consisting of a mix of products and related services to create an improved customer value (Baines et al. 2009; Kindström, 2010; Nudurupati et al., 2016; Gebauer et al., 2017; Vaittinen et al., 2018). In practice, organisations confront various pathways of servitisation to create different levels of customer value (Sklyar et al., 2019). These pathways include the addition of reasonably marginal services with restricted buyer interactions to full product–service solutions that are modified and co-designed by both service providers and buyers (Zighan et al., 2018). In this context, Baines et al. (2009, p.562) raised the question of how companies should combine their products and services in order to support their integration. This can be achieved in four main ways, as shown in figure (1) below

Product-orientation		Service-orientation	
Integrated-Oriented		Product-Oriented	Service-Oriented
Service is offered separately to support product sales		Service is added to support product functionality	Service is incorporated into the product to support customer activities
			Result-Oriented
			Service and product are fully integrated into selling capability

Figure 1: Methods for implementing servitisation to moving from product-dominant logic to service-dominant logic following the implementation of servitisation (Adapted from Clayton et al., 2012).

The purpose of these classifications of product-service systems is to distinguish between whether services are the supporting element or the product-service system’s focal component. However, achieving better customer value requires offering more advanced services (Tukker, 2015); moving from offering basic services to more advanced and complex ones implies shifting from product-orientation to service-orientation (Neely, 2008; Baines et al., 2009; Tukker, 2015). Table (1) below summarises the required changes following the servitisation strategy.

Table 1: The Required Change Following the Servitisation Strategy

Decentralised Decision-Making Authority	Galbraith, 2002
The system has to be focused on relationship management	Oliva & Kallenberg, 2003
The alignment between organisational processes, people, and rewards within the organisation	Kates & Galbraith, 2007
Skills and mindsets, and the development of related services know-how knowledge and talent	Neely, 2008
Robust intra- and inter-organisational collaboration	Neu & Brown, 2008
Management practices and behaviour supporting offering services and close customer relationships	Baines et al. 2009
Adopting servitisation requires transforming of employee skills and altering the way they are organised	Baines & Lightfoot, 2013
Changing the embedded product culture and perceiving service as a secondary element	Ohvanainen & Hakala, 2014
A transition from products to services as a new business model with processes supporting this business model	Reim et al., 2016
Redeploy organisational competencies with offering service	Gebauer & Kowalkowski, 2012
More Customer involvement and touchpoints	Kinnunen & Turunen, 2012
Communication, coordination, collaboration and information and the link between roles	Tukker, 2015
Decision-making power and authority allowing for quick response to customers’ needs	Cheng & Shiu, 2016

A hybrid design of front-office and back-office functions enabling responsiveness to customer needs	Raja et al. 2018
The organisational structure and capabilities have to be transformed and continuously refined, facilitating the delivery of services and solutions	Baik et al., 2019

Baines et al. (2017) grouped the required changes into five categories; strategy, culture, processes, people, and organisational structure. Bieberstein et al. (2005) described the impacts of service provision on the organisational structure. This is where the optimal organisational structure should empower the employees and create standard corporate practices and routines fitting with a high task uncertainty. It has to facilitate outstanding communication and coordination (Kujala et al., 2013). The structure should also promote the ability to rapidly adapt to changes in the business environment (Baik et al., 2019). Besides, the rapid changes in customers' needs and competitors' offers require a flexible decision-making process and more delegation of authority (Tronvoll et al., 2020). the organisational structure also has to promote innovative thinking (Galbraith, 2002). Besides, offering services involves close customer relationships with high customer interaction and high customer involvement (Randhawa & Scerri, 2015). This involvement requires more flexibility with fast decision-making and a problem-solving approach (Neu & Brown, 2005). According to Gebauer & Kowalkowski (2012), the organisational structure should develop a high customer centricity level and aid long relationships.

Kinnunen & Turunen (2012) argue that servitisation requires a more organic design than a mechanistic one. Mont (2002) suggests a modified functional structure when offering services. This functional design is based on departmentalisation and formalisation, where specific departments deal with specific tasks. Salonen (2011) linked the organisation structure to its operations process. When offering both product and service, the project-based structure is more suited to providing the organisation with the required flexibility to move between offering services and products. Oliva et al. (2012) suggest the development

of front- and back units. The front unit focuses on offering services and customers relationship. The back unit focuses on the products and the production system. Smith et al. (2014) linked the organisation design to the sources of customer value. They suggest that if the product is the primary source of customer value and service is an add-on element, the organisational design should be centralised around their products. However, when the product is substituted with services, and services become the primary source of customer value, organisations are advised to centralise their designs around the services. Raja et al. (2018) suggested different configurations within the organisation based on the level of servitisation and the types of offered service in terms of temporality and complexity of the offering.

2.2 Servitisation in Project-Based Organisations

A PBO is a business organisation system focused on project management. The PBOs adopt a temporary design to manage a portfolio of different types of projects. Management by projects is the primary organisation strategy (Turner & Miterev 2019). It works based on developing projects; each project aims to achieve a specific and distinct goal (Zighan, 2020). The business model of PBOs has traditionally been based on delivering value through the product. The customer perceives value only when it receives the finished product, which terminates its relationship with the organisation (Galera-Zarco et al., 2014).

