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Investigating the role of Product Owner in Scrum teams: Differentiation between organisational and individual impacts and opportunities☆

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ABSTRACT

The role of the Product Owner in agile software development is critical being accountable for maximising the value, although becoming proficient in this role is a complex process. The Product Owner's responsibilities vary between different industries. The literature has not fully explained the role of a Product Owner. We shed light on the factors that influence the role at levels of organisation, team, stakeholder, and the individual. We conduct a systematic literature review in combination with a focus group consisting of practitioners to better understand the problem and to address the persistent gaps in theory and practice. Rather than exposing generic competencies associated with the role of Product Owner, our findings show that the role is tailored to fit the unique organisational context, including at the team level, and involves managing the organisational environment, including the institutional culture and politics. We also find an inherent tension arising from the fact that although the role of Product Owner is affected by the organisational level, the performance of the role is strongly influenced by attributes at the individual level. In particular, the individual's ability to establish and manage networks and relationships within the organisation is mediated by his or her communication skills.

1. Introduction

Agile software development methods have gained significant momentum in regard to the development of software solutions in many industries (Dingsøyr et al., 2012; Laanti et al., 2013; VersionOne, 2020). Agile development is rooted in the creative and constructive thinking of self-governed teams (Cohen et al., 2004; Conboy and Fitzgerald, 2004; Coram and Bohner, 2005; Sharp and Robinson, 2010). Of the current swarm of agile methods, Scrum is the most widely applied, and predominates in industrial agile practices (Baskerville et al., 2010; Chagas et al., 2014; Diebold et al., 2015; Srivastava et al., 2020; VersionOne, 2021). Scrum is an incremental and iterative approach that emphasises inspection, adaptation, and transparency (Hossain et al., 2009; Schwaber, 2004; Schwaber and Sutherland, 2020; Srivastava et al., 2017). The agile team forms the core of the agile software development process (Bianchi et al., 2020; Coram and Bohner, 2005; Highsmith and Cockburn, 2001): the most vital part of Scrum is a small, cross-functional, empowered, and self-organised team composed of a Scrum master, a number of developers, and a Product Owner (Cervone, 2011; Schwaber and Sutherland, 2020; Srivastava et al., 2017). The Scrum master ensures that the team's practices are in accordance with the Scrum framework, while the developers are responsible for creating a useable increment during a sprint, and the Product Owner is accountable for maximising the value of the product based on the efforts of the Scrum team (Cervone, 2011; Schwaber and Sutherland, 2020).

This paper focuses on the role of Product Owner. Product Owners are regarded as the nexus between all participants, as they are empowered to prioritise the product backlog according to the stakeholders' needs (Unger-Windeler and Klünder, 2018), meaning that this is a central and critical role (Bass et al., 2018) and is key to the success of Scrum (Oomen et al., 2017). However, the implementation of the role of Product Owner depends on the individual, the team, and the organisation (Unger-Windeler et al., 2019). The role is perceived as a difficult one to become proficient in (Unger-Windeler et al., 2019), as its success depends upon various factors such as the organisational culture, organisational structure, management style, and team interaction (Oomen et al.,

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2017; Unger-Windeler et al., 2019). Understanding of the role and the associated responsibilities differs between organisations, but is rarely in perfect conformance with the official Scrum framework (Sverrisdottir et al., 2014). In addition, the role of Product Owner seems to have been neglected in the literature (Palmer, 2013).

Statements in the Scrum guide such as *"The Product Owner is accountable for maximising the value of the product resulting from the work of the Scrum Team. How this is done may vary widely across organizations, Scrum Teams, and individuals"* (Schwaber and Sutherland, 2020) are intriguing, as they clearly underline the diffusion of the role. Besides interacting with the Scrum team, the Product Owner interacts with all relevant stakeholders, including the customers (Kristinsdottir et al., 2016), product management (Remta et al., 2020), and architects (Furda et al., 2022; Galster et al., 2016). Hence, the role of Product Owner is influenced by the environment.

Earlier studies have shed light on the role of Product Owner from various perspectives, where the role may not have been the sole focus of the research but instead was explored in conjunction with other elements of agile software development. These include the personality traits of the Product Owner role and other Scrum roles (Baumgart et al., 2015), human values and Scrum role preferences (Demi et al., 2020), the competencies of the Scrum team (Hidayati et al., 2021), and the competencies of the Product Owner in relation to the team's effectiveness and stakeholder satisfaction (Oomen et al., 2017). Studies have also explored the perspective and expectations of Scrum teams in regard to the role of Product Owner (Unger-Windeler and Schneider, 2019), forms of collaboration that nurture agile values (Judy and Krumins-Beens, 2008), the implications of the role of Product Owner in terms of agile release planning (Kantola et al., 2022), and quality assurance processes (Kumlander, 2015). Studies have also explored the adaptation practices of Scrum roles (Garcia et al., 2020), scaling the role of Product Owner (Paasivaara et al., 2012), tailoring this role (Bass and Haxby, 2019) with its distinct functions (Bass, 2015), and coordination mechanisms within and across teams (Berntzen et al., 2019) in large-scale agile and globally distributed projects. In particular, a large-scale agile setting exceeds the abilities of one individual, and the role is then performed by a Product Owner team (Bass, 2013; Bass et al., 2018; Bass and Haxby, 2019; Heikkilä et al., 2017). While agile methodologies prescribe seven (plus or minus two) developers per team, the factor used to distinguish between small- and large-scale projects is the number of teams, with two to nine teams representing a large-scale project and more than 10 a very large-scale one (Kalenda et al., 2018). In this study, we extract the elements related to product ownership from the literature, which provides a valuable and comprehensive understanding of the role of Product Owner role for any team size.

In this study, we explore the factors that influence the role of Product Owner at three levels, guided by the captivating statement according to the Scrum guide, by considering the organisational level, the team and stakeholder level, and the individual level. Hence, our research questions are first *What are the characteristics and responsibilities of the Product Owner role? RQ2. How is the role of the Product Owner influenced by the organisation, the team and stakeholders, and individual factors?RQ3. What are the challenges associated with the Product Owner role?* To answer these questions, we conduct a systematic literature review to identify firstly the characteristics and responsibilities of the Product Owner, and secondly the factors that influence this role at the organisational level, the team and stakeholder level, and the individual level. The decision to employ a systematic review is driven by the need observed in the literature for a reproducible and transparent methodology to address the fragmented nature of the existing research (Tranfield et al., 2003) on the Product Owner role. In this regard, while the current literature predominantly focuses on the recognised responsibilities of the Product Owner, there is a limited understanding regarding the specific differences of these responsibilities at the organisational, team, stakeholder, and individual levels. We also extend our investigation by organising a follow-up focus group with practitioners, which contributes additional and relevant information allowing us to achieve a richer understanding of the subject (Onwuegbuzie et al., 2009). The use of focus groups is suitable for studying subjects' behaviours and is particularly recommended for research problems with significant social relevance and research contexts that involve group interactions (Wilkinson, 1998; Krueger and Casey, 2014) as is the nature of our study. These aspects align well with our research problem, which aims to explore the responsibilities and characteristics of Product Owners in agile project environments. The validity of focus group also has been confirmed in the literature examining agile methods (Gren et al., 2015) and software architecture (Verdecchia et al., 2021).

In line with other studies that seek to investigate the characteristics of the role of Product Owner (Bass, 2013, 2015; Bass and Haxby, 2019; Sverrisdottir et al., 2014) we explore the perspectives of Scrum practitioners and descriptions of their industrial experiences in the focus group session.

A combination of a focus group with a systematic literature review allowed us to undertake a comprehensive investigation of the role of Product Owner and how it is shaped by the environment. This study contributes theoretical insights that solidify the literature related to the role of Product Owner, and suggests additional avenues for research that would advance current knowledge of this promising topic. Furthermore, this study offers insights to practitioners and organisations in which agile software development is deployed. The remainder of this paper is organised as follows: Section 2 outlines our research methodology. Section 3 presents the findings of the systematic literature review and the focus group. Section 4 discusses our findings, implications, interpretations for practitioners, limitations of the work, and directions for future research. Section 5 concludes the paper.

2. Methodology

In our study, we apply a systematic literature review (SLR), which is a transparent and reproducible strategy for synthesising the knowledge base in a specific field of study (Tranfield et al., 2003). Then we organise a focus group of five Product Owner professionals to elevate the SLR and achieve a richer understanding of the subject studied. The research approach of combining a systematic literature review with a focus group is endorsed to investigate specific roles in a project-based contexts (Alkhudary and Gardiner, 2021) and recommended to provide more validity and reliability (Ahmed et al., 2021).

