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# A capability perspective on service provision in project-based organisations

**Abstract**
The theoretical underpinnings related to the required capabilities of service provision remain under development. Hence, this study aims to explore the pathway for service business development in project-based organisations. Using a qualitative case study approach, 30 interviews were conducted with project-based organisations from five different industries in eight countries. Thematic analysis techniques were used to analyse the data. Upon which, this study identifies the essential capabilities for the successful implementation of servitization strategies; these direct the projects to be customer orientated and sustain the core operations of service provision. Adopting dynamic capability theory, the study offers a roadmap for how project-based organisations develop and gain these capabilities. The results indicate a difference between the companies in developed as opposed to developing countries, when building their capabilities. The study contributes to the body of knowledge and proposes to decision makers the use of effective processes to help align project operations and service provision activities. It explains how project-based organisations reconfigure their resources to build essential capabilities to provide services. Moreover, the study highlights the differences between developed and developing countries in terms of the capabilities used and how they develop them.

**Keywords**: Servitization; Project-based Business; Dynamic capability theory.

## Introduction

Servitization strategy has been adopted as a means for organisations to achieve competitive advantage and create improved customer value (Baines et al., 2017, Goyal et al., 2017). Companies, which successfully offer product-service systems, are more customer-oriented and better equipped to anticipate changing conditions and respond faster to customers' needs (Kowalkowski et al., 2015). Servitization shifts the attention from designing and selling a tangible output to generating the commercial value through synthesis of both the product and related services for a greater value (Gebauer et al., 2005, Brad and Murar, 2015). Thus, significant attention is being paid to servitization that serves to renew companies' capabilities in order to create more value (Baines et al., 2009b). These capabilities pave the way toward combining products and services for customers' specific needs (Gebauer et al., 2010, Baines et al., 2017).

Despite the concept of capabilities not being new, as they have been previously investigated, the literature of servitization has focused primarily on the manufacturing sector (Baines et al., 2009a). Project-based organisations appear to be becoming more popular due to their importance of contribution to the global economy (Turner et al., 2010, Miterev et al., 2017a). A number of studies suggest differences between manufacturing companies and

project-based organisations, in terms of discontinuity of demand, complexity of offers, and individuality of the content and structure of each project (Galera-Zarco et al., 2014, Jalkala et al., 2010). This makes the recognition of projects' values impossible to assess until the projects are completed (Artto et al., 2015). Thus, more challenges have faced project-based organisations because of sophisticated customers' needs combined with dynamic changes in the business environment and these require close customer relationships and more customer involvement (Kujala et al., 2013). Consequently, servitization has become essential in project-based organisation to build and sustain robust relationships with customers' in order to survive in the market (Kujala et al., 2013, Galera-Zarco et al., 2014). Servitization in project-based organisations means abandoning the idea that project value is centred exclusively on the project delivery phase (Kujala et al., 2013). Contrariwise, a project should be understood as a process that includes phases before and after the project execution, and customers should perceive values in each phase through service provision (Kujala et al., 2013, Galera-Zarco et al., 2014).

A number of studies emphasise the essential shift of the project-based organisations from product centric, to a mix of product and service centric, and introduce comprehensive solutions to customers (Helms, 2016, Brady and Davies, 2004). Introducing services in project-based organisations requires different processes and capabilities that are not widely discussed in the literature (Miterev et al., 2017a). The importance of servitization capabilities in project-based organisations stems from the need to deal with the diverse services within diverse project life-cycle (Sousa et al., 2017, Zighan et al., 2018). Therefore, companies need to combine suitable capabilities in order to successfully introduce the services (Raddats et al., 2015, Paiola et al., 2013). However, little is known about the capabilities needed for project-based organisations, and how to develop these capabilities for services provision in a competitive market (Kujala et al., 2013, Galera-Zarco et al., 2014, Artto et al., 2015).

To this end, this study aims to explore the pathways for service business development in project-based organisations. The study investigates these aspects through addressing two main questions:

- RQ1: What capabilities are required by the project-based organisation to facilitate the implementation of servitization?
- RQ2: How can project-based organisations develop these required capabilities?

To do so, the dynamic capability perspective has been adopted to define and develop servitization capabilities in project-based organisations. This paper is structured as follows: the next section has the theoretical framework of the study which includes an overview of project-based organisations and a literature review that covers the prominence and capabilities of servitization, and the development of its capabilities. The research methodology is then explained, followed by the research results. Finally, the discussion and conclusion are presented.

**Project-based organisations**

Project-based organisations extend to cover different business fields that look to capture the customised nature of demand (Pemsel and Wiewiora, 2013). The nature of the project-based organisations is different from other types of business due to: specific relationships with the context surrounding the project itself, time constraints, characteristics of value creation, the degree of uncertainty, and the minimal possibility of normalisation of processes (Hellström and Wikström, 2005). Furthermore, each project is managed independently and restricted by the contractual agreement with customers (Hobday, 2000, Turner, 1999). Contracts tend to be for a specific length of time and are usually preceded by processes of pre-evaluation, negotiation, and planning; in addition, the contracts include guarantees and service periods once the project is delivered (Wikström et al., 2010). Thus, there is no specific functional integration in project-based organisations whereas the work is organised in project-based manner and as a result, these organisations generate their core products and services to meet the customers' needs as they are identified (Hobday, 2000, Turner and Keegan, 2001, Görög, 2016).