In PBOs, departments, functions, and personnel are organised around each project (Zighan et al., 2018). It signifies a specific style of organising management regarding working in different ways than the usual operational practices by using goal-orientated, systematic, temporary, and one-off practices to develop a unique product or service within a specific time, cost, and quality restrictions (Munns & Bjeirmi, 1996; Turner, & Müller, 2005; John, & Ganah, 2016). In that sense, the structure's design represents a crucial

decision in project management (Ahola et al., 2014). The project structure usually provides a formal and strict work environment (Zighan, 2020). This work environment helps the project members to perform their complex tasks and complete the project where value is created (Meredith & Mantel, 2011; Kerzner, 2017). It has to define the formal relationships among project members and the relationships with the organisation and external environment to avoid any accountability dilemmas (Munns, & Bjeirmi, 1996; Turner & Müller, 2005; Kalkman & Waard, 2017). In this context, Meredith & Mantel (2011) highlight three organisational structures that are available for designing a project:

- Functional structure in which similar or related occupation specialities or processes are grouped and the unit manager plays the role of project manager
- Matrix-based structure, where the responsibility of the project manager is shared with other units' managers
- Project-based structure, where the project manager has the ultimate authority over the project.

Internally, the project structure facilitates the execution of project activities, which are well-defined, interconnected, and interdependent with a strict scope, schedule, budget, and specifications (Sholarin, & Awange, 2015). Thus, the project structure's main objectives include fostering a working environment that delivers significant interactions between the project's members (Belassi, & Tukel, 1996; White & Fortune, 2002). It has to reduce conflicts in the internal process and supports the accomplishment of different tasks at different stages of the project lifecycle with minimum efforts and cost-effectively (Vanhoucke, 2012).

Project-based organisations have been studied from the product-oriented model (Kujala et al., 2010; Galera-Zarco et al., 2014; Momeni & Martinsuo, 2019; Copola Azenha et al., 2020). Nevertheless, for many leading PBOs operators, integrating services into the

project is seen as a fundamental shift to create more customer value (Artto et al. 2008; Kujala et al. 2013; Galera-Zarco et al., 2014). The servitisation strategy's adoption shifts the project focus from the physical product to a system of products and services that jointly satisfy customers' needs (Helms, 2016). The adoption of a servitisation strategy in the PBOs environment is not an easy process. It requires modifying organisational structure from those traditionally associated the product-orientation logic (Baines et al., 2009, Kowalkowski et al., 2011; Benedettini et al., 2015; Kohtamaki et al., 2015; Salonen et al., 2017). However, the unsuitable structural design in PBOs might cause a fundamental problem when adding services, as companies struggle to balance flexibility and openness to change, on the one hand, standardisation and productivity on the other hand (Gotsch et al., 2014; Helms, 2016). Consequently, offering services integrated into the project should be supported by an appropriate organisational structure (Helms, 2016).

3. Theoretical Lens

Organisational design theory is the study's lens, which defines organisations as a unit of organised people to perform integrated tasks pursuing collective goals (Combs & Ketchen 1999; Foss et al., 2015). The goal of this lens is to understand the aspects that shape the organisational structure. Organisational structure refers to "the formal allocation of work roles and the adoption of a management mechanism to control internal activities and support the implementation of business strategy within an organisation" (Zhang & Banerji, 2017, p. 220). The organisational structure is one of the key elements in organisational design, along with such things as organisational culture and operations systems (Legerer et al., 2009; Daft et al., 2010). An appropriate organisational structure is the one that is well-aligned with the company's strategy and resources and significantly contributes to organisational success (Covin et al. 1994; Foss et al., 2015). Organisational Structure has

been atomised into parts referred to as structural dimensions (Dalton, et al., 1980; Jones, 2013). Table (2) depicted the basic dimensions of organisational structure. Table (3) identified the structural aspects of a product-oriented organisation and service-oriented organisation.

Table 2: Basic Dimensions of Organisational Structure (adapted from Jones, & Jones, 2010)

Formalisation	Tasks are formal and within the organisational structure, based on documented regulations, official procedures, and rules. The movement towards adaption, informal, and flexible working systems result in a mutual adjustment of the structural design.
Standardisation	Standardisation is closely aligned to formalisation. Standardisation refers to which degree tasks are routine and follow specific procedures. The business activities and practices are carried out in a standard and routine manner. The movement towards task variety (tasks can be carried out in different ways) requires less standardisation and more flexibility.
Centralisation	The degree to which the authority to make decisions comes from the top of the organisation. The movement toward delegating authority and responsibility to lower organisational levels forms the decentralisation design
Specialisation	The extent to which tasks are well-defined and depend on people’s knowledge and speciality. The movement towards fewer tasks specialities refers to complexity. Complexity is defined as the number of different occupational specialities to perform complex and dependent tasks
The span of control	The number of subordinates a manager directly manages. It affects the organisation’s time to make decisions and solve a problem. Presumably, the effectiveness of work groups may vary as a function of whether few persons (narrow span) or many (wide span) report to a manager. The movement towards less control, more innovation, and more opportunity for personal initiative and better communication requires a wide span of control.