The utilisation of systematic reviews guiding the exploration of the literature is beneficial in addressing questions that may not be adequately answered by individual studies (Tranfield et al., 2003). Specifically, structured protocols such as PRISMA was chosen for two primary reasons. Firstly, it has shown its effectiveness in generating diverse forms of knowledge across various domains of knowledge (Moher et al., 2009). Secondly, recent research in correlated themes such as project management domain focusing on the social aspects of project leaders has found PRISMA to be a valuable approach (Alkhudary and Gardiner, 2021). Also, focus group is suitable for our study because it is able to capture diverse perspectives and nuanced meanings associated with participants' roles, providing valuable insights into the social dynamics within a well-defined population (Krueger and Casey,

2014). The incorporation of focus groups in our research design, aiming to enhance the comprehension of the findings and address the research questions, is further supported by prior studies in the software development domain. For instance, Verdecchia et al. (2021) investigated the perception and handling of architectural debt within software development companies, employing a combination of grounded theory study and subsequent focus group sessions. Similarly, in our study, a focus group was utilised as a valuable method during the second phase of the research to deepen the understanding of the emerging findings derived from the collected data. The efficacy of focus groups was also demonstrated by Gren et al. (2015) in the development of an agile maturity measurement model. Our article investigates the distinct roles of Product Owners in agile environments, aligning with the nature of focus groups' ability to explore and uncover these dynamics with more precision than other methods.

2.1. Systematic literature review

The systematic literature review technique applied as part of this work enabled us to discover evidence from the existing literature available to address the research issues investigated in this study by informed scholars and practitioners in the project management domain. The purpose of the data analysis and synthesis performed as part of the literature study was to discover meaningful insights and guidance for organisations in terms of carrying out interventions to improve their project management activities and better define the role of Product Owner.

One advantage of systematic reviews is that they help with an understanding of the state of the art in an area of study and in identifying useful knowledge (Grant and Booth, 2009; Tranfield et al., 2003). Previous studies have claimed that a systematic review, as a research method, can reduce bias while increasing the validity of data analysis (Grant and Booth, 2009). The following guidelines were used to perform the review in addition to assessing and synthesising the existing research on the topic of this study.

Step 1. Definition of the research problem. Persistent knowledge of the characteristics and responsibilities of the contemporary Product Owner is lacking. Furthermore, the factors influencing the characteristics of the contemporary Product Owner, at the levels of the organisation, team and stakeholder, and individual, are unknown and ambiguous, giving rise to several organisational implications relating to the role in scaled agile settings (Bass, 2013; Bass et al., 2018; Bass and Haxby, 2019; Heikkilä et al., 2017).

Step 2. Definition of the objectives. The first objective of this systematic review was to understand the characteristics and responsibilities of the role of Product Owner. The second was to explore and identify how this role is influenced at the level of the organisation, the team and stakeholders, and the individual. The study also aimed to understand the challenges associated with the role of Product Owner.

Step 3. Primary data sources. The databases considered in this systematic literature review were Scopus, Web of Science, Science Direct, Wiley and IEEE Explore. Scopus and Web of Science, for example, were chosen because they are considered the largest scientific databases, and include the most widely cited journals in their respective areas; they cover the main subject areas and categories relevant to the field of project management, such as information systems, business, management, and engineering journals (Mongeon and Paul-Hus, 2016).

Step 4. Keywords and search criteria. The terms "Product Owner" AND "Role" AND "Agile" were searched for using the title, abstract, and keyword search criteria of the databases.

Step 5. Definition of the survey period. The period covered in this study extended from January 2005 to March 2022. Although the survey period covered almost two decades of research related to the role of Product Owner, the majority of the contributions were made in recent years, as displayed in Fig. 2. In particular, nearly 50% (47.5%, 19 out of 40 papers) of the contributions included in our study were published within the last three years of the survey period (January 2019–March 2022). This emphasises the growing attention towards the role of Product Owner, as is evident from Fig. 2. Hence, this review includes both the evolvement and the most contemporary evidence from the literature to examine the modern role of Product Owners in organisations. It can be seen from Fig. 3 that this research is predominantly qualitative.

Step 6. Criteria for inclusion and exclusion. After screening all the sections of the potential papers following the procedures in Step 4, we considered only empirical and conceptual papers written in English that had been published in journals and conferences in the subject areas of project management and agile project management. In the subsequent stage, after an analysis of the content of the publication, the following inclusion criteria were adopted: (i) papers examining the characteristics and descriptions of the role of Product Owner as well as the associated responsibilities and tasks; (ii) papers examining the challenges faced by Product Owners acting in organisations; (iii) papers discussing the factors influencing the role of Product Owner at the level of the organisation, the team and stakeholders, and the individual. The main exclusion criteria were: (i) papers lacking a focus on this role, and essentially providing no meaningful insights in terms of answering the research questions; (ii) a lack of availability of the full-text form of the paper in the databases; (iii) papers written in languages other than English.

Step 7. Qualification criteria. To minimise the effect of bias during the quality assessment of these studies, we adopted an independent double-blind screening process for the papers (Tranfield et al., 2003). This strategy supported the decisions regarding the choice of the papers and the fit between the selected publications and research questions. Finally, a complete reading of the selected articles was carried out to better understand the content of the papers.

Step 8. Methods and results. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) process was used to report the outcomes of the systematic review (see Fig. 1) (Moher et al., 2009). This protocol was developed to improve the reporting of evidences and evaluation of systematic reviews studies.

To ensure transparency, Table 1 shows the author(s) of the selected studies, the year of publication, the type of research conducted, and the type of publication.

2.1.1. Data synthesis and analysis

The analysis undertaken as part of this systematic literature review is guided by the statements and definitions related to the role of Product Owner given in the Scrum guide (Schwaber and Sutherland, 2020). We define two categories to explore the characteristics and responsibilities of the Product Owner. According to the Scrum guide, "*The Product Owner is accountable for effective Product Backlog management. The Product Owner may do the below work or may delegate the responsibility to others. Regardless, the Product Owner remains accountable*"(Schwaber and Sutherland, 2020). The initial theme of the analysis explores "the role of Product Owner", which is divided into two categories: "characteristics of the role of Product Owner" and "responsibilities of the Product Owner". A statement such as *"being accountable for maximizing the value"* (Schwaber and Sutherland, 2020) falls into the category of "characteristics of the role of Product Owner ", whereas *"Creating and clearly communicating Product Backlog items"* (Schwaber and Sutherland, 2020) falls into the category of "responsibilities of the Product Owner", as this describes a

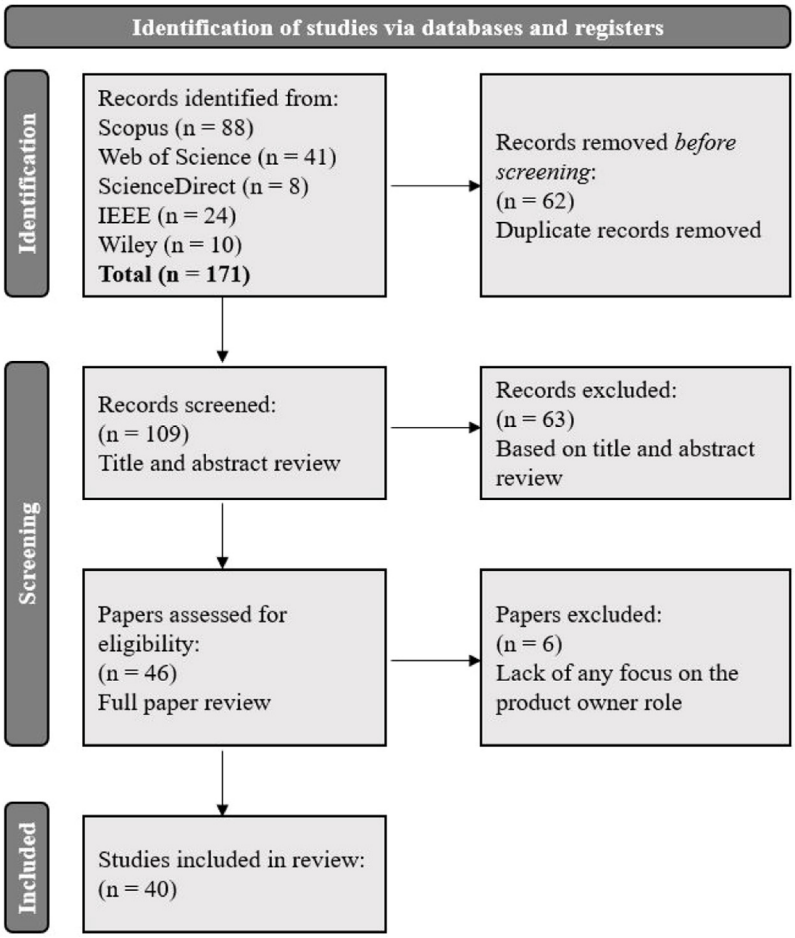

Fig. 1. Process used to conduct a systematic literature review.

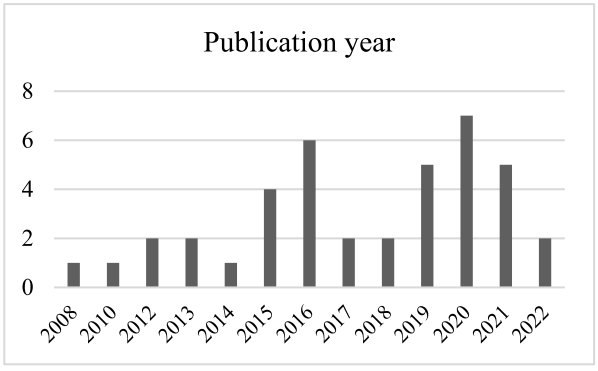

Fig. 2. Selected papers by year of publication.