Project-based organisations are directed to sustain the differentiated and customised customers' needs where customers are highly involved in projects (Hobday, 1998). Customers are involved before and during the projects to ensure the realisation of the service values (Storbacka, 2011, Vargo and Lusch, 2008). Although in many cases the companies, partners, and customers avoid sharing information and collaborate in order to reduce the risk where sometimes the relationships between them becomes adversarial (Gemünden et al., 2018). Nevertheless, customers are essential in project-based organisations. (Razmdoost and Mills (2016). Thus, the emphasis on generating the co-creation of value through customers' relationships management increases the importance of the servitization in project-based organisations (Artto et al., 2015).

However, moving towards servitization and the temporary aspects of the project-based organisations does increase complexity, which puts more pressure to meet customers' special needs within time, quality and cost parameters (Prado and Sapsed, 2016). It also makes the management of different projects within the organisation difficult since the projects are autonomous and separated from each other (Koskinen, 2010). Accordingly, the project-based organisation requires a particular management style of organising the work and bringing people together with different skills (Gemünden et al., 2018). Furthermore, Miterev et al. (2017b) highlighted that project-based organisations destruct competences because of high uncertainty in projects. So, it has been recommended that accumulated capabilities are required to break down the traditional barriers of the projects and facilitate changing adoptability (Miterev et al., 2017a).

**The Prominence of Servitization**

The prominence of servitization stems from its role in the rapid change of environments through the ability to develop a sustainable competitive advantage by extending the scope of business into services (Gebauer et al., 2012a). Specifically, the market becomes even more customer oriented which creates more complexity in business (Buil-Fabregà et al., 2017). For example, manufacturing companies have realised the difficulties in differentiating their tangible products (Raddats et al., 2016). Thus, companies extended their focus beyond production to offer a mix of products and services (Baines and Lightfoot, 2013, Mehra and Coleman, 2016), as the intangibility of service enhances the product differentiation and creates more maintainable competitive advantage due to the difficulty in imitating services (Biggemann et al., 2013). Thus, servitization has an importance impact on different aspects such as increasing sales, innovation and integrating the business knowledge with customers' needs (Neely, 2008). Moreover, servitization helps in meeting the customers' special demand and improved satisfaction as some customers need basic services, such as training and maintenance or more advanced services such as co-development and co-design services (Nordin and Kowalkowski, 2010). Servitization, is also considered as a way to enhance the companies' innovation capabilities through building good relationships with customers and collecting more valuable knowledge from them (Kastalli and Van Looy, 2013). This fact leads to maximising the value creation and learning (Zighan et al., 2018). It might also be supported through collaboration between companies to obtain a greater extent of knowledge (Lassen and Laugen, 2017).

Despite the fact that adding value and improving quality is the main rationale behind servitization (Raddats et al., 2016), moving toward servitization is not always a good choice for companies, thus companies need to calculate the expected return from servitization and the capacity to conduct it and the prominent profitability (Neely, 2008). Therefore, understanding the nature of servitization is a must, where servitization occurs via a different products and services mix. The mix might be product-orientated service, use-orientated service, or result-orientated service (Neely, 2008). In that sense, the final product could be: i) product-orientated service where the services are provided to support the product such as a maintenance service (Baines et al., 2009a); ii) The use-orientated services is when the customer pays for both the use of a product and service mix, whereby services are offered to support customers' activities (Bastl et al., 2012); finally, iii) the result-orientated service where the customers pay for the final results and the value of the system of both product and service (Raja et al., 2018). As a result, servitization changes the production structure through the way companies produce their product-service mix (Smith, 2014). Oliva and Kallenberg (2003) recommend that the service development from product manufacture to service provision includes the combination of the product related services, expands the process centred services, and the operational services

However, offering the wrong service can cost the companies more than not offering any service. Failure to provide servitization could be due to offering unsuitable solutions for customers or a failure to create satisfactory value for customers due to a lack of knowledge and capabilities (Valtakoski, 2017). Similarly, Pereira et al. (2018) concluded that the absence of an interdepartmental process and indicators are the reasons for the low service level because of knowledge dissemination across the department. In summary, servitization is associated with companies' positions in the market, changing companies' structures and capabilities, which increase complexity toward more operational services concentration (Brax and Visintin, 2017). Hence, it is recommended to consider companies' capabilities to secure the successful implementation of a servitization strategy (Raddats et al., 2015).

**Capabilities for Servitization**

Capabilities support the companies' abilities to respond to the changing environment by capturing the opportunities and dealing with the threats (Teece, 2007). The capability refers to the ability of an organisation to perform a coordinated set of tasks, utilising organisational resources for the purpose of achieving a particular end-result (Helfat and Peteraf, 2003). The

previous studies in servitization capabilities investigated the importance of the system integration and organisational change's capabilities for the successful adoption of servitization (Galera-Zarco et al., 2014, Kindström, 2010, Davies et al., 2007). The system integration capability refers to the organisational ability to jointly develop a successful product-service system able to add value for both the supplier and its customers (Brady et al., 2005). The organisational change capability, on the other hand, is highlighted as a significant capability to facilitate the organisational transformation process from being a product-orientated to a service-orientated company (Gebauer et al., 2012a, Martinez et al., 2010).