Table 3: The structural aspects of a product-oriented organisation and service-oriented organisation

Dimension	Product-orientation	Service-orientation
Formalisation	The system tends to prefer a little variety and more standardisation. Organisational policies, procedures, job descriptions, and rules are written and explicitly articulated. This is supported by extensive use of rules and sops to coordinate tasks, and work process is predictable	The system has few standardised practices or rules. It prefers more mutual adjustment to discover new and better ways of serving customers. This is supported by extensive use of face-to-face contact to coordinate tasks, and work process is relatively unpredictable
Standardisation	The system is designed to induce people to behave in predictable, accountable ways by routinely performing clearly defined tasks	The system promotes flexibility. It involves developing a wider range of different skills to perform different jobs and tasks in different ways.
Centralisation	Important decisions are retained by top management to reduce conflict and retain more control over the company	The authority is delegated to managers at different levels to promote flexibility and responsiveness by allowing lower-level

	operations. Most communication is vertical.	managers to make on-spot decisions. Most communication is lateral.
Specialisation	Employees work separately and specialise in one clearly defined task.	Employees work together and coordinate their actions to find the best way of performing a complex task
The span of control	Narrow span of control promoting rigidity, close control and low-autonomy	A wide span of control promoting flexibility, autonomy, and innovation

For Mintzberg (1990), “the structure must follow the strategy as the left foot follows the right.” Product-oriented organisations are subject to necessary changes when moving to servitisation (Nuutinen & Lappalainen, 2012). This is because the features of services are considerably different from the features of products. While products are tangible, durable that can be inventoried, the services are intangible, perishable, inseparable, heterogeneous, and differ from customer to customer (Wilkinson et al., 2009).

Consequently, drawing on organisational design theory, we argued that PBOs should adjust their structure when moving towards servitisation, moving from product-oriented structure to service-oriented structure, as shown in Figure (2). Nevertheless, one of the biggest challenges facing PBOs is the design of a project’s structure that can synthesise the project operation and services provision through all the project phases (Artto et al., 2015; Galera-Zarco et al., 2014; Kujala et al., 2013). Thus, a fundamental question facing PBOs’ policy-makers is how to change their organisational structure to fit with service provision strategy?

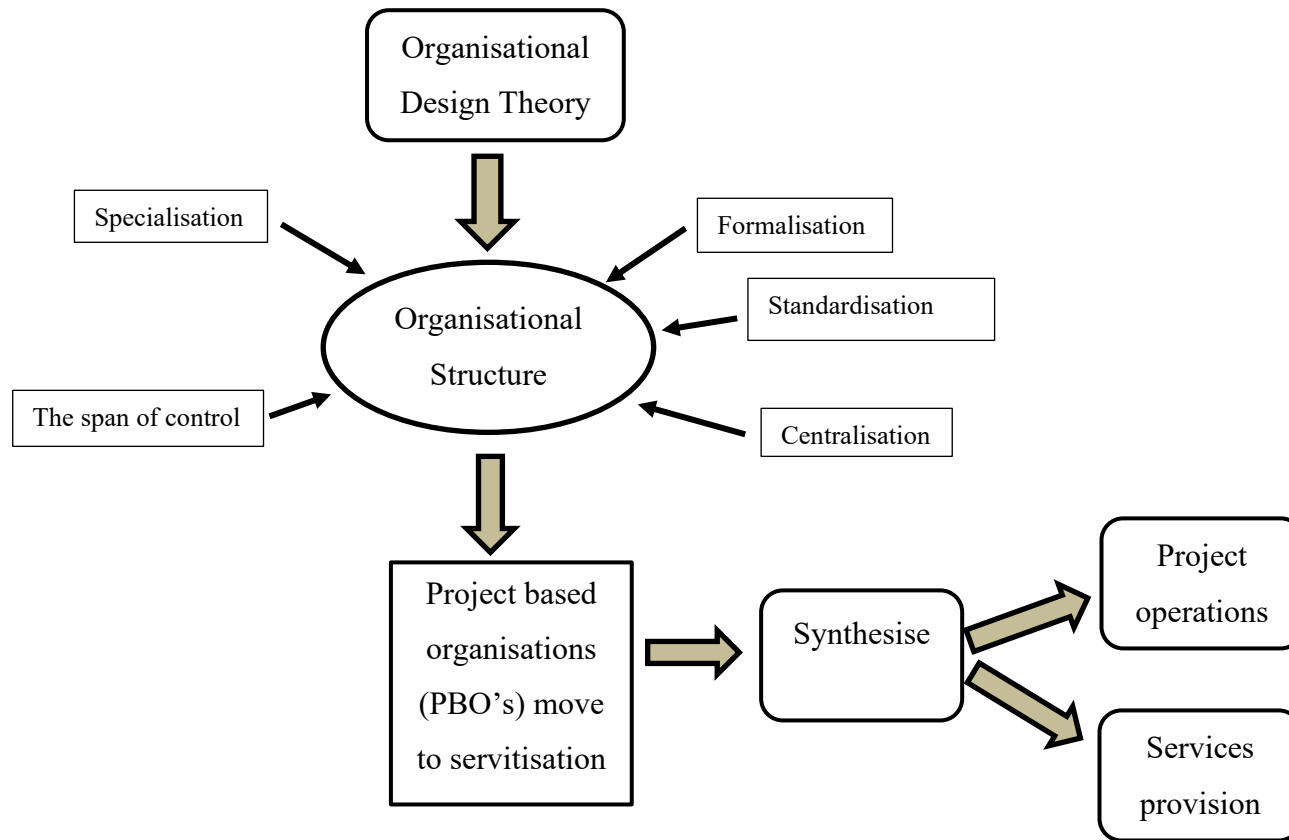


Figure 2: The lens of organisational design theory towards moving to servitisation in PBO's