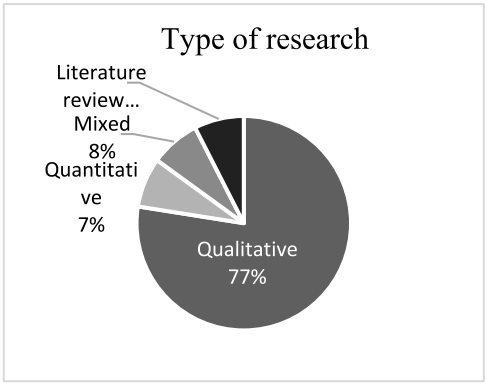

Fig. 3. Selected papers by type of research.

specific task to be performed. Our quest to explore the factors that influence the role of Product Owner are likewise guided by the Scrum guide. Statements from the guide such as "*The Product Owner is accountable for maximizing the value of the product resulting from the work of the Scrum Team. How this is done may vary widely across organizations, Scrum Teams, and individuals*" (Schwaber and Sutherland, 2020) are attractive but uneasy, and leave room for interpretation. Hence, the role of Product Owner can be influenced at the organisational level, the team level, and finally the individual level. The overall theme of "influencing factors" considered in the analysis consists of three categories: (i) the organisational level; (ii) the team and stakeholder level; and (iii) the individual level. Factors related to organisational structures fall into the category of "organisation level", whereas factors related to dynamics and collaboration with stakeholders and the team fall into the "team and stakeholder level" category. Finally, the individual characteristics, competencies, and personality traits related to the Product Owner fall into the category of "individual level". We also include a separate theme of "challenges" to explore the tensions, concerns and challenges related to the role of Product Owner.

Each of the 40 papers were read thoroughly, and items within each paper that were relevant to any of the categories were written on a coding sheet under the specific category. Upon

Table 1
Summary of papers included in the review.

Author(s)	Year	Type of research	Publication type	Source
Judy K.H., Krumins-Beens I.,	2008	Qualitative	Conference proceedings	*41st Annual Hawaii International Conference on System Sciences*
Eckstein J.	2010	Qualitative	Book chapter	*Implementing Agile Methods in Global Software Projects*
Denning S.	2012	Qualitative	Journal article	*Strategy and Leadership*
Paasivaara M., Heikkilä V.T., Lassenius C.	2012	Qualitative	Conference proceedings	*Empirical Software Engineering*
Bass J.M.	2013	Qualitative	Conference proceedings	*IEEE 8th International Conference on Global Software Engineering*
Palmer K.	2013	Qualitative	Conference proceedings	*INCOSE International Symposium*
Sverrisdottir H.S., Ingason H.T., Jonasson H.I.	2014	Qualitative	Journal article	*Procedia - Social and Behavioural Sciences*
Bass J.M.	2015	Qualitative	Journal article	*IEEE Software*
Baumgart R., Holten R., Hummel M.	2015	Qualitative	Conference proceedings	*23rd European Conference on Information Systems*
Kumlander D.	2015	Qualitative	Journal article	*Lecture Notes in Electrical Engineering*
Alt-Simmons, R.	2015	Qualitative	Book chapter	*Agile by Design: An Implementation Guide to Analytic Lifecycle Management*
Angelov S., Meesters M., Galster M.	2016	Qualitative	Conference proceedings	*Lecture Notes in Computer Science*
Galster M., Angelov S., Meesters M., Diebold P.	2016	Qualitative	Conference proceedings	*Lecture Notes in Computer Science*
Gupta R.K., Reddy P.M.	2016	Mixed	Conference proceedings	*49th Hawaii International Conference on System Sciences (HICSS)*
Hastie S.	2016	Qualitative	Book chapter	*Product Ownership Is a Team Sport*
Kristinsdottir S., Larusdottir M., Cajander Å.	2016	Qualitative	Conference proceedings	*Lecture Notes in Computer Science*
Ellis G.	2016	Qualitative	Book chapter	*Agile Project Management: Scrum, eXtreme Programming, and Scrumban*
Heikkilä V.T., Paasivaara M., Lasssenius C., Damian D., Engblom C.	2017	Qualitative	Journal article	*Empirical Software Engineering*
Oomen S., De Waal B., Albertin A., Ravesteyn P.	2017	Quantitative	Conference proceedings	*25th European Conference on Information Systems*
Bass J.M., Beecham S., Razzak M.A., Canna C.N., Noll J.	2018	Qualitative	Conference proceedings	*40th International Conference on Software Engineering*
Unger-Windeler C., Klünder J.	2018	Quantitative	Conference proceedings	*45th Euromicro Conference on Software Engineering and Advanced Applications*
Bass J.M., Haxby A.	2019	Qualitative	Journal article	*IEEE Software*
Berntzen M., Moe N.B., Stray V.	2019	Qualitative	Conference proceedings	*Lecture Notes in Business Information Processing*
Müller M., Schindler C., Slany W.	2019	Qualitative	Conference proceedings	*IFIP Advances in Information and Communication Technology*
Unger-Windeler C., Schneider K.	2019	Quantitative	Conference proceedings	*Lecture Notes in Computer Science*
Unger-Windeler C., Klunder J., Schneider K.	2019	Literature review	Conference proceedings	*Journal of Software: Evolution and Process*
Baham C.	2020	Mixed	Journal article	*Journal of Information Technology Education: Research*
Demi S., Colomo-Palacios R., Johansen S.H., Sánchez-Gordón M.	2020	Qualitative	Conference proceedings	*2020 IEEE/ACM 42nd International Conference on Software Engineering*
Garcia L.A., Oliveirajr E., Leal G.C.L., Morandini M., Urbanowski S.	2020	Qualitative	Conference proceedings	*ACM International Conference Proceedings*

(*continued on next page*)

Table 1 (*continued*).

Miler J., Gaida P.	2020	Mixed	Conference proceedings	*Lecture Notes in Business Information Processing*
Remta D., Doležel M., Buchalcevová A.	2020	Qualitative	Conference proceedings	*Lecture Notes in Business Information Processing*
Remta D.	2020	Literature review	Conference proceedings	*28th Interdisciplinary Information Management Talks*
Wu Y., Guimaraes A., Wang Z.	2020	Qualitative	Journal article	*Journal of Library Administration*
Harden M., Ajamie L.	2021	Qualitative	Journal article	*College and Undergraduate Libraries*
Remta D., Buchalcevova A.	2021	Qualitative	Journal article	*Information*
Unger-Windeler C., Klünder J.A.-C., Reuscher T., Schneider K.	2021	Qualitative	Journal article	*Lecture Notes in Business Information Processing*
Vedal H., Stray V., Berntzen M., Moe N.B.	2021	Qualitative	Conference proceedings	*Lecture Notes in Business Information Processing*
Hidayati A., Budiardjo E.K., Purwandari B.	2021	Qualitative	Journal article	*Quality—Access to Success*
Furda R., Molnar E., Greguš M.	2022	Literature review	Book chapter	*Studies in Systems, Decision and Control*
Kantola K., Vanhanen J., Tolvanen J.	2022	Qualitative	Journal article	*Information and Software Technology*

completion of the coding process, items within each category were reviewed for any discrepancies, and if necessary, moved into a more appropriate category. The selected papers were represented differently throughout the categories, depending on the relevance. Each category was coded separately, and items from the papers were reviewed multiple times to identify topics. In the following, we consider each category individually in terms of the identified topics. Initially, we discuss the first theme, i.e. the "role of Product Owner", and the two categories within this theme, "characteristics of the Product Owner" and "responsibilities of the Product Owner", are presented separately. We then consider the theme of "influencing factors", and each of the three categories comprising this theme (organisational, team and stakeholder, and individual levels) is discussed separately. The analysis is completed by considering the "challenges" category. Tables 3, 4, and 5 provide an overview of the topics within each category.

2.2. Focus group

A focus group (Morgan et al., 1998; Onwuegbuzie et al., 2009; Wilkinson, 1998) was organised to enhance our knowledge of the Product Owner role and to deepen our insight into the influencing factors at the levels of the organisation, stakeholder and team, and individual. The four-hour focus group consisted of five practitioners, including not only Product Owners but also an agile coach and a trainer of Product Owners; these participants were carefully selected to provide multilayered perspectives on the unfolding of the Product Owner role in organisations, as summarised in Table 2. Prior to the session, the participants were informed about the topic and duration. The session was moderated by an experienced facilitator, a coordinator was assigned to take notes, and all participants agreed to go on record.

Following the recommendation by Krueger and Casey (2014), all of the authors of this paper were present throughout the entire session. Each of the five authors undertook distinct roles, particularly during the first part of the session: one facilitator mainly interacted with the participants during the creative process, another assisted the facilitator and took notes, while the remaining three authors played the role of silent observers and took notes. During the second part of the session, which was a roundtable discussion, all of the authors engaged in discussion with the practitioners by asking questions that were both prepared in advance and emerged throughout the session. One author took notes during the roundtable discussion in addition to the audio recording. After the completion of the session, one author transcribed the writings on the whiteboards and post-it notes and photographed everything, as it appeared to support the data analysis.