The nature of the service impacts the capabilities needed, for example, the capabilities needed for basic services focuses on product design whereas the capabilities needed for advanced services are more customer-centred with interactive capabilities (Sousa et al., 2017). Hence, to maximize the value of servitization, companies need to have the best combination of capabilities (Raddats et al., 2015). Accordingly, the capabilities needed in the operational functions focus on the effectiveness of service delivery (Tuli et al., 2007). The marketing and sales department, on the other hand, emphasises improving the customer interactions capabilities (Santamaría et al., 2012). Wallin et al. (2015) highlighted the innovation capabilities needed for servitization related to knowledge spills over across functions and network partnering during problem-solving. As a result of the combination of these capabilities, companies will have a set of dynamic capabilities that enable them to address different customer needs (Gebauer et al., 2012a, Coreynen et al., 2017). Story et al. (2017) added that manufacturing needs capabilities to balance the product and service mix innovation through creating a product and service synergistic culture and developing customer focus.

In addition, companies are not able to internally improve all the required capabilities for offering services and need to build service-orientated capability (Gebauer et al., 2013). This requires learning capabilities to gain new knowledge and develop existing ones to leverage the service provision. For instance, Paiola et al. (2013) demonstrated the services provision process using different activities and linked them to a specific capability, whereby the required capabilities of each activity could be developed either through an internal or external development process, or by a combination of both processes. Consequently, the internal companies' capabilities are the key explanatory factors to identify servitization pathways (Sousa et al., 2017).

### The Role of Dynamic Capability

Dynamic Capability extends and modifies organisational response ability to market changes (Teece, 2007). It enables companies to synthesise internal and external environmental competencies to capture changes through sensing, sizing, and resources reconfiguration (Teece, 2007, Teece, 2017). Dynamic Capability is essential for business transformation and adopting new procedures and practises (Helfat and Winter, 2011), it therefore plays a significant role in adopting servitization through identifying the important internal resources and capabilities and determining gaps in current capabilities. These then need to be filled with new skills (Kanninen et al., 2017) to build, enlarge, and adjust the business's product-related capabilities into service-related capabilities (Fischer et al., 2010). The dynamic capability process in servitization starts with sensing the need to adopt suitable service-orientated capability to capture the opportunities among a diversity of customers' needs (Kanninen et al., 2017, Gebauer et al., 2012b). After identifying available opportunities companies require the seizing of these opportunities by formulating suitable strategies, such as planning to enter a specific market (Matthyssens and Vandenbempt, 2008).

## Methodology

### Data collection

The data was collected through semi-structured in-depth interviews (Louise Barriball and While, 1994, Gabriel and Griffiths, 2004). The majority of previous servitization studies were conducted in developed countries (Coreynen et al., 2017, Raja et al., 2018, Smith et al., 2014). Therefore, a number of studies called for the importance of investigating servitization in developing countries (Gebauer and Kowalkowski, 2012, Turunen and Finne, 2014). Hence, we choose to collect data from both developed and developing countries. Furthermore, collecting evidence from developed and developing countries enriched this study by taking a comprehensive coverage of the phenomena from different views (Sheth, 2011). This facilitated the identification of projects that contained relevant information on the focal topic by consideration of different sources of evidence in different countries.

Project managers were approached to confirm that their companies offer services integrated into the project outcome. We started with the projects that we had access to, then we asked them to recommend other projects that combined services. As a result, 30 projects were selected from 5 different industries (Construction, Oil& Gas, IT, Logistics, and Health service) in 8 countries (UK, Spain, United Arab Emirates, Saudi Arabia, Jordan, Qatar, and

Oman). The evidence was collected from 30 semi-structured interviews with the project managers in which 9 interviews conducted in developed countries and 21 interviews conducted in developing countries. The study involved project managers who had full authority for project activities and internal design. In project-based organisations project managers were defined as the responsible persons who combine and coordinate projects with other companies (Ajmal and Koskinen, 2008). Patanakul (2013) highlighted that in a multiple project environment, project managers have significant impact on companies' strategic value, and project managers in project-based organisations were the contact persons responsible for dealing with and aligning different partners and their companies (Ajmal and Koskinen, 2008). Hence, project managers tend to be the experienced professionals who play essential roles in integrating and communicating different sources of knowledge inside and across projects (Wei and Miraglia, 2017).

**Interview process**

The interview questions were grouped into two main categories: the first focused on the required capabilities that help companies to transfer towards servitization in project-based organisations, the second category depicted the development process of capabilities in project-based organisation as shown in appendix (A). The interview questions were adopted from Raddats et al. (2017) and Kanninen et al. (2017), and the questions were sent to 5 academic experts in the field who verified the suitability of the questions with the research aim and questions. The interviews were conducted face to face or through conference call (due to the geographical distance of some countries), the study aim was explained and permission to record requested (names of respondents and companies would be anonymous). A case study protocol containing the study aim and questions was used in each interview to increase reliability and maintain consistency (Yin, 2017). The duration of the interviews was between 1 and 2 hours, and the audio-recorded transcript was shared with the respondents in order to sense check and ensure that their views were fully represented.

**Analysis process**

Nvivo 11 was the thematic analysis software used to analyse the data and it followed the process suggested by Braun and Clarke (2006). Each interview was reviewed to make sure all recorded data was understood; then, a number was given to match interviews with the respondents; the research team transcribed each interview. This helped the team become

more familiar with the data and what it meant (during the process of listening and transcription notes were taken to identify and log patterns and ideas; also, at this stage, the analysis process was focused on identifying any differences among participants' profiles to identify the direction of the analysis. The emerging capability themes were coded in parallel by two members of the research team via detailed reading and re-reading of the transcripts (King and Brooks, 2016, Crabtree et al., 2001). The researchers then met, reviewed each other's suggestions, discussed, defined and justified their codes and agreed on initial themes for application to the full data set, where the themes names identified from the literature. Each segment of the text had the potential to be classified with multiple codes to allow for potential inter-relation of identified capabilities. The final coding structure was reached when further analysis of all the transcripts by the two coders brought forward neither new codes nor new relationships; i.e. theoretical saturation was reached (Bryman, 2015). In the analysis, we focused on similarities between respondents, however the importance of the themes is not essentially depends on quantifiable measures, instead it on whether it address something vital to the study (Braun and Clarke, 2006). Figure (1) demonstrates a sample of the analysis technique used.