4. Research Design

This study followed an experimental research method using a single case design consisting of embedded cases (Voss, 2010). The case study is appropriate for more in-depth exploration in a particular context, where understanding the phenomena is limited (Brad & Murar, 2015). It allows using the rich data generated from “bounded real-world settings” (Eriksson, 2013, p. 329).

In order to establish reliability, we adopted a purposive sampling technique (Yin, 2017). The selection criterion was according to the projects’ outcomes in terms of project-based-organisations providing a system of project and services, intending to discover organisational design across a range of PBOs offering extra services and had the experience and knowledge of a breadth of functions. This facilitated identifying cases containing relevant information on the focal topic by considering different sources of evidence in different industries. Seventy different companies were contacted, with an official letter sent to these companies explaining the study’s purpose to get their approval to conduct the meetings. The project managers were approached to confirm that their companies offer services integrated into the project outcome. As a result, 51 projects have been selected from 5 different industries (Construction, Oil & Gas, IT, Logistics, and Health service). Table (4) below shows the features of the study participants.

Table 4: The study participants demographic features

Demographic Features		The number of respondents/per category	%
Age	29-38	10	%20
	39-48	14	%27
	49-58	22	%58
	above 58	5	%10
Education	Bachelor	33	65%
	Higher Education	18	35%
PMP Certification	Certified Project Manager	24	47%
Experience	Less than 5 years	11	22%
	5-10 years	25	49%
	More than 10 years	15	29%
Industry	Construction	19	37%
	Oil & Gas	7	14%
	IT	15	29%
	Logistics	4	8%
	Health service	6	12%

The evidence was collected based on semi-structured interviews with the project managers with a solid understanding of business cases and expert knowledge of servitisation strategy in PBOs. The interviews were directed by a set of questions (Rowley, 2012), covering issues related to the companies' structure when carrying out the servitisation strategy and the extent to which the structure helped in delivering services successfully. How internal and external factors affect the design of PBO when offering services?; How did the servitisation strategy's adoption affect the projects' organisational structure in terms of formalisation, level of decision making, standardisation, specification, and span of control? The interviews lasted between 1-1:30 hours and were conducted face-to-face and via online conference calls, followed by follow-up phone calls with some respondents where more clarifications were needed. Data were recorded, transcribed, and shared with respondents to sense-check and ensure that their views were correctly represented.

5. Data Analysis

The analysis process starts with assembling the obtained data into narratives. Then, computer-aided and manual data analysis were carried out. The data analysis process was oriented toward developing guidance to configure the organisational structure toward successful service provision in PBOs. The framework in figure (2) was used to inform the data analysis considering the previous research developed around service provisions and organisational change requirements and examine how these building blocks come together to form the organisational structure. Researchers thematically coded the agreed versions of the transcripts using thematic analysis, which is valuable for exploring and discovering trends in the data (Guest et al., 2011). In specific, template analysis, a form of thematic analysis, was used to analyse the data. The core of template analysis is to identify a list of a pre-identified template that represents themes in textual data. Still, the template analysis gives flexibility for any modification and emerging themes (King, 2004). Consequently, the analysis involved deductive and inductive data analysis techniques (Braun & Clarke, 2006). Table (5) shows an example of deductive coding based on pre-identified themes, and Table (6) shows an example of inductive coding.

Table 5: An Example of Deductive Coding

Theme	Codes	Raw Data
Formalisation	Clear Regulations Policies, Procedures, and Responsibilities	Each project is designed with clear regulations, policies, procedures, and responsibilities that control the project's operations and successfully deliver its expected result.
	Clear Responsibilities and Accountabilities	It is clear some several responsibilities and accountabilities must be clearly defined for effective project management
	Clarify the Key project's Parameters	The project design should clarify the key factors that outline the project's anticipated outcome. The project scope, cost, time, and quality force project members to work within these parameters
Centralisation	Accountable and Empowered Project Manager	The project manager is responsible for project success and must be empowered. Hierarchical decision-making controls the project activities but

		slows down problem-solving. For which, the responsibility for the provision of services could be delegated to a senior team leader.
	One Person Accountable	A project should have one person accountable for its success. Some of the project manager authority could be delegated when it is needed but without compromising the project's works
	Control Authority	The project is there to deliver a specific outcome, which needs strict control if services are added to that outcome, the project should enable that service outcome even if it is necessary to delegate some of the power.