The focus group session started with a presentation about our research and the purpose of the focus group, and was structured in two parts. The goal of the first part was to portray a fictive Product Owner in opposing scenarios, an unsuitable scenario and a favourable scenario, which draws upon the participants' extensive experience in the agile environment. With inspiration from human centred design as a point of departure, the purpose was to create hypothetical archetypes (Turner and Turner, 2011) of real Product Owners, in the form of personas, in realistic scenarios (Grudin and Pruitt, 2002). A persona is described in a narrative form to make it seem like a real person. Hence, the narrative brings the persona to life (Miaskiewicz and Kozar, 2011). The goal of the second part was to gain a richer understanding of the Product Owners' interfaces with the organisational context. The first part of the session encouraged creative constructs based on the participants' extensive experience. Here, the participants unfolded a fictive portrait of a Product Owner in an unsuitable scenario, and one portrait of a favourable scenario. In each scenario, the participants were guided to address and consider the interorganisational context and personal characteristics. During the creative process, the practitioners freely interacted with each other and used joint whiteboards and post-it notes to capture their discussions, opinions, and statements. The author who took the role of facilitator frequently engaged with the practitioners, firstly by explaining the exercise and guiding them throughout the process, and secondly by asking follow-up and clarifying questions about the post-its and whiteboard writings to ensure that all of the meanings and opinions had been understood. The second and concluding part involved a roundtable discussion which aimed to capture the participants' views of the realities of the Product Owner role in various organisational contexts. To analyse the data, we combined the field notes, records, whiteboard notes and post-its, and observations and conducted a qualitative thematic coding (Braun and Clarke, 2012; Clarke et al., 2015; Terry et al., 2017).

This study has benefited from the use of an experienced focus group. However, risks and bias are recognised. The participants were unpaid and spend their effort during their workhours. They joined in their capacity as knowledgeable volunteers. They were experienced from numerous industrial sectors: Banking, manufacturing, energy, retail, government. The group presented a view from Danish companies but striving to use a "global rhetoric"

Table 2
Results from the Product Owner (PO) focus group.

Participant	Domain industry experience (years)	Experience in project management (years)	Formal experience in the role of Product Owner (years)	Key industries	Notable certifications	Key take away
PO#1	23	10	5	Finance	Certified Scrum Product Owner	PO responsible for people management activities
PO#2	6	16	4 (mostly Scrum Master)	Multiple	SAFe® 5 Program Consultant	PO defines roles when many external consultants are engaged
PO#3	5	4	Agile coach	Finance, manufacturing	SAFe Advanced Scrum Master	PO is difficult but critical to the agile thinking
PO#4	2	9	4	Finance	Certified SAFe® 5 Product Owner	PO defines roles and ensures clarity of responsibilities
PO#5	7	4	2 (mostly as PO trainer)	Manufacturing	Certified Scrum Product Owner	PO experience and "organisational power" is key determinant for success

Table 3
Summary of SLR results: Product Owner characteristics and responsibilities.

The role of the Product Owner	
Characteristics	- A central and a critical role in terms of overseeing the overall strategic vision of the project - Must have sufficient authority, be respected and empowered to make decisions - Responsible for the return on investment and maintaining a continuous focus on business delivery - Represents the interests of internal and external stakeholders and customers - Ensures that product increments are delivered to the satisfaction of the customer - Must communicate effectively and act as the line of communication between stakeholders and the team - Must understand business interests and needs, and translate these into practical software requirements - Must have product or technical domain knowledge
Responsibilities	- Providing direction and managing the product lifecycle - Developing, maintaining, eliciting and prioritising items, requirements or user stories in the product backlog - Performing all communications between the team and the stakeholders outside the team - Working in close contact with the various stakeholders to describe the functions to be developed in the product backlog - Being available to the team and shielding the team from the external environment - Ensuring that the development team's work is as productive as possible - Assessing whether features have met the definition of 'done' and approving software produced for release to customers - Technical involvement

of Scrum. The results might be different in different cultures with e.g. less transparency, more power distance, or more social tensions.

3. Analysis and findings

In this section, we present the findings of the systematic literature review analysis and subsequently the findings of the focus group.

3.1. Systematic literature review — the role of product owner

First, this section presents the findings of the systematic literature review analysis related to the role of Product Owner, which consists of two categories: "characteristics of the Product Owner" and "responsibilities of the Product Owner". Second, we present the findings related to the "Influencing factors" at the organisational level, the team and stakeholder level, and the individual level. Third, we present the identified challenges related to the Product Owner role.

3.1.1. Characteristics of the product owner

Product ownership plays a central and a critical role in regard to overseeing and ensuring the clarity of the overall strategic vision for the project (Bass, 2013; Ellis, 2016; Harden and Ajamie, 2021; Hastie, 2016; Miler and Gaida, 2020; Sverrisdottir et al., 2014) and directing the project throughout the software development process (Alt-Simmons, 2015; Bass et al., 2018). The Product Owner is accountable for achieving the business objectives (Judy and Krumins-Beens, 2008) that are aligned with the organisational strategy (Hastie, 2016). Hence, the Product Owner is responsible for the return on investment (Demi et al., 2020; Ellis, 2016), and must ensure a continuous focus on business delivery (Eckstein, 2010). To achieve this, the Product Owner must have sufficient authority, and must be respected and empowered to make decisions (Alt-Simmons, 2015; Baham, 2020; Harden and Ajamie, 2021; Sverrisdottir et al., 2014).

Key characteristics of the role involve acting as the voice of customers in the development process and representing the interests of internal and external stakeholders (Demi et al., 2020;

Table 4
Summary of SLR results: Influencing factors.

Influencing factors		
Organisational level	-	The responsibilities and demands associated with large-scale (and global) agile projects exceed the capabilities of one individual
	-	Product ownership is performed by a Product Owner team and the role is shared among several individuals, which include both management and technical representatives
	-	Increased synchronisation within the Product Owner teams
	-	Product Owner teams may produce a internal hierarchical team structure
	-	Existing work must be considered when laying out the roles and responsibilities of the Product Owners
	-	The time of the Product Owners must be protected to allow space for both creative and strategic thinking
	-	The work culture and gender dynamics may influence the perception of a Product Owner's work
	-	Potential risks, resistance, and changes in institutional culture and politics should be identified prior to the introduction of the Product Owner role
Team and stakeholder level	-	In large-scale agile projects, the project owner must serve multiple cooperating development teams over longer time scales and manage a broader range of stakeholders
	-	Becoming a part of a Product Owner team can influence the proximity to the customer, as the information travels over longer distances from the customer to the development team
	-	Architectural activities are significantly influenced by the skills of the Product Owner
	-	Responsibilities overlap with product management
	-	Team-level characteristics influence the Product Owner's orientation (customer vs. technical)
	-	Product Ownership can be rotated among development team members
	-	Team culture and spirit can nurture a collaborative product ownership environment
Individual level	-	Experience and high status are needed to exert influence over other stakeholders
	-	Personality traits: independence (self-direction), authority (power), self-confidence, assertiveness, low vulnerability. Compliance to prevent conflicts, sensitivity, ability to work in a team, trust in the team, modesty. Must be orderly and structured. Requires strong communication, relationship management and social skills, trustworthiness. Technical skills.
	-	Expectations exceed the capabilities of one individual

Table 5
Summary of SLR results: Product Owner role challenges.

Product Owner role challenges	
-	May become too business-oriented and lack architectural and technological knowledge and competence
-	Cannot provide architectural information in software development or engage in discussions — team must directly communicate with external stakeholders
-	Lack of adequate communication and timely feedback, busyness and unavailability
-	Must balance duality and may find themselves caught between two chairs
-	Lack of synchronisation among Product Owners: each Product Owner pushes their own agenda and ignores the overall business functionality of the system
-	The activities, tasks, and responsibilities exceed the capabilities of a single individual
-	There is external pressure to push out new features, and the effort to develop domain competence for new projects are issues of tension
-	Stressed and overloaded Product Owners can have a severe influence on the overall performance of the organisation

Denning, 2012; Ellis, 2016; Oomen et al., 2017; Palmer, 2013). In this way, the Product Owner maximises the value of the product (Oomen et al., 2017) and ensures that product increments are delivered to the satisfaction of the customer (Alt-Simmons, 2015; Baham, 2020; Miler and Gaida, 2020).

Effective communication skills are required (Baham, 2020; Miler and Gaida, 2020; Sverrisdottir et al., 2014; Unger-Windeler et al., 2019) in order to act in the line of communication between stakeholders, customers and the development team (Bass, 2013; Harden and Ajamie, 2021; Hastie, 2016; Sverrisdottir et al., 2014). Hence, the Product Owner becomes the link between the customer or the user side of an organisation and the development team (Kristinsdottir et al., 2016); (Unger-Windeler and Klünder, 2018).

For this reason, the Product Owner should have a knowledge of the business domain (Garcia et al., 2020) and understands the business interests and needs (Baham, 2020), and can translate these into prioritised and practical software requirements (Alt-Simmons, 2015; Bass et al., 2018; Bass and Haxby, 2019; Kantola et al., 2022; Miler and Gaida, 2020; Müller et al., 2019; Palmer, 2013; Paasivaara et al., 2012).