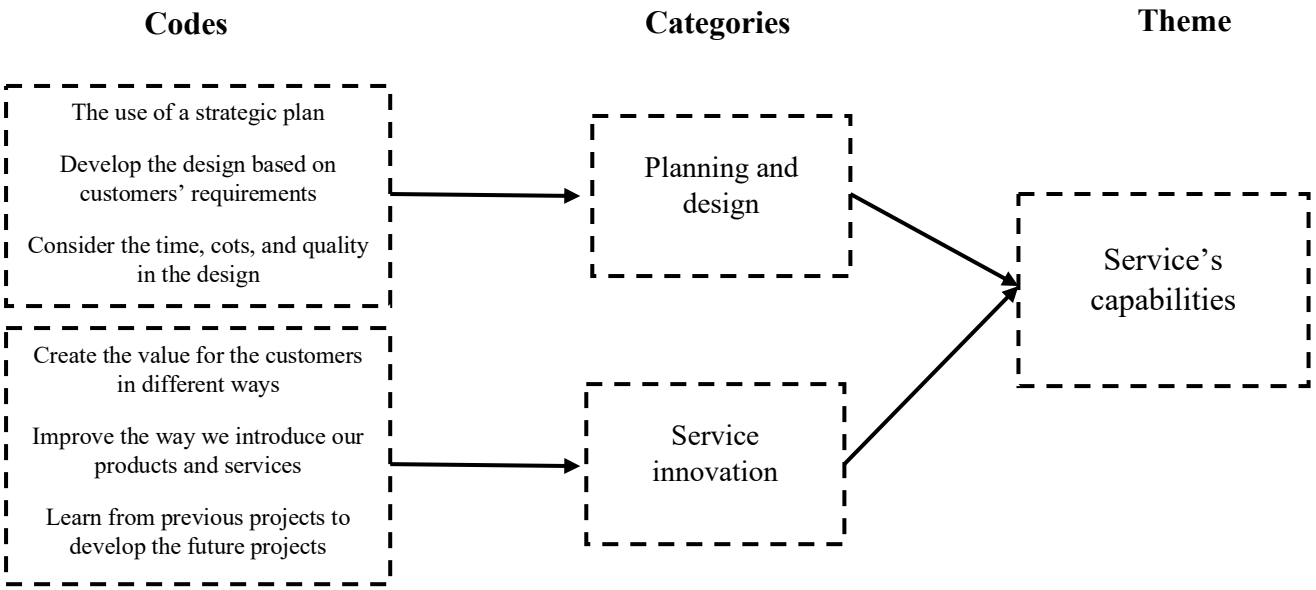


Figure 1 Thematic analysis example

In order to maintain the quality of the data different techniques were used as shown in Table 1 below.

Table 1: Data quality process

| Test | Techniques |
|---|---|
| **Validity** | Use multiple sources of evidence<br>Pattern matching analysis<br>Experts feedback on the results<br>Replication of the interview |
| **Reliability** | Interview protocol<br>Use analysis database Nvivo<br>Interview transcript |

Adopted from (Yin, 2014, Bryman, 2015)

To maintain validity the methodology followed processes that allowed reflection and peer review of interpretations (Creswell and Miller, 2000, Hirschman, 1986). In addition to the pattern matching analysis, the results were compared for identifying the similarities and differences between the respondents (Yin, 2014). Reliability was maintained by use of the interview protocol in each interview, the transcript from the interviews, and using the database analysis system that enables the research team to display the codes, remove the duplication, and aggregate them under suitable themes (Yin, 2014, Bryman, 2015).

## Results

### Capabilities required for Servitization in project-based organisations

The results showed that the perception of the required capabilities in project-based organisations to support service provision varies in some capabilities between developed and developed countries while they share some common capabilities. The capabilities that emerged only from the developed countries are risk management, sustainable project operations, and service innovation. The other capabilities are common between developed and developing countries. Drawn on dynamic capability theory the emerged capabilities were classified into three main groups: sensing, sizing, and reconfiguration. Classification was conducted after the coding stage by the authors, then validated by 10 academic experts from the field. Figure (2) summarises the project-based capabilities and aggregated both the capabilities that emerged from the develop countries only and the common capabilities. The explanation of the capabilities is as follows:

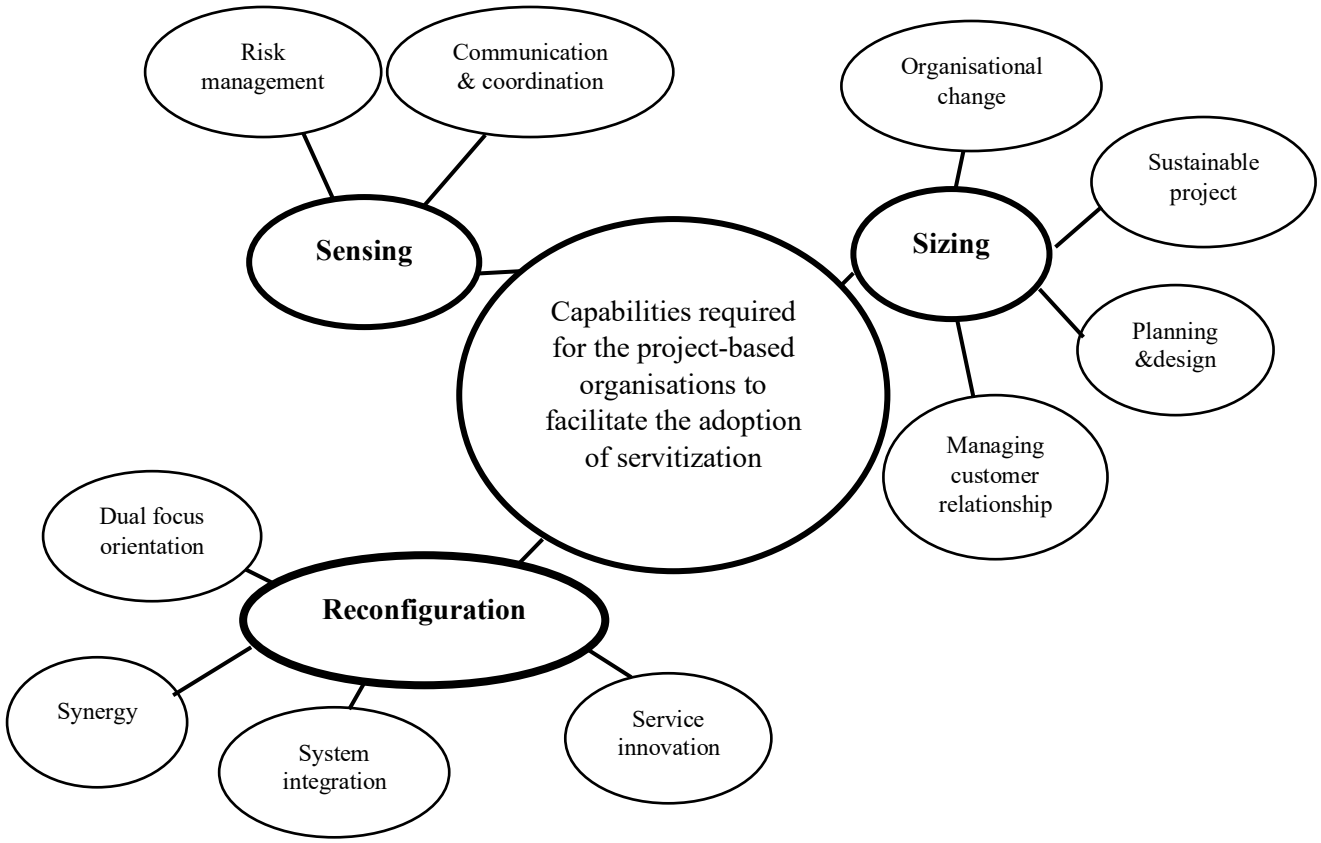


Figure 2 Project-based capabilities

**Sensing capabilities**

Effective communication

Building effective communication between the project-based organisations and customers (including partners) is highlighted by a majority of the respondents. Usually, projects have a specific timeline and resources, therefore the projects need effective communication methods between all parties to effectively and efficiently deal with the changes during the projects. For instance, a project manager from an IT project in Qatar said "*on time communication in our business is very important and impacts the effectiveness of the different functions in sharing the knowledge"*. The project manager working in oil & gas from Egypt said "*the effective communication channels between our company, our partners, and our customers are very important to keep the projects on track. These communications channels vary based on the nature of the issues, it might be through meetings, emails, or conference call for example''*.

Risk management

The project-based organisations faced different risks due to the comparatively short term of their projects compared with organisations using long-term contracts and the risk of different partners involved in the projects. For example, the project manager of a construction company from Spain said "*it is necessary to conduct a comprehensive risk assessment on the impact of added services and its implications in each stage of any project''*. The project manager of an IT company from the UK added "*the company is not only holding its own risks but also other partner's risks. The resources should be allocated according to the plan and the project should be finished at the agreed time, otherwise, any error will impact upon the company's compatibility, reputation and profitability''*.

**Sizing capabilities**

Planning and design

The importance of the planning and design appears in companies' abilities to draw a successful roadmap for the project, allocating the resources, and decide the business model to invest. As the project manager from oil & gas in the UAE commented *"our industry is risky because of the instability in prices and costs. As a result, we use a strategic plan for our projects with a specific design during the project timeline. Any changes or unplanned issue might cost us a lot''.* Likewise, a project manager of a construction company from the UK added "*providing services should be considered within the project three constraints (time, cost and scope) and be more geared to project quality, risk, and resources''*.