Table 6: An Example of Inductive Coding

Raw Data	Sub- Codes	Code
When offering services, the project has two fundamentally different activities: running the project and managing the customer. These two types of activities need to be managed differently within the same project	Big-Picture Thinking	Project Governance
Every project has stakeholders with different needs gathered around the project outcome. The project structure must bring these needs together based on effective stakeholder management and communications	Stakeholder Management and Communications	
The project is task-driven; these tasks are different, still interrelated, interconnected, and interdependent. This requires integrated project management that regulates these tasks and controls the project's progress	Integrated Project Management	

Data were analysed in parallel by two research team members via an extensive reading of the transcripts to advance the findings' validity and reliability. Each researcher coded one of the interview transcripts. Then the two researchers met, reviewed each other's suggestions, discussed, defined, and justified their codes, and agreed on an initial code to apply to the full data set. Each segment of the text had the potential to be classified within multiple codes to allow for a potential inter-relationship of identified organisational design. The final coding structure was reached when further analysis of all the transcripts by the two researchers brought forward neither new codes nor new relationships; that is, theoretical saturation was reached. We also followed a different process to establish the credibility and validity of our findings, including two separate series of data analyses,

deductive and inductive data analysis as well as reflection and peer review of our interpretations, which supports our confidence in the study results as well as, a measurement scale was used during scheduled interviews.

Furthermore, the measurement scale emphasises the collaboration between projects during projects, standardisation and formalisation, decision-making, responsibility, accountability, and span of control. The analysis also considered any emerging themes. Table (7) represents an example of the frequency of themes from interviews. Nevertheless, important and relevant codes were considered regardless of their frequency (Braun & Clarke, 2006).

Table 7: The frequency of themes from interviews

Themes from interviews	Sectors	Frequency	%
Focus on project orientation	Logistics, Construction and IT	24	8%
Transformation of service	Health service, Construction, IT, and logistics	36	12%
Change structure when offering advanced services	Construction, Oil & Gas, IT, Logistics, and Health service	45	15%
Run service-orientation and project-orientation	Construction, IT, and Health service	37	12%
Interaction with customers during projects	Health service, Construction, IT, and logistics	41	13%
Low degree of formality when offering services	Construction, Oil & Gas, IT and Logistics	27	9%
Empowerment and delegation of authority	Construction, IT, and Logistics	32	10%
Minimising hierarchy and complexity	Oil & Gas, IT and Logistics	29	10%
The framework for how a project is done	IT, Logistics, and Health service	34	11%

6. The Study Findings

It has been found that all cases successfully adopted the conceptual routes for servitisation development, i.e., the incremental move of service provision. Initially, the organisations had started by offering basic services as add-ons that support the product functions. It is also worth mentioning that the value creation was restricted and covering a narrow range

of project lifespan. Then, all cases went from providing basic services to offering more advanced services, in an attempt to amount more value and more buyer relations. They have extended the scope of service actions across the full project lifespan—this extension of service offering includes logistic services, design and construction services, and services supporting sales. The offered services are aiming at supporting customers' activities and customised needs. The project team offered some of these advanced services, and other compound services were outsourced to a third-party. Nevertheless, only eight companies moved from offering advanced services to offer more complicated services and system solutions, and the most example of offering complicated services and system solutions occurred in the IT industry and construction industry.

Regardless of the level of servitisation and offered services, all the companies within the study view offering services as a vital step and an appearance of organisational modification and development. Accordingly, they alter their project operations towards greater service delivery, resulting in various organisational structure changes. When offering basic services, the case studies companies focus more on project-orientation, with less change towards greater service provision. This 'partial level of servitisation' which reflects the company's concept does not essentially change altogether; instead, departments, which are most fit for change, are modified to offer basic service. 89% of the study participants have replicated this theme. As quoted, "*At the start, the organisations had started with offering basic services as add-ons that support the product functions. Value creation was restricted and covering a slim range of project lifespan*". In other terms, the transformation occurs in organisational units or sections organised to deal with buyers. In addition to this, 81% of the study participants emphasised that offering more advanced services requires greater integration within the project activities, considered high task interdependency. For those offering advanced services, customers are brought up during

the project and could play a role in project design and development. As quoted, *“In order to successfully offer advance services and as the organisation then attempts to adjust their current position and enter a new area of business, we had to modify the organisational structure such as balancing its decentralised and centralised decision-making processes to offer more flexibility.”* Also, 82% of the study participants argued that PBOs changed their structure when they move toward providing more advanced services. Alongside the formal project structure that is needed to achieve the specific objectives of the project, an informal arrangement should be embedded to allow mutual adjustment by which the project team uses their judgment rather than formal rules to promote high coordination, solve problems, and make a decision, while still exhibiting a high degree of effectiveness.

Nevertheless, 75% of the study participants maintained that the project nature indicates that the project manager has to run two key activities simultaneously: service-orientation and project-orientation effectively. As quoted, *“Delegating the responsibility of providing services and customers’ interaction to a specific team within the project is preferable. This will help the rest of us to focus on the project activities and at the same time, the effective development of service provisions strategy”*. The project arrangements are needed for providing services and balance project orientation and service orientation. This is in line with the previous studies, which concluded that adding services requires organisations to manage the service provision effectively and the product provision simultaneously in order to achieve the desired outcome from projects (Artto et al. 2008; Kujala et al. 2013 and Galera-Zarco et al., 2014; Artto et al., 2015; Zighan et al., 2018).