In essence, the literature shows that the Product Owner is the primary channel via which relevant information about the content and context of backlog items is communicated to teams (Alt-Simmons, 2015; Kantola et al., 2022; Paasivaara et al., 2012). To do this, the Product Owner must understand the development process (Hastie, 2016) and should constantly collaborate and plan with the team regarding how to produce most value for the business (Kristinsdottir et al., 2016; Müller et al., 2019). In addition, the Product Owner needs to be a product domain specialist or at least to have domain knowledge (Alt-Simmons, 2015; Galster et al., 2016; Miler and Gaida, 2020).

3.1.2. Responsibilities of the product owner

The overarching responsibility of the Product Owner is to maximise the value of the project (Judy and Krumins-Beens, 2008; Kristinsdottir et al., 2016) by providing direction, managing the product lifecycle, and bringing new products to life (Baham, 2020; Bass, 2015). It is paramount that the Product Owner balances the needs and priorities of the organisation, customers, and end users to determine the features the product will contain and the sequence for developing those features (Alt-Simmons, 2015).

The Product Owner gathers, develops, maintains, elicits and prioritises items, requirements or user stories in the product backlog (Baham, 2020; Bass, 2013, 2015; Bass et al., 2018; Bass and Haxby, 2019; Harden and Ajamie, 2021; Hastie, 2016; Judy and Krumins-Beens, 2008; Kristinsdottir et al., 2016; Remta and Buchalcevova, 2021; Remta et al., 2020; Unger-Windeler and Klünder, 2018; Unger-Windeler and Schneider, 2019), and has content rights to the team backlog (Furda et al., 2022). Although the Product Owner is responsible at any given time for setting priorities as to what should be worked on in any particular sprint, the role is not that of a conventional boss or even a benevolent dictator (Denning, 2012).

The Product Owner represents all stakeholders (Judy and Krumins-Beens, 2008) in terms of clarifying the different requirements of the various customers (Eckstein, 2010; Unger-Windeler and Klünder, 2018), and clearly communicates the business needs and product backlog items to the development team (Berntzen et al., 2019; Garcia et al., 2020; Hidayati et al., 2021; Kantola et al., 2022; Kristinsdottir et al., 2016; Remta, 2020; Sverrisdottir et al., 2014; Vedal et al., 2021). This means that the Product Owner needs to work in close contact with the various stakeholders to describe the functions to be developed in the product backlog (Harden and Ajamie, 2021; Oomen et al., 2017; Remta, 2020; Remta and Buchalcevova, 2021; Remta et al., 2020; Sverrisdottir et al., 2014). In order to balance technical necessity with the needs of customers, the Product Owner must be able to speak the technical language to represent the customers' voices in the self-organised development process (Palmer, 2013). Hence, the Product Owner gives a single voice to the project in order to provide guidance to the development team on the functionality that needs to be delivered to satisfy stakeholder needs (Alt-Simmons, 2015).

For this reason, the Product Owner performs all communications between the team and the stakeholders outside the team (Bass, 2015; Bass et al., 2018; Eckstein, 2010; Ellis, 2016; Galster et al., 2016; Harden and Ajamie, 2021; Kantola et al., 2022; Unger-Windeler et al., 2019; Unger-Windeler and Klünder, 2018), for example by telling stakeholders which items from the product backlog have been completed (Furda et al., 2022; Hidayati et al., 2021; Sverrisdottir et al., 2014).

At the team level, the Product Owner is responsible for enabling the work of the development team to be as productive as possible, and for ensuring the value of the work performed by the development team (Garcia et al., 2020; Kantola et al., 2022; Kristinsdottir et al., 2016; Kumlander, 2015; Oomen et al., 2017; Vedal et al., 2021). Hence, the Product Owner must be available to the team (Baham, 2020; Sverrisdottir et al., 2014; Vedal et al., 2021), shield the team from the external environment (Galster et al., 2016), and manage conflicts within the team (Hidayati et al., 2021). In addition, the Product Owner provides feedback, assesses whether features meet the definition of 'done', and approves software produced for release to customers (Baham, 2020; Bass et al., 2018; Bass and Haxby, 2019; Furda et al., 2022; Hidayati et al., 2021).

The responsibilities entailed within the sphere of product ownership are evolving, and new activities are emerging, including the notion of technical involvement. While technical decision making or acting as a technical governor or an architect are traditionally not associated with product ownership (Unger-Windeler and Klünder, 2018), there is a slight drift towards deeper technical involvement (Remta, 2020). This involvement may include designing, implementation, and dissemination of a reference architecture for large projects, participating in test activities, verifying the completion of requirements, and managing technical risks (Hidayati et al., 2021; Remta, 2020). On the business side, the responsibilities may drift towards providing user support, and at the team level, the focus may move beyond team coordination to team leadership (Remta, 2020). Finally, the literature indicates that Product ownership is indisputably an inward, outward, rewarding, and diverse role that involves handling daily and future activities to ensure that people are always engaged in the right activities (Kristinsdottir et al., 2016). Table 3 summarises the identified characteristics and responsibilities of the Product Owner role.

3.1.3. Influencing factors

A wide range of factors can influence the success of the Product Owner, such as the organisational culture, type of project, management approach, and interactions within the team, among others (Sverrisdottir et al., 2014). Organisations can target the desired features and meet user expectations more accurately by understanding how Product Owners affect the development team (Kumlander, 2015). In this section, we present the findings of our systematic literature review and analysis related to the "Influencing factors". These are divided into three categories: the organisational level, the team and stakeholder level, and the individual level.

3.1.3.1. Organisational level. When agility is implemented throughout the organisation, large-scale agile projects have a strong influence on the role of Product Owner (Kantola et al., 2022; Remta et al., 2020). Additional activities are included in the Product Owner's responsibilities to such an extent that the associated responsibilities and demands exceed the capabilities of one individual (Bass, 2013; Bass et al., 2018; Bass and Haxby, 2019). For this reason, product ownership is performed by a Product Owner team and tasks are shared among several individuals (Bass, 2015, 2019; Bass and Haxby, 2019; Gupta and Reddy, 2016; Heikkilä et al., 2017). Technical and governance issues are added to the responsibilities of the Product Owner (Bass et al., 2018) along with a string of organisational and communicative task that all might be more than what one individual can accommodate (Bass and Haxby, 2019). Hence, the Product Owner team must include both management and technical representatives (Bass, 2015). These teams are required to manage multiple development teams and the complexity in large scale and even globally distributed organisations (Bass, 2013, 2015; Berntzen et al., 2019; Heikkilä et al., 2017).

Synchronisation becomes paramount in the scaled and distributed environment to allow for the coordination of complex, interdependent tasks and team goals and to ensure that the resulting system provides a surplus with each iteration (Berntzen et al., 2019; Eckstein, 2010; Heikkilä et al., 2017). Within the Product Owner teams, frequent coordination and update meetings are required in order to manage and synchronise the work of development teams and to guide these teams by creating and prioritising epics (Berntzen et al., 2019; Heikkilä et al., 2017). The Product Owners synchronise with the development teams to create, split and estimate user stories (Heikkilä et al., 2017).

The establishment of Product Owner teams can give rise to additional team structures, as synchronisation efforts require a lead or chief Product Owner to mediate between and steer the feature-team Product Owners (Eckstein, 2010; Gupta and Reddy, 2016; Heikkilä et al., 2017). The lead Product Owner, situated

for example at the portfolio management level, conveys decisions about requirements and feature information to the Product Owners within the Product Owner team. The Product Owners then disseminate this information to the development teams (Heikkilä et al., 2017). Several distinct roles can also be distributed among the Product Owner team, with a particular focus on technical, governance, or business elements, among others (Bass, 2015; Bass and Haxby, 2019; Gupta and Reddy, 2016).

The authority associated with the role of Product Owner needs to be clearly articulated to the organisation at the outset, as this influences the success of the role (Harden and Ajamie, 2021). Organisations should protect the Product Owners' time, to allow space for both creative and strategic thinking and the completion of important project tasks (Harden and Ajamie, 2021). Organisations must also consider existing work when laying out the roles and responsibilities of the Product Owners, where a lack of consideration may result in low productivity and burnout (Harden and Ajamie, 2021). Furthermore, it is important to consider how the work culture and gender dynamics may influence the perception of a Product Owner's work and responsibilities (Harden and Ajamie, 2021).

The introduction and implementation of the Product Owner role within the organisation can be facilitated by the Project Management Office (PMO). This includes a description of the role and the responsibilities, authority boundaries, and expectations, which are needed to explain how the Product Owner fits into the existing organisational structure (Oomen et al., 2017; Wu et al., 2020). Furthermore, potential risks, resistance, and changes in institutional culture and politics should be identified with plans for how to address them prior to introduction of the Product Owner role and the new structural changes (Oomen et al., 2017; Wu et al., 2020). Finally, introducing the role at a smaller scale may work better.

3.1.3.2. Team and stakeholder level. Scaling agility throughout the organisation influences the interactions at the team and stakeholder level. In large-scale agile projects, the Product Owner must serve multiple cooperating development teams over longer time scales and manage a broader range of stakeholders (Bass and Haxby, 2019). Product ownership can therefore become a group effort (Unger-Windeler et al., 2021).