Organisational change

The success of the project-based organisations depends on the organisation's transition ability from an exclusive focus on delivering a project and changing aspects such as organisational culture, structure, and the operational process to successfully incorporate services into a project. A product manager in a health service project in the UAE said: "s*ince standardization is the main aspect of project operations, we have to consider the capability for organisational restructure, changing organisational culture and procedures, as well as changing the business model to create capable service infrastructures".* A project manager from an oil & gas company from Saudi Arabia added "*providing the customers with the*

*required products and services which meet and exceed their expectations at the right time are key issues in our company''.*

Sustainable project operations

Providing consistent project operations are also important. These capabilities mainly focus on the development of products and services, enhance production processes and service delivery. The project manager of a logistics company from Spain mentioned "*we always work on improving the way we provide our services to customers at the same time we are trying to minimise our wastes and errors''.* A project manager from an oil & gas company from UK added *"providing customers with the required products and services which meet and exceed their expectations at the right time are key issues in our company''.*

Customer relationship management

Intimate understanding of customers' needs and building close relationships with them are key requirements to enable the companies to understand the customers' businesses for which improvements can be made. The project manager of an IT Company from the UK quoted "*our customers are our partners and we are keen to keep a good relationship with them because they are the source of our knowledge".* The project manager of the logistics company in Spain quoted "*the identical nature of our business needs to change by strengthening our ability to gain a deeper understanding and response to customers' needs and expectations throughout the process. This understanding is achieved through good relations with our customers which will then direct our future focus".*

**Resources reconfiguration capabilities**

System integration capabilities

The capability of creating a suitable mix of products and services is required for project-based organisations. Especially as the integration between products and services might change from one project to another depending on customers' needs and a projects' conditions. The project manager for a construction based project in the UK said "*the key success of services provision is the development of a system that effectively incorporates both services and projects in a manner which adds more value for our customers''*. The project manager of a health service from Jordan added *"the most important thing for us is to satisfy our customers so we see what the customer needs are first and then we take into consideration these needs in deciding our services and products mix''.*

Dual focus business orientation

The project-based organisations realised the importance of creating a balance between the standardization, efficiency and effectiveness on one hand and the emphasis on flexibility, problem-solving, and co-creation on the other. The IT project manager from Jordan mentioned "*it is important to ensure a stable system through the standardization, the efficiency, and the ability to quickly solve any problems arising".* The construction project manager from Oman added "*it is challenging actually to maintain the company's standards and also to be flexible with customer requirements, because responding to customers special requirements means extra costs and resources''* .

The design synergy

The nature of project-based organisations requires companies to align the different components of project operations and service provisions into a unique design so that work is done in an organised and accurate manner. A project manager on health service in Jordan said "*the type of projects we carry out combines both products and services, which gives us challenges aligning the different components concurrently and accurately".* The project manager of an oil and gas company in Saudi Arabia added "*partners change according to the type of project. Also, the design of the project changes, therefore bringing all components together is not easy and requires a lot of effort to maintain consistency during the projects life".*

Service innovation

Companies are looking for innovation in the way they provide the services and the products. This innovation could be via small improvements on products and processes (incremental) or it could be a more radical innovation through introducing new products, services or a new product/service mix. A project manager of a logistic project from Spain mentioned "*to survive in the market we need to be innovative by proving our services to customers by developing our ability to create value and service our customers differently to our competitors''.* A project manager of a health service from UK added "*in every project we try to improve the way we introduce our products and services by either improving our services or products or introducing something new to the market".*

**The process of developing capabilities of the project-based organisation**

The project-based organisations develop their capabilities through a certain process that combines the internal and external capabilities of the companies, as shown in figure (3).

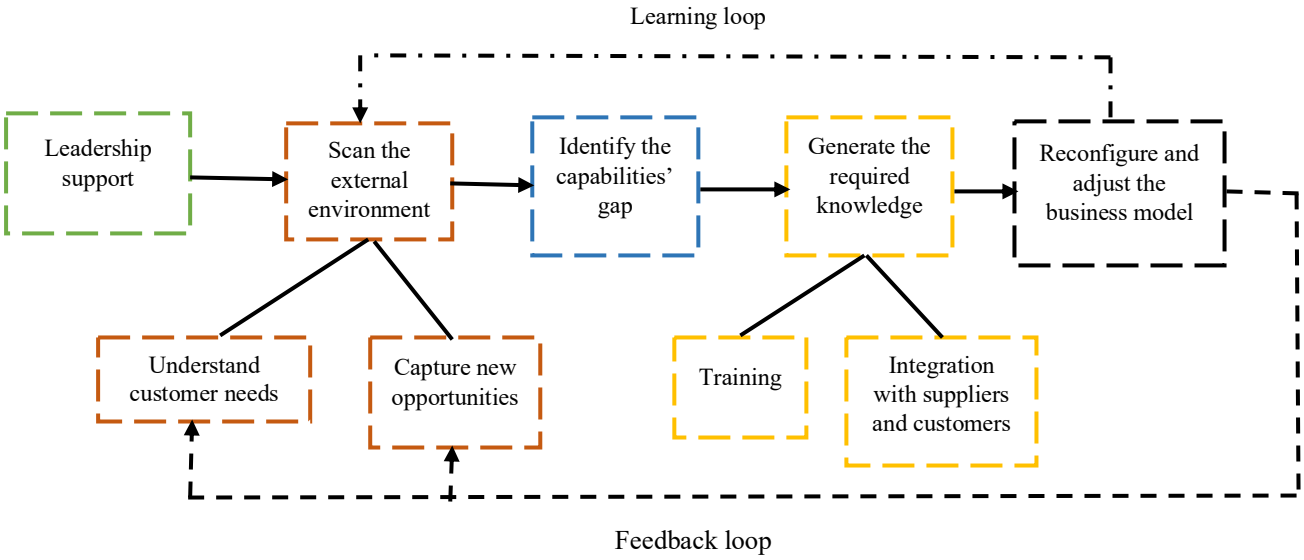


Figure 3 Servitization's capabilities pathway

The leadership support is the main enabler for the process of developing capabilities of the project- based organisations, as the project manager from a construction company in Spain mentioned "*the capabilities' development and sustainability come from leader support who always follow up this process and provide financial support''*. Similarly, the project manager from a logistic project in Oman added *"top management assesses employees based on the amount of development they have had. They are keen to improve the employees' skills to deal with changes in the market"*. As depicted in Figure 3 the process of developing the capabilities within project-based organisations consists of 3 main stages as follows:

i) Scan the external environment in order to identify customers' needs. The project manager of the IT company in the UK said "*the company always try to provide the services in different and better ways but we should first understand what the customer wants''*. Likewise, the project manager of a construction company in Jordan added "*before we start the project we meet with the customers to identify exactly what they need, in some cases the*