Table (8) shows examples of how companies succeeded in providing services after adjusting their structure. The type of service identifies the suitable structural adjustment needed. For instance, the service that is provided at the beginning of the project like “the

design” requires high customers’ involvement and cross projects collaboration in order to understand customers’ needs, while the services that were provided during the project, such as “risk assessment and inspection” need to flatten the structure and flexible procedures which facilitate knowledge sharing and support the decision-making process.

Table 8: Examples of How Companies Succeeded in Providing Services

Project-based type	Structural change	Organisational success
Construction	Networking and cooperation	Consulting services
	Full integration and customer Collaboration	Co-Design service
	Flexible workflow	Project site inspection and business solutions
IT	Project governance	Telecommunications services
	Decentralised decision making	Consulting and customised services
	Flexible workflow	Business solutions service
Logistics	Delegation	Insurance service
	Networking and corporation	Logistic solutions
	Decentralised decision making	Freight consolidation
Oil & Gas	Collaboration across projects and with customers	Technical Training
	Wide-span of control	Risk assessment
	Decentralised decision making	Specialist engineering services
Health service	Project governance & Flexible workflow	Physician evaluation program
	Collaboration across projects and with customers	Telemedicine service
	Integration and communication	Database and knowledge sharing

The data analysis identified 219 codes of the required structural changes when offering services. These codes have been categorised into five main categories: collaboration across-project and with customers, flexible workflow, decentralised decision making, the wide-span of control, and project governance. Table (9) below shows the frequency of these themes as a measure of its importance.

Table 9: shows the frequency of these themes

Dimension	Themes from interviews	Frequency	%
Formalisation	Balancing the mutual adjustment and formalisation to create a reciprocal relationship.	51	23%
Standardisation	Achieving a proper balance between standardisation and flexibility to perform a variety of tasks leads to a higher value	42	19%
Centralisation	Balancing centralisation and decentralisation decision making	41	19%
Specialisation	The system promotes flexibility. It involves developing a wider range of different skills used to perform different jobs and tasks.	35	16%
The span of control	A wide span of control promoting flexibility and autonomy	32	15%
Project Governance	A framework providing the project manager and team with the structure, processes, decision-making models, and tools to steer the project while supporting and controlling the project for successful delivery.	18	8%

1. Formalisation

The project's tasks are highly formalised based on well-planned project scope (Zighan, 2020). The PBOs' design is often orientated around productivity, efficiency, and effectiveness to successfully deliver the project's intended goal, emphasising the aspects of quality, cost, and time (Kerzner, 2017). For this study, the participants maintained that the interdependence and interrelated nature of the project's tasks require a highly integrated structure enabling strong connections and collaboration between different departments and different project teams. Offering services, on the other hand, holds a high amount of customer interaction with short response times and difficult quality measurements. The required scheme for the service-based organisation should have very high levels of interactions with customers. As quoted, *"offering services may be costly in terms of time and exhaustion; it also may drive away from the team's concentration on everyday project practices. The added services should not disturb the project's progress and activities."* Further, the collaboration between projects also needed through integrating between special teams. A project manager mentioned, *"service provision is assigned to special teams in each company, therefore; more collaborative effort is required between different*

parts to provide a comprehensive services-products mix as an output for projects. This is also needed to create a collaborative culture within the project's overall structure”.

According to the literature, service provision is much more than offering services; it emphasises value co-creation in business prosperity. Whereby services are offered as a means of customer-interaction, facilitating more value co-creation (Baines et al., 2009; Gebauer & Friedli, 2005; Turunen & Toivonen, 2011). This role of servitisation requires more attention to the organisation design when adopting servitisation (Kowalkowski, 2010; Kowalkowski et al., 2015).

The structure for servitisation should be associated with flexibility and autonomy to decide on a case-by-case basis. This structural flexibility provides the opportunity to allocate the required resources to activities needed for successful service provision. Nevertheless, some policies, procedures, job descriptions, and rules should be explicitly articulated to reduce ambiguity and direct employees to behave in a particular manner. Both mutual adjustment and formalisation are essential to successful servitisation and project delivery. This balance between mutual adjustment and formalisation should create a reciprocal relationship to develop more customer value.

2. Decentralised Decision-making

Inherently, the project has a centralised structure, based on a transparent chain of management where the project manager has the final authority to make project decisions, change priorities, and acquire or assign resources (Kerzner, 2017). Nonetheless, the results emphasised when providing services; organisations are considering adopting some aspects of decentralisation whereby the authority to make crucial decisions is delegated to project team leaders and the employees to permit flexibility and rapid response to suit customers' specific needs. As quoted by a project manager, *“the success of a project is mainly achieved*

through centralised tight plans and procedures where possible and providing minimal degrees of freedom to the people in charge of carrying out these plans. Service provision, the project team, needs to be given a delegation to react at a suitable time with less bureaucracy”. Hence, although the project managers’ role in leading the projects and prioritising activities, delegating the authority is also essential to effectively deal with customers’ needs. Previous studies argued that for successful service provision, employees should be empowered to make the right decisions at the right time to deal with a high variation of customer needs (c.f. Neu & Brown, 2005; Salonen, 2011; Bustinza et al., 2015).