Whereas an "ordinary" Product Owner becomes a part of the Product Owner team, a lead Product Owner becomes the key point of contact for the real customer and collects their key ideas (Eckstein, 2010). Hence, the information travels over longer distances between the customer and the development team (Eckstein, 2010; Gupta and Reddy, 2016). A lead Product Owner ensures that the other Product Owners disseminate the same information about the requirements to the development teams (Gupta and Reddy, 2016). While the lead Product Owner may have the final authority over all product-related decisions, input from the team of Product Owners is required in order to make decisions on business priorities (Eckstein, 2010). In large-scale and globally distributed projects, a local Product Owner should be in place at each site as a representative (Eckstein, 2010; Paasivaara et al., 2012). Regardless of whether scaled and globally distributed development is in place, the sharing of Product ownership among several individuals is recommended, as this increases their availability to the development team; this in turn brings different types of expertise and user perspectives to the table, ensures feedback from various stakeholder groups, and reduces delays (Harden and Ajamie, 2021).

Architectural activities are significantly influenced by the skills of the Product Owner (Furda et al., 2022; Galster et al., 2016). The interaction between architects and the individuals filling the other roles in the Scrum team heavily depends on the Product Owner (Galster et al., 2016). A lack of architectural knowledge reduces the ability of the Product Owners to facilitate architectural work and to provide sufficient information to architects and the development team. This imposes an increased workload on the "internal" team member architects, who must communicate directly with external stakeholders or enterprise architects about architectural issues. External architects become empowered to remove stories from the sprint backlog that are not sufficiently specified by the Product Owner, which positions the architect higher in the hierarchy than the Product Owner (Galster et al., 2016). Inevitably, this diminishes the purpose of the Product Owner role in Scrum (Galster et al., 2016). Hence, an overlap between the roles of Product Owner and enterprise architect is important, meaning that software architects or domain experts are suitable candidates for the role of Product Owner (Furda et al., 2022; Gupta and Reddy, 2016). Nonetheless, the education of Product Owners in the field of architecture is important to ensure that they can extract architecturally relevant information from stakeholders to support architects in carrying out their roles (Furda et al., 2022).

Product managers, who drive and develop business and product plans, strongly influence the decisions of Product Owners about priorities and requirements for development (Remta et al., 2020). In view of this, product managers fit with the role of lead Product Owner (Gupta and Reddy, 2016) and these two roles may even overlap (Palmer, 2013). The literature also shows that the characteristics of the Product Owner at the team level influence this role and its orientation. Feature teams require a more market and customer-oriented Product Owner, whereas component teams require a more technically oriented Product Owner who can translate needs into technical requirements (Paasivaara et al., 2012).

The team can also share the role of Product Owner, with this role being assumed by the person who has the clearest vision of the product at that point in the development process (Denning, 2012). The Product Owner is whoever in the team has the deepest technical knowledge at that moment, and thus has the clearest vision of the work in the current sprint and can prioritise the possible things the team needs to work on (Denning, 2012). The culture or spirit of the team can influence Product ownership, as a performing team and a capable Product Owner can build a spirit of collaborative Product ownership environment over all aspects of a product lifecycle. In a culture such as this, there is no clear barrier between the Product Owner and the team, yielding a partnership based on excellent performance, mutual respect, and profound trust (Judy and Krumins-Beens, 2008).

3.1.3.3. Individual level. The wide range of challenging activities associated with this role means that experience and high status are required to be able to exert influence over other stakeholders (Bass et al., 2018). Human values such as self-direction and power are associated with a preference for the Product Owner role. Individuals who are directed by values such as independence (self-direction) and authority (power) tend to prefer the role of Product Owner (Demi et al., 2020). The Product Owner needs self-confidence, assertiveness, and a lack of vulnerability when seeking a compromise between contrasting interests and balancing competing viewpoints (Baumgart et al., 2015; Harden and Ajamie, 2021). On the other hand, the Product Owner needs a string of inter-personal competencies/ to prevent conflicts, and requires sensitivity, the ability to work in a team, trust in the team, and modesty, so that the team is able to remain self-organised (Baumgart et al., 2015). Lastly, the Product Owner needs to have an orderly and structured mindset in order to manage the backlog (Baumgart et al., 2015; Harden and Ajamie, 2021), since backlog management competency is the key predictor of team effectiveness according to Oomen et al. (2017).

Expert communication skills are required (Harden and Ajamie, 2021; Müller et al., 2019; Unger-Windeler et al., 2021), as the Product Owner needs to communicate with the team and a wide range of stakeholders, including listening and responding to concerns, and providing feedback on work completed by others (Harden and Ajamie, 2021). Strong communication skills are preferable to technical decision-making competencies (Unger-Windeler and Klünder, 2018). Hence, the Product Owner's competence in relationship management and user support acts as a predictor of team effectiveness and stakeholder satisfaction (Oomen et al., 2017). In additional, trustworthiness is a preferred characteristic of the Product Owner (Unger-Windeler and Schneider, 2019; Wu et al., 2020). Besides business- and negotiation-related qualities such as being team collaboration-oriented, orderly and structured, and having communication and relationship management competencies, the Product Owner should also have sufficient technical knowledge (Heikkilä et al., 2017). In particular, architectural competencies are emphasised in order to enable the project owner to provide architecturally relevant information, communicate architectural decisions to the team and the stakeholders, and even get involved in architectural activities (Furda et al., 2022; Galster et al., 2016).

The Product Owner is expected to have excellent social and communication skills in order to maintain relationships with team and stakeholders and keep the big picture in mind, while still possessing the requisite detailed and technical insight to function as architect, risk manager, and quality assurance officer (Bass, 2013; Bass and Haxby, 2019). These expectations may seem overwhelming and certainly impose stringent requirements on individual capabilities (Harden and Ajamie, 2021; Hastie, 2016), particularly in scaled agile projects (Bass, 2015; Bass et al., 2018; Bass and Haxby, 2019). The Product Owner cannot maintain true Product ownership in the hierarchical structures of the scaled agile framework, since it is difficult for one job to cover all of the essential tasks (Remta and Buchalcevova, 2021). Hence, the activities and competences associated with the role of Product Owner are better performed as a team effort (Bass, 2015; Bass et al., 2018; Bass and Haxby, 2019; Hastie, 2016). Nonetheless, the Product Owner appears to involve much more of a leadership role than suggested in the extant literature (Kristinsdottir et al., 2016) and is a non-traditional way to develop leadership competencies in authentic situations (Harden and Ajamie, 2021). Table 4 summaries the identified influencing factors at the organisational-, team and stakeholder-, and individual level.

3.1.4. Challenges

The Product Owner may become too business-oriented, and may lack knowledge and competence related to technology, architecture, and requirements engineering (Angelov et al., 2016; Bass, 2015; Furda et al., 2022; Galster et al., 2016), as he or she may be an employee from a non-IT department (Galster et al., 2016). In this case, the Product Owner is unable to transfer technical information to the team or engage in discussions (Angelov et al., 2016), and the team must directly communicate with external stakeholders (Angelov et al., 2016). This can cause conflicts and insufficient communication between the Product Owners on one side and the development team and architects on the other, due to a lack of architectural knowledge (Furda et al., 2022; Galster et al., 2016). The Product Owner may even lack Scrum capabilities (Furda et al., 2022). A lack of adequate communication and timely feedback, and the busyness and unavailability of the Product Owner have emerged as challenges (Angelov et al., 2016; Baham, 2020; Furda et al., 2022).

A Product Owner must balance the duality of the role, and may find themselves caught between two chairs: supporting the team and involving the customers (Eckstein, 2010). This makes fulfilling the responsibilities of the Product Owner very exhausting (Eckstein, 2010). A lack of synchronisation among the Product Owners within an organisation poses challenges and risks, as each Product Owner pushes their own features and ignores the overall business functionality of the system (Eckstein, 2010).

The activities, tasks, and responsibilities associated with the Product Owner role exceed the capabilities of a single individual, which has been identified as a significant concern (Bass, 2013, 2015; Bass and Haxby, 2019). Changing priorities, the external pressure to push out new features, and the effort needed to develop domain competence for new projects are issues of tension (Kantola et al., 2022). The Product Owner may become stressed as agile organisations develop, which can have a severe influence on the overall performance (Kantola et al., 2022). Hence, the organisation should ensure adequate working conditions and time for the Product Owners to perform to the best of their ability (Harden and Ajamie, 2021; Kantola et al., 2022). Table 5 summaries the identified challenges related to the Product Owner role.

3.2. Focus group findings

This section presents the findings of the focus group. The first part of the session, where participants unfolded a fictive portrait of a Product Owner in two opposing scenarios, is presented as two separate narratives in this section.

3.2.1. The product owner in an unsuitable scenario

A dominant, self-willed, and persuasive Product Owner archetype exploits a well-established network and uses micromanagement to ensure progress, deliverables, deadlines, and time to market, while aspiring to become a product manager. From the outside, this Product Owner appears to perform well, and is considered a good investment for the company and a desirable Product Owner from a business perspective. While maintaining a strong relationship with the product manager, this archetype of Product Owner is likely to take the credit for the product manager's achievements. Despite excellence in terms of delivering business value, the development team is neither involved nor acknowledged in the process. Empowerment and the ability to self-organise is not encouraged or supported by the Product Owner, which jeopardises psychological safety in the development team. Retrospectives are considered as an unnecessary waste of time, and architects are overruled by the Product Owner.