*customers might ask for something which is difficult to do because of the technical issues''*. In other cases, the company itself chooses to develop based on an opportunity in the market as the project manager in the health service from Qatar mentioned *"we develop our service in some cases because of the new trend in the market regardless of whether our customers ask for that''*.

ii) Identify the capabilities' gap between customers' needs and/or external opportunities. In this stage companies find differences between their capabilities and the required capabilities needed to capture market opportunities or to meet customer needs, and they generate the required knowledge needed to develop. The findings showed differences between developed and developed countries in their answer toward filling this gap. The respondents from developed countries highly focused on the integration with their suppliers and customers to acquire the knowledge whereas the respondents from the developing countries focused on training & developed as well as their R&D department to acquire the knowledge. The production manager from the logistics company in Spain said "we *always work in collaboration with our partners to improve, for example, our suppliers might help us through their expertise in some big projects that we do not have enough capabilities to develop. Also, the partners help in the project design"*. Similarly, a project manager in the construction company from the UK mentioned "*we developed by working in collaboration with our key customers who can give us key information about the market and the competitors"*. On the other hand, others have mentioned the internal training and development as a source to develop and fill the gap. For example, the project manager of the oil & gas company in Egypt said "*our training and development team is responsible for improving the employees' skills in case we need to improve"*. A project manager from a health service company added *"most of our development depends on our R&D department as well as on-the-job training"*. Also, the project manager of the oil and gas company from Saudi Arabia mentioned "*our company always send our employees on training courses to improve their skills to capture the external changes"*.

iii) Reconfigure and adjust the business model: based on the companies' internal capabilities and the developed capabilities, the companies create new working routines and/or processes by reconfiguring the internal and the external resources and capabilities. Therefore, the new capabilities will enhance companies' capabilities in scanning the external environment in the future. In some cases, companies need to adjust their business model to adapt to the customers' requirements and current opportunities. This step might need

technological adjustment, changing the types of services, or providing the service in different ways. A project manager from health services in Jordan said *"we adjusted our work process based on the knowledge we get"*. The IT project manager from the UK added "in *one of our projects we amended the service we used to provide based on an opportunity in the market. In that project we provided a new system for our customers. Before that, we did a lot of improvement and development in our employees' skills"*. The improved capabilities lead to enhancing companies' abilities to serve their customers as a project manager of a logistics company in Spain said *"we always learn something new from each project that helps us in future projects and to capture the markets' needs"*. A project manager for a construction company in Jordan added *"our developed capabilities and skills support our ability to provide the suitable mix of products and services to our customers"*.

## Discussion

Project-based organisations need both codification knowledge sharing and personalization knowledge sharing for both routine and innovative projects (Boh, 2007, Davies and Brady, 2000). Service provision is argued to develop innovation capabilities and deliver more customer value (Baines et al., 2009a). Nevertheless, service provision needs a set of sophisticated organisational capabilities. Previous studies discussed capabilities in a servitization context such as Kindström et al. (2013); Wallin et al. (2015); Baines et al. (2017). However, capabilities in project-based organisations in servitization context are still in its infancy. Therefore, this study borrowed from the dynamic capability theory, and demonstrated the most required capabilities that were classified into three main categories; sensing, sizing, and reconfiguration capabilities based on Teece (2007), Teece (2017). The study revealed that these capabilities facilitate project-based organisations to transform into service-orientated companies and create the suitable mix of products and services in a competitive way. This study revealed three main capabilities that emerged from developed countries that are risk management, sustainable project operations, and service innovation. The reason behind this difference is due to the advanced technology in the developed countries that enable companies to introduce advanced services (Turunen and Finne, 2014). Moreover, the cultural differences play an important role in the differences between developed and developing countries in terms of their perception to services (Gruber et al., 2011). Paiola et al. (2013) suggested that companies have to develop capabilities focused on

understanding customers' service needs and aligning their offerings with customers' operational processes.

Previous studies concluded that the stock of current capabilities is not enough to survive in a dynamic market (Teece et al., 1997, Eisenhardt and Martin, 2000, Yusr et al., 2017). This research explained the process of developing new capabilities to enrich the current pool of capabilities in order to create the new required dynamic capabilities. To do so, the project-based organisations scan the external environment with the intention of understanding customer needs and finding new opportunities. Therefore, the companies who manage and reduce the possible risks benefit from the effective communication and coordination between their functions. This finding is consistent with previous studies that concluded the importance of effective communication to support environmental scanning and managing the risks (Weerawardena et al., 2015, Nair et al., 2014). Further, the results indicated that after companies scan the external environment they identify the gap between their current capabilities and the required capabilities by adjusting the structure, culture, planning, and designing to provide a suitable mix of products and services. Interestingly, the results showed two different techniques to acquire the knowledge to fill this gap, in which the companies in developed countries like the UK and Spain depend on their relationship with suppliers and customers' integration to get the strategic knowledge needed to develop. Companies in developing countries, on the other hand, rely more on the intra-company training and development from the training and R&D departments. On the contrary, Childerhouse et al. (2011) concluded there are no differences in terms of the external integration between countries such as New Zealand, Thailand and the UK. A number of studies on the other hand, highlighted the impact of cultural differences on the external integration with partners (Braunscheidel et al., 2010, Ayoub et al., 2017).