Centralisation or decentralisation not the end in themselves, but are means to create more customer value. The degree to which decision-making authority is structured based on centralisation and decentralisation. The power is vested in people, resulting in empowerment and allowing them to make decisions and solve customers’ problems. Still, centralisation enables decision-making to be uniform at a general level facilitating the application of work methods and policies in order to optimise the work system of the project. It ensures consistency in quality and work progress.

3. Standardisation

One of the project structure’s main objectives is to reduce uncertainty and confusion that typically occurs at different points in a project’s lifecycle (Sholarin, & Awange, 2015). This study supports the importance of standardising the procedures to create a formal environment for projects, such as a formal process of communication, workflow, and information exchange. According to a Project Manager, *“the mutual relationship between projects and services involves a robust commitment to the project’s goal and objectives, which achieved through standardised producers and routine work.”* However, offering

services requires more flexibility than standardisation to respond quickly to customers' needs at a suitable time; as quoted, *"the rules are useful guides for safe behaviour. However, these rules will not help the project members do the right thing, especially in states of abnormal operation such as providing extra services where the project members would need strong, but also flexible guidance"*. As a result, the need is for a more open and informal structure, where the emphasis is on managing customer relationships, sharing, and generating new ideas with the intention of achieving innovation and customer satisfaction. According to a Project Manager, *"The project structure should be designed based on matched configuration between service-orientation and project-orientation,"*

Moreover, flexibility allows the project team to cope with the great variety and variation of customer needs. Nevertheless, flexibility when offering services increases task-interdependence, organisational-complexity, and uncertainty. As a result, a balanced mix of flexibility and standardisation is needed; as a Project Manager said: *"flexibility is critical when providing services, but we still need to maintain our standards and work routine to reduce costs and control the quality."* Likewise, Baines and Lightfoot (2013) revealed the importance of companies' abilities to modify their working routine to capture customers' requirements. Service provision leads to high customer involvement, and this involvement requires more flexibility and a problem-solving approach (Neu & Brown, 2005; Salonen, 2011).

4. Specialisation

A project is a teamwork-based, whereby each team is concerned with performing specific tasks. The division of labour or separation of tasks is a critical element in project-based organisations (Meredith & Mantel, 2011). The Project tasks and their specifications are well-defined within the project scope. The accomplishment of these tasks requires

specialised know-how (Zighan, 2020). Although the scope and content of services may be designed and in advance, service is intangible and variable. It differs according to customer needs (Galera-Zarco et al., 2014). Services are generally produced tailored to customers' needs, which requires gaining different types of skills. According to a project manager, *“Offering services requires Many different skills that have to be coordinated. The project teams should work together and coordinate their actions to find the best way of performing the project tasks and the tasks of service provision”*. It has been found that the role of task variety is essential for offering services, building new competencies, and developing greater flexibility.

Nevertheless, specialisation at work has been recognised as a critical driver of productivity, and too much variety can impede project productivity. Thus, achieving a proper balance between specialisation and exposure to a variety leads to the highest value. According to a project manager, *“The project should be designed in which project members at all levels are continually enhancing their skills and developing new ones to meet the dynamic changes of the business.”*

5. Span of Control

The main goal of project control management is to ensure that project objectives are met by continually monitoring and measuring the project's progress and ensuring that all the project's managers take corrective actions as and when necessary (Vanhoucke, 2012). Moving towards servitisation means that the PBOs emphasise value co-creation and are driven by customers' needs. As a result, PBOs are eager to maintain the flow of services development, process innovation, and flexible operations. Thus, the wide span of control enables the project managers to broader knowledge about the projects and reduce the conflicts that might be caused in a narrow span of control where the decision can be taken

quickly. One of the project managers mentioned, *“referring to one person like a project manager minimises the contradictory that might occur in case of more than one reference person. Also, the decision is taken faster”*. The previous studies argued that continuous change is the main characteristic of servitisation (Gebauer & Friedli, 2005; Kindström, 2010; Gebauer et al., 2013). Thus, the results showed that the PBOs need a wide span of control to give the required agile in the market when providing services. A project manager said, *“Providing services means changing needs and more especial requirements from customers; therefore, we need to make our decision so quick with less hierarchy and complexity.”*

6. Project Governance

The project’s work is organised around a work breakdown structure that divides the project goals into specific activities or tasks for each project area or component. This is accomplished by clarifying and recognising the tasks, emphasising accountability and responsibilities of all individuals enrolled in a project, and measuring their communication and coordination level. The project tasks are structured based on specialisation allowing the project manager to take complex tasks and break them down into smaller, more precise tasks that individual workers can complete. Thus, employees are specialised in a clearly defined task. Ahola et al. (2014) concluded that various project components should be integrated so that the team efforts contribute to the overall project goal. Hence, the need for clear responsibility, accountability, and an operative communication channel increase when companies move toward products and services mix; as one of the project managers said, *“The aim of the project’s structure is the harmonisation of individual efforts to achieve project goals. Therefore, we are keen to create a structure that governs the whole*

project's activities so that the project manager can focus on the bigger picture. This should come from effective configuration management”.