Our results suggest that this Product Owner has a well-established network and knows many people within the organisation. To ensure his or her own deliverables and achievements, the dominant Product Owner will put pressure both upwards and downwards on the network, including pressure on other Product Owners to micromanage another team to achieve his or her own goals. An experienced Scrum master is needed to ensure that this situation will not get out of control. If it does, then the role of Scrum master may be shaped by the Product Owner into that of a personal assistant. Eventually, the whole team will fall apart in a scenario with a dominant Product Owner and an inexperienced Scrum master. Based on this experience, the organisation is likely to conclude that the agile method does not work and will revert back to waterfall. This means that it is important to have a competent Scrum master if the dominant Product Owner leaves the team or the organisation. It is crucial that the Scrum master informs which type of Product Owner the team needs, so that the organisation does not hire the exact same type as a replacement. In this case, the management will unfortunately not be able to see the problem in depth, as the focus is primarily on the business goals, and it often takes a long time before it is realised.

Table 6
Focus group findings: The Product Owner role in the two opposing scenarios.

The unsuitable scenario	The favourable scenario
- Dominant and self-willed	- Pragmatic, visionary, and honest
- Exploits a well-established network for own gains	- Explores a well-established network for the sake of the team
- High performance and excellent in delivering business value	- Aware of own shortcomings
- Takes credit of other's achievements	- Focus on long-term benefits
- Micromanagement and putting pressure on other Product Owners and teams	- Conscious and adapts to the organisational maturity
- Does not encourage team empowerment and self-organising	- Continuous synchronisation with stakeholders
- Retrospectives are a waste of time	- Meaningful and motivating communication with the team
- Scrum master is a personal assistant	- A partnership with the Scrum master
- Impedes the agile transformation	- Drives the agile transformation

3.2.2. The product owner in a favourable scenario

A pragmatic Product Owner can be involved, coach, and shield while remaining strategic and visionary with a focus on the realisation of long-term benefits. Our findings indicate that transparency and honesty are fundamental to this archetype, and decisions and actions are controlled and meaningfully elaborated by the development team. Value is not considered solely in monetary terms. This type of Product Owner is conscious of the organisational context, adapts to the organisational maturity level, and is a team player in the agile transformation process. This Product Owner is an excellent communicator with an ability to light a fire in the team regarding what needs to be achieved and to ensure continuous synchronisation with customers and relevant stakeholders. The relationship between the Scrum master and the Product Owner is characterised as a partnership, where both adapt to each other and complement each other. This implies that if there is a good collaboration between the pragmatic Product Owner and the Scrum master, then the team will also function well.

Our results indicate that this Product Owner archetype also achieves good cooperation with other Product Owners within the organisation, which ensures continuous synchronisation in order to optimise project practices. A well-established network within the organisation is vital, and the Product Owner applies it when necessary without exploiting it. To succeed as a Product Owner, it is paramount to have a profound knowledge of all the levers to pull within the organisation and to know who can contribute knowledge to the team. Hence, this Product Owner is not a newcomer in the organisational context.

It is crucial that the Product Owner has a knowledge of agile methods, and preferably also a knowledge of project management methodologies and how a project-based organisation thinks and operates. Technical and product domain knowledge is considered an advantage. Essentially, the pragmatic Product Owner is curious and aware of his or her own shortcomings and applies what is available within proximity to accommodate needs and close gaps. If technical knowledge is lacking, this Product Owner will seek it out and will reach out within the well-established network to address these needs for technical knowledge. A summary of the Product Owner role in the two opposing scenarios is depicted in Table 6.

3.2.3. Roundtable discussion of product owner realities

The second part of the focus group session consisted of a discussion of Product Owner realities among practitioners. The key findings derived from the thematic coding process are summarised in Table 7.

4. Discussion: Implications and recommendations

This section presents a discussion of our results from the systematic literature review and the empirical findings from the focus group session.

4.1. Portrait of an archetype product owner

The quest to outline a universally accepted definition of the Product Owner role may seem untenable Obviously, the process of exploring and filtering the existing literature to portray the characteristics and responsibilities of the Product Owner is possible, and produces an archetypal definition of the role, which spans the boundaries between the business and technical sides while managing everything in between. Nonetheless, a closer inspection of the list of characteristics and responsibilities related to the role shows that it is unlikely to fit a single person from a realistic perspective. However, the comprehensive nature of the role should be regarded as a complete array of items from which the tasks performed by the Product Owner are tailored to fit into the organisational context. This suggests that the role of the Product Owner is strongly influenced by the organisational level.

4.2. The ubiquitous influence of the organisational context

It is paramount that organisations carefully consider their needs and constraints prior to introducing the role of Product Owner (Oomen et al., 2017; Wu et al., 2020). A Product Owner must fit into the organisational context and be able to manage its environment, including the institutional culture and politics, rather than espousing generic competencies associated with the role.

Existing organisational structures have a strong influence of the key characteristics of the Product Owner. Although the role is associated with agile methods, the legacy of traditional project management models and decision structures can hamper the authority of the Product Owner. Inevitably, this reduces the authority of the Product Owner to a technical lead, making technical and product development decisions rather than business-related decisions.

The characteristics of the project, particularly when organisations decide to execute large-scale or platform projects, mean that this role may exceed the capabilities of a single person (Bass and Haxby, 2019; Kantola et al., 2022; Remta et al., 2020; Unger-Windeler et al., 2021). This is continually emphasised throughout the existing literature, and was also highlighted during the focus group discussion. To meet the expectations of Product ownership in projects at this scale, product ownership is carried out

Table 7
Findings from the focus group discussion.

Key findings	Description
Agile roles	While many applicants view the role of Scrum master as an entry position from which to progress to a Product Owner, these are two completely different profiles.
Maturity and tailored training	The maturation process for a Product Owner is individual for each Product Owner and depends upon an awareness of one's own challenges and shortcomings and how to become better in specific areas. Improvement points are tailored to each person and context.
Contextualisation	Defining an archetype of a good Product Owner, such as a good communicator, is easy, but the archetype must fit into the context. When the organisation is very political, a Product Owner is needed that can manage this, in which case managing the product backlog becomes secondary.
Networking	The most successful Product Owners are immensely proficient in networking and have well-established networks within the organisations.
Failing agile	The Scrum master is essential to lead the team through the storming phase during the team development process. Whenever collaboration or work become tough, there is a risk of reverting back to former models (waterfall).
Measuring	Organisations can conduct team-level surveys to measure agility: the team results are shared with each Scrum master, and the Scrum masters are responsible for taking action.
Context and tailoring of role	Project-based organisations follow a traditional phase-gate model for governance while including agile and iterative project execution. There will be a project manager who has a strong focus on stakeholders and the business side, while also handling the product and technical perspectives. The Product Owner manages the product and makes decisions associated with the sequence of how the product is developed, and is considered to be someone who knows the development team well. The main challenge in such project-based and traditional organisational environments is that Product Owners are not empowered to make decisions; the power instead resides within the line management.
Product Owner teams	In larger development set-ups, such as programs or platforms, where several teams share one backlog, then product ownership will be shared among several individuals, such as a chief Product Owner who is supported by two Product Owners.

as a team effort, which creates a need for further hierarchical structures (Eckstein, 2010; Gupta and Reddy, 2016).

Indirectly, organisations have the ability to exert influence at the team level through the decision on who is appointed as a Product Owner for a specific team, including the Scrum master. Which type of Product Owner does the team need—a technically oriented one or a customer-oriented one (Paasivaara et al., 2012)? It is important to consider the technical competencies and architectural knowledge (Furda et al., 2022; Galster et al., 2016) of the Product Owner in relation to the team's needs. In addition, the cooperation between the Scrum master and Product Owner was emphasised throughout the focus group session, as it influences the development team. Inadequate cooperation between the two roles can have a negative effect on the implementation of agile methods and the agile transformation.

4.3. The individual level

While an organisation may tailor the role of the Product Owner according to the organisational context, the way in which the role is actually performed is strongly influenced at the individual level. The personality traits identified in the literature review are wide-ranging and even contradictory. The creative constructs in which the Product Owner role is portrayed in both unsuitable and favourable scenarios mainly emphasise the individual level. These narratives about Product Owner scenarios illustrate the means by which individual characteristics influence how a Product Owner interacts with the organisational environment and manages a broad range of stakeholder relations and the development team. Eventually, the narratives can be viewed and interpreted as if individual characteristics have a determining effect on the outcome of evolving into either an unsuitable or a favourable scenario. Common to the narratives of both scenarios and the focus group discussion was a need for the ability to establish and manage a network within the organisation to ensure the performance of the Product Owner. While the literature emphasises strong communication skills (Harden and Ajamie, 2021; Müller et al., 2019; Unger-Windeler et al., 2021)), the findings of the focus group, including the narratives of the scenarios, emphasised networking capabilities. However, the ability to establish and manage a network and relations relies on communication skills.