Finally, the results revealed the importance of reconfiguring resources and capabilities to create new capabilities and services, which offer more value to customers. The core of this stage is learning, whereas knowledge alone is insufficient to develop the dynamic capabilities needed (Chien and Tsai, 2012). In summary, capabilities emerged from companies' learning abilities as well as their abilities to combine the current and newly learned knowledge to create and/or develop new dynamic capabilities. As shown in figure 4, the learning ability of a company can enhance the current pool of capabilities through digest the incremental capabilities and transform them within company's routine. As a result, a company will have advanced capabilities that built over time from its ability to combine between current pool of

knowledge and the new accumulated capabilities. The advanced capabilities enable the project- based organisations to offer more customised and advanced services. Moreover, an organisation's capabilities enhance its ability to offer valuable solutions to hidden customers' needs. The process that is supported by dynamic capability theory (Teece, 2007, Teece, 2017).

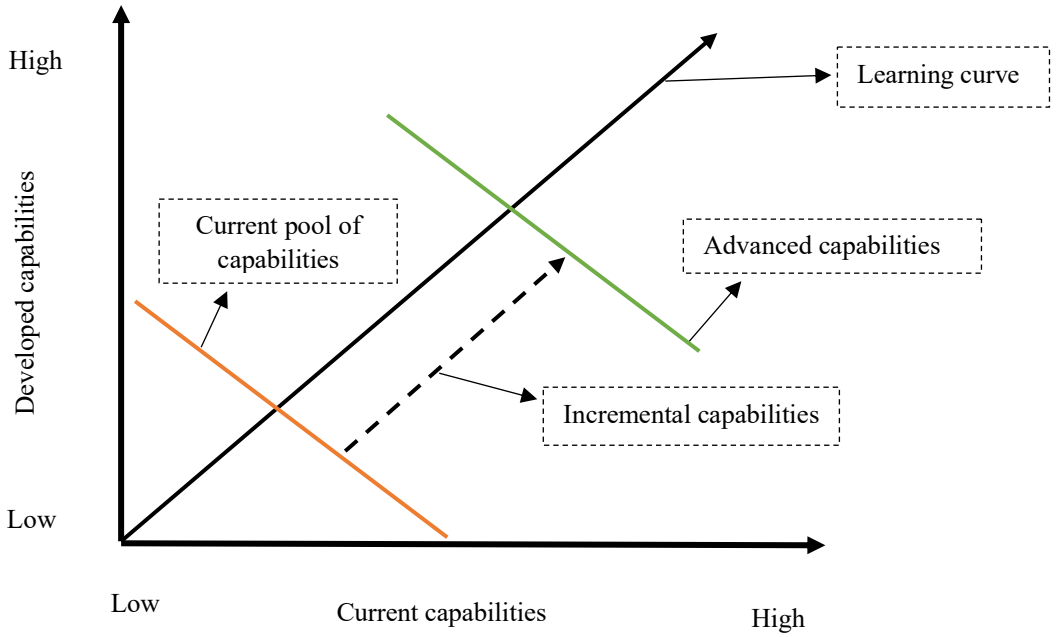


Figure 4 Improving the project-based capabilities

## Conclusions and limitations

This research examined the capabilities required to direct projects to become more customer orientated and sustain the operations of service provision. The study contribution can be summarised in three sets: contribution to the literature, contribution to theory, and empirical contribution. First, contribution to literature where the previous studies discussed the importance of knowledge and learning in project-based organisations (Sydow et al., 2004, Pemsel and Wiewiora, 2013, Davies and Brady, 2016), few empirical studies demonstrated the capabilities needed for project-based organisations to support their movement toward servitization especially in developing countries. Thus, this study explained the important capabilities needed in the project-based organisations and the process of developing these dynamic capabilities. Second, we make a contribution to the theory through expanding the implementation of the dynamic capabilities theory and highlighted the activities that lead to

create competitive advantage to companies where previous studies limitedly explained (Chowdhury and Quaddus, 2017). Third, an empirical contribution as the findings provided guidance for decision makers in project-based organisations to build and improve their capabilities from their existing pool of skills. Further, this study highlighted the difference between companies in developed and developing countries in building capabilities. Hence, this paper recommends that companies in developing countries to increase collaboration with their partners where they can find the knowledge they need to enhance their capabilities. Also, companies in developing countries are suggested to build the culture that supports building the suitable capabilities to adopt with environmental changes.

While this study makes a number of contributions, there are some limitations that open opportunities for future studies. First, this study is based on evidence collected from interviews which make the results generalisability questionable, so it will be fruitful if future studies validate the findings using a quantitatively larger sample. Second, the findings disclosed the difference between companies in developed and developing countries enhancing their capabilities, therefore future studies are recommended to consider the cross-cultural differences between companies in different countries. Finally, by focusing on different industries, companies' sizes and countries, we have drawn a broad picture of the capabilities needed for servitization and the process of creating them. Future studies are advised to investigate the impact of these contextual factors on servitization and dynamic capability development.

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