Moreover, the project structure must bring together stakeholders' different needs based on effective stakeholder management and communications. The project structure also has to empower the project team to think on a day-to-day execution and the big picture. According to a project manager, *“Being able to see the bigger picture puts the project in context. It helps the project manager operate more effectively and see what is important to the project and business customers.”* According to Artto et al. (2015), the project governance system helps PBOs successfully integrate services into the project core-operations and overcome the difficulties arising from the PBOs' intermittent nature. Hence, in providing services, the project managers develop several instructions and processes to enable more manageable alterations and adjustments inside a realistic timeframe and budget, which does not affect the project's criteria and success. As quoted, *“the service's elements should be incorporated into the earned value analysis system to keep the project in scope and with clear criteria for measurement.”*

7. Conclusion

Following the servitisation strategy, companies are required to change the internal structure, hierarchical communications, and the flow of information, authority lines, rights, and responsibilities to support this transformation (Neu & Brown, 2005; Stauss et al., 2010; Bustinza et al., 2015; Salonen et al., 2017; Zhang & Banerji, 2017). This study specifically focused on the PBO's structure needed to implement the servitisation based on evidence collected from different fields. It contributes to the servitisation literature by examining how PBOs change their structure to successfully develop and offer services. The study highlighted the importance of synthesising the aspects of project and service by adjusting

the structure to enable the companies to add more value. Consequently, this study guides the PBOs towards the required modifications in their structure when considering servitisation. The study findings align with the organisational design theory emphasising that the organisational structure should follow the adopted strategy, which should be used as a starting point to design the organisational structure that facilitates the capture of servitisation benefits. The study further expanded the implementation of the organisational design theory by showing how PBOs adjusted their structure when they shifted towards being more customer-orientated through servitisation.

Service is seen together with products as an essential part of creating customer value and as a catalyst for growth. Building on organisational design theory, the findings showed the importance of balancing standardisation and flexibility in the workflow system and the need to delegate authorities, decrease centralisation, and broaden the wide span of control to respond to customers' needs quickly. However, the successful extending of PBOs' outcomes into a system of both project output and extra services based on servitisation strategy requires a mutual coordinated organisational design with a suitable balance of the products and services mix. The product and services are two complementary core tasks to create more customer value. The whole project's activities should follow coherent logic to solve customers' problems with services and products. Therefore, the project structure should support the holistic view of the product-service system. It serves two primary purposes: to guide the process of service provision and project operations. This mainly involves an adjustment of the organisational structure that creates greater value from integrating services into the project outcome.

Servitisation could add economic and social values for a diverse set of project stakeholders. However, the sustainability performance of servitisation in servitised project-based

organisations is an outcome of reducing the clash between project operations and service provision activities.

Our paper attempts a rigorous and relevant contribution by considering both a theoretical and practical problem when formulating the research focus and positioning the contributions via its implications. This is reflected by expanding the implementation of organisational design theory within PBOs context and provide empirical evidence on how PBOs should modify their structure in response to servitisation, which an issue that previous studies fall short of improving.

7.1 Managerial Implications

This study suggested several managerial implications for PBOs and project managers. The study found that service orientation affects the project operations. Thus, it is crucial to design a project structure that balances service orientation and project orientation. The study highlighted the importance of the structural need for the PBOs to provide better services for their customers. This structure's characteristics should have features supporting the product-orientation and service-orientation. The features of an organic structure involve a flat design and more decentralised decision-making. This implies fewer management tiers and more employees' empowerment and multiple dimensions of a control system with wider spans of control. This will aid successful service provision and help develop and mastering of service capabilities. However, they are advised to keep some of the mechanistic aspects directing the efforts and resources on reaching the project goal based on defined tasks. The aspects of mechanistic aspects will reduce ambiguity and provide more clear directions to the project team. Hence, the project teams are given specific job descriptions delineating their roles and responsibilities for tasks requiring

special attention. Thus, employees know to turn to a handbook or a procedure guideline whenever a problem arises. This leads to consistency of behaviour.

7.2 Limitations and Future Research

Despite the contributions of this study, it has some limitations that open opportunities for future research. The study was based on qualitative research, and the generalisability of the findings is hard to assess. Quantitative research could extend the sample by focusing on a larger sample. Also, the empirical evidence was collected within a short time. Therefore, a longitudinal data collection would be fruitful for this research. Future research should also investigate how PBOs should collaborate and integrate with external partners to develop adequate service provision. Concerning organisational transformation, there is always the barrier of defining the changing scope in companies, mainly when the analysis area is not an individual company but several companies, which has enabled the examination of distinct sections relative to servitisation. Thus, we see a necessity in the future to in-depth analyse the dissimilarities between PBOs in various environments and recognise environmental elements influencing servitisation of all projects operating in a similar environment. Finally, this study is taken from the project managers' viewpoint. Thus, future studies are recommended to consider other stakeholders in the projects' chain when collecting data.

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