4.4. Tailoring the role of product owner towards multifaceted portraits

A generic definition of the role of Product Owner is neither valuable nor applicable. Each organisation should shape its own definition of the Product Owner to ensure that the role is defined according to the organisational context. A comprehensive or exhaustive list of characteristics and responsibilities exceeds the capabilities of a single individual. However, our literature review presents an empirical collection of all possible responsibilities and characteristics of the Product Owner, extracted from the predominantly qualitative and case-based body of literature related to this role. Organisations may extract elements from such lists for the purpose of defining and tailoring the role of Product Owner to fit into the unique organisational context. Considering the maturity processes and advanced training of Product Owners, uniform processes are not regarded as suitable based on the findings of the focus group. This relates to the diversity in the role of Product Owner due to the possibility of tailoring the role according to the organisational environment and the needs of the team while considering the individual level. Hence, training and maturity depend on the specific tailoring of the role and the individual traits of the Product Owner.

The organisational level, the team and stakeholder level, and the individual level should not be considered independently of each other. The organisation exerts a downward influence on the

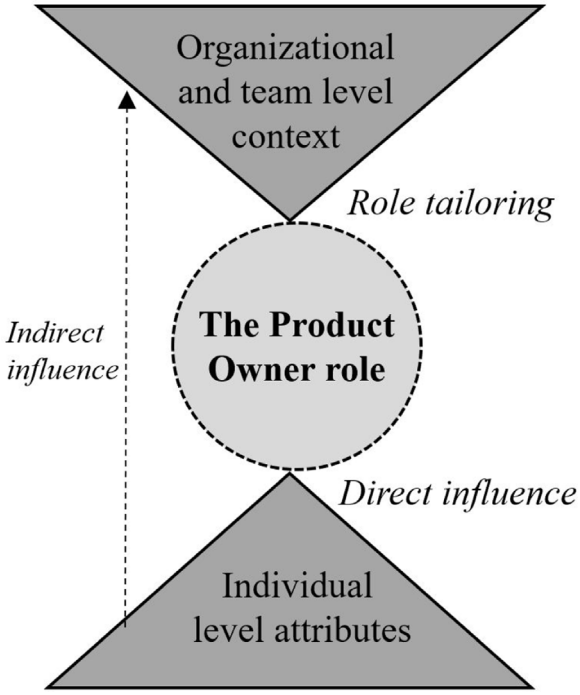

Fig. 4. Drivers in the formation of the Product Owner role.

role of Product Owner with a decisive importance relevant to how the role is defined. The team level should be included, as organisations can influence the tailoring of the role according to the knowledge of the team and its needs. However, tailoring of the role does not equate to a made-to-order Product Owner, since the individual level must also be considered. The dependencies between the levels become apparent as the organisational level shapes the role, and the individual level affects the organisational environment. This is illustrated in Fig. 4.

At the individual level, the findings of the focus group indicate that strong networking abilities and a well-established internal network are paramount for the Product Owner. Establishing these may require years of experience within the organisation. While organisations have the possibility of tailoring the final role of the Product Owner, it should be considered whether this tailored role can be fulfilled by existing employees, who already have a well-established internal network. Hence, tailoring the role and finding a candidate to undertake the tailored role may involve pragmatic trade-offs.

Based on a discussion of the reviewed literature and the findings of the focus group, we can formulate the following proposition:

- *The role of Product Owner is tailored to fit the organisational and team level context, while the characteristics of the Product Owner at the individual level influence how the role impacts its environment.*

4.5. Implications for research, practice, social, and management

As agile work practices are becoming dominant in the field of project management, research on project management, and subsequently on innovation and technological transformation, must explore the key determinants of the agile practices. This article unfolds a range of issues related to the Product Owner as a critical link between the business and the Scrum team. The character of these links must be studied carefully to understand the potential factors affecting the outcome in terms of success or failure, and the shaping processes of the resultant technologies. As one focus group participant stated, *"Sometimes, I take on the simplest Product Owner roles myself; I can probably do them more effectively than a junior, who could then gain by working on more complex Product Owner tasks"*. Researchers must look at a broad spectrum of factors to understand the role of Product Owner, from organisational and technological skills to experience, mindset, esteem, risk management, and fit with the team. The actual definition in the context of Product Owner roles also appears to be a determinant, for example whether the Scrum team has a broader integration in the organisation than just via the Product Owner, and whether the Product Owner is capable of conveying the breadth of the business needs to the team.

The Product Owner is a relatively new term within project management frameworks. The focus group revealed that the implications of recruitment for the role of Product Owner, its definition, and aspects such as empowerment and authority are not fully known. It is clear that authority and insight are valued skills; however, seniority must be gained over time, and the Product Owner must start somewhere. Paradoxically, companies are not concerned with whether Product Owners are recruited from the business, whether they are internal "professional Product Owners", or whether they are hired as external consultants. A key implication of this is that management has a key role in defining and selecting the Product Owner. This conflicts somewhat with the idea of the Product Owner as a skilled individual who is neutral in regard to the actual organisational and technological context of the agile project.

4.6. Reflections beyond the scope

On hindsight one may consider the definition of the Product Owner in a broader perspective, expanded beyond the terminology and keywords we utilised, inclusive of the essence of the role or even including responsibilities attributed to established managerial roles.

To this end, it is worth mentioning the work carried by Maruping and Matook (2020) in which the authors describe the role of customer representative (CR) of an agile environment. In their findings, the authors describe the CR as multiplex, dynamic and multi-oriented role (Maruping and Matook, 2020; Matook and Maruping, 2014). Undoubtedly these findings are closely relatable with the PO research described herein, and one might need to encompass such views to accommodate a holistic view of an indeed multifaceted role. Furthermore, in a more pragmatic approach Gandomani et al. (2020) report on the link of existing agile roles, like the Product Owner with the traditional managerial roles, like the project manager. In their review the authors depict that agile pre-defined roles include traditional managerial perspectives and responsibilities, yet they place those mainly on Scrum masters and agile coaches rather than the Product Owner (Gandomani et al., 2020). In the same review, the Product Owner is responsible to notify the team about customer requirements and priorities, showcasing the product and providing the vision, tasks that in a traditional setting would have been appointed to the project manager.

4.7. Future work

This study has clearly found that this is a multi-layered role that echoes the organisational context that surrounds the Product Owner but also include the practical aspects that one may encounter when adopting such a role. Using these findings as a basis, we intend to supplement our understanding using a rather novel approach, with a focus on the perception of the role as it is portrayed in industry job advertisements. Our hypothesis,

inspired by similar research (see Ahsan et al., 2013 and Feldman et al., 2006) is that the job advertisement is a reference point for the role manifested by multiple stakeholders that varies by industry. Thus, taking as our point of departure the contents of online job advertisements for Product Owners, we aim to identify similarities, discrepancies and trends from the literature and practice.

5. Conclusion

Agile software development methods are gaining ground in various industries, with Scrum being the most widely applied approach. The vital core of Scrum is a small, cross-functional, empowered, and self-organised team composed of a Scrum master, a number of developers, and a Product Owner. The Product Owner is accountable for maximizing the value of the product based on the work of the Scrum team. Thus, the role of Product Owner is a central and critical one, and the Product Owner is regarded as the nexus between all nodes. At the same time, becoming proficient in this role is perceived as a complex process, as the role itself is strongly influenced by its environment. Perceptions of the responsibilities associated with the role vary between organisations, meaning that the implementation is rarely in perfect conformance with the official Scrum framework. Furthermore, the role of Product Owner seems to have been neglected in the literature in this field.

In this paper, we therefore explored the factors that influence the role of Product Owner at the organisational level, the team and stakeholder level, and the individual level, by conducting a systematic literature review followed by a focus group session with industrial practitioners. We discovered that the wide range of characteristics and responsibilities associated with the role produces an archetype definition of the role that appears unreasonable to fit a single person. Thus, the role of Product Owner is tailored to fit into the organisational context and be able to manage its environment, including institutional culture and politics, rather than exposing generic competencies associated with the role, which suggests a strong influence at the organisational level.

The paper offers theoretical and actionable insights to companies by indicating that organisations need to pay attention to the needs of the team, including the Scrum master, when appointing a Product Owner for a specific team. Although organisations may tailor the role of Product Owner according to the organisational context, how the role is actually performed is strongly influenced by characteristics at the individual level. In particular, the individual's ability to establish and manage a network and relations within the organisation is vital, and this requires strong communication skills. Dependencies between these levels become apparent, as factors at the organisational level, including the team level, shape the role, while those at individual level affect the organisational environment. This paper contributes to understanding and solidifying current research on the multifaceted aspects of the role of Product Owner.

CRediT authorship contribution statement

Maja Due Kadenic: Developed the introductory, Theoretical and analytical part. **Diego Augusto de Jesus Pacheco:** Contributed on methodology literature review, Data processing. **Konstantinos Koumaditis:** Worked on data processing, Research concept design. **Gitte Tjørnehøj:** Worked on the initial framing, Focus group formation, Analytical framing. **Torben Tambo:** Worked on research design, Data collection, Data analysis, Discussion, Overall research design.

Declaration of competing interest

For the artcle "Investigating the role of product owner in Scrum teams: Differentiation between organisational and individual impacts and opportunities" there are no interests to declare.

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Data availability

Data will be made available on request.

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